# Wisconsin Department of Justice

# Initiating Case Report 23-4795

Report Date: 06/16/2023

**Primary Information** 

Description: Case Initiation Report William Steven Boardman - Vernon County OID

Reporting LEO: Haverley, Michael (Wisconsin Department of Justice)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

Agency Reference Numbers

Agency Case/File Number
Vernon County Sheriff's Office CFS23-12398

Addresses

Relationship Address

Case Request Location Vernon County, Wisconsin United States of America

Subjects

Relationship Bio DOB

Deceased Boardman, William S (Person) 61 yr. old, White, Male

 Vehicles

 Relationship
 Tag #
 VIN #
 VehicleDescription

 Subject's Vehicle
 SJ2723
 1B7GG26N11S113521
 2001 Dodge Dakota (Black) - Truck

Narrative begins on the following page.

06/30/2023 07:38:58 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795 Initiating Case Report

On Friday, June 16, 2023, the Vernon County Sheriff's Office (VCSO) was involved in an officer-involved critical incident (OICI) on Highway 35 between the Village of Genoa and Gianoli Road in Vernon County, Wisconsin.

VCSO deputies responded to a residence located at S5074 State Highway 35, Genoa, Wisconsin 54632 for a check welfare. During that contact, the male subject left his residence in his pickup truck and a traffic stop was conducted on Highway 35 south of Gianoli Road by a VCSO Deputy. The Deputy that was initially at the residence arrived at the traffic stop location. As Deputies were still in contact with the male subject, he began traveling away from the traffic stop location. The male subject had been told that he was not free to leave and to get his keys out of the ignition.

That VCSO Deputy ended up hanging onto the male subject's vehicle as the vehicle continued northbound on Highway 35. The Deputy ordered the subject to stop. The Deputy fired one round striking the subject. The Deputies then got the subject's vehicle to slow and stop. First aid was rendered, but the subject died at the scene.

VCSO requested the Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) complete the OICI investigation. Special Agent in Charge (SAC) Jake Vosters received the request as DCI Coordinator for this OICI investigation. Special Agent (SA) Michael Haverley was assigned as DCI Lead Investigator for this OICI investigation. Additional WI DOJ-DCI Special Agents responded from Eau Claire and Madison.

# **RECOMMENDATION:**

It is recommended that an active case file be opened to act as a repository for all investigative reports related to the OICI.

# Interview 23-4795/1

Report Date: 06/19/2023

| <b>Primary Information</b>  |  |  |                             |  |  |
|---|--|--|-----------------------------|--|--|
| Description:  | Interview of and and   | - 06/16/2023                               |                             |  |  |
| Occurrence From:  | 06/16/2023 23:15   |  |                             |  |  |
| Occurrence To:  | 06/16/2023 23:59   |  |                             |  |  |
| Reporting LEO:  | Beardsley, Wade A (ICAC & Computer Crimes  | DCI / Wisconsin Division of Criminal Inves | stigation)                  |  |  |
| Backup LEO:   | Maske, Lance A (Eau Claire HT DCI / Wisconsi   | in Division of Criminal Investigation)     |                             |  |  |
| Report Status:  | Approved   |  |                             |  |  |
| Report Status Date:   | 06/29/2023   |  |                             |  |  |
| Approved By:  | Vosters, Jake E (Wisconsin Division of Crimin  | al Investigation)                          |                             |  |  |
|   |  |  |                             |  |  |
| Synopsis  |  |  |                             |  |  |
| Special Agents Wade I   | 23, at approximately 11:15 P.M., Wisconsin Depa<br>Beardsley and Lance Maske, interviewed<br>Genoa Harmony Fire Rescue building, located | , F/W, DOB , and                           | vestigation (DCI)<br>, M/W, |  |  |
|   |  |  |                             |  |  |
| Addresses   |  |  |                             |  |  |
| Relationship Address  |  |  |                             |  |  |
| Interview Location 126 Main St, GENOA, Wisconsin 54632 United States of America |  |  |                             |  |  |
|   |  |  |                             |  |  |
| Subjects  |  |  |                             |  |  |
| Relationship  | <u>Name</u>  | <u>Bio</u>                                 | <u>DOB</u>                  |  |  |
| Interviewed   | (Person)   | 28 yr. old, White, Female                  |                             |  |  |
| Interviewed   | (Person)   | 29 yr. old, White, Male                    |                             |  |  |
| Mentioned   | (Person)   | White, Male                                |                             |  |  |
| Mentioned   | Boardman, William S (Person)   | 61 yr. old, White, Male                    |                             |  |  |
|   |  |  |                             |  |  |
| Telephones / E-Addr   |  |  |                             |  |  |
| <u>Relationship</u>   | Number/E-Address   |  |                             |  |  |
| Subject's Telephone   | (651) (Cellular)   |  |                             |  |  |
| Subject's Telephone   | (651) (Cellular)   |  |                             |  |  |
|   |  |  |                             |  |  |

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Narrative begins on the following page.

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heavily and deteriorating mentally.

| Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/1 Interview of and and and and and and and and another and and another and another and another and another and another and another another and another and another another and another another and another another another and another an |
|--|
| stated that methamphetamine didn't "sit right" with Boardman.  stated that her father would become paranoid when he used methamphetamine.  stated her father had previously been committed to a hospital in California for methamphetamine addiction many years ago.  stated Boardman's methamphetamine use had been continually getting worse through the years.  stated Boardman had been "going crazy" and described Boardman as talking to walls.  described Boardman's residence as completely destroyed.  stated "everything is upside down, broken, shattered"  stated there were no complete walls in Boardman's residence because there were so many holes.  stated electrical power to Boardman's residence had previously been turned off.  |
| stated she went over to Boardman's residence with door. stated Boardman slammed the door in stated Boardman slammed the door in stated she was Boardman's only child so for Boardman to do that, knew things were not right with her father. Eventually did speak to her father. Stated that Boardman had a couple people staying on his property in a separate trailer and Boardman wanted them gone. stated prior to her arrival, these individuals had left along with their camper. Boardman asked "Aren't you going to ask why the house is like this?" stated that Boardman told her that the neighbors were flying drones and were "fucking with his electric and everything." Boardman also told that the neighbors were putting cameras inside his house. stated her father was exhibiting extreme paranoia but stated it was "beyond that, like he is mentally ill." advised she called dispatch tonight in hopes of getting her father committed to a hospital due to his mental state.   |
| stated the last time she saw Boardman prior to today was over Christmas because she knew her father wasn't okay.  stated she brought Boardman to her residence for a couple days.  described her father as "being weird, staring at the wall."  described Boardman as moving his mouth and jaw continuously while moving his arms.  asked her father what he was doing and Boardman stated he was "going through a tunnel."  stated she hadn't talked to Boardman since December when he was at her residence.   |
| said her boyfriend, was coming back from Darlington a couple days ago and was going to be in the area of Boardman's residence. stated went to Boardman's residence to check on him, but he never answered. and believed that Boardman was "barricaded in the house." stated after wasn't able to reach Boardman, contacted her uncle, by phone. advised that something wasn't right with Boardman and was worried he was going to hurt himself. told that they should call in a welfare check. stated that Boardman was "digging in the electrical box." among other unsafe activities.  |
| stated she got off work today and called in a welfare check for Boardman.  stated she told the dispatcher that she was on her way to her father's house and wanted a welfare check done.  stated she arrived at Boardman's residence approximately ten minutes before law enforcement arrived.  stated that she and her father began yelling at each other.  |

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| Wisconsin Division of Criminal Investigation Case Report  Case/Report Number: 23-4795/1 Interview of and and and an additional and additional additional and additional addit |
|--|
| stated Boardman wanted her to leave. stated there was no way to communicate or reason with Boardman due to his current state. stated Boardman was pacing around trying to find his hat and boxers, which didn't make any sense. encouraged the Deputy on-scene to see the condition of Boardman's residence and tried explaining to the Deputy that Boardman "wasn't there" mentally. stated she witnessed the Deputy trying to reason with Boardman, however stated that Boardman was so "fixated" on "everyone being a part of it."  |
| stated Boardman eventually made his way to his truck and sat down in the driver's seat. stated the deputy tried to hold the vehicle's door open and asked Boardman to talk to him to figure out what was wrong. stated that Boardman said something similar to "You guys know what's going on." stated that Boardman believed law enforcement was "a part of it." regarding Boardman losing his house and his electrical being shut off. stated that she believed law enforcement had recent contacts with Boardman., including a situation where Boardman walked into the neighbor's house uninvited.   |
| stated after Boardman got into his vehicle, he slammed the vehicle's door shut in front of the deputy and drove off, turning right out of the driveway.  stated she advised the Deputy that Boardman did not have a valid driver's license.  stated she told the Deputy that because she was "being selfish" and wanted Boardman to go to jail in order for him to get help. The Deputy advised to remain at the residence while he assisted his partner on the traffic stop with Boardman.  stated she and remained at the residence for approximately one hour. After waiting for an hour, stated they left the residence to figure out what was going on. stated they observed numerous emergency vehicles on 35. stated as she got closer to the scene, observed Boardman lying on the ground.  stated they did not witness or hear any portion of the traffic stop or shooting.   |
| SA Beardsley asked if Boardman owned or was known to possess any weapons.  stated her father did not own any weapons or firearms. added that it was possible Boardman owned a pocket knife. stated that the Deputy also asked if her father owned any weapons; told the Deputy he did not. stated that her father does own a phone but assumed he likely destroyed it, along with the rest of the property in his residence. stated she communicated with her father only by phone calls and not text messages or other means. SA Beardsley asked and if they had any contact information for the individuals previously living in the camper on Boardman's property. The pair advised they did not know who they were and had no way of contacting them.  |
| stated after staying on-scene for approximately twenty minutes or so, the pair drove back to Boardman's residence. stated they secured Boardman's residence and pushed his bike back into his house.   |

The interview concluded at approximately 11:59 P.M.

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# Interview 23-4795/2

Report Date: 06/19/2023

| Warning                |                     |                             |  |            |
|------------------------|---------------------|-----------------------------|--|------------|
| Contains entities exe  | mpt from disclosure |                             |  |            |
|                        |                     |                             |  |            |
| Primary Information    |                     |                             |  |            |
| Description:           | Interview-          | -06/19/2023                 |  |            |
| Reporting LEO:         | Maske, Lance A (    | Eau Claire HT DCI / Wiscons | sin Division of Criminal Investigation)  |            |
| Report Status:         | Approved            |                             |  |            |
| Report Status Date:    | 06/29/2023          |                             |  |            |
| Approved By:           | Vosters, Jake E (   | Wisconsin Division of Crimi | nal Investigation)   |            |
|                        |                     |                             |  |            |
| Synopsis               |                     |                             |  |            |
| requested to interview |                     | called the Vernon           | nal Investigation (DCI) Special Agent (SA)<br>County Sheriff's Office to report he had wi<br>phone at SA Haverley's request. |            |
|                        |                     |                             |  |            |
| Subjects               |                     |                             |  |            |
| Relationship           | <u>Name</u>         |                             | Bio  | <u>DOB</u> |
| Interviewed            |                     | (Person)                    | 45 yr. old, White, Male  |            |
| Mentioned - EXEMPT     |                     | (Person)                    | 14 yr. old, White, Female  |            |
|                        |                     |                             |  |            |
| Documents              |                     |                             |  |            |

Narrative begins on the following page.

<u>Document</u>

Vernon County Report

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# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/2- Interview-06/19/2023

On June 16, 2023, Wisconsin Department of Justice-Division of Criminal Investigation (DCI) was requested to lead an officer involved critical incident (OICI) by the Vernon County Sheriff. The location of the OICI was Highway 35 and Gianoli Road, Township of Genoa, Vernon County, Wisconsin. On June 19, 2023, Special Agent (SA) Lance Maske was requested to interview called the Vernon County Dispatch and said he was a witness to the traffic stop on June 16, 2023. The following is a synopsis of the interview. SA Maske placed a telephone call to who answered and identified himself as said he was traveling south on Highway 35 on his way to go camping with his and saw two police vehicle with their red and blue lights on. first noticed the police vehicles about a quarter to half a mile away and he slowed down to pass said as he got closer, he saw one of the police vehicles parked in front of another vehicle. said he thought it was odd the way the vehicle was pulled over as he didn't normally see cars stopped on the side of the road the way this vehicle was positioned. said he thought someone might have had a medical emergency and the officers were trying to help the person. said as he got even closer, he could see one of the officers appeared disheveled and both officers were at the driver side door of the vehicle. said he witnessed a person was "slumped" over in the driver seat at an angle. said, based on the position of the individual in the vehicle, he thought there was a medical emergency. said he didn't see the individual's vehicle moving while he ( ) drove past, and he said he couldn't remember if there were any other vehicles on the road at that time. if there was anything else law DCI should know. SA Maske asked said he thought it was a medical emergency until he watched the news and thought he should report what described his vehicle as a 1994 GMC Suburban, black in color with a he witnessed. maroon fender and he was towing an older model pontoon. said he would be available to talk if needed. for his time and ended the phone call. SA Maske thanked A PDF copy of the Vernon County Report will be attached to this report and uploaded to the

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critical incident folder under this case number.



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5785 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

NATHAN CAMPBELL, CHIEF DEPUTY

CFS Command Log

Printed on June 18, 2023

CFS # CFS23-12530 Call Taker Corinna Halvorson

**Location** 4676-BLK STATE HIGHWAY 35, GENOA, WI 54632

**Location Details** 

Primary Incident Code FOLL: INV FOLLOW-UP

ModRoutinePriority4Use CautionNo

**Primary Disposition** 

Beat WEST

**Zone** Town of Genoa **Call Time** 06/18/23 06:42:48

**Completed Time** 

| Repor | rters |
|-------|-------|
|-------|-------|

(Initial Reporter)

Sex DOB Address

Report Time 06/18/23 06:42:48
How Reported Self-Initiated

From Phone (608)
Contact Phone
Comments

**Other Names** 

**Vehicles** 

Responders

**Response Times** 

Assigned Enroute

Arrived

Leaving

Arrived At

Completed

IR / External Agency Numbers

Command Log Filter: Only Log Commands | Details: Hidden | Units: All Units | Revised Entries: Shown

06/18/23 06:57:05 | Halvorson, Corinna | DID WITNESS OIS INCIDENT ON FRIDAY AROUND 7:30. HE DID SEE OFFICER GET UP OFF THE GROUND AND CHASE THE VEHICLE. SAW POLICE VEHICLE WITH LIGHTS ON

AND GOT IN FRONT OF THE VEHICLE. HE JUMPED OUT OF THE SQUAD AND WENT TOWARDS THE SUSPECT VEHICLE. HE DID SEE OFFICER GET UP AND CHASE THE VEHICLE. THOUGHT IT WAS A MEDICAL EMERGENCY, BUT AFTER HE READ THE NEWS RELEASE REALIZED WHAT HE HAD WITNESSED. DID GET GAS AT THE ZZIP STOP AND THEN WAS DRIVING TO THE PARK, CAME UPON THE INCIDENT.



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

Printed on June 18, 2023

NATHAN CAMPBELL, CHIEF DEPUTY

CFS Unit Response Times

**Call Taker** Corinna Halvorson

Location 4676-BLK STATE HIGHWAY 35, GENOA, WI 54632

CFS23-12530

**Location Details** 

CFS#

Primary Incident Code FOLL: INV FOLLOW-UP

Mod Routine **Priority** 4 **Use Caution** No

**Primary Disposition** 

**WEST** Beat

Town of Genoa Zone **Call Time** 06/18/23 06:42:48

**Completed Time** 

(Initial Reporter)

Sex DOB **Address** 

**Report Time** 06/18/23 06:42:48

**How Reported** Self-Initiated **From Phone** (608)

**Contact Phone** Comments

**Other Names** 

**Vehicles** 

Responders

**Response Times** 

**Assigned Enroute** 

**Arrived** 

Leaving

**Arrived At** 

Completed

IR / External Agency Numbers

**Unit Response Times** 

**Non Unit Specific Times** 

06/18/23 06:57:05 | DID WITNESS OIS INCIDENT ON FRIDAY AROUND 7:30. HE DID SEE OFFICER GET UP OFF THE GROUND AND CHASE THE VEHICLE. SAW POLICE VEHICLE WITH LIGHTS ON AND GOT IN FRONT OF THE VEHICLE. HE JUMPED OUT OF THE SQUAD AND WENT TOWARDS THE SUSPECT VEHICLE. HE DID SEE OFFICER GET UP AND CHASE THE VEHICLE. THOUGHT IT WAS A MEDICAL EMERGENCY, BUT AFTER HE READ THE NEWS RELEASE REALIZED WHAT HE HAD WITNESSED. DID GET GAS AT THE ZZIP STOP AND THEN WAS DRIVING TO THE PARK, CAME UPON THE INCIDENT.

# Investigative 23-4795/3

Report Date: 06/19/2023

**Primary Information** 

Description: Scene Processing, Scene Searches, Evidence Recovery, and Scene Documentation

Occurrence From: 06/16/2023 20:00
Occurrence To: 06/17/2023 05:00

Reporting LEO: Kleinhans, David J (Arson DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Agnew, Alexander J (Arson DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/19/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

Addresses
Relationship Address

Case Request Location Vernon County, Wisconsin United States of America

 Subjects

 Relationship
 Name
 Bio
 DOB

 Law Enforcement
 Brown, Jonathon (Law Enforcement Official)
 -- 

 Law Enforcement
 Brueggeman, Bradley (Law Enforcement Official)
 -- 

 Law Enforcement
 Winchel, Sam J. (Law Enforcement Official)
 White, Male

 Deceased
 Boardman, William S (Person)
 61 yr. old, White, Male

 Vehicles
 Relationship
 Tag #
 VIN #
 VehicleDescription

 Subject's Vehicle
 SJ2723
 1B7GG26N11S113521
 2001 Dodge Dakota (Black) - Truck

| Property      |                 |  |
|---------------|-----------------|--|
| <u>Status</u> | <u>Quantity</u> | <u>Description</u>   |
| Inventory     | 1               | Deputy Brown's Duty Weapon   |
| Inventory     | 1               | 1 Glock Magazine and 17 unfired silver cartridges with Hornady 9mm on head stamp |

#### Narrative begins on the following page.

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Wisconsin Division of Criminal Investigation Case Report

Case/Report Number: 23-4795/3

### **SYNOPSIS**

On June 16, 2023, at 7:46 PM, Special Agent (S/A) David Kleinhans was contacted by Special Agent in Charge (SAIC) Jake Vosters requesting assistance with an officer involved shooting in Vernon County that resulted in the death of one subject.

SAIC Vosters requested S/A Kleinhans respond to the scene in Vernon County on Hwy 35 near Gianoli Rodd in the Village of Genoa. S/A Kleinhans arrived on scene at 9:30 PM. Upon arrival, the on-scene DCI agents received a briefing from the Vernon County Sheriff's Office (VESO). S/A Kleinhans and S/A Agnew were assigned to conduct scene processing and documentation. The Wisconsin State Patrol (WSP) Technical Reconstruction Unit (TRU) was on scene prior to DCI's arrival. DCI was requested to assist with scene processing and evidence collection and the WSP-TRU was requested to assist with documenting the scene utilizing surveying and laser scanning equipment and completing a crash report.

Due to the time of day, S/A Kleinhans requested overhead lighting to assist with processing the scene during the hours of darkness. The VESO contacted the fire department for overhead lighting and had them brought to the scene.

# **SCENE CONTROL/SECURITY**

Control and security at the scene were maintained continually from the time of the initial response to the conclusion of the scene examination. Yellow police tape lined the perimeter and VESO maintained a scene log.

Control and security at the scene were maintained through the constant presence of VESO, WSP, and DCI agents conducting the scene examination.

### PARTICIPATING CRIME SCENE PERSONNEL

Wisconsin Department of Justice - DCI

- S/A David Kleinhans
- S/A Alexander Agnew

Wisconsin State Patrol Total Reconstruction Unit

- Trooper Chris Sukis
- Trooper Marcus Meurer
- Trooper Courtney Mueller

## LEGAL AUTHORITY FOR CONDUCTING A SCENE EXAMINATION

The crime scene was located on a public roadway in the County of Vernon. S/A Adam Frederick contacted the Vernon County District Attorney's office about applying for a search warrant to search William Boardman's vehicle. The DA advised the scene was on a public roadway and the deceased would have no expectation of privacy. No search warrant was needed.

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Case/Report Number: 23-4795/3

# **WEATHER CONDITIONS**

Weather conditions were obtained from archived weather data records available from wunderground.com. Weather conditions at the time of the incident were recorded at the La Crosse Regional Airport, in La Crosse, Wisconsin on June 16, 2023, and reported as:

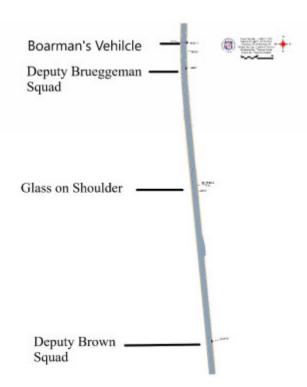
| Time        | Temp  | Dew<br>Point | Humidity | Wind    | Wind<br>Speed | Wind<br>Gust | Pressur<br>e | Precip. | Condition |
|-------------|-------|--------------|----------|---------|---------------|--------------|--------------|---------|-----------|
| 7:53 PM     | 76 °F | 54 °F        | 46 %     | WN<br>W | 5 mph         | 0 mph        | 29.24 in     | 0.0 in  | Fair      |
| 8:53 PM     | 70 °F | 57 °F        | 63 %     | NNE     | 3 mph         | 0 mph        | 29.23 in     | 0.0 in  | Fair      |
| 10:53<br>PM | 66 °F | 56 °F        | 70 %     | SE      | 3 mph         | 0 mph        | 29.27 in     | 0.0 in  | Fair      |
| 11:53<br>PM | 63 °F | 55 °F        | 75 %     | ESE     | 5 mph         | 0 mph        | 29.27 in     | 0.0 in  | Fair      |

# **SCENE DESCRIPTION**

The crime scene was on Hwy 35 near Gianoli Rd. Genoa, Vernon County, Wisconsin. The crime scene was in a business district with commercial buildings on both sides of the roadway. The roadway traveled north and south. The roadway had an asphalt pavement with no curb, gutter, or public sidewalk on either side of the roadway. See the goggle map and State Patrol diagram of scene location. (See Figures 1 and 2)



(Figure 1-Hwy 35 and Gianoli Rd., Genoa, Vernon County, Wisconsin - Courtesy of Google Maps)



(Figure 2-Scene diagram Hwy 35 and Gianoli Rd, Genoa, Vernon County, Wisconsin - Courtesy of Wisconsin State Patrol)

## **SCENE EXAMINATON/PROCESSING**

On Friday, June 16, 2023, the Vernon County Sheriff's Office (VESO) was involved in an officer-involved critical incident (OICI) on Highway 35 between the Village of Genoa and Gianoli Road in Vernon County, Wisconsin.

Deputy Brueggeman of the VESO responded to a residence located at S5074 State Highway 35, Genoa, Wisconsin for a check welfare on William Boardman. During that contact, Boardman left his residence in his pickup truck and a traffic stop was conducted on Highway 35 south of Gianoli Road by Deputy Brown of the VESO. Deputy Brueggeman arrived at the traffic stop location at assist. Deputies contacted Boardman as he began driving away from the traffic stop location. Deputies told Boardman he was not free to leave and to get his keys out of the ignition.

Deputy Brown attempted to unlock the driver door through the open window and Boardman accelerated away from the traffic stop. Deputy Brown's arm became stuck, and Deputy Brown jumped on the running bar of Boardman's truck as Boardman accelerated northbound on Highway 35. Deputy Brown ordered Boardman to stop. Deputy Brown fired one round

Deputy Brueggeman got in front of Boardman's truck with his squad car and assisted with safely stopping Boardman's vehicle on the roadway. The Deputies and EMS provided first aid at the scene. Boardman died at the scene.

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VESO requested the Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) complete the OICI investigation. Special Agent in Charge (SAIC) Jake Vosters received the request as DCI Coordinator for this OICI investigation. Special Agent (SA) Michael Haverley was assigned as DCI Lead Investigator for this OICI investigation.

Prior to DCI's arrival, law enforcement officers, EMS, and Coroner Betty Nigh confirmed William S. Boardman was on scene and deceased.

Upon arrival S/A Kleinhans and S/A Agnew contacted Sergeant (Sgt) Sam Winchel of the VESO. Sgt confirmed he arrived on scene after the incident was over and Boardman was removed from the vehicle and was lying in the roadway next to his truck. Sgt Winchel had secured Deputy Brown's department issued firearm in his squad which was still on scene. Sgt Winchel stated that he did not interview the involved deputies and did not have many details of what had occurred. Sgt Winchel stated Deputy Brown and Deputy Brueggeman were at the VESO.

Upon completing the on-scene briefing, S/A Kleinhans contacted S/A Haverley to obtain additional details about the scene. S/A Haverley advised the involved deputies would not be completing initial interviews or a scene walk through on the evening of June 16, 2023.

Upon completing the briefing and a walk through with the VESO and speaking with S/A Haverley, S/A Kleinhans conducted a scene search in a systematic manner beginning from the exterior of the perimeter and working toward the vehicles. S/A Kleinhans documented the scene with photographs. The Wisconsin State Patrol-TRU was on scene prior to DCI's arrival and had started documenting the scene.

During the initial scene assessment, S/A Kleinhans documented Boardman's vehicle which was parked on the shoulder of Hwy 35. The vehicle was a black 2001 Dodge Dakota and displayed WI license plate SJ2723. The vehicle was parked facing north bound on the east shoulder of the roadway. S/A Kleinhans observed the vehicle was off and the doors were closed. The driver side window was rolled down and the passenger window was broken out. A red biohazard was lying in the roadway near the front driver side tire. Boardman was lying in the roadway next to the driver side door and was covered with a gray sheet. A medic bag was on the shoulder of the road near the rear of Boardman's vehicle.

S/A Kleinhans documented Deputy Brueggeman's marked Vernon County squad as a Ford Interceptor which was parked on the east shoulder of Hwy 35 facing north approximately forty yards behind Boardman's vehicle. The Vernon County squad displayed WI official license plate F1241. The squad was unoccupied, and all the doors were closed. S/A Kleinhans observed the squad car was off and the emergency lights were off.

S/A Kleinhans documented Deputy Brown's marked Vernon County squad as a Ford Interceptor which was parked on the east shoulder of Hwy 35 facing north approximately half mile south of

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Boardman's vehicle. The Vernon County squad displayed WI official license plate E7842. The squad was unoccupied, and all the doors were closed. S/A Kleinhans observed the squad car was running and the emergency lights were on.

While walking toward Deputy Brown's squad car, investigators observed glass on the east side of the roadway approximately a quarter of a mile behind Boardman's vehicle. The glass was consistent with being from Boardman's passenger side door. At the time of the scene assessment, investigators did not have any details as to what caused the window to break. The area of the glass was photographed and searched for a casing. Investigators did not locate any bullet casings in the area. Sgt Winchel confirmed several vehicles had passed through the scene prior to the VESO closing the roadway.

Once the initial photos were taken and the evidence was identified, the VESO contacted the Vernon County Coroner's office to respond to the scene. Coroner Betty Nigh returned to the scene with Justin Panske and Bridgett Madden of the Vosseteig Funeral Home on June 16, 2023, at 11:40 PM. Boardman's body bag was sealed on June 16, 2023, at 11:58 PM.

While conducting the scene examination, S/A Kleinhans was informed Deputy Brueggeman's and Deputy Brown's body cameras were secured in Sgt Winchel's squad. Investigators confirmed both Vernon squad cars had a dash mounted squad camera in the vehicle but were not able to determine if it was on and recording. S/A Kleinhans requested a S/A to respond to the scene to take custody of the body cameras and assess the Vernon County Squad Camera for video recordings. On June 17, 2023, at 12:38 AM, S/A Folkers arrived on scene and collected the SD cards from the Vernon County squads and took custody of the two body cameras. S/A Folkers and Digital Evidence Specialist (DES) Teai Czajka processed the SD card and body cameras off site and returned them to the VESO on June 17, 2023.

S/A Kleinhans conducted an initial assessment of the vehicles at the scene for damage. S/A Kleinhans observed the following damage to Boardman's vehicle. The passenger side window was broken out. The front license plate was a little bent and the front bumper had some minor scratches. Investigators were not able to determine when the minor damage would have occurred.

Deputy Brueggeman's squad had the following damage. The rear bumper and tailgate had damage consistent with being hit from the rear. The tailgate and bumper were dented, and the rear taillight was not attached and was hanging by the wires.

Deputy Brown's squad was examined, and no damage was documented. The State Patrol was contacted to complete the crash report. At the time of the initial assessment, investigators did not have all the details on how Deputy Brueggeman's squad car had received the damage and why it was parked south of Boardman's vehicle.

Once the vehicle searches were completed, S/A Kleinhans and S/A Agnew obtained Deputy Brown's firearm from Sgt Winchel's squad. S/A Agnew examined the firearm and determined the slide was closed and the firearm had one round in the chamber. S/A Agnew removed the

Page 6

seventeen-round magazine from the firearm and counted sixteen unfired rounds in the magazine. The rounds removed from Deputy Brown's firearm and magazine had silver in color casings that had "Hornady 9mm" stamped on them.

Once the WSP-TRU completed the scene documentation, S/A Kleinhans and S/A Agnew collected and packaged the following evidence items. All the evidence items were identified with placards for documentation.

Placard #1 Deputy Brown's Glock firearm recovered from Sgt Winchel's squad.

Placard # 2 magazine, and seventeen rounds recovered from Deputy Brown's firearm recovered from Sgt Winchel's squad.

Placard #3 SD card removed from Deputy Brueggeman's Vernon County Squad Camera

Placard #4 SD card removed from Deputy Brown's Vernon County Squad Camera

Placard #5 Deputy Brown's body camera recovered from Sgt Winchel's squad.

Placard #6 Deputy Brueggeman's body camera recovered from Sgt Winchel's squad.

Once the vehicles were documented, the damaged Vernon County squad and Boardman's vehicle were removed from the scene by C&C Towing and Recovery and towed to the VESO secure storage facility. Sgt Winchel followed the vehicles. VESO removed Deputy Brown's vehicle from the scene. Once the vehicles were removed from the scene, the VESO contacted the fire department to decontaminate the scene prior to clearing the scene.

S/A Kleinhans and investigators cleared the scene on June 17, 2023, at approximately 1:30 AM.

On June 22, 2023, at the VESO secured storage facility, S/A Kleinhans, S/A Frederick, and S/A Greeno documented and processed the Vernon County Squads and Boardman's vehicle. See additional ACISS reports for details.

## **EVIDENCE COLLECTED**

S/A Kleinhans transported the evidence to the Eau Claire field office on June 17, 2023, and secured it in the evidence room. S/A Kleinhans sealed the evidence at the Eau Claire field office on June 19, 2023.

#### **SCENE DOCUMENTATION**

During the scene examination, the Wisconsin State Patrol obtained measurements and scans for the completion of scene diagrams. The Wisconsin State Patrol reports were sent to S/A Haverley. S/A Kleinhans captured 111 digital images utilizing a digital SLR camera and a copy of the photos was submitted to DCIR.

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# **Wisconsin Division of Criminal Investigation Case Report** Case/Report Number: 23-4795/3 A copy of the scene log which was maintained and secured by the VESO.

# Interview 23-4795/4

Report Date: 06/19/2023

**Primary Information** 

Description: Interview of Vernon County Sheriff's Office Sergeant Sam Winchel

Occurrence From: 06/17/2023 00:33
Occurrence To: 06/17/2023 01:03

Reporting LEO: Stearns, Randy M (Eau Claire Financial Crimes DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Hall, David J (Medicaid Fraud Control and Elder Abuse Unit / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On June 17, 2023, Special Agent (SA) David Hall and SA Randy Stearns interviewed Vernon County Sheriff's Office Sergeant Sam Winchel regarding the officer involved incident.

| Addresses          |   |
|--------------------|---|
| Relationship       | Address   |
| Interview Location | Vernon County, Wisconsin United States of America |

| Subjects        |   |                         |            |
|-----------------|---|-------------------------|------------|
| Relationship    | <u>Name</u>   | Bio                     | <u>DOB</u> |
| Law Enforcement | Vernon County Sheriff's Office (Law Enforcement Agency) |                         |            |
| Interviewed     | Winchel, Sam J. (Law Enforcement Official)              | White, Male             |            |
| Law Enforcement | Brown, Jonathon (Law Enforcement Official)              |                         |            |
| Law Enforcement | Brueggeman, Bradley (Law Enforcement Official)          |                         |            |
| Law Enforcement | Campbell, Nathan (Law Enforcement Official)             |                         |            |
| Law Enforcement | Davig, Michael (Law Enforcement Official)               |                         |            |
| Mentioned       | Boardman, William S (Person)                            | 61 yr. old, White, Male |            |

## Narrative begins on the following page.

06/30/2023 07:41:27 Page 1 of 3

### Wisconsin Division of Criminal Investigation Case Report

Case/Report Number: 23-4795/4 – Interview of Vernon County Sheriff's Office Sergeant Sam Winchel

On June 17, 2023, at approximately 12:33 a.m., Special Agent (SA) David Hall and SA Randy Stearns conducted an interview of Vernon County Sheriff's Office Sergeant Sam Winchel. The interview occurred within SA Hall's squad car parked on State Highway 35, just north of the incident scene. Sergeant Winchel provided the following of interest:

Sergeant Winchel was scheduled to work from 1:00 p.m. on June 16, 2023, through 3:00 a.m. on June 17, 2023. Sergeant Winchel attended a training through the Department of Human Services from 1:00 p.m. through 4:00 p.m.

Sergeant Winchel stated there were 3 other deputies working on the road at the time of the incident. Deputy Bradley Brueggeman was working a 5:00 p.m. to 5:00 a.m. shift, Deputy Johnathan Brown was working a 6:00 p.m. to 6:00 a.m. shift, and Deputy Nathan Campbell was working 12:00 p.m. to 12:00 a.m. shift.

Sergeant Winchel stated the incident was generated from a "Check Welfare" called in by William Boardman's daughter. Sergeant Winchel believed the call came in at approximately 6:00 p.m., as Sergeant Winchel believed Deputy Brueggeman and Deputy Brown responded from the Vernon County Sheriff's Office. Sergeant Winchel believed the Deputies arrived at the call at approximately 6:30 p.m. Deputy Campbell did not respond to the call or the incident.

When the initial call came out, Sergeant Winchel was already responding to a "deer" call in Coon Valley. Sergeant Winchel was near Westby. Sergeant Winchel called Deputy Brueggeman to provide Deputy Brueggeman with details regarding Boardman. Sergeant Winchel advised Deputy Brown was already familiar with Boardman via a previous OWI incident.

Sergeant Winchel told Deputy Brueggeman about a vehicle pursuit with Boardman on June 13, 2023. Boardman had passed Sergeant Winchel while travelling the same direction. Sergeant Winchel was the passenger in a squad car while field training a new deputy. Boardman's speed was radared from 75 mph to 91 mph. Upon attempting to initiate a traffic stop, Boardman did not stop. Sergeant Winchel called off the pursuit as he had Boardman's vehicle plate number and Sergeant Winchel did not want a new trainee in a pursuit. Later, during that shift, Sergeant Winchel contacted Boardman at Boardman's residence. Boardman did not appear impaired. Boardman blamed Boardman's behavior on having a bad day due to water issues at the residence and having to run around Iowa looking for parts to fix the water problem. Sergeant Winchel decided not to "ruin his life" by arresting Boardman. Sergeant Winchel decided to refer Boardman for charges. Sergeant Winchel was not aware of any other incidents involving Boardman since June 13, 2023.

After Deputy Brueggeman and Deputy Brown arrived at the "Check Welfare", Sergeant Winchel overheard irregular radio traffic which was very scrambled. Sergeant Winchel overheard radio traffic possibly regarding a rammed squad car or "on car" and "shots garble garble". Sergeant Winchel radioed to the deputies, something to the effect, "Do you have charges?", as Sergeant

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#### **Wisconsin Division of Criminal Investigation Case Report**

Case/Report Number: 23-4795/4 – Interview of Vernon County Sheriff's Office Sergeant Sam Winchel

Winchel believed they may be in a pursuit. Then Sergeant Winchel overheard "shots fired" on the radio and immediately responded to the scene. Sergeant Winchel recalled overhearing "rendering aid" over the radio, and later recalled seeing the deputies' medical bags scattered about the incident scene after Sergeant Winchel's arrival.

Sergeant Winchel indicated it took Sergeant Winchel approximately 30 minutes to arrive on scene. Upon Sergeant Winchel's arrival, Captain/Chief Deputy Michael Davig was already on scene along with EMS and Fire units.

Sergeant Winchel received permission from Captain Davig to turn off body cameras and squad cameras. Sergeant Winchel did not review any of the videos.

Sergeant Winchel contacted Deputy Brown who was seated in the rear of Deputy Brueggeman's squad car. Deputy Brown advised Deputy's Brown's loaded duty weapon was in a bag on the front passenger seat of Deputy Brueggeman's squad. With gloved hands, Sergeant Winchel removed Deputy Brown's duty weapon from the bag, made the firearm safe, and place the firearm in one bag and the magazine and the chambered round in another bag. The bags were then secured in Sergeant Winchel's squad car.

Sergeant Winchel took uniform inspection photographs of Deputy Brueggeman and Deputy Brown with a cellular device which should automatically upload to Crime Fighter. Deputy Brueggeman did not have any injuries. Deputy Brown appeared to have a scrape on his left forearm.

Sergeant Winchel took photographs of the incident scene as Sergeant Winchel believed the number of EMS and Fire personnel "running around" may disturb the scene.

Sergeant Winchel remained on scene assisting with scene security and the scene entry log.

Sergeant Winchel had no further information and the interview concluded at approximately 1:03 a.m.

### DFU - Technical Assist 23-4795/5

Report Date: 06/19/2023

#### **Primary Information**

Description: Vernon County OID - Critical Incident

Reporting LEO: Czajka, Teai M (ICAC & Computer Crimes DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/19/2023

Approved By: Olesen, Matthew G (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On Friday, June 16, 2023, DFE Teai Czajka was contacted by Director Jake Vosters to assist with a Critical Incident in Vernon County, wi

Dash camera SD cards and body cameras from Deputy Brown and Deputy Bruggeman were brought to the Vernon County Sheriff's Office by Special Agent Kenneth Folkers

DFE Czajka downloaded the dash camera footage using a Forensic laptop and a Kingston SD card reader. There was one dashcam video from Deputy Brown and two videos from Deputy Bruggeman for the date of 06/16/2023.

DFE Czajka used Sgt. Winchel's Panasonic Toughbook laptop to gather bodycam footage from 06/16/2023. Evidence Sync software was used along with a transfer cable to directly connect the body cameras to the Toughbook laptop.

DFE Czajka collected 1 video from Deputy Brown that was 00:35:14 in length.

DFE Czajka collected 1 video from Deputy Bruggeman that was 00:43:49 in length.

DFE Czajka collected 8 videos from Sgt. Winchel.

- 16:58:09 (00:06:16)
- 19:28:02 (00:10:59)
- · 19:58:07 (00:06:51)
- 20:13:23 (00:16:53)
- 21:19:16 (00:08:19)
- 21:28:48 (00:10:26)
- 22:21:00 (00:03:33)
- 22:27:35 (00:03:28)

The videos were gathered from the Vernon County Sheriff's Office iCrimeFighter folder and transferred to an external hard drive.

All video files were then transferred to a USB flash drive and given to Special Agent Adam Frederick.

Special Agent Michael Haverly is the case agent for this case.

06/30/2023 07:41:57 Page 1 of 1

# Interview 23-4795/6

Report Date: 06/19/2023

**Primary Information** 

Neighborhood Canvas - 06/17/2023 Description:

06/17/2023 12:00 Occurrence From: Occurrence To: 06/17/2023 15:30

Reporting LEO: Zassenhaus, Maloree N (Eau Claire ICAC DCI / Wisconsin Division of Criminal Investigation)

Beardsley, Wade A (ICAC & Computer Crimes DCI / Wisconsin Division of Criminal Investigation) Backup LEO:

Report Status: **Approved** Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On 06/18/2023 Wisconsin Department of Justice, Division of Criminal Investigation Special Agents (SA) Maloree Zassenhaus and Wade Beardsley conducted a neighborhood canvas of the area of the scene near State Highway 35 at Gianoli Road in Genoa, Wisconsin.

| Addı | esses |
|------|-------|
|------|-------|

Relationship Address

**Neighborhood Canvass** S4726 State Highway 35 # Genoa, Wisconsin 54632 United States of America **Neighborhood Canvass** S4726 State Highway 35 # Genoa, Wisconsin 54632 United States of America S4804 State Highway 35 # Genoa, Wisconsin 54632 United States of America **Neighborhood Canvass Neighborhood Canvass** S4804 State Highway 35 # Genoa, Wisconsin 54632 United States of America

| Su |  |  |
|----|--|--|
|    |  |  |
|    |  |  |

| Relationship | <u>Name</u>                  | <u>Bio</u>              | <u>DOB</u> |
|--------------|------------------------------|-------------------------|------------|
| Interviewed  | McClellan, Larry D. (Person) | 69 yr. old, White, Male |            |
| Interviewed  | Osthoff, Chad W. (Person)    | 49 yr. old, White, Male |            |
| Interviewed  | Spears, Eugene P. (Person)   | 80 yr. old, White, Male |            |
| Interviewed  | Thom, Walter J. (Person)     | 78 yr. old, White, Male |            |



# Narrative begins on the following page.

06/30/2023 07:42:31 Page 1 of 3 Wisconsin Division of Criminal Investigation Case Report

Case/Report Number: 23-4795/6

On 06/18/2023 Wisconsin Department of Justice, Division of Criminal Investigation Special Agents (SA) Maloree Zassenhaus and Wade Beardsley conducted a neighborhood canvas in the vicinity of the scene near State Highway 35 at Gianoli Road in Genoa, Wisconsin.

The following is a chronological list of the addresses and occupants contacted during the neighborhood canvas and the information provided:

## S4804 State Hwy 35, Genoa, WI

Lot

Name: Chad W. Osthoff

Date of Birth:

Telephone: 608-

Chad Osthoff stated he was not home on 06/17/2023 and no one else was present at his residence.

Lot

Name: Larry D. McClellan

Date of Birth:

Larry McClellan stated he was home on 06/17/2023 with his significant other. He said neither one had seen or heard anything.

Lot Vacant

## S4726 State Hwy 35, Genoa, WI

Lot

No answer.

Lot 43

Name: Walter J. Thom

Date of Birth:

Walter Thom stated he was home on 06/17/2023, but he did not see or hear anything out of the ordinary.

Lot

Name: Eugene P. Spears

Date of Birth:

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Eugene Spears stated he was home on 06/17/2023 and was outside when he observed an officer make a traffic stop around 5:00 PM near the power plant. Spears said that was not uncommon and he did not pay attention to the traffic stop. He said he heard a police siren at one point, but did not see anything else. Spears said he is hard of hearing so he did not hear any gun shots or any conversations take place.

# Investigative 23-4795/7

Report Date: 06/19/2023

**Primary Information** 

Description: VESO Body-Worn Cameras and Squad SD Cards

Occurrence From: 06/16/2023 10:40
Occurrence To: 06/17/2023 01:15

Reporting LEO: Folkers, Kenneth J (Madison Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

| Addresses         |   |
|-------------------|---|
| Relationship      | <u>Address</u>  |
| Location of Event | Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America |

| Subjects        |   |                         |            |
|-----------------|---|-------------------------|------------|
| Relationship    | <u>Name</u>   | <u>Bio</u>              | <u>DOB</u> |
| Law Enforcement | Vernon County Sheriff's Office (Law Enforcement Agency) |                         |            |
| Law Enforcement | Brown, Jonathon (Law Enforcement Official)              |                         |            |
| Law Enforcement | Brueggeman, Bradley (Law Enforcement Official)          |                         |            |
| Deceased        | Boardman, William S (Person)                            | 61 yr. old, White, Male |            |

## Narrative begins on the following page.

06/30/2023 07:43:08 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/7 VESO Body-Worn Cameras and Squad SD Cards

On Friday, June 16, 2023, Special Agents (SA) from the Wisconsin Department of Justice-Division of Criminal Investigation (WI DOJ-DCI) were assigned to assist the Vernon County Sheriff's Office (VESO) with an officer-involved death investigation (OID) in Genoa, WI.

On Friday, June 16, 2023, at approximately 8:00 p.m., DCI SA Kenneth Folkers was contacted by DCI Director Lourdes Fernandez and requested to respond to Vernon County, WI to assist SAs with the DCI Eau Claire Field Office with an OID. At approximately 10:40 p.m., SA Folkers arrived at the Vernon County Sheriff's Office (VESO) in Viroqua, WI and contacted DCI SA Adam Frederick and DCI SA Michael Haverley. SA Haverley requested SA Folkers respond to Genoa, WI to pick up the VESO body-worn cameras and VESO squad camera SD cards related to this incident.

On Saturday, June 17, 2023, at approximately 12:38 a.m., SA Folkers contacted DCI SA David Kleinhans in Genoa, WI and received the following items:

- VESO Deputy Bradley Brueggeman's squad P3 SD card
- VESO Deputy Jonathon Brown's squad P16 SD card
- VESO Deputy Jonathon Brown's body-worn camera
- VESO Deputy Bradley Brueggeman's body-worn camera

SA Folkers transported the items back to the VESO. At approximately 1:15 a.m., SA Folkers turned over the items to DCI Digital Forensic Examiner (DFE) Teai Czajka for download. Reference DFE Czajka's report under 23-4795/5 for details on the download.

NO FURTHER ACTION TAKEN

# Investigative 23-4795/8

Report Date: 06/19/2023

**Primary Information** 

Description: Autopsy - William Boardman (06/19/2023)

Occurrence From: 06/19/2023 09:17
Occurrence To: 06/19/2023 12:00

Reporting LEO: Folkers, Kenneth J (Madison Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Hall, David J (Medicaid Fraud Control and Elder Abuse Unit / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

**Agency Reference Numbers** 

Agency Case/File Number
Wisconsin State Crime Laboratory-Madison M23-1645

University of Wisconsin (UW) - Hospital 23-285

Addresses

Relationship Address

Location of Event 1111 Highland Ave UW Hospital Morgue, Madison, Wisconsin 53792 United States of America

Subjects
Relationship Name

me Bio

Mentioned Ertl, John R (Crime Lab Personnel) White, Male

Mentioned Naleid, Trevor W (Crime Lab Personnel)

Deceased Boardman, William S (Person) 61 yr. old, White, Male

Medical Personnel Kallan, Jamie DR (Person) White, Female ---

**DOB** 

Mentioned Achenbach, Stacy (Person) White, Female ---

#### **Documents**

**Document** 

23-4795.8 WSCL Receipt of Physical Evidence - Vernon County OID

23-7495.8 UW Health Personal Belonging Inventory Form

| Property      |                 |                       |
|---------------|-----------------|-----------------------|
| <u>Status</u> | <u>Quantity</u> | <u>Description</u>    |
| Inventory     | 1               | Left Boot             |
| Inventory     | 1               | Right Boot            |
| Inventory     | 1               | Jeans with suspenders |
| Inventory     | 1               | White socks           |
| Inventory     | 1               | Pocket Knife          |
| Inventory     | 1               | Drug pipe and lighter |
| Inventory     | 1               | Wallet with contents  |
| Inventory     | 1               | Black shirt           |

06/30/2023 07:43:52 Page 1 of 4

# Investigative 23-4795/8

Report Date: 06/19/2023

| Property - Contin | nued            |                    |  |
|-------------------|-----------------|--------------------|--|
| <u>Status</u>     | <u>Quantity</u> | <u>Description</u> |  |
| Inventory         | 1               | US Currency        |  |
| Inventory         | 1               | Major Case Prints  |  |
| Inventory         | 1               | DNA Card           |  |
| Inventory         | 1               | DNA Card           |  |

Narrative begins on the following page.

06/30/2023 07:43:52 Page 2 of 4

### Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/8 Autopsy - William Boardman (06/19/2023)

On Friday, June 16, 2023, Special Agents (SA) from the Wisconsin Department of Justice-Division of Criminal Investigation (WI DOJ-DCI) were assigned to assist the Vernon County Sheriff's Office (VESO) with an officer-involved death investigation (OID) in Genoa, WI. DCI SA Kenneth Folkers was assigned to attend the autopsy of William S. Boardman.

On Monday, June 19, 2023, between approximately 9:17 a.m. and 12:00 p.m., University of Wisconsin School of Medicine and Public Health Forensic Pathologist, Dr. Jamie Kallan, conducted an autopsy of William Boardman at the Wisconsin Institutes of Medical Research (UW Morgue) at 1111 Highland Ave, Madison, WI. The following individuals were also present during the autopsy:

- Autopsy Technician Stacy Achenbach
- Wisconsin State Crime Laboratory (WSCL) Forensic Scientist Trevor Naleid
- DCI SA David Hall

Prior to the autopsy, Technician Achenbach took x-rays of Boardman's body within the sealed body bag. After the x-rays, Technician Achenbach assisted Dr. Kallan during the autopsy. WSCL Forensic Scientist Trevor Naleid took digital photographs of evidentiary items and other pertinent items during the autopsy. SA Folkers later received a Sharefile link from John Ertl with the WSCL. The link included the autopsy photos, which were placed in the DCI Critical Incident Repository file of this investigation.

The evidence seal (#2358) on the body bag containing Boardman was broken at approximately 9:17 a.m. When the body bag was opened, Boardman was observed clothed with blue jeans, yellow suspenders, Caterpillar size 10.5 boots (right and left) and socks. A black long-sleeved shirt was recovered from inside of the body bag.

#### EVIDENTIARY ITEMS COLLECTED AT AUTOPSY

The following evidentiary items were obtained at the autopsy and subsequently collected and packaged by WSCL Forensic Scientist Naleid:

- 23-4795.4 Left boot Caterpillar size 10.5.
- 23-4795.5 Right boot Caterpillar size 10.5.
- 23-4795.6 Blue jeans with suspenders.
- 23-4795.7 Socks
- 23-4795.8 Pocket knife recovered from front right jeans pocket.
- 23-4795.9 Clear pipe with residue and lighter record recovered from front left jeans pocket.
- 23-4795.10 Black wallet recovered from back right jeans pocket.
- 23-4795.11 Black long-sleeved shirt
- 23-4795.12 US Currency
  - o \$12.00 cash (2) \$5.00 bills and (2) \$1.00 bills) removed from wallet.

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## Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/8 Autopsy - William Boardman (06/19/2023)

- o Coins (1) \$.50 Euro, (1) \$.25, (2) \$.05, (4) \$.01) recovered from front right jeans pocket.
- 23-4795.13 Major case prints
- 23-4795.14 DNA card
- 23-4795.15 DNA card

WSCL Forensic Scientist Naleid placed each item into a package and sealed the package with evidence tape. The items collected during the autopsy were provided to SA Folkers. WSCL Forensic Scientist Naleid and SA Folkers signed a WSCL Receipt of Physical Evidence form, and it is attached to this report for review. Technician Achenbach and SA Folkers signed a UW Health Personal Belongings Inventory Sign-out form, and it is attached to this report for review.

Following the autopsy, SA Folkers transported the evidence to the Vernon County Sheriff's Office in Viroqua, WI and met with DCI SA Michael Haverley. At approximately 4:00 p.m., SA Folkers transferred the evidence to SA Haverley so the items could be entered into secure storage at the DCI Fau Claire Field Office.

#### PRELIMINARY AUTOPSY DETERMINATION

On Monday, June 19, 2023, Dr. Kallan provided SA Folkers with the following preliminary findings from the autopsy of William Boardman:

Dr. Kallan said Boardman sustained a perforating gunshot wound

Manner of Death- Homicide Cause of Death- Perforating intermediate range of fire, gunshot wound

Please reference the following case numbers for additional information: Autopsy #23-285 and WSCL #M23-1645.

NO FURTHER ACTION TAKEN

# Interview 23-4795/9

Report Date: 06/19/2023

| Description:        | Interview with , , and a  | nd <b>Carlotte</b>                          |                      |
|---------------------|---|---|----------------------|
| Occurrence From:    | 06/16/2023 23:05  |   |                      |
| Occurrence To:      | 06/20/2023 09:12  |   |                      |
| Reporting LEO:      | Hall, David J (Medicaid Fraud Control and E   | der Abuse Unit / Wisconsin Division of Crim | ninal Investigation) |
| Backup LEO:         | Stearns, Randy M (Eau Claire Financial Crimes DCI / Wisconsin Division of Criminal Investigation) |   |                      |
| Report Status:      | Approved  |   |                      |
| Report Status Date: | 06/29/2023  |   |                      |
| Approved By:        | Vosters, Jake E (Wisconsin Division of Crim   | inal Investigation)                         |                      |
|                     |   |   |                      |
| Subjects            |   |   |                      |
| Relationship        | <u>Name</u>   | <u>Bio</u>                                  | <u>DOB</u>           |
| Interviewed         | (Person)  | 66 yr. old, White, Female                   |                      |
| Interviewed         | (Person)  | 54 yr. old, White, Male                     |                      |
| Interviewed         | (Person)  | 40 yr. old, White, Female                   |                      |
| Mentioned           | (Person)  | White, Male                                 |                      |
| Mentioned           | Boardman, William S (Person)  | 61 yr. old, White, Male                     |                      |
| Mentioned           | (Person)  | 28 yr. old, White, Female                   |                      |

| Telephones / E-Addresses |                  |  |
|--------------------------|------------------|--|
| Relationship             | Number/E-Address |  |
| Number Called            | (608) (Cellular) |  |

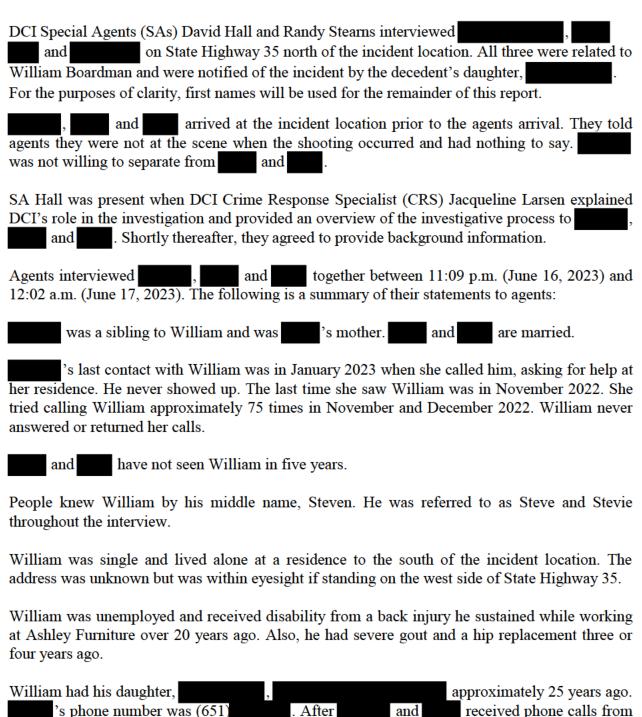


# Narrative begins on the following page.

**Primary Information** 

06/30/2023 07:45:08 Page 1 of 5

On Friday, June 16, 2023, the Vernon County Sheriff's Office requested the Wisconsin Department of Justice – Division of Criminal Investigation (DCI) to investigate an officer involved critical incident (OICI) that occurred on State Highway 35 near Gianoli Road in the Village of Genoa (Vernon County, Wisconsin). The decedent of this incident was identified as William Steven Boardman.



observed William lying in the road prior

they responded to the scene. They said

to being covered from public view.

William previously lived with his parents. In 2003, William's father died in a house fire after he used accelerants to start a fire in a wood burning stove/furnace in the residence. The piping for the stove was stuffed with objects by previous tenants, causing the fire to go toward William's father. William was present when his father ran out of the house on fire. William helped extinguish the fire, but his father died two weeks later due to his injuries. In 2012, William's mother told him that he was getting on her nerves and told him to leave the house. William went drinking and returned later. He opened the door to the residence and the house became engulfed in fire. Their mother died from smoke inhalation. The house was rebuilt, and William was still living in the same location that killed both parents.

| William's demeanor gradually worsened since his mother's death. He stopped joking around and was not his "normal jolly self". William blamed himself for his mother's death. Since the summer of 2022, William stopped answering his phone. did not know what William had been doing since. and William had a close relationship prior to his behavior change.  |
|---|
| William had a brother named , who family referred to as , did not like law enforcement, and was a very negative person. Historically, William disapproved of 's drug use. knew and William spoke frequently and spent time together. They did not have a phone number for and dissuaded agents from attempting to speak with him about William's death for a few days. was at the scene prior agent arrival and threatened law enforcement. |
| last spoke with months ago because they did not get along. She loved him but did not like him. and have not communicated with for approximately ten years.  |
| did not know where William spent time. They were unaware of any of his associates.  |
| William was not a smoker. He used to drink a lot and got into trouble when he was younger. William's frequency of alcohol consumption in recent years was unknown to and and .  |
| William was using unknown drugs. In September 2022, told and she caught William using drugs. They could not recall the drug type. said William hated taking pills and refused to take Aspirin to help deal with pain.   |
| During one of second 's most recent visits with William, she saw him moving his mouth in an awkward manner, prompting to ask if he was okay. William covered his face with a magazine to conceal "twitchy" facial expressions and said he was fine.   |
| believed William was previously convicted of a felony when he was in his 20's, which prohibited him from lawful firearm possession.   |

from him when he was younger due to his previous arrests/conviction(s). William did not have social media profiles. His phone numbers were (608) (house) and (608)(cellular phone). had sporadic contact with reached out to them when she was concerned about William. They had numerous conversations since the summer of 2022 where considered a welfare check on her father. They did not believe law enforcement conducted welfare checks prior to June 15, 2023. and spoke with on June 15, 2023. was encouraged to call in a to go with her to William's residence, but welfare check. wanted discouraged it and told was concerned about William's reaction due to known drug use. and did not go to William's residence on June 15, 2023. were unaware of the law enforcement assigned welfare check on June 16, 2023. They did not communicate with on June 16, 2023, until she notified them of looked at her cellular phone and estimated the time of William's death. call to be 8:00 p.m. arrived on scene and spoke with before they both and observed William's residence on June 16, 2023. Things were pulled and departed. off the walls. The house was described as disgusting and appeared ransacked. William slammed the door closed when law enforcement attempted contact with him. Shortly thereafter, William got into his vehicle and left the scene. Law enforcement told the residence for them to return. Approximately 30 minutes later, left the residence and observed William deceased. did not have any further information to provide. They agreed for follow up contact if it was necessary. The agents provided business cards to them and ended the contact. On Monday, June 19, 2023, DCI SA Michael Haverley located obituaries for from an internet search. The obituaries were saved as PDFs and attached to this report for information. 's obituary indicated he was from Genoa, Wisconsin and died on May 20, 2003, from injuries sustained during a fire at his home. The obituary identified 's wife as (no last name cited) and Steven Boardman. his three children as 's obituary indicated she was from Genoa, Wisconsin and died on June 15, 2012, from smoke inhalation from a fire at the home she shared with her son, Steve Boardman. 's three children were identified as and Steven Boardman.

with any firearms, nor were they aware of him possessing any firearms. His firearms were taken

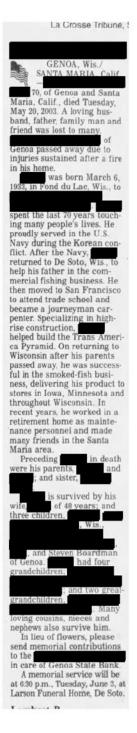
# FOLLOW UP CONTACT WITH On June 20, 2023, between 8:58 a.m. to 9:12 a.m., SA Hall spoke with by phone at to seek additional information related to her parents. She said the death of her parents was overwhelmingly tragic and she did not want to provide more information. She said information can be found on their obituaries, confirming their identities as and acknowledged William had problems. However, she believed law enforcement was trying to paint a negative picture about William based on his past, indicating he was deranged. believed law enforcement's attempts to resuscitate William after a direct gunshot was done to "cover their ass". She said law enforcement was conducting a welfare check and could have called for backup or used a less lethal option (i.e., Taser). observed William's truck at the scene after the incident. She saw the truck parked at an angle in the gravel at the side of the road. She described his truck as a stick shift (manual transmission) and knew the gravel in that area was fresh and loose. She had experience with a manual transmission vehicle and did not believe William would have been able to accelerate at a high rate of speed pulling an officer who was uninjured. was documenting her concerns and might share them with law enforcement. SA Hall to reach out with additional questions/concerns and ended the phone encouraged

contact.



# The La Crosse Tribune

La Crosse, Wisconsin • Sat, May 31, 2003 Page 27



# Obituary for

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# Obituary



June 18, 2012

A loving mother, grandmother, and friend was lost to us on June 15, 2012.

, 78, of Genoa, WI died of smoke inhalation after a fire devastated the home she shared with her son and caregiver, Steve Boardman.

| Arizona to                                       | . Her father being of Italian descent (Turin, Italy) |
|--|--|
| and mother of Mexican descent (Sonora, Mexico)   | would later decide that to allow their children a    |
| better future they would "Americanize" their nam | es – thus  |
| is the woman we had all come to know and love.   |  |

In 1945 the family moved to San Francisco, CA. It was there that she would meet the sailor of her dreams . On May 7th 1955 they were married in San Francisco by a municipal judge. In their 48 years of marriage and traveled, lived, and loved. They called home to Northern CA for many years. In 1972 she and her family moved back to Genoa, WI to run the family fish market.

California Dreamin' came again in 2000 where they took residence in Santa Maria, CA. During a visit to Wisconsin and the family home there was a tragic accident that took the life of her husband in May of 2003. moved back to Genoa in 2006 to live out the remainder of her days.

She lived simply and loved wholly.

| Proceeding in death was her love and her life .  |
|--|
| is survived by her three children,   |
| , and Steven Boardman of Genoa. Grandchildren,   |
| ; and great-grandchildren  |
| . Many loving family and   |
| friends in California.   |
| 's last wishes were to be cremated and join her husband in eternal rest at sea.  Contributions are welcome to help her achieve her wish. |
| A memorial service will be held at 6:30 pm on Friday, June 29, 2012 at Coulee Region Cremation   |

Group, 133 Mason Street Onalaska. A visitation will be held from 5:00 pm until the service at

the funeral home.



**Condolences** 

# Let's Celebrate Life Together

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# Wisconsin Division of Criminal Investigation

# Interview 23-4795/10

Report Date: 06/20/2023

**Primary Information** 

Description: Interview: Vernon County Deputy Jonathon Brown - 6/19/2023

Occurrence From: 06/19/2023 00:00
Occurrence To: 06/19/2023 00:00

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

# **Synopsis**

On June 19, 2023, Vernon County Sheriff's Office (VCSO) Deputy Jonathon Brown was interviewed by Wisconsin Department of Justice - Division of Criminal Investigation following an Officer Involved Critical Incident (OICI) which had occurred on June 16, 2023.

| Addresses          |   |
|--------------------|---|
| Relationship       | <u>Address</u>  |
| Interview Location | Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America |

| 5 | Subjects        |  |                         |            |
|---|-----------------|--|-------------------------|------------|
|   | Relationship    | Name   | Bio                     | <u>DOB</u> |
|   | Law Enforcement | Brown, Jonathon (Law Enforcement Official)     |                         |            |
|   | Law Enforcement | Brueggeman, Bradley (Law Enforcement Official) |                         |            |
|   | Deceased        | Boardman, William S (Person)                   | 61 yr. old, White, Male |            |

# Narrative begins on the following page.

06/30/2023 07:49:47 Page 1 of 7

# **SYNOPSIS**

On Friday, June 16, 2023, the Vernon County Sheriff's Office (VCSO) was involved in an Officer-Involved Critical Incident (OICI) on Highway 35 between the Village of Genoa and Gianoli Road in Vernon County, Wisconsin.

VCSO deputies responded to a residence located at S5074 State Highway 35, Genoa, Wisconsin 54632 for a check welfare. During that contact, the male subject left his residence in his pickup truck and a traffic stop was initiated on Highway 35 by Gianoli Road. The Deputy that was initially at the residence for the check welfare arrived at the traffic stop location. As the two Deputies were still in contact with the male subject, he began traveling away from the traffic stop location as one of the deputies was attempting to open the door, remove the keys, and direct the vehicle away from the roadway.

That VCSO Deputy ended up having to hold onto the male subject's vehicle as the vehicle continued northbound on Highway 35. The Deputy fired one round striking the male subject. The Deputies then got the subject's vehicle to slow and stop. First aid was rendered, but the subject died at the scene.

VCSO requested the Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) complete the OICI investigation. Special Agent in Charge (SAC) Jake Vosters received the request as DCI Coordinator for this OICI investigation. Special Agent (SA) Michael Haverley was assigned as the DCI Lead Investigator for this OICI investigation. Additional WI DOJ-DCI Special Agents responded from Eau Claire and Madison.

VCSO Deputy Jonathon Brown was interviewed at the Vernon County Sheriff's Office on Monday, June 19, 2023. Wisconsin Professional Police Association (WPPA) Business Agent Jeff Spencer and Attorney James L. Palmer, II were present during the interview. Deputy Brown participated in the interview voluntarily. The interview was not recorded.

## **INTERVIEWEE**

Vernon County Sheriff's Deputy Jonathon Brown

# **PARTICIPATING INVESTIGATORS**

WI DOJ-DCI Special Agent Michael K. Haverley WI DOJ-DCI Special Agent Adam L. Frederick

## **EDUCATION/EXPERIENCE INFORMATION**

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Deputy Brown achieved ninety-three credit hours towards a Criminal Justice Bachelors Degree. In 2002, Deputy Brown joined the Iowa National Guard and was a infantryman, 11B. Deputy Brown's military tours included Afghanistan in 2004-2005 and Iraq in 2006-2007. Deputy Brown received an honorable discharge and left as an E4 Specialist. In 2008, Deputy Brown completed the 450 course for the Department of the Army Civilian Police Academy. Deputy Brown also served ten years in the Department of the Army Civilian Police.

Deputy Brown has received specialized training and certifications including active shooter, crash reconstruction, street crimes, interview techniques, chief of police training, and behavioral analysis.

Deputy Brown received his field training certification through the Illinois State Police. Deputy Brown was an Electronic Control Device (ECD/Taser) instructor. Deputy Brown completed his reciprocity in 2017 to get certified as a Wisconsin law enforcement officer. Deputy Brown's training is documented in ACADIS, which includes additional certificates. Deputy Brown attends VCSO in-service training and weapons training.

On December 4, 2017, Deputy Brown was hired as the Chief of Police for the Village of La Farge in Vernon County, Wisconsin. Deputy Brown was the La Farge Chief of Police until May 24, 2022 when he was hired by VCSO as a Deputy Sheriff.

# **LAW ENFORCEMENT/POLICE DECRIPTORS**

Deputy Brown works patrol shift for VCSO. Deputy Brown had two days off prior to the OICI on Friday, June 16, 2023, which was a regular scheduled shift. Deputy Brown's radio dispatch number is "23".

Deputy Brown was operating his assigned Ford Interceptor sport-utility vehicle (SUV) squad vehicle (Designation: P16), which is fully marked with exterior lights. Deputy Brown's squad vehicle has an interior facing camera as well as a front facing camera. Deputy Brown has an issued body worn camera (BWC).

At this point of the interview, SA Fredrick displayed photographs of Deputy Brown's uniform and equipment. Deputy Brown stated the photographs were an accurate depiction of what he was wearing during the OICI incident. Deputy Brown advised that he carries a Glock Model 45 Generation 5 9mm handgun. The handgun has a magazine capacity of seventeen plus one additional in the chamber. Deputy Brown's handgun was secured after the OICI by Deputy Bradley Brueggeman and then turned over to VCSO Sergeant (Sgt) Sam Winchel. Deputy Brown was provided a replacement handgun at the scene. Deputy Brown

has a pocket knife, which he observed in the uniform photos. Deputy Brown

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advised that he typically has keys hanging off the rear of his belt and he wears a Sheriff's Office hat.

## **SUBJECT**

William S. Boardman M/W DOB:

# **HISTORICAL KNOWLEDGE OF SUBJECT**

Deputy Brown advised that prior to the OICI, he had learned that this subject had fled from Sgt. Winchel approximately three days prior. Deputy Brown's understanding after speaking with Deputy Brueggeman was that this subject would be arrested for felony eluding charges regardless. Deputy Brown did not recall any further updates from dispatch, but he had begun checking their Computer-aided Dispatch (CAD) system for history during his response.

# PRE-INCIDENT INFORMATION

Prior to his shift, Deputy Brown received a normal amount of sleep, which he estimated to be six to eight hours. Deputy Brown was not consuming any medications or substances that would preclude him from completing his duties as a sworn Deputy Sheriff for VCSO. Deputy Brown started his work day at approximately 5:10 P.M. at which point he responded to River Valley Auto to pick up his squad vehicle and then traveled to VCSO.

# **INCIDENT**

Deputy Brown was at VCSO getting his squad ready. Deputy Brown then entered the dispatch center and learned that Deputy Brueggeman was dispatched to a check welfare call so he responded from VCSO.

Deputy Brown stated the welfare check was for a male subject named "William". Deputy Brown did not know or recall the subject's last name. Deputy Brown's understanding was that the subject's daughter called and said her dad needed help and he wasn't going to get it on his own. Deputy Brown recalled that the daughter wanted an officer there to keep the peace because she did not know how it was going to go.

Deputy Brown learned that this subject eluded Sgt. Winchel approximately three days prior. Deputy Brown advised that the county sections had coverage with an appropriate amount of deputies so he began responding towards Deputy Brueggeman's call, which was in the area of Highway 35 and a cul-de-sac south of Gianoli Road. Deputy Brown could see where Deputy Brueggeman's squad was parked on their squad computer system. Deputy Brown parked on Highway 35 south of the cul-de-sac facing north in the event something would happen. Deputy

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Brown recalled dispatch checking Deputy Brueggeman's status. Later, Deputy Brueggeman relayed to dispatch that the subject was leaving and a license plate was provided. Deputy Brown observed the truck leaving northbound on Highway 35. Deputy Brown was behind the black truck and Deputy Brueggeman requested it to be stopped. Deputy Brown activated his emergency lights and siren based on the previous eluding. Deputy Brown notified dispatch of the traffic stop, which occurred on the shoulder of Highway 35 near Gianoli Road.

Deputy Brown made sure his body worn camera was on. Deputy Brown made contact with the subject, William, at the open driver's side window of the truck. Deputy Brown informed William that his partner, Deputy Brueggeman, wanted to talk to him. Deputy Brown described William as a white male, aged in his 50's, with short facial stubble, short hair, and sweaty.

Deputy Brown advised that William told him that his partner, Deputy Brueggeman, was not a real cop. Deputy Brown said that a train was going by, it was difficult to hear, and William seemed agitated. Deputy Brown told William to take the keys out of the ignition so he believed the keys were on the passenger seat after that.

Deputy Brueggeman arrived on scene and was positioned by the driver's side mirror of the truck while Deputy Brown was near the pillar by the driver's side door. Deputy Brown stated that William was clearly agitated and William said that he was going to leave. Deputy Brown did not recall a very long conversation with William when William had the keys in his hand, which were previously on the seat. Deputy Brown told him he was not free to leave. Deputy Brown tried to open the door and the door was locked. Deputy Brown attempted to reach inside and unlock the vehicle door. At that point, William started to drive away while Deputy Brown was grasping the steering wheel and trying to steer it away from the roadway and into the ditch. Deputy Brown recalled being on the driver's side running board of the truck and as he was trying to direct the truck away from the roadway and into the ditch. Deputy Brown stated that he was verbalizing for William to "STOP". Deputy Brown stated that he just wanted William to comply and stop. Deputy Brown stated that Highway 35 is busy, especially at this time on a Friday. Deputy Brown explained that he could not jump off as their two squads were behind William's truck and he did not know if northbound traffic would hit him or run him over. Deputy Brown stated that William fought harder for the steering wheel as he continued on the road and was accelerating. Deputy Brown was trying to turn steering wheel towards the ditch initially so there wouldn't be another pursuit and so innocent drivers and families wouldn't be hurt or killed.

Deputy Brown said the truck was going fast like a roller coaster going down a hill. Deputy Brown stated that based on his training and experience, he could not jump off even at lower speeds without sustaining great bodily harm. Deputy Brown stated that he told William to stop numerous times. Deputy Brown recalled William saying numerous times that he would have to shoot him. Deputy Brown advised William was driving "so quickly" and crossing the centerline into oncoming traffic. Deputy Brown recalled multiple southbound vehicles as William's truck

continued northbound. Deputy Brown stated that he was in fear for his life and was begging William to stop the vehicle. Deputy Brown stated that he did not have any other choice as William was aiming for the oncoming cars. Deputy Brown directed one shot from his handgun at William to stop the imminent threat against him and the other motorists. Deputy Brown saw William slump over towards the passenger seat. Deputy Brown holstered his handgun and radioed to dispatch that shots were fired. Deputy Brown was heading towards oncoming cars so he worked on turning the steering wheel towards the shoulder of the roadway.

Deputy Brown advised that he was in fear for his life based on the speed and William aiming for oncoming vehicles. Deputy Brown stated that although he has been in combat overseas, he has never had to beg another human to stop a vehicle. Deputy Brown stated that he has never been that afraid in his life. Deputy Brown stated that it felt like highway speeds when he was hanging onto William's truck. Deputy Brown did not know if he was going to get run over by another car or by William's truck. Deputy Brown stated that jumping off would have obviously caused serious injuries or death. Deputy Brown stated deadly force was the last thing he wanted to do, but he only had three total options; get hit/seriously injured/killed by another vehicle; jump off and get run over/seriously injured/killed; use deadly force. Deputy Brown stated that if William's truck hit anything, he would have been launched from the vehicle. Deputy Brown stated that he did not want to die in that moment and felt it was life or death. Deputy Brown stated that he had to fire a round and regain control of the situation based on the safety of himself and others. Deputy Brown advised that their law enforcement presence, verbal commands, and other actions had not worked with William. Deputy Brown stated he never imagined his shift going this way. Deputy Brown stated that he could have absolutely died in a split second. Deputy Brown stated that following the OICI, a detective indicated to him that he was glad they were not preparing for a law enforcement funeral.

While the truck was still moving at a slower speed, Deputy Brueggeman positioned his squad vehicle in front of the truck. The truck rear-ended the squad and came to a stop. Deputy Brown updated dispatch about the gunshot wound and requested Emergency Medical Services (EMS). Deputy Brown and Deputy Brueggeman removed William from the truck to begin first aid.

Deputy Brueggeman could not get to his emergency bag in the rear of his squad because of the damage. Deputy Brueggeman responded to Deputy Brown's squad down the road for medical supplies.

Deputy Brown advised that a first responder arrived on scene and attempted to help William as well. Deputy Brown rolled William into a recovery position

well. Deputy Brown rolled William into a recovery position

Deputy Brown advised that William

asked to move the suspect onto his back for first responders. A first responder

After Deputy Brown stepped back

and

Page 5

medical personnel moved in. Deputy Brown advised that the first responder was an unknown female and an EMT named Dillon Krause who is also a dispatcher for VCSO were both on-scene providing care. Deputy Brown stated that he moved to the front of the truck and was gagging and hacking afterwards.

Deputy Brueggeman removed Deputy Brown's handgun. Sgt. Winchel secured the body worn cameras and the cameras were turned off for preservation. Deputy Brown recalled taking off his medical gloves and placing them by the rear passenger door of Deputy Brueggeman's squad vehicle.

Deputy Brown sustained injuries and/or bruising to his left tricep/elbow area as well as his ribs. Deputy Brown advised that the injuries were from having to hang onto the vehicle. Those injuries have been captured by photographs. From the scene, Deputy Brown was driven to the office and contacted by WI DOJ-DCI. Deputy Brown provided a public safety statement (PSS) to VCSO Captain Mike Davig.

Agents left the interview room and Deputy Brown viewed his camera footage with his WPPA representation. After viewing the video, Deputy Brown remembered that William said he was going to punch his face in. Deputy Brown also recalled the number of times the suspect told him he was going to have to shoot him. Deputy Brown stated that with wind noise, William may not be heard saying you will have to shoot me. Deputy Brown stated that the abovementioned statements solidified where this encounter would go.

Time of interview: 1:15 P.M. until 3:05 P.M.

## **CONCLUSION**

On June 22, 2023, Special Agents Michael Haverley and Adam Frederick met with Deputy Brown, WPPA Business Agent Jeff Spencer, and WPPA Attorney James L. Palmer, II. A review of this report was completed and minor corrections/clarifications were made.

# Wisconsin Division of Criminal Investigation

# Interview 23-4795/11

Report Date: 06/20/2023

**Primary Information** 

Description: Interview: Vernon County Deputy Bradley Brueggeman - 6/19/2023

Occurrence From: 06/19/2023 00:00
Occurrence To: 06/19/2023 00:00

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

# **Synopsis**

On June 19, 2023, Vernon County Sheriff's Office (VCSO) Deputy Bradley Brueggeman was interviewed by Wisconsin Department of Justice - Division of Criminal Investigation following an Officer Involved Critical Incident (OICI) which had occurred on June 16, 2023.

| Addresses          |   |
|--------------------|---|
| Relationship       | <u>Address</u>  |
| Interview Location | Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America |

| 5 | Subjects        |  |                         |            |
|---|-----------------|--|-------------------------|------------|
|   | Relationship    | Name   | Bio                     | <u>DOB</u> |
|   | Law Enforcement | Brown, Jonathon (Law Enforcement Official)     |                         |            |
|   | Law Enforcement | Brueggeman, Bradley (Law Enforcement Official) |                         |            |
|   | Deceased        | Boardman, William S (Person)                   | 61 yr. old, White, Male |            |

# Narrative begins on the following page.

06/30/2023 07:50:26 Page 1 of 6

# **SYNOPSIS**

On Friday, June 16, 2023, the Vernon County Sheriff's Office (VCSO) was involved in an Officer-Involved Critical Incident (OICI) on Highway 35 between the Village of Genoa and Gianoli Road in Vernon County, Wisconsin.

VCSO deputies responded to a residence located at S5074 State Highway 35, Genoa, Wisconsin 54632 for a check welfare. During that contact, the male subject left his residence in his pickup truck and a traffic stop was initiated on Highway 35 by Gianoli Road. The Deputy that was initially at the residence for the check welfare arrived at the traffic stop location. As the two Deputies were still in contact with the male subject, he began traveling away from the traffic stop location as one of the deputies was attempting to open the door, remove the keys, and direct the vehicle away from the roadway.

That VCSO Deputy ended up having to hold onto the male subject's vehicle as the vehicle continued northbound on Highway 35. The Deputy fired one round striking the male subject. The Deputies then got the subject's vehicle to slow and stop. First aid was rendered, but the subject died at the scene.

VCSO requested the Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) complete the OICI investigation. Special Agent in Charge (SAC) Jake Vosters received the request as DCI Coordinator for this OICI investigation. Special Agent (SA) Michael Haverley was assigned as the DCI Lead Investigator for this OICI investigation. Additional WI DOJ-DCI Special Agents responded from Eau Claire and Madison.

VCSO Deputy Bradley Brueggeman was interviewed at the Vernon County Sheriff's Office on Monday, June 19, 2023. Wisconsin Professional Police Association (WPPA) Business Agent Jeff Spencer and Attorney James L. Palmer, II were present during the interview. Deputy Brueggeman participated in the interview voluntarily. The interview was not recorded.

## **INTERVIEWEE**

Vernon County Sheriff's Office Deputy Bradley Brueggeman

# **PARTICIPATING INVESTIGATORS**

WI DOJ-DCI Special Agent Michael K. Haverley WI DOJ-DCI Special Agent Adam L. Frederick

# **EDUCATION/EXPERIENCE INFORMATION**

Page 1

Deputy Brueggeman achieved his Associate Degree and completed the 720 hour Wisconsin Law Enforcement Standards Board Academy in 2019.

Deputy Brueggeman was hired by VCSO as a Jail Deputy and then applied and obtained a Patrol Deputy position for VCSO in June of 2021. Deputy Brueggeman has decoy training and attends VCSO in-service and weapons training.

# **LAW ENFORCEMENT/POLICE DECRIPTORS**

Deputy Brueggeman's shift was pushed until 5:00 P.M. on June 16, 2023 which was the date this OICI occurred. June 16, 2023 was Deputy Brueggeman's first day on after two days off. Deputy Brueggeman's radio dispatch number is "20". Deputy Brueggeman was operating his assigned 2021 Ford Explorer squad vehicle, which is fully marked and had a light bar. Deputy Brueggeman's squad vehicle has an interior facing camera and a front camera.

At this point of the interview, Special Agent Adam Frederick displayed photographs of Deputy Brueggeman following the OICI. Deputy Brueggeman advised that those photographs were an accurate depiction of his uniform and equipment. Deputy Brueggeman advised that prior to his shift, he obtained a normal amount of sleep which is typically eight hours. Deputy Brueggeman advised that he had not consumed any medications or substances that would preclude him from completing his duties as a sworn Deputy Sheriff for VCSO.

## **SUBJECT**

William S. Boardman M/W DOB:

# HISTORICAL KNOWLEDGE OF SUBJECT

Deputy Brueggeman advised that he had previously arrested William Boardman for an operating while intoxicated (OWI) offense. Deputy Brueggeman did not recall exactly when that OWI contact occurred. Deputy Brueggeman advised that he was aware that VCSO Sergeant (Sgt) Sam Winchel had a vehicle pursuit with William Boardman approximately two days prior to the OICI on June 16, 2023.

# PRE-INCIDENT INFORMATION

Deputy Brueggeman began his shift and drove to the VCSO. Deputy Brueggeman was sent to this welfare check call as it was the first call of his shift.

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# **INCIDENT**

Deputy Brueggeman was at VCSO when he was called on the phone by dispatch advising of a check welfare call for "William". Deputy Brueggeman advised that William's daughter was worried about him and she wanted police to make contact. Deputy Brueggeman responded to William's address by Genoa from VCSO. Deputy Brueggeman had talked with Sgt. Winchel who had made contact with William regarding the pursuit. Deputy Brueggeman's understanding was that Captain Davig and Sgt. Winchel had made a decision not to arrest based on the mental health concerns. Deputy Brueggeman observed William had bond conditions in the notes section of their call, but the conditions did not apply to this call. Deputy Brueggeman arrived and pulled into the driveway and was met by William when he exited the house. William appeared to be upset and distraught. Deputy Brueggeman stated that when William came out, his daughter also exited. Deputy Brueggeman said the daughter was crying, her face was red, and she was saying something similar to just look at the house. Deputy Brueggeman advised that another unknown male subject was at the house. Deputy Brueggeman did not have an opportunity to interview the unknown male subject. As William was coming outside, he was saying get them out of here and he wanted them to leave the house. Deputy Brueggeman stated that he was trying to talk to William and asked what was going on. Deputy Brueggeman stated that William started to talk about a specific individual that was turning off his power and water. Deputy Brueggeman recalled William mentioning that someone was selling his underwear.

William was walking towards his truck to look for underwear and Deputy Brueggeman followed. Deputy Brueggeman said that he kept a reasonable distance between him and William as William went into his truck. Deputy Brueggeman did not believe William got anything from his truck and then William walked towards his garage. Deputy Brueggeman then talked to the daughter and she said William had a history of substance abuse. Deputy Brueggeman stated the daughter did not believe William was diagnosed with any mental health or medical illnesses.

Deputy Brueggeman stated that William came out of the garage and appeared to be angry and mumbling to himself. William then walked to the house briefly and came back out towards the truck. Deputy Brueggeman asked William not to leave and continued to attempt to get him to tell him what was happening. William got into his truck and the driver side door was open. Deputy Brueggeman stepped into the driver's doorway to prevent it from being closed. William twice attempted to pull the door closed causing the door to hit Deputy Brueggeman in the back. After the second attempt, Deputy Brueggeman moved out of the doorway. William left in his truck so Deputy Brueggeman radioed dispatch providing the plate. Deputy Brueggeman advised William's daughter said it was unusual behavior and she was worried about him. Deputy Brueggeman believed something had transpired at William's house.

Deputy Brueggeman requested Deputy Brown to initiate a traffic stop and mentioned that William may run from him. Shortly after that, Deputy Brown radioed that he was attempting a

Page 3

traffic stop and Deputy Brueggeman could hear the siren. Deputy Brown said the vehicle stop was north on Highway 35. Once the vehicle was stopped, Deputy Brueggeman responded to assist. Deputy Brueggeman arrived and pulled behind Deputy Brown's squad vehicle on the east shoulder. Both squad vehicles had emergency lights activated. Deputy Brown was observed standing at the driver's side door of the truck. Deputy Brueggeman approached the driver's side of the truck and attempted to continue the conversation with William by asking what was going on. Deputy Brueggeman recalled William saying something similar to you already know what is going on. Deputy Brueggeman stated that he did not know what William was speaking about.

While speaking during the traffic stop, William's keys were out of the ignition and in his right hand. Deputy Brueggeman stated that William moved the keys like he was going to start the vehicle. Deputy Brueggeman requested William's keys, but William refused. Deputy Brueggeman recalled William saying something similar to go get a real cop so they can bring me in; that is the only way I would talk. Deputy Brueggeman recalled telling William that he didn't want to arrest him. Deputy Brueggeman was trying to ask what happened as William's daughter was crying and William said something similar to how would I know. Deputy Brueggeman recalled William directing a comment at Deputy Brown about pushing his nose through his skull and saying it wasn't a threat, it was a promise.

Deputy Brueggeman believed that William may have made a statement that he was going to leave and get food at the gas station. William brought the keys to the ignition and started the vehicle. Deputy Brueggeman recalled Deputy Brown reaching for the door or keys and William took off and drove North on Highway 35. Deputy Brueggeman believed that Deputy Brown was attempting to get the keys out of the vehicle.

Deputy Brown had stepped up onto the running board and he was now holding onto the truck as it drove away. Deputy Brueggeman ran back to his squad vehicle, activated his siren, and radioed information to dispatch. Deputy Brueggeman recalled updating dispatch that "23" (Deputy Brown) was hanging outside of the vehicle and providing the ten code for pursuit "10-80". Deputy Brueggeman pulled out and was attempting to catch up to William's truck. William's vehicle moved closer to oncoming traffic while Deputy Brown was hanging on to the exterior. Deputy Brueggeman was concerned that if William hit oncoming traffic, it would likely result in the death of Deputy Brown. Deputy Brueggeman was initially concerned about William's safety and then the safety of Deputy Brown and other motorists when William took off. Deputy Brueggeman provided an estimation that William's truck may have been traveling 45-50 miles per hour, but it would be very difficult to know. Deputy Brueggeman stated that the traffic was moderate to heavy at that time. Deputy Brown relayed something over the radio, but Deputy Brueggeman was not sure what he said. Eventually William's truck began to slow and moved into the gravel/grass area of the shoulder. At this time, Deputy Brueggeman estimated William's truck was traveling less than ten miles per hour so he moved in front of the truck with his squad vehicle. Deputy Brueggeman wanted to slow down the truck as much as he could so Deputy

Brown could safely get off. Deputy Brueggeman was hoping William was going to slow the vehicle. The front of William's truck collided with the rear of Deputy Brueggeman's squad vehicle.

| Deputy Brueggeman exited his squad at which point he observed  |
|--|
| . Deputy Brown radioed dispatch about shots fired. Deputy Brown and Deputy   |
| Brueggeman removed William from the truck and attempted to provide life saving measures and  |
| EMS had been requested. Deputy Brueggeman could not get into the rear of his squad to retrieve   |
| medical equipment based on the damage from the collision. Deputy Brueggeman looked around  |
| for something to apply pressure to the wound.  |
| Deputy Brown gave Deputy Brueggeman the keys to his squad so Deputy Brueggeman could get medical supplies. After that, Deputy Brueggeman responded back to the area of William and Deputy Brown. At that point, a first responder was on scene and  The first responder asked that the medical bag be dumped as they looked for gauze. |
| Deputy Brueggeman and additional medical responders  |
| arrived. Deputy Brueggeman asked fire personnel and EMT's . The  |
| First responder was  |
| Deputy Brueggeman . Additional medical responders arrived and they . Deputy Brueggeman walked with Deputy Brown and they secured Deputy Brown's firearm. Deputy Brown stayed by a squad vehicle as Deputy Brueggeman returned to assist EMS. Shortly after,  |
| VCSO Captain Mike Davig and Sgt. Winchel arrived on scene.   |

Deputy Brueggeman stated that based on the conversation with William's daughter and his previous OWI interaction with William, William was definitely acting differently.

Deputy Brueggeman advised that he had search gloves on when he was attempting to render aid so those gloves may be in a squad vehicle. From the scene, Deputy Brueggeman went to VCSO with Captain Davig where he was contacted by WI DOJ-DCI.

Time of interview: 4:35 P.M. until 5:30 P.M.

# **CONCLUSION**

On June 22, 2023, Special Agents Michael Haverley and Adam Frederick met with Deputy Brueggeman, WPPA Business Agent Jeff Spencer, and WPPA Attorney James L. Palmer, II. Agents left the conference room and Deputy Brueggeman viewed his camera footage. After viewing the video, \*\*

A review of this report was completed and minor corrections/clarifications were made.

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# Wisconsin Division of Criminal Investigation

# Investigative 23-4795/12

Report Date: 06/20/2023

**Primary Information** 

Description: Video surveillance from Dairyland Power Cooperative (ISFSI) - 06/17/2023

Occurrence From: 06/17/2023 12:35
Occurrence To: 06/17/2023 13:35

Reporting LEO: Beardsley, Wade A (ICAC & Computer Crimes DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Zassenhaus, Maloree N (Eau Claire ICAC DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

# **Synopsis**

On Saturday, June 17, 2023, Wisconsin Department of Justice, Division of Criminal Investigation (DCI) Special Agents (SA) Wade Beardsley and Maloree Zassenhaus, obtained video surveillance footage from the Dairyland Power Cooperative, Independent Spent Fuel Storage Installation (ISFSI), located at S4601 State Hwy 35, Genoa, WI 54632.

| Addresses        |   |
|------------------|---|
| Relationship     | <u>Address</u>  |
| Evidence Located | S4601 State Highway 35, GENOA, Wisconsin 54632 United States of America |

| Subjects     |                     |             |            |
|--------------|---------------------|-------------|------------|
| Relationship | <u>Name</u>         | <u>Bio</u>  | <u>DOB</u> |
| Mentioned    | Moe, Marty (Person) | White, Male |            |

| Property  |                 |   |
|-----------|-----------------|---|
| Status    | <u>Quantity</u> | <u>Description</u>                        |
| Inventory | 1               | Flash drive containing video surveillance |

# Narrative begins on the following page.

06/30/2023 07:50:54 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report
Case/Report Number: 23-4795/12 Video surveillance from Dairyland Power Cooperative (ISFSI) 06/17/2023

On Saturday, June 17, 2023, Wisconsin Department of Justice, Division of Criminal Investigation (DCI) Special Agents (SA) Wade Beardsley and Maloree Zassenhaus, obtained video surveillance footage from the Dairyland Power Cooperative, Independent Spent Fuel Storage Installation (ISFSI), located at S4601 State Hwy 35, Genoa, WI 54632.

Agents met with Dairyland Power ISFSI manager Marty Moe inside the facility. Moe provided a brief overview of their camera system and advised one camera captured the Officer Involved Critical Incident (OICI) from a great distance away.

Two-minutes, forty-six seconds into the video, a dark colored pick-up truck with a topper is observed operating north-bound on Hwy 35, followed by a squad with its emergency lights activated. The pair of vehicles pull over to the side of the road. At eight-minutes, thirty-seconds, the pick-up truck begins driving north-bound on Hwy 35 and is then obscured by trees and other objects. Shortly thereafter, a squad can be seen pursing the pick-up truck. At eight-minutes, fifty-five seconds, the truck is then observed again continuing north-bound on Hwy 35 before coming to a stop. The squad pursuing the pick-up truck appears to be in close proximity. Due to how far away the OICI occurred from the camera, the footage is extremely grainy and difficult to discern.

The video file was saved to a flash drive and provided to SA Beardsley. The flash drive was logged into evidence at the DCI - Eau Claire field office. The video file was also uploaded to the Critical Incident folder under this case / report number.

# Wisconsin Division of Criminal Investigation

# Examination of Records 23-4795/13

Report Date: 06/20/2023

**Primary Information** 

Description: Examination of Sergeant Sam Winchel's Body Worn Camera Videos

Occurrence From: 06/20/2023 11:05
Occurrence To: 06/20/2023 13:43

Reporting LEO: Stearns, Randy M (Eau Claire Financial Crimes DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

## **Synopsis**

On June 20, 2023, Special Agent Randy Stearns reviewed Vernon County Sheriff's Office Sergeant Sam Winchel's body worn camera videos contained within the DCI Officer Involved Critical Incident Folder.

| Subjects        |  |                           |     |  |
|-----------------|--|---------------------------|-----|--|
| Relationship    | Name                                       | Bio                       | DOB |  |
| Law Enforcement | Winchel, Sam J. (Law Enforcement Official) | White, Male               |     |  |
| Interviewed     | (Person)                                   | 54 yr. old, White, Male   |     |  |
| Interviewed     | (Person)                                   | 40 yr. old, White, Female |     |  |
| Interviewed     | (Person)                                   | 29 yr. old, White, Male   |     |  |
| Mentioned       | (Person)                                   | White, Male               |     |  |
| Mentioned       | Boardman, William S (Person)               | 61 yr. old, White, Male   |     |  |
| Mentioned       | (Person)                                   | 28 yr. old, White, Female |     |  |

Narrative begins on the following page.

06/30/2023 07:55:32 Page 1 of 3

#### **Wisconsin Division of Criminal Investigation Case Report**

Case/Report Number: 23-4795/13 - Examination of Sergeant Sam Winchel's Body Worn Camera Videos

On June 20, 2023, Special Agent (SA) Randy Stearns reviewed Vernon County Sheriff's Office Sergeant Sam Winchel's body worn camera videos which were contained within the DCI Officer Involved Critical Incident Folder and within a subfolder titled, "Winchel\_BodyCamera".

The properties of the videos indicate the videos were modified approximately 5 hours earlier than the timestamps observed on the videos.

The following is SA Stearns' description of the body worn camera videos:

# File Name: Axon Body 2 Video X81100158 2023-06-16 165809

The video was 6 minutes and 16 seconds in length. The beginning date and time were displayed as "2023-06-16 T21:58:10Z".

The video's entirety was of Sergeant Winchel within a squad car taking a telephone call of an unrelated complaint.

# File Name: Axon Body 2 Video X81100158 2023-06-16 192802

The video was 10 minutes and 59 seconds in length. The beginning date and time were displayed as "2023-06-17 T00:27:45Z".

The video captures Sergeant Winchel walking up to the incident scene and contacting William Boardman's daughter, and so so solve by solve

At approximately 7:02 minutes into the video, Sergeant Winchel asked if anything had been "going on" with Boardman. replied that Boardman was on "meth" and Boardman's parents had died in separate house fires.

The video continued to capture activities after the officer involved death occurred.

# File Name: Axon Body 2 Video X81100158 2023-06-16 195807

The video was 6 minutes and 51 seconds in length. The beginning date and time were displayed as "2023-06-17 T00:58:04Z".

The video captures Sergeant Winchel recontacting , and north of the scene after the officer involved death occurred.

# File Name: Axon Body 2 Video X81100158 2023-06-16 201323

The video was 16 minutes and 53 seconds in length. The beginning date and time were displayed as "2023-06-17 T01:13:02Z".

The video captures Sergeant Winchel's contacts with , and north of the scene after the officer involved death occurred.

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## **Wisconsin Division of Criminal Investigation Case Report**

Case/Report Number: 23-4795/13 - Examination of Sergeant Sam Winchel's Body Worn Camera Videos

## File Name: Axon Body 2 Video X81100158 2023-06-16 211916

The video was 8 minutes and 19 seconds in length. The beginning date and time were displayed as "2023-06-17 T02:19:21Z".

The video captures Sergeant Winchel's contact with north of the scene after the officer involved death occurred.

# File Name: Axon Body 2 Video X81100158 2023-06-16 212848

The video was 10 minutes and 26 seconds in length. The beginning date and time were displayed as "2023-06-17 T02:28:55Z".

The video captures Sergeant Winchel's contact with and and north of the scene after the officer involved death occurred.

Additionally, at approximately 02:46 minutes into the video, Sergeant Winchel allows a vehicle pass by the west side of the scene, via the southbound lane of State Highway 35. The unknown female operator stated she lived nearby.

At approximately 09:15 minutes into the video, Sergeant Winchel identifies and a series, as being in a vehicle allowed to drive from the north side of the scene to the south side of the scene. At approximately 10:04 the vehicle passes on the west side of the scene via the southbound lane of State Highway 35.

# File Name: Axon Body 2 Video X81100158 2023-06-16 222100

The video was 3 minutes and 33 seconds in length. The beginning date and time were displayed as "2023-06-17 T03:20:34Z".

The video captures Sergeant Winchel's contact with near the scene after the officer involved death occurred.

## File Name: Axon Body 2 Video X81100158 2023-06-16 222735

The video was 3 minutes and 28 seconds in length. The beginning date and time were displayed as "2023-06-17 T03:27:45Z".

The video captures Sergeant Winchel's contact with the south side of the scene after the officer involved death occurred.

# Wisconsin Division of Criminal Investigation

# Memo to File 23-4795/14

Report Date: 06/20/2023

#### **Primary Information**

Description: Evidence entered into drying booth-06/20/2023

Reporting LEO: Maske, Lance A (Eau Claire HT DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

## **Synopsis**

On June 20, 2023, Wisconsin Department of Justice-Division of Criminal Investigation (DCI) Special Agent (SA) Lance Maske entered evidence into a drying booth at the Eau Claire County Sheriff's Office.

SA Maske transported the evidence from the DCI Eau Claire Field Office temporary storage locker to the Eau Claire County Sheriff's Office. SA Maske unsealed and placed numerous pieces of clothing into drying booth number four. SA Maske photographed the existing tag noting the drying booth was "clean". SA Maske sealed the drying booth door with a red evidence tag at 10:24 AM.

PDF photos are attached to this report.

#### **Documents**

Document

**Drying Booth Photographs** 

06/30/2023 07:56:08 Page 1 of 1

# Wisconsin Division of Criminal Investigation

# Investigative 23-4795/15

Report Date: 06/22/2023

## Warning

Contains entities exempt from disclosure

#### **Primary Information**

Description: Neighborhood canvass - 06/17/2023

Occurrence From: 06/17/2023 14:00
Occurrence To: 06/17/2023 15:00

Reporting LEO: Beardsley, Wade A (ICAC & Computer Crimes DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Zassenhaus, Maloree N (Eau Claire ICAC DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

## **Synopsis**

On the afternoon of June 17, 2023, Wisconsin Department of Justice, Division of Criminal Investigation (DCI) Special Agents (SA) Wade Beardsley and Maloree Zassenhaus, conducted a neighborhood canvass in the area of the Officer Involved Critical Incident (OICI).

DOB

#### Addresses

Relationship Address

Neighborhood Canvass E469 Gianoli Rd, Genoa, Wisconsin 54632 United States of America

Neighborhood Canvass S4726 State Highway 35 , Genoa, Wisconsin 54726 United States of America Neighborhood Canvass S4804 State Highway 35 , Genoa, Wisconsin 54632 United States of America S4804 State Highway 35 , Genoa, Wisconsin 54632 United States of America

#### Subjects

RelationshipNameBioInterviewedChristianson, Verlin G (Person)77 yr. old, White, MaleInterviewedOsthoff, Pamela K (Person)64 yr. old, White, FemaleInterviewed - EXEMPT(Person)10 yr. old, White, Female

Interviewed Peck, Gregory A II (Person) White, Male

Interviewed Reuter, Jennifer S (Person) 53 yr. old, White, Female

Narrative begins on the following page.

06/30/2023 07:57:33 Page 1 of 3

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/15 Neighborhood canvass - 06/17/2023

On the afternoon of June 17, 2023, Wisconsin Department of Justice, Division of Criminal Investigation (DCI) Special Agents (SA) Wade Beardsley and Maloree Zassenhaus, conducted a neighborhood canvass in the area of the Officer Involved Critical Incident (OICI).

| E469 Gianoli Rd, Genoa, WI: Agents met with homeowner Verlin G Christianson, M/W, DOB inside his home. Christianson stated he saw a squad car with its lights activated pull over to the side of the road yesterday on highway 35, north-bound. Moments later, Christianson heard over the scanner there had been a shooting. Christianson did not see or hear anything related to the OICI.   |
|--|
| S4804 State Hwy 35, Genoa, WI: Agents met with homeowner Pamela K Osthoff, F/W, at the front door of her residence. Osthoff stated she observed a marked squad with its emergency lights and siren activated pulling over a dark-colored pick-up truck with a topper on Highway 35. Osthoff stated at one point she could hear faint yelling between two male voices but couldn't make out what they were saying. Osthoff did not witness any other portion of the OICI.   |
| S4726 State Hwy 35, Genoa, WI: Agents met with homeowner Gregory A Peck II, M/W, DOB and his daughter F/W, DOB advised he did not hear or witness anything related to the OICI. advised she and her friend observed a vehicle get pulled over by two squad cars on Highway 35. described the vehicle as a bigger car that was blue or dark in color. It stated she later saw the car drive away followed by a squad with its emergency lights heading in the same direction. It thought perhaps the vehicle left when it wasn't supposed to leave. The believes the traffic stop happened around 5 or 6pm yesterday. |
| S4726 State Hwy 35, Genoa, WI: Agents met with homeowner Jennifer S Reuter, F/W, DOB , outside her residence. Reuter stated she was in her garden yesterday early evening when she saw an SUV squad with its emergency lights and sirens activated, attempting to catch up to a black pick-up truck. Shortly thereafter, Reuter stated she heard approximately four to five gun shots. Reuter stated she believed this occurred yesterday around 6:30 P.M. Reuter stated she heard the shots approximately twenty to thirty minutes after she saw the squad and pick-up truck pass by.                               |

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/15 Neighborhood canvass - 06/17/2023

# Wisconsin Division of Criminal Investigation

# Examination of Records 23-4795/16

Report Date: 06/22/2023

**Primary Information** 

Description: Examination of Deputy Bradley Brueggemans's Body Camera

Reporting LEO: Trowbridge, Brian J (Eau Claire HT DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/06/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

## **Synopsis**

Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) Special Agent (SA) Brian Trowbridge reviewed squad and body worn camera video footage from Deputy Bradley Brueggeman for this officer involved critical incident (OICI) investigation.

| Subjects     |  |                         |            |
|--------------|--|-------------------------|------------|
| Relationship | <u>Name</u>                                    | <u>Bio</u>              | <u>DOB</u> |
| Mentioned    | Brown, Jonathon (Law Enforcement Official)     |                         |            |
| Mentioned    | Brueggeman, Bradley (Law Enforcement Official) |                         |            |
| Mentioned    | Boardman, William S (Person)                   | 61 yr. old, White, Male |            |

Narrative begins on the following page.

07/12/2023 08:03:42 Page 1 of 9

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/16 - Examination of Deputy Bradley Brueggemans's Body Camera

On June 19th, 2023 Wisconsin Department of Justice – Division of Criminal Investigation (DCI) Special Agent (SA) Brian Trowbridge reviewed body camera and squad video related to this case. The files were uploaded in the DCI Critical Incident Materials folder designated for this case.

SA Trowbridge was aware that on June 16, 2023 DCI SA's were requested to investigate an Officer Involved Critical Incident (OICI) that had occurred in rural Vernon County, Wisconsin. Vernon County Deputies involved were Deputies Bradley Brueggeman and Jonathon Brown. William Boardman was the subject of the initial case Vernon County responded to.

DCI SA Brian Trowbridge examined the following video, which was viewed independently, and entirely, and a synopsis was included below.

# **Body Camera**

# Video file: Axon Body 2 Video X81095469 2023-06-16 183240

This video was approximately forty-three minutes and forty-nine seconds (43:49) long and appeared to be the body worn camera of Vernon County Deputy Sheriff Bradley Brueggeman. The date and time stamp in the video was 2023-06-16 T23:32:38Z at the start of the video, and the camera designation noted in the video was AXON BODY 2 X81095460. The ending time stamp read 2023-06-17 T00:16:27Z.

Times noted refer to the time the video has been running.

- 00:00 Video begins, Deputy Brueggeman is standing in a residential driveway. A maroon Jeep, license plate , is parked in the driveway.
- 00:02 Audio begins.
- 00:10 Deputy Brueggeman approaches door to home, motorcycle, license plate WI 4723N, is parked under a covered entry.
- 00:15 Door to home opens before Deputy Brueggeman reaches it, and a white male wearing a black long-sleeved Harley Davidson shirt exits the house and said "get out of my house."
- 00:16 Deputy Brueggeman addressed the male, saying "Hey, William!" and the male made a comment about taking something or someone out, and pointed backward over his right shoulder with his thumb, toward the open door.
- SA Trowbridge learned that William's full name was William S. Boardman.
- 00:21 Deputy Brueggeman said "Hey William, why don't you hold up for one second, explain to me what's going on." Boardman told Brueggeman that someone had been on his property and had possibly caused damage.

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# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/16 - Examination of Deputy Bradley Brueggemans's Body Camera

- 00:39 Deputy Brueggeman called after Boardman as he was walking away toward a Dodge pickup in the driveway and said "Hey William, where are you going?" Boardman replied to Brueggeman, and made a comment similar to finding some underwear and a hat.
- 1:25 Boardman climbs out of the Dodge truck and again tells Deputy Brueggeman something about finding underwear, and someone having been on his property possibly causing damage.
- 2:02 As Boardman walks back to the open door of the house a white male and female, approach Deputy Brueggeman in the driveway. The female tells Deputy Brueggeman about recent interactions with Boardman that she has had. She then described coming to Boardman's home and he was sitting on the couch. She opened her mouth and shook her head around in a strange manner, and said that Boardman was doing that while sitting. She asked Boardman what he was doing and he told her "I'm in a tunnel."

Based on the investigation, SA Trowbridge was aware that the male and female were identified as and ...

- 2:19 Boardman exits the house and is talking. He made comments about trying to file a police report, and other comments that SA Trowbridge thought made no sense. Boardman then stopped walking and looked back toward Deputy Brueggeman and said "I'm insane? You're allIll insane." When Boardman said this he was waving his hands around in a circle. Boardman then walked off of camera.
- 2:34 Deputy Brueggeman asked whether or not believed Boardman had mental health issues, or a drug abuse problem.
- 2:43 Deputy Brueggeman asked if Boardman owns any weapons or firearms. Brueggeman that she did not believe so.
- 3:11 Deputy Brueggeman asked and and if Boardman had made any comments about harming himself or others. Both the male and female said that Boardman never said anything specific about harming himself or anyone, but that he had talked about being "on the edge of death."
- 3:34 Deputy Brueggeman asked the and and if Boardman had any medical conditions and they both said no. and and told Deputy Brueggeman about multiple traumatic experiences that Boardman had, and that Boardman had started using drugs.
- 4:30 Boardman walks back into view of the camera as Deputy Brueggeman is asking and the male if they could leave since that is what Boardman wants, and Deputy Brueggeman would try to talk to Boardman. Boardman continues to walk away, and comments about Deputy Brueggeman's statement.

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- 4:54 Boardman comments about police escorts, then Boardman closes the screen door to the house then walks back toward Deputy Brueggeman.
- 5:04 Boardman made comments about random things not related to any prior conversation, and he sounded and appeared to be agitated.
- 5:15 Deputy Brueggeman told Boardman that the others were going to leave, and Boardman replied "yeah, thanks." Deputy Brueggeman attempted to engage in a conversation with Boardman, and Boardman continued to walk away from Deputy Brueggeman. Boardman then walked to a dark colored Dodge pickup with Wisconsin license plate SJ2723 and got in.
- 5:36 Deputy Brueggeman asked Boardman to explain the situation to him. Boardman started talking about things that SA Trowbridge didn't feel were related to the situation, or prior conversation, and didn't make sense.
- 6:42 Deputy Brueggeman pleads with Boardman asking for Boardman to talk with him. Boardman continues to talk, then violently pulls the door closed.
- 6:57 Boardman drives out of the driveway and turns right onto Highway 35.
- 7:16 Deputy Brueggeman talked to in the driveway and asked her what was going on. told Deputy Brueggeman "he's lost his mind." also mentioned someone living in a camper on the property and telling her that Boardman would stay in the house for days without coming out.
- 8:28 Radio traffic can be heard involving another deputy stopping Boardman, and Deputy Brueggeman leaves to go to the traffic stop.
- 9:50 Deputy Brueggeman stops his squad and gets out at the scene where another deputy had stopped Boardman on Highway 35.

Based on the investigation, SA Trowbridge was aware that Deputy Brown was the deputy in contact with Boardman.

- 10:14 Deputy Brueggeman approached Deputy Brown, who was trying to talk to Boardman. Boardman can be seen talking, but there is a freight train passing nearby and what he is saying is mostly unintelligible.
- 10:29 Boardman can be heard making comments about his mental state.
- 10:37 Deputy Brueggeman asked Boardman for his keys and Boardman refused and commented about Deputy Brueggeman's authority as law enforcement.
- 11:38 Boardman makes comments regarding his clothing that don't seem to fit the conversation.

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- 12:42 Boardman tells the deputies he is going to leave, then Boardman put the key in the ignition and Deputy Brown can be seen trying to open the truck door, Deputy Brown reaches into the open driver's window.
- 12:50 Boardman is seen holding the truck door closed and appeared to challenge Deputy Brown.
- 12:55 Deputy Brown told Boardman "give me your keys," Boardman refused.
- 12:59 Deputy Brown told Boardman "give me your keys, right now." Boardman stared at Deputy Brown, then replied "you're gonna have to take them."
- 13:04 Deputy Brown told Boardman "I'm asking you for them." Boardman replied "and I'm telling you you're gonna have to take 'em." Boardman continues to stare at Deputy Brown.
- 13:09 Deputy Brown asked Boardman "you going to try to drive away?" Boardman replied "no, I'll try and drive your nose through your face, I'm sick of it." Deputy Brown asked Boardman "is that a threat?" Boardman replied "no, it's not a threat. Not a threat at all. That is a fuckin promise...you're not the law, you're a bought fucking law, and I'm not gonna go."
- 13:29 Deputy Brown turns toward Deputy Brueggeman and asked Deputy Brueggeman what he had for Boardman. Deputy Brueggeman said he was just trying to talk to him to understand what's going on.
- 13:39 Boardman told Deputy Brueggeman and Deputy Brown that he was leaving. Deputy Brown told Boardman that he was not free to leave.
- 13:49 Boardman starts the pickup and Deputy Brown reaches in the driver's window.
- 13:55 Boardman pulls away from the traffic stop with Deputy Brown standing on the driver's side running board with his left arm inside of the driver's window. Deputy Brueggeman turns and runs back to his squad.
- 14:07 Deputy Brueggeman opens the driver's door to his squad and as Deputy Brueggeman moves to enter his squad Boardman's vehicle can be seen driving away in the wrong lane of traffic, and another vehicle can be seen in the distance coming toward Boardman's pickup. SA Trowbridge used VLC media player to view this portion of the video frame-by-frame as it moves quickly.
- 14:16 Deputy Brueggeman is in his squad and calls in the situation via radio indicating a pursuit with Deputy Brown hanging off the side of the vehicle.
- 14:30 Radio traffic that sounds like "shots fired."
- 14:49 Deputy Brueggeman stops his squad and it appears that the squad is impacted by something. When Deputy Brueggeman exits the squad the front bumper of Boardman's black

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truck is in contact with the rear bumper of Deputy Brueggeman's squad. Deputy Brown is still hanging onto the side of the pickup and was talking on his radio.

- 15:07 Deputy Brueggeman asks Deputy Brown to confirm if he had said that shots were fired. Deputy Brown confirmed that was what he had said. Deputy Brueggeman asked Deputy Brown if he had requested EMS, and Deputy Brown used his radio to call that request in.
- 15:21 Deputy Brueggeman walked to the passenger side of the pickup, and viewers can see that the passenger side window is shattered and mostly missing. Boardman can be seen slumped over in the driver's seat.
- 15:30 Deputy Brown can be heard making exclamations about the situation, Deputy Brueggeman can be heard asking if there are first aid actions that can be taken.
- 15:50 Deputy Brueggeman can be seen looking through his squad, then moving the squad so he can attempt to access the cargo area. When Deputy Brueggeman is not able to access the cargo area he asked Deputy Brown if Brown had any gauze.
- 16:55 Deputy Brown asks Deputy Brueggeman about traffic.
- 17:34 Deputy Brown asks Deputy Brueggeman for his assistance removing Boardman from the pickup. The deputies lay Boardman on the ground outside of the pickup. Deputy Brown tells Deputy Brueggeman that he has first aid supplies in his squad, and Deputy Brueggeman leaves in his squad. Deputy Brueggeman drives back to Deputy Brown's squad and retrieves a first aid kit.
- 20:00 Deputy Brueggeman returns to the location of Deputy Brown, and Boardman, and there is a female assisting Deputy Brown
- 21:30 Deputy Brueggeman goes to his squad and moves it to provide traffic control for the scene.
- 22:00 A male first responder asks Deputy Brueggeman if he wanted traffic stopped.
- 22:20 Deputy Brueggeman

  The female first responder

  Deputies and first responders attempt to resuscitate Boardman.
- 29:00 Deputy Brown is seen leaning on the hood of the pickup. Deputy Brueggeman walks over to Deputy Brown, and removes Brown's handgun from its holster. Brueggeman carries the handgun back to his squad and places it into a plastic bag, then walks back to Deputy Brown to check on Deputy Brown. Deputies Brueggeman and Brown walk back to Brueggeman's squad and talk to each other.
- 32:40 Vernon County Sheriff's Office Captain M. Davig spoke with Deputies Brown and Brueggeman about this incident outside of Deputy Brueggeman's squad.

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- 34:50 Deputy Brueggeman returns to Boardman's pickup. Several first responders are on scene
- 41:15 Vernon County Sheriff's Office Sergeant (Sgt.) Sam Winchel spoke with Deputies Brown and Brueggeman at Deputy Brueggeman's squad. Sgt. Winchel walks away and Deputies Brueggeman and Brown talk.
- 42:55 A first responder from Gunderson Health System checks Deputy Brown's vitals at Deputy Brueggeman's squad.
- 43:40 Captain Davig tells Deputy Brueggeman to secure the body cameras, and shut them off.
- 43:49 Audio and video end.

### Squad Camera

### Video file: 1D03AE0D20230607232655001i100.avi

This video is approximately one minute and forty-two seconds long. The time stamp is 6/7/23 at 23:26:23. The video shows the squad driving on an unknown roadway at night, and the deputy stops to pick up debris in the roadway. The video appears to be unrelated to this case.

### Video file: 1D03AE0D20230607232655001i200.avi

This video is approximately one minute and forty-two seconds long. The time stamp is 6/7/23 at 23:26:23. The video is a rear facing view of the squad interior and Deputy Brueggeman driving. The video appears to be unrelated to this case.

### Video file: 1D03AE0D20230608203813001i100.avi

This video is approximately six minutes and forty seconds long. The time stamp is 6/8/23 at 20:37:41. The video shows the squad driving on an unknown roadway at dusk. The deputy makes a traffic stop on a dark colored sedan. The video appears to be unrelated to this case.

### Video file: 1D03AE0D20230608203813001i200.avi

This video is approximately six minutes and forty seconds long. The time stamp is 6/8/23 at 20:37:41. The video is a rear facing view of the squad interior and Deputy Brueggeman driving. The video appears to be unrelated to this case.

### Video file: 1D03AE0D20230616184107001i100.avi

This video is approximately forty-six minutes and fifty-three seconds long. The time stamp is 6/16/23 at 18:40:34. The video shows the squad driving during daylight on a highway. A synopsis of the video is below.

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Times noted refer to the time the video has been running.

- 00:41 The squad stops behind another squad that has red and blue emergency lights activated and is stopped along the highway. There is a freight train passing on the left side of the video. Deputy Brueggeman exits the squad and walks out of sight in front of the other squad.
- 04:46 Deputy Brueggeman runs toward the parked squad, gets in, and drives off. Deputy Brueggeman passes nine vehicles traveling in the opposite direction.
- 05:17 Deputy Brueggeman pulls up behind a black pickup truck, Deputy Brown is holding on to the side of the pickup and standing on the driver's side running board. Radio traffic can be heard of someone yelling. The pickup continues to drive along the shoulder of the roadway with Deputy Brown on the side of it.
- 05:30 Deputy Brueggeman drives around the pickup and pulls over. The video appears as if the squad was impacted from behind.
- 06:36 The sound of doors on the squad opening can be heard and Deputy Brueggeman walks around the front of the squad.
- 08:50 The squad turns around and drives back to Deputy Brown's squad. Deputy Brueggeman can be seen retrieving items from Brown's squad, then returns to Deputy Brown's location where he parks behind the black pickup.
- 22:40 Two deputies can be seen walking back to the squad. Doors can be heard opening, and there is muffled talking coming from off camera.
- 46:53 Video and audio end

### Video file: 1D03AE0D20230616184107001i200.avi

This video is approximately forty-six minutes and fifty-three seconds long. The time stamp is 6/16/23 at 18:40:34. The video is a rear facing view of the squad interior and Deputy Brueggeman driving. A synopsis of the video is below.

Times noted refer to the time the video has been running.

- 00:43 Deputy Brueggeman stops the squad and exits.
- 04:53 Deputy Brueggeman enters the squad, activates the siren, uses the police radio, and accelerates away.
- 05:36 Deputy Brueggeman stops the squad and exits, and as he does so it appears that the squad lurches as if it were impacted from behind.
- 06:50 Deputy Brueggeman briefly enters the squad and appears to move it.

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- 08:47 Deputy Brueggeman enters the squad, drives to another location and briefly exits, then reenters and drives to another location where he stops and exits the squad.
- 22:38 Door can be heard opening, and talking from off camera can be heard.
- 46:53 Video and audio end.

### Video file: 1D03AE0D20230617000710001i100.avi

This video is approximately one minute and forty-six seconds long. The time stamp is 6/17/23 at 00:06:38. The video shows the squad parked in almost total darkness. A synopsis of the video is below.

Times noted refer to the time the video has been running.

00:01 – Multiple people can be seen walking in front of the squad. It is nighttime and very little can be seen.

01:46 - Video and audio end

It is the belief of SA Trowbridge that the squad camera was mistakenly activated while parked on scene of this OICI. Nothing can be seen or heard in the video that is relevant to this case.

### Video file: 1D03AE0D20230617000710001i200.avi

This video is approximately one minute and forty-six seconds long. The time stamp is 6/17/23 at 00:06:37. The video shows a rear view of the squad interior, and it is dark outside of the squad. A synopsis of the video is below.

Times noted refer to the time the video has been running.

00:05 - A deputy enters the squad briefly, then talks to someone off camera. The deputy appears to try and start the squad with no success.

01:46 - Video and audio end

It is the belief of SA Trowbridge that the squad camera was mistakenly activated while parked on scene of this OICI. Nothing can be seen or heard in the video that is relevant to this case.

## Investigative 23-4795/17

Report Date: 06/22/2023

**Primary Information** 

Description: Uniform and Weapons Inspection: Deputy Bradley Brueggeman

Occurrence From: 06/16/2023 22:26
Occurrence To: 06/16/2023 22:26

Reporting LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/05/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

**Addresses** 

Relationship Address

Location of Event Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America

Narrative begins on the following page.

07/12/2023 08:04:29 Page 1 of 2

## Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/17

On Friday, June 16, 2023, at approximately 10:15 P.M., Special Agent (S/A) Adam L. Frederick met with Vernon County Sheriff's Office Deputy Bradley Brueggeman at the Vernon County Sheriff's office. Deputy Brueggeman was accompanied by other law enforcement officers. S/A Frederick introduced himself to Deputy Brueggeman and explained to him the process of an Officer Involved Critical Incident investigation (OICI). Deputy Brueggeman was told the entire process was voluntary and he did not have to participate in any portion of the investigation.

Deputy Brueggeman agreed to participate in a uniform and weapons inspection. During the inspection, S/A Frederick captured 11 digital images of Deputy Brueggeman, his firearm, and magazines. Deputy Brueggeman stated he was in the same uniform captured by digital images as he was during the OICI.

Deputy Brueggeman carried a Glock 17, Gen 5, Serial number BLNG561, with a tactical Streamlight TLR – 1 HL. The magazine capacity was 17 rounds. The inserted magazine had all 17 unfired cartridges plus one that was chambered. The two spare magazines also contained 17 unfired cartridges each.

The digital images were transferred to a .pdf document and electronically attached to this report.

A crime victim's packet was also provided to Deputy Brueggeman, and he provided a signature to the acknowledgement form. The acknowledgement form was electronically scanned and attached to this report.

#### WISCONSIN DEPARTMENT OF JUSTICE

**Division of Criminal Investigation** 17 W. Main Street, P.O. Box 7857 Madison, Wisconsin 53707-7857

WISCONSIN STATUTES, CHAPTER 950, AND STATE CONSTITUTIONAL AMENDMENT (ARTICLE I, SECTION 9M) DEFINE VICTIM AND WITNESS RIGHTS IN WISCONSIN.

LAW ENFORCEMENT, PROSECUTORS, JUDGES AND OTHER CRIMINAL JUSTICE OFFICIALS WORK TOGETHER TO ENSURE THAT VICTIMS AND WITNESSES OF CRIMES RECEIVE THE RIGHTS AND SERVICES TO WHICH THEY ARE ENTITLED.

| I, BRADLEY BRUECGEMAN, hereby certify that I have been provided with a copy                            |
|--|
| of the brochure prepared by the Division of Criminal Investigation (DCI), which explains my rights     |
| under Wisconsin Statute § 950 and the Wisconsin State Constitution, by DCI Special Agent               |
| ADAM FREDERECK MEKE HNESLEG  |
|  |
| I understand that I can call the Department of Justice's Crime Victim Resource Center at the toll-free |
| number provided in the DCI brochure with any questions I may have or for further assistance.           |
|  |
| Signed: Badly Magn   |
| Date: 6-17-23  |
| Witnesses:   |

I ROADIEY BRUZGESMAN

## Investigative 23-4795/18

Report Date: 06/22/2023

**Primary Information** 

Description: Uniform and Weapons Inspection: Deputy Brown

Occurrence From: 06/16/2023 22:43
Occurrence To: 06/16/2023 22:43

Reporting LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/05/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

Addresses

Relationship Address
Location of Event Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America

 Relationship
 Name
 Bio
 DOB

 Law Enforcement
 Brown, Jonathon (Law Enforcement Official)
 --

| Property | Status | Quantity | Description | Inventory | 1 | Duty Pants |

#### Narrative begins on the following page.

07/12/2023 08:07:18 Page 1 of 2

## Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/18

On Friday, June 16, 2023, at approximately 10:43 P.M., Special Agent (S/A) Adam L. Frederick met with Vernon County Sheriff's Office Deputy Jonathon Brown at the Vernon County Sheriff's office. Deputy Brown was accompanied by Wisconsin Professional Police Association Business Agent Jeff Spencer and later Attorney Jim Palmer. S/A Frederick introduced himself to Deputy Brown and explained to him the process of an Officer Involved Critical Incident investigation (OICI). Deputy Brown was told the entire process was voluntary and he did not have to participate in any portion of the investigation.

Deputy Brown agreed to participate in a uniform and weapons inspection. During the inspection, S/A Frederick captured nine digital images of Deputy Brown and spare magazines. Deputy Brown's firearm that was utilized during the OICI was removed and replaced earlier in the evening. Deputy Brown sated he was in the same uniform captured by digital images as he was during the OICI excluding the replaced firearm.

Deputy Brown said his magazine capacity was 17 rounds. The two spare magazines contained 17 unfired cartridges each.

The digital images were transferred to a .pdf document and electronically attached to this report.

A crime victim's packet was also provided to Deputy Brown, and he provided a signature to the acknowledgement form. The acknowledgement form was electronically scanned and attached to this report.

### WISCONSIN DEPARTMENT OF JUSTICE

**Division of Criminal Investigation** 17 W. Main Street, P.O. Box 7857 Madison, Wisconsin 53707-7857

WISCONSIN STATUTES, CHAPTER 950, AND STATE CONSTITUTIONAL AMENDMENT (ARTICLE I, SECTION 9M) DEFINE VICTIM AND WITNESS RIGHTS IN WISCONSIN.

LAW ENFORCEMENT, PROSECUTORS, JUDGES AND OTHER CRIMINAL JUSTICE OFFICIALS WORK TOGETHER TO ENSURE THAT VICTIMS AND WITNESSES OF CRIMES RECEIVE THE RIGHTS AND SERVICES TO WHICH THEY ARE ENTITLED.

| I, Jonathon Brown, hereby co  | ertify that I have been provided with a copy |
|---|--|
| of the brochure prepared by the Division of Criminal Inve   | estigation (DCI), which explains my rights   |
| under Wisconsin Statute § 950 and the Wisconsin Statute § 950 |  |
| I understand that I can call the Department of Justice's Cri<br>number provided in the DCI brochure with any questions I m  |  |
| Signed:   | June H                                       |
| Date:   | 6/16/23                                      |
| Witnesses:  |  |

## Investigative 23-4795/19

Report Date: 06/22/2023

**Primary Information** 

Description: Body Worn Camera and Squad Camera Data (Winchel, Brown, Brueggeman)

Occurrence From: **06/17/2023 02:31**Occurrence To: **06/17/2023 02:31** 

Reporting LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/05/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

| Addresses         |   |
|-------------------|---|
| Relationship      | <u>Address</u>  |
| Location of Event | Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America |

| Subjects        |  |             |            |
|-----------------|--|-------------|------------|
| Relationship    | <u>Name</u>                                    | <u>Bio</u>  | <u>DOB</u> |
| Law Enforcement | Brown, Jonathon (Law Enforcement Official)     |             |            |
| Law Enforcement | Brueggeman, Bradley (Law Enforcement Official) |             |            |
| Law Enforcement | Winchel, Sam J. (Law Enforcement Official)     | White, Male |            |

Narrative begins on the following page.

07/12/2023 08:08:34 Page 1 of 2

## Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/19

On Friday, June 16, 2023, and into the early morning hours of Saturday, June 17, 2023, Special Agent (S/A) Adam L. Frederick was assigned to work with Digital Evidence Examiner (DEE) Teai Czajka in an attempt to recover the data collected from the body worn camera (bwc) and squad cameras from Deputy Brown, Deputy Brueggeman, and Sgt. Winchel. Deputy Brown and Deputy Brueggeman's bwc were previously collected and turned over to DCI staff. Sgt. Winchel's bwc was turned over to S/A Frederick on June 17, 2023, at 2:31 A.M.

The body worn camera data could only be extracted utilizing a Vernon County Sheriff's Office laptop with the proprietary software that would communicate with the hardware. DEE Czajka was able to extract the data from the three law enforcement officers bwc utilizing Sgt. Winchel's assigned laptop. The data from the two squad cameras as well as the all the data captured from the bwc were placed onto an external drive and turned over to S/A Frederick.

The data was uploaded to the critical incident folder and reviews of video were done separately. The external drive was turned over to Case Agent Michael Haverley.

## Investigative 23-4795/20

Report Date: 06/22/2023

**Primary Information** 

Description: Vernon County Dispatch: Radio traffic, calls, and CAD

Occurrence From: 06/19/2023 12:00
Occurrence To: 06/19/2023 12:00

Reporting LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/10/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

Addresses

Relationship Address
Location of Event Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America

| Subjects        |   |            |            |
|-----------------|---|------------|------------|
| Relationship    | <u>Name</u>                             | <u>Bio</u> | <u>DOB</u> |
| Law Enforcement | Davig, Michael (Law Enforcement Officia | al)        |            |

### Narrative begins on the following page.

07/12/2023 08:09:07 Page 1 of 2

## Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/20

On Friday, June 16, 2023, the Vernon County Sheriff's Office (VCSO) was involved in an officer-involved critical incident (OICI) on Highway 35 between the Village of Genoa and Gianoli Road in Vernon County, Wisconsin. Special Agent (S/A) Adam L. Frederick responded to the Vernon County Sheriff's Office and eventually contacted staff in the Vernon County Dispatch Center. S/A Frederick requested dispatch to make a copy of all radio traffic, calls, and CAD entries associated with the OICI from beginning of the OICI to the conclusion of the case.

S/A Frederick was told a supervisor had the authority to obtain those records and a message would be sent to the supervisor. On Monday June 19, 2023, S/A Frederick received an external drive from Vernon County Sheriff's Office Captain Davig at the Vernon County Sheriff's Office. S/A Frederick reviewed the data on the external drive and uploaded the data to the critical incident folder.

The external drive had a .pdf document that had the dispatch report data. The zipped folder on the external drive was labeled 23\_12398 and contained 314 audio clips. Most of the files were related to radio transmissions from law enforcement to and from dispatch. The audio transmissions of what transpired during the OICI were consistent with the audio that was captured on the body worn camera (BWC) data.

The last audio file in the folder was a call made by the decedent's daughter to dispatch for a welfare check. She explained her father needed to be committed and described his behaviors. She said her father would not get help willingly and that he was not, "ok."

### Examination of Records 23-4795/21

Report Date: 06/22/2023

**Primary Information** 

Description: Deputy Brown Injury Photos provided by WPPA BA Spencer

Occurrence From: 06/19/2023 14:04
Occurrence To: 06/19/2023 14:04

Reporting LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/05/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

| Subjects        |  |            |            |
|-----------------|--|------------|------------|
| Relationship    | <u>Name</u>                                | <u>Bio</u> | <u>DOB</u> |
| Law Enforcement | Brown, Jonathon (Law Enforcement Official) |            |            |
| Mentioned       | Spencer, Jeffrey R (Person) White, Male    |            |            |

Narrative begins on the following page.

07/12/2023 08:09:53 Page 1 of 2

## Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/21

On Monday, June 19, 2023, Special Agent (S/A) Adam L. Frederick received an email from Wisconsin Professional Police Association Business Agent (B/A) Jeff Spencer. The email from B/A Spencer was at the request of S/A Frederick.

S/A Frederick met with Vernon County Sheriff's Office Deputy Brown the night of the Officer Involved Critical Incident (OICI) for a weapons and uniform inspection. During that inspection, Deputy Brown showed S/A Frederick marks to his forearm resulting from hanging onto the subject's door.

S/A Frederick requested Deputy Brown to have someone that he was comfortable with take pictures throughout the week of his injuries to show the injuries progression and regression. The emailed photographs indicated the photographs were injuries to Jon Brown and they were taken by on June 18, 2023, at 1:21 A.M. and at 3:48 P.M.

The photographs were electronically attached to this report as a .pdf file.

### Investigative 23-4795/22

Report Date: 06/22/2023

**Primary Information** 

Description: Vehicle Searches 2001 Dodge Dakota and VCSO Police Interceptor

Occurrence From: 06/22/2023 10:30
Occurrence To: 06/22/2023 11:30

Reporting LEO: Greeno, Jay T (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Kleinhans, David J (Arson DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On June 22, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) Special Agents (SA) Jay Greeno, David Kleinhans, and Adam Frederick conducted vehicle searches at a secure impound lot in the City of Viroqua, Vernon County, Wisconsin. The vehicles searched included a black 2001 Dodge Dakota with Wisconsin registration of SJ2723, registered to William S. Boardman. The second vehicle searched was a Vernon County Sheriff's Office (VCSO) marked squad. SA Kleinhans took digital photographs of both vehicles and collected evidence during the search of the Dodge Dakota.

| Addresses         |  |
|-------------------|--|
| Relationship      | <u>Address</u>   |
| Location of Event | 326 Fairlane Dr, VIROQUA, Wisconsin 54665 United States of America |

| Subjects     |                              |                         |            |
|--------------|------------------------------|-------------------------|------------|
| Relationship | <u>Name</u>                  | <u>Bio</u>              | <u>DOB</u> |
| Deceased     | Boardman, William S (Person) | 61 yr. old, White, Male |            |

| Property      |                 |                          |
|---------------|-----------------|--------------------------|
| <u>Status</u> | <u>Quantity</u> | Description              |
| Inventory     | 1               | Clear glass smoking pipe |

#### Narrative begins on the following page.

06/30/2023 07:58:03 Page 1 of 17

On June 22, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (WI DOJ-DCI) Special Agents (SA) Jay Greeno, David Kleinhans, and Adam Frederick conducted vehicle searches at a secure impound lot in the City of Viroqua, Vernon County, Wisconsin. The vehicles searched included a black 2001 Dodge Dakota with Wisconsin registration of SJ2723 and vehicle identification number 1B7GG26N11S113521. The vehicle is registered to William S. Boardman of S5074 State Highway 35, Genoa, WI. The second vehicle searched was a Vernon County Sheriff's Office (VCSO) marked squad, Police Ford Interceptor, with Wisconsin official registration of F1241 and vehicle identification number of 1FM5KSAW3MNA20314. The Police Interceptor was registered to the Vernon County Sheriff's Office at 1320 Bad Axe Court, Viroqua, WI 54665. SA Kleinhans took digital photographs of both vehicles and collected evidence during the search of the Dodge Dakota.

At approximately 10:30 a.m., SA Kleinhans and Greeno conducted a walk around of the black Dodge Dakota. SA Kleinhans and Greeno noticed red staining, all around the interior driver's seat area, center console, and rear driver's side window of the vehicle and a shattered passenger side window that both appeared to have occurred during the incident on June 16, 2023. There was also a small scratch on the front bumper and the front license plate was hanging down, which was believed to have occurred when the Dodge Dakota ran into the rear of the VCSO Police Interceptor. (See figures 1, 2, 3, and 4)

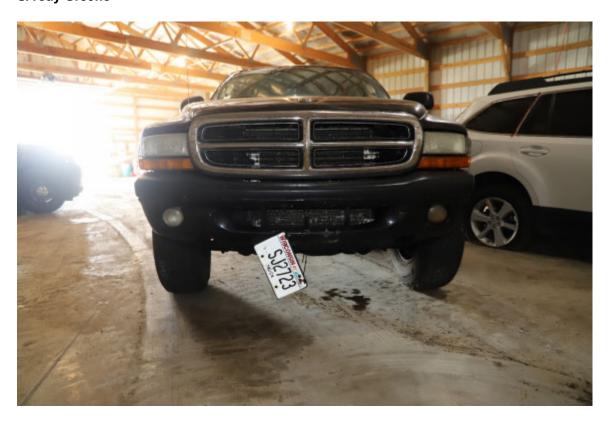


Figure 1 (IMG 0009 front of WI Auto SJ2723-Captured by S/A Kleinhans)

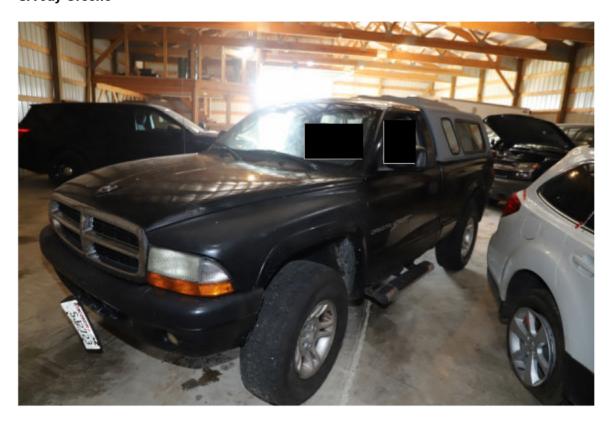


Figure 2 (IMG\_0005 Driver side of WI Auto SJ2723-Captured by S/A Kleinhans)



Figure 3 (IMG 0001 Rear of WI Auto SJ2723-Captured by S/A Kleinhans)



Figure 4 (IMG\_0012 Passenger side of WI Auto SJ2723-Captured by S/A Kleinhans)

After photographing the exterior of the Dodge Dakota, SA Kleinhans photographed the interior of the vehicle. SA Greeno and Kleinhans noticed the passenger side widow was broken and the inside driver's side area was heavily soiled (See figures 5, 6, 7, and 8)



Figure 5 (IMG\_0029 Driver side interior of WI Auto SJ2723-Captured by S/A Kleinhans)



Figure 6 (IMG\_0040 Driver side rear window of WI Auto SJ2723-Captured by S/A Kleinhans)

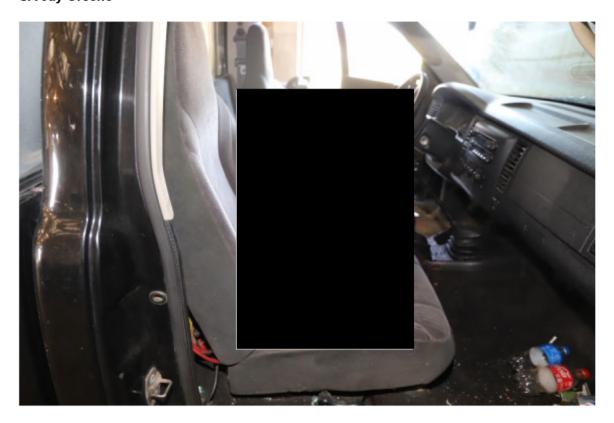


Figure 7 (IMG\_0052 Passenger side interior of WI Auto SJ2723-Captured by S/A Kleinhans)



Figure 8 (IMG\_0091 Inside of box of WI Auto SJ2723-Captured by S/A Kleinhans).

After photographs were taken of the vehicle, SA Frederick and SA Greeno conducted a search of the vehicle. SA Greeno located a clear glass pipe consistent with one that is commonly used to ingest methamphetamine in a paper bag in the passenger door lower compartment of the Dodge Dakota. The pipe appeared clean and possibly unused. SA Kleinhans marked the item as evidence with placard #1 and photographed it multiple times. SA Greeno then packaged and secured the pipe as evidence at approximately 11:00 a.m. The pipe was later labeled as evidence #23-4795.17 and entered into the evidence facility at the DCI-Eau Claire Field Office. This was the only item secured as evidence from the Dodge Dakota.

After completing the search of the Dodge Dakota, SA Kleinhans photographed and searched the Vernon County Police Interceptor with Wisconsin official registration of F1241 and vehicle identification number of 1FM5KSAW3MNA20314. SA Greeno and Kleinhans did a walk around of the vehicle and noticed moderate to severe damage to the passenger side rear of the Police Interceptor. The passenger side rear taillight was hanging from the back and there was metal damage on the rear lift gate of the Police Interceptor. SA Kleinhans conducted overall

photographs of the interior and exterior of the vehicle. No items of evidentiary value were located in the Police Interceptor. (See figures 9, 10, 11, and 12)



Figure 9 (IMG 0097 Front of VCSO squad F1241-Captured by S/A Kleinhans).



Figure 10 (IMG 0100 Passenger side of VCSO squad F1241-Captured by S/A Kleinhans).

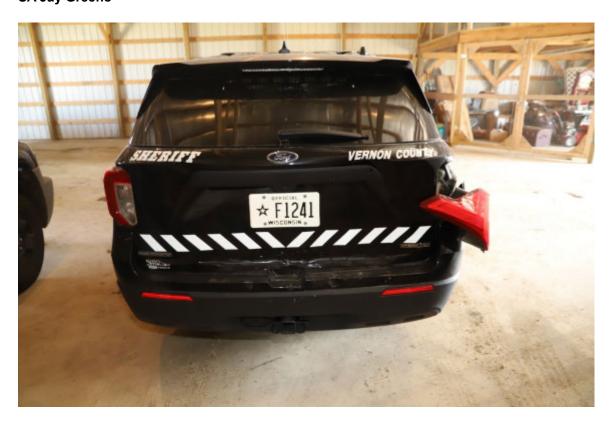


Figure 11 (IMG 0103 Rear of VCSO squad F1241-Captured by S/A Kleinhans).



Figure 12 (IMG\_0095 Drivers side of VCSO squad F1241-Captured by S/A Kleinhans).

SA Kleinhans took photographs of the interior of the VCSO squad car as well. There was no internal damage to the squad or anything of evidentiary value taken. (Please see figures 13, 14 and 15)

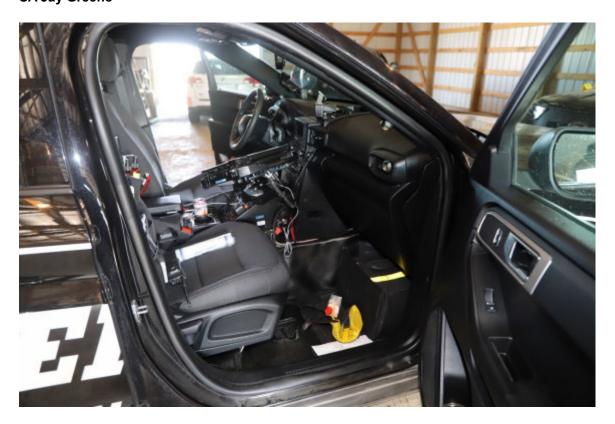


Figure 13 (IMG\_0115 Passenger side interior of VCSO squad F1241-Captured by S/A Kleinhans).



Figure 14 (IMG 0108 Driver side interior of VCSO squad F1241-Captured by S/A Kleinhans).

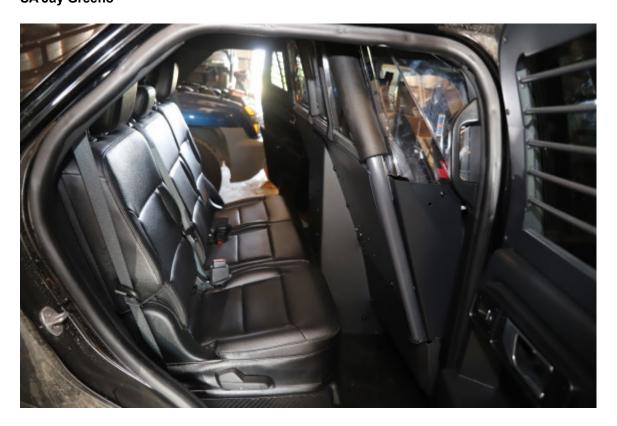


Figure 15 (IMG\_0121 Rear seats taken from passenger side of VCSO squad F1241-Captured by S/A Kleinhans).

The photographs and vehicle searches were completed at approximately 11:15 a.m. The vehicles were secured and left at the secure impound lot in Vernon County.

### **Attachments:**

SA Greeno packaged and entered the clear glass pipe into evidence at the DCI-Eau Claire Field Office. SA Greeno placed the photographs in a folder for this specific report within the DCI Critical Incident Materials Folder under case number 23-4795.

### Investigative 23-4795/23

Report Date: 06/23/2023

**Primary Information** 

Description: Information related to LPR cameras on VCSO squad vehicle

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

During the course of this officer involved critical incident (OICI) investigation, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent Michael Haverley had contacts with the Vernon County Sheriff's Office (VCSO) about data from the license plate reader cameras affixed to a VCSO squad assigned to Deputy Bradley Brueggeman.

Narrative begins on the following page.

06/30/2023 07:58:44 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/23 Information related to LPR cameras on VCSO squad vehicle

During the course of this officer involved critical incident (OICI) investigation, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent Michael Haverley had contacts with the Vernon County Sheriff's Office (VCSO) about data from the license plate reader (LPR) cameras affixed to a VCSO squad assigned to Deputy Bradley Brueggeman. DCI requested any data from the VCSO LPR to attempt to identify additional potential witnesses for this investigation.

SA Haverley was initially informed by Sheriff Roy Torgerson that Deputy Bradley Brueggeman's squad vehicle had LPR cameras. SA Haverley was updated by Captain Mike Davig that their new LPR system uploads to cloud storage and data was not stored. SA Haverley was informed that the last data collected by the VCSO LPR camera system was on June 3, 2023.

SA Haverley was copied on an email on June 19, 2023 as a Vernon County IT Technician looked into their BOSS server, which did not show any read outs since the night of June 3, 2023.

#### Examination of Records 23-4795/24

Report Date: 06/26/2023

**Primary Information** 

Description: Receipt of WSP TRU Diagrams

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On June 19, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received an email from Wisconsin State Patrol (WSP) Technical Reconstruction Unit (TRU) Trooper Courtney Mueller. Trooper Mueller provided all files from the diagram of the Vernon County officer involved critical incident (OICI). SA Haverley preserved these files in the DCI Critical Incident Materials Folder.

Narrative begins on the following page.

06/30/2023 07:59:17 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/24 Receipt of WSP TRU Diagrams

On June 19, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received an email from Wisconsin State Patrol (WSP) Technical Reconstruction Unit (TRU) Trooper Courtney Mueller. Trooper Mueller is a Crash Reconstruction Specialist for WSP TRU and she provided all files from the diagram of the Vernon County officer involved critical incident (OICI). SA Haverley was aware that WSP TRU were mapping the scene while it was processed by SA David Kleinhans and SA AJ Agnew. SA Haverley located 18 files within the folder sent by Trooper Mueller.

#### **ATTACHMENT:**

SA Haverley preserved these files in the DCI Critical Incident Materials Folder.

#### Examination of Records 23-4795/25

Report Date: 06/26/2023

**Primary Information** 

Description: Receipt of Axon Metadata files from VCSO

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On Sunday, June 25, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received an email from Vernon County Sheriff's Office (VCSO) Sheriff Roy Torgerson. Sheriff Torgerson forwarded the initial email from VCSO Captain Mike Davig, which contained Metadata files from the Axon Body Cameras from Deputy Brueggeman and Deputy Brown. SA Haverley placed these files in the DCI Critical Incident Materials Folder under this case file.

Narrative begins on the following page.

06/30/2023 08:00:58 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/25 Receipt of Axon Metadata files from VCSO

On Sunday, June 25, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received an email from Vernon County Sheriff's Office (VCSO) Sheriff Roy Torgerson. Sheriff Torgerson forwarded the initial email from VCSO Captain Mike Davig, which contained two Metadata files from the Axon Body Cameras from Deputy Brueggeman and Deputy Brown.

Sheriff Torgerson had previously mentioned these files containing metadata for the two body cameras as SA Haverley was obtaining information on VCSO's body cameras for potential GPS data.

#### **ATTACHMENT:**

SA Haverley placed these two files in the DCI Critical Incident Materials Folder under this case file

<?xml version="1.0" encoding="UTF-8"?><evidence version="1.0.0"> <title>Axon Body 2 Video X81205168 2023-06-16 184131 <device><serial no>X81205168</serial no><manufacturer>TASER International</manufacturer><model>Axon Body 2</model> <firmware version>1.25.16</firmware version></device><files> <file><segment number>1</segment number><name>Axon Body 2 Video X81205168 2023-06-16 184131.MP4</name><absolute path>C:\Users \mdavig\OneDrive - Vernon County\Documents\Files for Export</absolute\_path><type>primary</type><format>video</format> <checksums><checksum><hash algorithm>sha256</hash algorithm> <hash>1c43bc20ee94bf078ba41840c5a60f429856a75d8453cf2c8f8edaa1b35 db6eb</hash></checksum></checksums><size>1254638634</size> <content type mime>video/mp4</content type mime> <date created>2023-06-16T23:41:31Z</date created> <date ends>2023-06-17T00:16:45Z</date ends></file></files> </evidence>

<?xml version="1.0" encoding="UTF-8"?><evidence version="1.0.0"> <title>Axon Body 2 Video X81205168 2023-06-16 184131 <device><serial no>X81205168</serial no><manufacturer>TASER International</manufacturer><model>Axon Body 2</model> <firmware version>1.25.16</firmware version></device><files> <file><segment number>1</segment number><name>Axon Body 2 Video X81205168 2023-06-16 184131.MP4</name><absolute path>C:\Users \mdavig\OneDrive - Vernon County\Documents\Files for Export</absolute\_path><type>primary</type><format>video</format> <checksums><checksum><hash algorithm>sha256</hash algorithm> <hash>1c43bc20ee94bf078ba41840c5a60f429856a75d8453cf2c8f8edaa1b35 db6eb</hash></checksum></checksums><size>1254638634</size> <content type mime>video/mp4</content type mime> <date created>2023-06-16T23:41:31Z</date created> <date ends>2023-06-17T00:16:45Z</date ends></file></files> </evidence>

#### Examination of Records 23-4795/26

Report Date: 06/26/2023

**Primary Information** 

Description: Examination of VCSO Deputy Jonathon Brown Videos

Occurrence From: 06/26/2023 00:00
Occurrence To: 06/27/2023 00:00

Reporting LEO: VanSchoyck, Mary R (Eau Claire Public Integrity DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

Special Agent Mary Van Schoyck reviewed Vernon County Sheriff's Office Deputy Jonathon Brown's body worn camera and squad camera videos contained within the DCI Officer Involved Critical Incident Folder.

| Subjects        |  |                         |            |
|-----------------|--|-------------------------|------------|
| Relationship    | Name                                       | <u>Bio</u>              | <u>DOB</u> |
| Law Enforcement | Brown, Jonathon (Law Enforcement Official) |                         |            |
| Deceased        | Boardman, William S (Person)               | 61 yr. old, White, Male |            |

Narrative begins on the following page.

06/30/2023 08:01:52 Page 1 of 3

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/26 - Examination of VCSO Deputy Jonathon Brown Videos

On June 26 and 27, 2023, Special Agent (SA) Mary Van Schoyck reviewed Vernon County Sheriff's Office Deputy Jonathon Brown's body worn camera and squad camera videos which were contained within the DCI Officer Involved Critical Incident. Below is a brief synopsis of each video file.

Folder: Brown BodyCamera #5 1236

File: Axon Body 2 Video X81205168 2023-06-16 184131

The video was 35 minutes and 14 seconds (35:14) in length. The beginning date and time were displayed as "2023-06-16 T23:41:28Z". The video began as Deputy Brown exited his squad car and approached a Dodge truck. Deputy Brown spoke with the male occupant (later identified and herein referred to as William Boardman).

At approximately 4:00, Boardman stated he was going to leave. Deputies asked for the keys and Boardman stated they will have to take them. Deputies asked Boardman if he was going to drive away and he responded "no, I'll try to drive your nose through your face because I'm sick of it." Boardman stated that was not a "threat" but was a "fucking promise." At approximately 4:55, Boardman was told he was not free to leave and asked to remove his keys from the ignition.

At approximately 5:03, Boardman started his vehicle and began to drive away while he told Deputies "shoot me." At approximately 5:12, Boardman drove the vehicle into the lane of traffic. At approximately 5:26, the yellow reflection of the centerline and a vehicle headed in the opposite direction can be seen. Deputy Brown asked Boardman to stop several times. At approximately 5:28 the reflection of a vehicle headed in the opposite direction can be seen, and a short time later Deputy Brown fired one round. Deputy Boardman steered the vehicle into the ditch until it came to a stop.

At approximately 8:49, Deputies remove Boardman from the vehicle. At approximately 10:16, a first responder arrives. At approximately 16:45, Deputy Brown leaves Boardman as other's take over care.

Folder: Brown\_Squad\_P16\_1230\_#4 File: 1D03A21520230616175322001i100

The video was 1 hour, six minutes and 57 seconds (1:06:57) in length and was upside down for the duration of the video. SA Van Schoyck temporarily changed settings within the video to view it normally. The beginning date and time were displayed as "06/16/23 05:52:50 PM". Deputy Brown exited the vehicle and approached a Dodge and was joined by a second Deputy a short time later. Any conversation that occurred outside the vehicle was not audibly recorded.

At approximately 6:20, it appears Deputy Brown has one foot on the running board of the Dodge and at approximately 6:22, the Dodge began to move. Deputy Brown held onto the side and lifted his second leg onto the running board.

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# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/26 - Examination of VCSO Deputy Jonathon Brown Videos

The Dodge left the shoulder of the road and drove into the oncoming traffic lane, crossing the centerline. The vehicle returned to the normal lane of traffic and an oncoming vehicle passed. At approximately 6:45, the second squad car leaves the area of Deputy Brown's squad. The duration of the video does not appear to capture anything of interest.

Folder: Brown\_Squad\_P16\_1230\_#4 File: 1D03A21520230616175322001i200

The recoding was 1 hour, six minutes and 57 seconds (1:06:57) in length. The beginning date and time were displayed as "06/16/23 05:52:51 PM". The screen remains black for the duration of the recording. The audio appears to be the same contained in file "1D03A21520230616175322001i100".

#### Examination of Records 23-4795/27

Report Date: 06/28/2023

**Primary Information** 

Description: Receipt of Genoa-Harmony FD/EMS records

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/06/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

During the course of this investigation, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent Michael Haverley requested reports and records from Genoa Fire Department (FD) and Emergency Medical Services (EMS). SA Haverley made the request through Chief Michael Hanson after Sheriff Roy Torgerson of the Vernon County Sheriff's Office (VCSO) provided SA Haverley contact information for Chief Hanson. SA Haverley spoke with Chief Hanson and received records, which have been electronically attached to this report.

| Subjects          |                          |               |            |
|-------------------|--------------------------|---------------|------------|
| Relationship      | <u>Name</u>              | <u>Bio</u>    | <u>DOB</u> |
| Fire Service      | Hanson, Michael (Person) | White, Male   |            |
| Medical Personnel | Krause, Dylan (Person)   | Unknown, Male |            |

#### **Documents**

Document

Genoa Harmony Fire Department Run Sheets & EMS worksheet

Narrative begins on the following page.

07/12/2023 08:21:21 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/27 Receipt of Genoa FD/EMS records

#### **SYNOPSIS:**

During the course of this investigation, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent Michael Haverley requested reports and records from Genoa-Harmony Fire Department (FD) and Emergency Medical Services (EMS). SA Haverley made the request through Chief Michael Hanson after Sheriff Roy Torgerson of the Vernon County Sheriff's Office (VCSO) provided SA Haverley contact information for Chief Hanson.

On June 28, 2023, SA Haverley spoke with Chief Hanson and confirmed receipt of emailed documents. Chief Hanson advised that Genoa-Harmony FD and EMS were connected and not many reports or records exist for this call response. Chief Hanson advised that he and EMT Dylan Krause were the first truck out after the officer involved critical incident (OICI). Chief Hanson stated that EMT Dylan Krause is also a dispatcher for the VCSO. Chief Hanson advised that they arrived on scene, but he did not believe life-saving measures would work

Chief Hanson stated that he was aware VCSO deputies had

started CPR.

SA Haverley asked Chief Hanson about the female first responder who worked on the patient with the deputies. Chief Hanson advised that he would have that first responder contact SA Haverley.

SA Haverley also asked Chief Hanson about the FD/EMS roster on their run sheets because the last name of Boardman was observed. Chief Hanson stated that they do have a member with the last name of Boardman, however that member did not respond and Chief Hanson did not have any information regarding potential relation to the subject.

SA Haverley viewed the attachments sent by Chief Hanson. SA Haverley observed three of the four attachments were FD run sheets listing basic information and which members had responded. The fourth attachment was a Gundersen medical direction pre-hospital EMS worksheet.

#### **ATTACHMENTS:**

The documents received from Genoa-Harmony FD/EMS have been electronically attached to this report by SA Haverley.

#### Investigative 23-4795/28

Report Date: 06/28/2023

**Primary Information** 

Description: Contact with First Responder/Nurse Kimberly Bakalars by telephone - 6/28/2023

Occurrence From: 06/28/2023 14:23
Occurrence To: 06/28/2023 14:23

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/30/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On June 28, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received a phone call from first responder Kimberly Bakalars who is also a nurse at Gundersen Hospital.

| S | Subjects          |                             |               |            |
|---|-------------------|-----------------------------|---------------|------------|
|   | Relationship      | Name                        | Bio           | <u>DOB</u> |
| ١ | Medical Personnel | Bakalars, Kimberly (Person) | White, Female |            |

#### Narrative begins on the following page.

07/01/2023 13:19:02 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: Contact with First Responder/Nurse Kimberly Bakalars

On June 28, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received a phone call from Kimberly Bakalars. Kimberly received the request to call SA Haverley from Genoa Fire Chief Michael Hanson. Kimberly has an active EMS license as she was a first responder for Westby EMS. Kimberly is also a nurse at Gundersen Hospital in the Pediatrics ICU.

### Investigative 23-4795/29

Report Date: 06/28/2023

**Primary Information** 

Description: Contact with VCSO Dispatcher/Genoa EMT Dylan Krause by phone - 6/28/2023

Occurrence From: 06/28/2023 15:14
Occurrence To: 06/28/2023 15:14

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/30/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley briefly spoke with Dylan Krause on June 28, 2023. Dylan Krause is a Genoa first responder and a dispatcher for the Vernon County Sheriff's Office.

| Subjects          |                        |               |            |
|-------------------|------------------------|---------------|------------|
| Relationship      | <u>Name</u>            | <u>Bio</u>    | <u>DOB</u> |
| Medical Personnel | Krause, Dylan (Person) | Unknown, Male |            |

#### Narrative begins on the following page.

07/01/2023 13:25:29 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795 Contact with VCSO Dispatcher/Genoa EMT Dylan Krause

Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley briefly spoke with Dylan Krause on June 28, 2023. Dylan Krause is a Genoa first responder and a dispatcher for the Vernon County Sheriff's Office (VCSO). VCSO Sheriff Roy Torgerson provided Dylan's phone number to SA Haverley. Dylan spoke with SA Haverley and advised that when he arrived at the officer involved critical incident (OICI) scene with Chief Michael Hanson on June 16, 2023, he observed Deputy Jonathon Brown and a female first responder was also on-scene. Dylan advised that Deputies and first responders continued with lifesaving measures until paramedics arrived as they continue with lifesaving measures until paramedics or other medical professionals can terminate those

measures. Dylan did not observe or hear anything else that would assist in this investigation.

# Investigative 23-4795/30

Report Date: 06/28/2023

**Primary Information** 

Description: Surveillance video from Genoa Highway Garage - 06/22/2023

Occurrence From: 06/22/2023 00:00
Occurrence To: 06/22/2023 00:00

Reporting LEO: Beardsley, Wade A (ICAC & Computer Crimes DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/30/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On Thursday, June 22, 2023, Wisconsin Department of Justice, Division of Criminal Investigation (DCI) Special Agent Mike Haverley received two flash drives from Vernon County Highway Department Build Supervisor Phil Hewitt.

| Addresses        |  |
|------------------|--|
| Relationship     | <u>Address</u>   |
| Evidence Located | F428 Gianoli Rd. Genoa. Wisconsin 54632 United States of America |

| Subjects     |                       |             |            |
|--------------|-----------------------|-------------|------------|
| Relationship | <u>Name</u>           | <u>Bio</u>  | <u>DOB</u> |
| Mentioned    | Hewitt, Phil (Person) | White, Male |            |

| Property      |                 |  |
|---------------|-----------------|--|
| <u>Status</u> | <u>Quantity</u> | <u>Description</u>                             |
| Inventory     | 2               | Flash drives (2) containing surveillance video |

#### Narrative begins on the following page.

07/01/2023 13:26:05 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/30 Surveillance video from Genoa Highway Garage - 06/22/2023

On Thursday, June 22, 2023, Wisconsin Department of Justice, Division of Criminal Investigation (DCI) Special Agent Mike Haverley received two flash drives from Vernon County Highway Department Building Supervisor Phil Hewitt. The flash drives contained surveillance video from two cameras mounted on the Genoa Highway Garage, located at E428 Gianoli Rd, Genoa, Vernon County, Wisconsin 54632.

After taking possession of the flash drives, SA Haverley transported them to the Eau Claire DCI Field Office where he provided them to DCI SA Wade Beardsley for review and submission into evidence. SA Beardsley uploaded the contents of both flash drives to the Critical Incident folder under this case / report number. SA Beardsley next logged the flash drives into evidence at the Eau Claire DCI Field Office.

#### VIDEO REVIEW

**NVR Channel 1 camera:** This camera faces south on Highway 35. The video does not have audio. The traffic stop appears on camera at 6:40:50 P.M. according to the time-stamp on the video, or 14 minutes and 5 seconds, into the video. At approximately 6:46:35 P.M., or 19 minutes, 43 seconds into the video, the pick-up truck appears to leave the scene of the traffic stop, driving north-bound on Highway 35, towards the Genoa Highway Garage. At one point while traveling north-bound, the pick-up truck appears to be operating in the south-bound lane as a van approaches from the opposite direction in the same lane. The van appears to drive onto the shoulder of its lane in order to avoid the pick-up truck as it veers back into it's correct lane of traffic. The pick-up truck passes a total of three vehicles as it continues north-bound on Channel 1. As the pick-up truck comes closer into view, Vernon County Sheriff's Office Deputy Jonathon Brown can be observed standing on the running board of the pick-up truck. 20 minutes, 0 seconds, into the video, glass appears to break out of the front passenger window of the pick-up truck as it continues north-bound. This is likely the result of the round fired by Deputy Brown. 20 minutes and two seconds into the video, the pick-up truck goes out of frame.

**NVR Channel 2 camera:** This camera faces north on Highway 35. The video does not have audio. The pick-up truck appears in frame at 6:46:53 P.M. or two hours, eighteen minutes, fifty seconds into the video. Deputy Brown is visible from his head to his shoulders, standing on the running-boards of the pick-up truck as it continues north on Highway 35. The pick-truck passes a total of nine vehicles, including the above described van. The pick-up truck begins to slow and pull off to the right shoulder of the road. At 6:47:03 P.M. or two hours, nineteen minutes, a marked Vernon County Sheriff's Office patrol SUV appears with its sirens activated, attempting to catch up to the pick-up truck. The pick-up truck and patrol SUV both disappear out of frame at 6:47:09 P.M.

This concludes the review of the above two cameras.

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#### Examination of Records 23-4795/31

Report Date: 06/29/2023

**Primary Information** 

Description: VCSO Property Receipt regarding release of keys

Occurrence From: 06/22/2023 00:00
Occurrence To: 06/29/2023 00:00

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Backup LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 06/29/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

**Synopsis** 

On June 29, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received an email from Vernon County Sheriff's Office (VCSO) Captain Michael Davig. Attached to the email was a property receipt as William Boardman's daughter, picked up keys from the VCSO. SA Haverley electronically attached the VCSO property receipt to this report.

**Addresses** 

Relationship Address

Location of Event Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America

**Subjects** 

Relationship <u>Name</u> <u>Bio</u> <u>DOB</u>

Law Enforcement Davig, Michael (Law Enforcement Official)

Mentioned 28 yr. old, White, Female

**Documents** 

**Document** 

VCSO Property Receipt - keys/keychain

Narrative begins on the following page.

06/30/2023 08:02:19 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/31 VCSO Property Receipt regarding release of keys

On June 22, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Adam Frederick requested Vernon County Sheriff's Office (VCSO) Investigator Scott Bjerkos to place William Boardman's keys in the lobby for pick up by family. Crime Response Specialist Jackie Larsen had informed investigators that Boardman's family wanted the keys as they had not been to Boardman's residence. SA Michael Haverley received updated information from Jackie Larsen that family was unable to get the keys over the weekend. SA Haverley updated Investigator Bjerkos of that information.

On June 29, 2023, SA Haverley received an email from VCSO Captain Michael Davig. Attached to the email was a property receipt as William Boardman's daughter, picked up keys from the VCSO.

#### **ATTACHMENT:**

SA Haverley electronically attached the VCSO property receipt to this report.



# SHERIFF'S OFFICE COUNTY OF VERNON

1320 BAD AXE COURT VIROQUA, WISCONSIN 54665 BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785

EMAIL: vcso@vernoncounty.org

ROY R. TORGERSON, SHERIFF

NATHAN CAMPBELL, CHIEF DEPUTY SHERIFF

# PROPERTY RECEIPT

| DATE OWNE                               | R NOTIFIED: | 6-2        | 3-23                         |               |                  |
|---|-------------|------------|------------------------------|---------------|------------------|
| REFERENCE                               | CASE#: U    | :30 23     | -0704                        |               |                  |
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#### Examination of Records 23-4795/32

Report Date: 07/06/2023

**Primary Information** 

Description: Receipt of William S. Boardman Toxicology Report

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/06/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On June 29, 2023, Vernon County Sheriff Roy Torgerson sent an email to Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley. Attached to the email was the Toxicology Report for William Boardman.

| Subjects     |                              |                         |            |
|--------------|------------------------------|-------------------------|------------|
| Relationship | Name                         | <u>Bio</u>              | <u>DOB</u> |
| Deceased     | Boardman, William S (Person) | 61 vr. old. White. Male |            |

| Documents         |  |
|-------------------|--|
| <u>Document</u>   |  |
| Toxicology Report |  |

#### Narrative begins on the following page.

07/12/2023 08:15:15 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/32 Receipt of Toxicology Report

On June 29, 2023, Vernon County Sheriff Roy Torgerson sent an email to Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley. Attached to the email was the Toxicology Report for William Boardman.

SA Haverley viewed the received document, which shows it to be an AXIS Forensic Toxicology Testing Report. The subject's name is listed on the top right of the document.

#### **ATTACHMENT:**

SA Haverley electronically attached the toxicology report to this report.

#### Examination of Records 23-4795/33

Report Date: 07/07/2023

**Primary Information** 

Description: Receipt of Vernon County Sheriff's Office reports, photos, phone call

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/10/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On July 5, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received narrative reports, photographs, and a recording from the Vernon County Sheriff's Office (VCSO). The narrative reports, photographs, and recording were sent by Lead Administrative Assistant Amy Dvorak. SA Haverley placed the documents received in the DCI Critical Incident Materials Folder under this case number.

Narrative begins on the following page.

07/12/2023 08:16:26 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/33 Receipt of VCSO narrative reports

On July 5, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley received narrative reports, photographs, and a recording from the Vernon County Sheriff's Office (VCSO). The narrative reports, photographs, and recording were sent by Lead Administrative Assistant Amy Dvorak and downloaded through iCrimeFighter links provided to SA Haverley. The files provided were an index of attached documents and five PDF documents, another index and several photographs, and a phone call into dispatch.

#### **ATTACHMENT:**

SA Haverley placed the documents, photographs, and recording received from VCSO in the DCI Critical Incident Materials Folder under this case number.



# **COUNTY OF VERNON** SHERIFF'S OFFICE

1320 BAD AXE COURT VIROQUA, WISCONSIN 54665 ROY TORGERSON, SHERIFF

Property / Evidence Summary

NATHAN CAMPBELL, CHIEF DEPUTY SHERIFF

Printed on June 25, 2023

# Property / Evidence for Case VCSO-23-0704

Primary Officer: Winchel, Sam

| Received for all dates Category Any Category Status Any Status Collected By All Users Other | Agency VCSO Evidence Type All Types Target Disp. Date for all dates Access Tag All | VCSO<br>All Types<br>for all dates<br>All | Type  Location  All Locatic  Item #  Case Report Type All Types | All Property / Evidence<br>All Locations<br>9 All Types |
|---|--|---|---|---|
|   |  |   |   |   |

| Micro SD Card from P-16                | Micro Sd Card from P-3                 | 83 |  |
|--|--|----|--|
| In Temporary Custody Temporary Storage | In Temporary Custody Temporary Storage | 7  |  |

FORD EXPLORER SQUAD CAR P-3

DODGE DAKOTA Description

> ul - punodul Impound - In

In Custody In Custody Status

> Vehicle Vehicle Article Article

> > VCSO-23-0704-002 VCSO-23-0704-003 VCSO-23-0704-004

VCSO-23-0704-001

Item #

Type

Location



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5785 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

NATHAN CAMPBELL, CHIEF DEPUTY

Case VCSO 23 0704

Printed on July 5, 2023

StatusApprovedReport TypeReportPrimary OfficerSam WinchelInvestigatorNone

**Records Technician** 

**Reported At** 06/16/23 17:51 **Incident Date** 06/16/23 17:51

Incident Code WELF: WELFARE CHECK

**Location** S5074 STATE HIGHWAY 35, GENOA, WI 54632

**Zone** Town of Genoa

Beat WEST
Court None
Ereferral County None
Municipality Type None
Summers Of Insident

**Summary Of Incident** 

**Disposition** Forward to Other Agency (Closed)

**Disposition Date/Time** 07/05/23 03:07 **Review for Gang Activity** None

#### **Dispatch Information**

**CFS** # CFS23-12398

**Location** S5074 STATE HIGHWAY 35, GENOA, WI 54632

Incident Code WELF: WELFARE CHECK

Occurred Between 06/16/23 17:51:10 and

#### **CFS Responders**

| or o mooperidore                |                          |                |
|---------------------------------|--------------------------|----------------|
| 117 (Primary)<br>DFD1 (Primary) | 117 - Nigh, Betty        | COR<br>DFD     |
| EG100 (Primary)                 | EG100 - Larson, Brandon  | EMG            |
| GFD1 (Primary)                  |                          | GFD            |
| GFR (Primary)                   |                          | GFR            |
| GUNDAIR (Primary)               |                          | GUNDAIR        |
| RFD1 (Primary)                  |                          | RFD            |
| SFD1 (Primary)                  |                          | SFD            |
| 1                               | 1 - Torgerson, Roy       | VCSO (Primary) |
| 2                               |                          | VCSO (Primary) |
| 3                               | 3 - Davig, Michael       | VCSO (Primary) |
| 4                               | 4 - Bjerkos, Scott       | VCSO (Primary) |
| 8                               | 8 - Egge, JoEllen        | VCSO (Primary) |
| 14                              | 14 - Winchel, Sam        | VCSO (Primary) |
| 19                              | 19 - Krzewinski, Donald  | VCSO (Primary) |
| 20 (Primary)                    | 20 - Brueggeman, Bradley | VCSO (Primary) |
| 23                              | 23 - Brown, Jonathon     | VCSO (Primary) |
| 62                              | 62 - Howell, Larry       | VCSO (Primary) |
| WDFD1 (Primary)                 |                          | WDFD           |
| WDFR (Primary)                  |                          | WDFR           |
| SPTO (Primary)                  |                          | WSP            |
|                                 |                          |                |

Case VCSO-23-0704 Page 1 of 4

#### **BOARDMAN, WILLIAM STEVEN**

Male, DOB



S5074 STATE HIGHWAY 35 GENOA, WI 54632

(608) (608)



#### **DESOTO FIRE DEPARTMENT**

57 CRAWFORD ST DESOTO, WI 54624

(608) 648-3331 Home desotofire@mwt.net Personal

#### **GENOA FIRE DEPARTMENT**

126 MAIN ST GENOA, WI 54632

(608) 689-2151 Home (608) 689-2561 Home ghfd@mwt.net Personal

#### **GENOA FIRST RESPONDERS**

126 MAIN ST GENOA, WI 54632

(608) 689-2151 Home ghfd@mwt.net Personal

#### **GUNDERSEN AIR**

Unknown

1910 SOUTH AVE LACROSSE, WI 54601

(800) 527-1200 Home

#### **READSTOWN AMBULANCE**

107 N RAILROAD ST READSTOWN, WI 54652

(608) 629-5100 Home

Female, DOB

GENOA, WI 54632

(608) (608) (605) Home Home Home

(608) Cell

#### STODDARD FIRE DEPARTMENT

188 N MAIN ST STODDARD, WI 54658

(608) 457-2118 Home sbfd@mwt.net Personal

Case VCSO-23-0704 Page 2 of 4

#### TRI-STATE AMBULANCE

235 COPELAND AVE LACROSSE, WI 54601

(608) 606-1901 Cell

(608) 775-5407 Home

(608) 784-4996 Home

(608) 637-8639 Home

#### **VERNON COUNTY CORONER**

318 FAIRLANE DR VIROQUA, WI 54665

(608) 637-5284 Home

#### **VERNON COUNTY EMERGENCY MANAGEMENT**

VIROQUA, WI 54665

(608) 637-5267 Home

#### **VERNON COUNTY HIGHWAY DEPARTMENT**

1335 RAILROAD AVE VIROQUA, WI 54665

(608) 637-5452 Home

#### WHEATLAND FIRE DEPARTMENT

E2177 STATE HIGHWAY 82 DE SOTO, WI 54624

(608) 648-2600 Home

wheatland.fd@gmail.com Personal

#### WHEATLAND FIRST RESPONDERS

E2177 STATE HIGHWAY 82

**DESOTO**, WI 54624

(608) 648-2600 Home

wheatlandemsvc@gmail.com Personal

#### WI DEPT OF JUSTICE (DCI)

Unknown

PO BOX 7857 MADISON, WI 53707

(608) 266-1221 Home

#### WISCONSIN STATE PATROL

23928 LESTER MCMULLIN DR

**TOMAH, WI 54660** 

(608) 374-0513 Home

#### **Vehicles**

#### F1241 WI

2021 Black Ford Explorer
Owner VERNON COUNTY SHERIFF'S OFFICE

SJ2723 WI - (Other)

2001 Black Dodge Dakota

Case VCSO-23-0704 Page 3 of 4

# Assisting Officer Narrative By Donald Krzewinski, 06/16/23 09:15

This report is in reference to an Assisting Officer Report for case VCSO-23-0704.

On June 16, 2023, I was contacted by Captain Michael Davig of the Vernon County Sheriff's Office. Captain Davig informed me that there was a critical incident near Genoa, WI. I was off duty and was asked if I would be available to assist with the critical incident.

I responded to the scene of the critical incident located south of Genoa on State Highway 56 near Gianoli Road. I met with Captain Davig and Sheriff Roy Torgerson when I arrived on scene. I was advised to take a position south of the incident on State Highway 56 and close all traffic traveling north.

I remained at the traffic assignment throughout the events of the evening. The only parties allowed to pass my location were members of the WI DOJ DCI unit and Wisconsin State Patrol. Deputy Sheriff Jonathon Brown's patrol vehicle was located south of my location. The last event of the evening was when Deputy Brown's vehicle was recovered by the tow company for transport.

I was officially released from my post by Sheriff Torgerson and the scene was cleared.

This is all the information I have at this time.

End of report.

Deputy Sheriff Donald Krzewinski Jr. Vernon County Sheriff's Office

# **Assisting Officer Narrative By Larry Howell, 06/16/23 16:19**

I, Deputy Sheriff Lawrence Howell, was dispatched by Captain Michael Davig of the Vernon County Sheriff's Office to a critical incident of an officer involved shooting on June 16, 2023. I was to get there as quick as possible, as my assignment was to direct traffic at the intersection of State Highway 56 and State Highway 35 (just north of the incident location.) My directive was to only allow traffic through that was authorized by Vernon County Sheriff Roy Torgerson.

End of Report

Deputy Sheriff Lawrence J Howell #62 Vernon County Sheriff's Office

Case VCSO-23-0704 Page 4 of 4



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

NATHAN CAMPBELL, CHIEF DEPUTY

Case Narrative for VCSO 23 0704 (06/17/23 01:29)

Printed on June 22, 2023

# Assisting Officer Report By Sam Winchel, 06/17/23 01:29

Case #VCSO-23-0704 Typed By Sam Winchel

This supplemental report concerns follow up from an officer involved death.

On June 17<sup>th</sup>, 2023 at approximately 1:29 AM, I cleared the scene and escorted two tow trucks to the Vernon County Inside Impound in Viroqua. Both tow trucks were from C&C Towing.

We arrived at 2:01 AM. Both vehicles were unloaded inside. The squad car was driven inside and parked. The vehicle with Wisconsin license plate of SJ2723 was unloaded inside. The vehicle was not operated or searched, and no contact was made with the interior.

I later received permission from DCI Agent Adam Fredrick, to retrieve Deputy Sheriff Bradley Brueggeman's gym key fob from his squad car. I did this at approximately 2:40 AM.

---End of Report---

Sergeant Sam Winchel Vernon County Sheriff's Office

Signed Date 06/22/23

Sam Winchel, Officer

Case VCSO-23-0704 Page 1 of 1



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

NATHAN CAMPBELL, CHIEF DEPUTY

Case Narrative for VCSO 23 0704 (06/16/23 18:50)

Printed on June 26, 2023

# Assisting Officer Report By Michael Davig, 06/16/23 18:50

Case #VCSO-23-0704 Typed By Vicky Inman

This report is in regards to a welfare check/death investigation.

On June 16, 2023, at approximately 6:50 PM, I received a phone call from Sgt. Sam J. Winchel with the Vernon County Sheriff's Office informing me there was incident involving a deputy who discharged his firearm. He did not know a lot of the details other than the incident occurred on State Highway 35, near the power plant. He was requesting I go to the scene.

At approximately 6:53 PM, I went en route to the scene.

At approximately 7:05 PM, I arrived on location.

Upon my arrival, the Genoa First Responders were on location. Deputy Sheriff Jonathon R. Brown and Deputy Sheriff Bradley J. Brueggeman were on location.

I approached Deputy Brown and Deputy Brueggeman and spoke with them briefly. I was told there was an incident where Deputy Brown discharged his firearm. There was a male being cared for by emergency medical personnel. I asked them if they were okay, and they said yes. They provided me with a brief synopsis of what occurred.

I was told Deputy Brown was standing on the running board of the pickup truck. The truck driver drove off with Deputy Brown standing on the running board. He refused to stop the pickup. Deputy Brown discharged his firearm after multiple commands to stop the vehicle.

I assisted in securing the scene. I told Deputy Brown and Deputy Brueggeman to stay back by their squad cars. I helped with making sure the needed support was on location.

Sgt. Winchel arrived on location. Sgt. Winchel assisted in securing the scene. Sgt. Winchel secured Deputy Brown's firearm and body camera. Sgt. Winchel secured Deputy Brueggeman's body camera.

Investigator Scott D. Bjerkos arrived on location. Investigator Bjerkos transported Deputy Brown to the Vernon County Sheriff's Office.

Shortly after Deputy Brown left the scene, I transported Deputy Brueggeman to the Vernon County Sheriff's Office.

Deputy Brown and Deputy Brueggeman were kept separated. Their union representatives were called. Prior to this, the Wisconsin Department of Justice, Department of Criminal Investigation (DCI) was contacted. The DCI was instructing the sheriff's office on how to handle the situation.

I stayed at the sheriff's office until Deputy Brown and Deputy Brueggeman were done meeting with DCI agents. After they were done meeting, I transported Deputy Brown to his residence. DCI instructed me to collect Deputy Brown's pants, which I collected. I placed Deputy Brown's pants in a brown paper bag and returned to the sheriff's office. When I arrived at the sheriff's office, I turned the brown paper bag over to DCI agents.

I assisted DCI agents with anything else they needed while we were at the sheriff's office.

On June 17, 2023, at approximately 3:00 AM, I cleared from the call.

Case VCSO-23-0704 Page 1 of 2

On June 23, 2023, at approximately 7:00 AM, Sheriff Roy R. Torgerson informed me DCI left the micro SD cards from both squad car cameras in his secured box at the sheriff's office. I secured the SD cards from the squad cars and the body cameras in my possession until June 25, 2023 at which time I uploaded all footage into our record system. I provided the metadata from the body cameras to Sheriff Torgerson. Sheriff Torgerson was going to forward the metadata to DCI. I placed both of the SD cards from the squad cars into evidence bags and secured them in an evidence locker at the sheriff's office.

--End of Report--

Captain Michael G. Davig Vernon County Sheriff's Office

Signed

Michael Davig, Captain

milas Dang

**Date** 06/26/23

Case VCSO-23-0704 Page 2 of 2



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

ROY TORGERSON, SHERIFF

NATHAN CAMPBELL, CHIEF DEPUTY

CFS - Command Log

Printed on June 19, 2023

CFS # CFS23-12398
Call Taker Lillian Clements

**Location** S5074 STATE HIGHWAY 35, GENOA, WI 54632

**Location Details** 

**Primary Incident Code** WELF: WELFARE CHECK **Additional Incident Code(s)** DI: DEATH INVESTIGATION

**CHASE: PURSUIT** 

Mod In Progress

Priority 1 Use Caution No

Primary Disposition Report Needed

Beat WEST

 Zone
 Town of Genoa

 Call Time
 06/16/23 17:51:10

 Completed Time
 06/17/23 03:14:02

#### Reporters

#### (Initial Reporter)

Sex Female DOB

Address S5074 STATE HWY 35

GENOA. WI 54632

Home Phone (608) Home Phone (608) Cell Phone (608)

**Report Time** 06/16/23 17:51:10

How Reported Phone From Phone (651)

Contact Phone Comments

#### **Other Names**

#### **BOARDMAN, WILLIAM STEVEN (Patient)**

Sex Male DOB

Address S5074 STATE HIGHWAY 35

GENOA. WL54632

Home Phone (608) Cell Phone (608)

**Comments** 

#### **DESOTO FIRE DEPARTMENT (Other)**

Sex DOB

Address 57 CRAWFORD ST

**DESOTO, WI 54624** 

Home Phone (608) 648-3331

Comments

**GENOA FIRE DEPARTMENT (Other)** 

Sex DOB

Address 126 MAIN ST

**GENOA, WI 54632** 

**Home Phone** (608) 689-2151 **Home Phone** (608) 689-2561

Comments

**GENOA FIRST RESPONDERS (Other)** 

Sex DOB

Address 126 MAIN ST

**GENOA, WI 54632** 

Home Phone (608) 689-2151

**Comments** 

**GUNDERSEN AIR (Other)** 

Sex Unknown

DOB

Address 1910 SOUTH AVE

LACROSSE, WI 54601

Home Phone (800) 527-1200

**Comments** 

**READSTOWN AMBULANCE (Other)** 

Sex DOB

Address 107 N RAILROAD ST

READSTOWN, WI 54652

Home Phone (608) 629-5100

**Comments** 

STODDARD FIRE DEPARTMENT (Other)

Sex DOB

Address 188 N MAIN ST

STODDARD, WI 54658

Home Phone (608) 457-2118

**Comments** 

**TRI-STATE AMBULANCE (Other)** 

Sex DOB

Address 235 COPELAND AVE

LACROSSE, WI 54601

**Cell Phone** (608) 606-1901 **Home Phone** (608) 775-5407 **Home Phone** (608) 784-4996 **Home Phone** (608) 637-8639

**Comments** 

**VERNON COUNTY CORONER (Other)** 

Sex DOB

Address 318 FAIRLANE DR

VIROQUA, WI 54665

Home Phone (608) 637-5284

Comments

**VERNON COUNTY EMERGENCY MANAGEMENT (Other)** 

Sex DOB

#### **Address**

VIROQUA, WI 54665

Home Phone (608) 637-5267

**Comments** 

#### **VERNON COUNTY HIGHWAY DEPARTMENT (Other)**

Sex DOB

Address 1335 RAILROAD AVE

VIROQUA, WI 54665

Home Phone (608) 637-5452

**Comments** 

#### WHEATLAND FIRE DEPARTMENT (Other)

Sex DOB

Address E2177 STATE HIGHWAY 82

DE SOTO, WI 54624

Home Phone (608) 648-2600

Comments

#### WHEATLAND FIRST RESPONDERS (Other)

Sex DOB

Address E2177 STATE HIGHWAY 82

**DESOTO, WI 54624** 

**Home Phone** (608) 648-2600

**Comments** 

#### WI DEPT OF JUSTICE (DCI) (Other)

Sex Unknown

DOB

Address PO BOX 7857

MADISON, WI 53707

Home Phone (608) 266-1221

**Comments** 

#### **WISCONSIN STATE PATROL (Other)**

Sex DOB

Address 23928 LESTER MCMULLIN DR

TOMAH, WI 54660

**Home Phone** (608) 374-0513

Comments

#### **Vehicles**

#### SJ2723 WI (Other)

**Description** 2001 Black Dodge Dakota

Owner BOARDMAN, WILLIAM STEVEN

#### Responders

117 (Primary) 117 - Nigh, Betty COR
DFD1 (Primary) EG100 - Larson, Brandon EMG
GFD1 (Primary) GFD
GFR (Primary) GFR
GUNDAIR (Primary) GUNDAIR
RFD1 (Primary) RFD

RFD1 (Primary) RFD SFD1 (Primary) SFD

1 1 - Torgerson, Roy VCSO (Primary) 2 VCSO (Primary) 3 3 - Davig, Michael VCSO (Primary) 4 4 - Bjerkos, Scott VCSO (Primary) 8 - Egge, JoEllen 8 VCSO (Primary) 14 14 - Winchel, Sam VCSO (Primary) 19 - Krzewinski, Donald VCSO (Primary) 19 20 (Primary) 20 - Brueggeman, Bradley VCSO (Primary) 23 23 - Brown, Jonathon VCSO (Primary) 62 62 - Howell, Larry VCSO (Primary) WDFD1 (Primary) WDFD WDFR (Primary) **WDFR** SPTO (Primary) WSP

### **Response Times**

Assigned06/16/23 18:03:30Enroute06/16/23 18:15:21Arrived06/16/23 18:32:09Leaving06/16/23 18:42:21Arrived At06/16/23 18:42:42Completed06/17/23 03:14:02

### IR / External Agency Numbers

VCSO-23-0704 PO: 14 - Winchel, Sam

```
Command Log Filter: All Commands | Details: Hidden | Units: All Units | Revised Entries: Shown
06/16/23 17:51:10 | Clements, Lillian | New CFS
06/16/23 17:55:29 | Clements, Lillian | DAUGHTER THINKS THAT HE NEEDS HELP, BUT HE WOULDN'T GO
WILLINGLY, SHE IS ON HER WAY UP NOW
06/16/23 17:57:06 | Clements, Lillian |
                                            IS AFRAID HE IS GOING TO HURT HIMSELF
06/16/23 17:57:38 | Clements, Lillian | MALE DOES HAVE BOND CONDITIONS THROUGH US CURRENTLY
06/16/23 18:03:30 | JaDoul, Alexis | 20 | Dispatched
06/16/23 18:15:21 | JaDoul, Alexis | 20 | Enroute
06/16/23 18:32:09 | Brueggeman, Bradley | 20 | On Scene
06/16/23 18:37:26 | JaDoul, Alexis | 20 | Check Status (Time (minutes): 15)
06/16/23 18:40:25 | JaDoul, Alexis | 20 | Message - SJ2723 - HE JUST TOOK OFF IN HIS VEHICLE
06/16/23 18:42:06 | JaDoul, Alexis | 20 | Message - (D) DO YOU COPY?
06/16/23 18:42:21 | JaDoul, Alexis | 20 | Location Change (Location: GIANOLI RD) - HEADING THERE NOW
06/16/23 18:42:42 | JaDoul, Alexis | 20 | Arrived At (Location: GIANOLI RD)
06/16/23 18:42:59 | JaDoul, Alexis | 23 | Dispatched
06/16/23 18:43:50 | JaDoul, Alexis | 23 | Location Change (Location: GIANOLI RD) - DELAYED - TRYING TO GET
VEHICLE STOPPED LIGHTS AND SIRENS
06/16/23 18:43:55 | JaDoul, Alexis | 23 | Arrived At (Location: GIANOLI RD) - GOT IT STOPPED
06/16/23 18:47:28 | JaDoul, Alexis | 20 | Message - 1080 23 HANGING OUTSIDE OF VEHICLE
06/16/23 18:48:16 | JaDoul, Alexis | 23 | Message - 1050 ONE GUN SHOT
06/16/23 18:48:34 | JaDoul, Alexis | 14 | Enroute
06/16/23 18:49:55 | JaDoul, Alexis | GFD1, GFR | Dispatched
06/16/23 18:50:14 | JaDoul, Alexis | 23 | Message - CPR IN PROGRESS
06/16/23 18:50:53 | JaDoul, Alexis | GFD1, GFR | Message - SECOND PAGE
06/16/23 18:51:39 | JaDoul, Alexis | 23 | Message -
06/16/23 18:51:43 | JaDoul, Alexis | 23 | Message - EMT ON SC3ENE
06/16/23 18:52:32 | JaDoul, Alexis | GFD1, GFR | Enroute
06/16/23 18:52:42 | JaDoul, Alexis | RFD1 | Enroute - HEADING DIRECT SELF
06/16/23 18:53:00 | JaDoul, Alexis | GFR | Message - ENROUTE WITH 2
06/16/23 18:53:05 | JaDoul, Alexis | 2 | Enroute
06/16/23 18:53:09 | JaDoul, Alexis | 2 | Available
06/16/23 18:53:11 | JaDoul, Alexis | 3 | Enroute
```

```
06/16/23 18:54:30 | McGregor, Lindsey | ATTEMPTED 1 AND 5 VIA PHONE
06/16/23 18:54:38 | JaDoul, Alexis | GFD1, GFR | On Scene
06/16/23 18:57:04 | JaDoul, Alexis | SPTO | Enroute
06/16/23 18:57:17 | McGregor, Lindsey | 1 | Dispatched
06/16/23 18:57:40 | JaDoul, Alexis | STATE PATROL CALLED THEY ARE SEND 2 UNITS
06/16/23 19:00:02 | JaDoul, Alexis | GFD1 | Clear Alarms
06/16/23 19:01:08 | JaDoul, Alexis | GUNDERSEN AIR CALLED AND ADVISED THEY HAVE BEEN DISPATCHED
BY THEIR UNIT, NEED FIRE TO START A LANDING ZONE AT HELP SITE
06/16/23 19:02:38 | JaDoul, Alexis | 20 | Clear Alarms
06/16/23 19:04:48 | JaDoul, Alexis | GUNDERSEN AIR 18 MINUTES OUT
06/16/23 19:04:51 | JaDoul, Alexis | 4 | Enroute
06/16/23 19:05:04 | JaDoul, Alexis | 3 | On Scene
06/16/23 19:06:18 | JaDoul, Alexis | GFD1, GFR | Message - (D) GUNDERSEN AIR 18 MIN - 18
06/16/23 19:06:22 | JaDoul, Alexis | GUNDAIR | Dispatched
06/16/23 19:08:23 | McGregor, Lindsey | TSA AIR WAS NOTIFIED OF HELP LANDING ZONE, GENOA PARK
06/16/23 19:08:28 | JaDoul, Alexis | GFD1 | Message - CAN YOU SEND A THIRD PAGE TO BALL PARK FOR
LANDING ZONE
06/16/23 19:09:29 | JaDoul, Alexis | GFD1 | Message - THIRD PAGE
06/16/23 19:10:16 | JaDoul, Alexis | 3 | Clear Alarms
06/16/23 19:12:40 | JaDoul, Alexis | GFD1 | Message - LANDING ZONE SECURED
06/16/23 19:16:30 | JaDoul, Alexis | GFD1 | Message - 10-79 CANCEL AIRT LINK
06/16/23 19:17:46 | McGregor, Lindsey | CHRIS WITH DESOTO FIRE WILL SHUT DOWN 35 AT DESOTO
06/16/23 19:17:51 | JaDoul, Alexis | CALLED STODDARD CHIEF, SEND OUT PAGE TO STATION
06/16/23 19:18:33 | JaDoul, Alexis | SFD1 | Dispatched - FIRST PAGE FOR TRAFFIC CONTROL
06/16/23 19:19:49 | JaDoul, Alexis | 117 | Dispatched
06/16/23 19:31:48 | JaDoul, Alexis | 4 | On Scene
06/16/23 19:32:08 | JaDoul, Alexis | SPTO | On Scene
06/16/23 19:35:55 | JaDoul, Alexis | WDFD1 | Dispatched
06/16/23 19:36:54 | JaDoul, Alexis | 4 | Clear Alarms
06/16/23 19:37:45 | JaDoul, Alexis | SPTO | Clear Alarms
06/16/23 19:40:07 | McGregor, Lindsey | PER SHERIFF TORGERSON, REQUEST TO CALL STATE PATROL AND
ADVISE THEM THAT DCI WILL LEAD THE INVESTIGATION AND THAT WE WOULD STILL REQUEST THE TRU
UNIT TO RESPOND. NOTIFIED STPO DISPATCH AND THEY WILL GET SOMEONE HEADED THIS WAY, AND
CALL AND LET US KNOW WHEN SOMEONE IS ENR
06/16/23 19:40:56 | JaDoul, Alexis | SFD1 | Location Change (Location: STATE HIGHWAY 35/STATE HIGHWAY 162)
06/16/23 19:41:04 | JaDoul, Alexis | SFD1 | Arrived At (Location: STATE HIGHWAY 35/STATE HIGHWAY 162)
06/16/23 19:41:25 | JaDoul, Alexis | DFD1 | Dispatched
06/16/23 19:42:03 | JaDoul, Alexis | DFD1, WDFD1 | Location Change (Location: STATE HIGHWAY 35/COUNTY
ROAD UU)
06/16/23 19:45:37 | JaDoul, Alexis | WDFR | Dispatched
06/16/23 19:46:07 | JaDoul, Alexis | WDFR | Location Change (Location: WASHINGTON RD/STATE HIGHWAY 35)
06/16/23 19:59:12 | Lunde, Yanicka | CALLED STOC TO UPDATE THEM. STATE HIGHWAY 56 IN GENOA WILL BE
DETOUR FFROM THE NORTH
06/16/23 19:59:18 | Lunde, Yanicka | EG100 | Enroute
06/16/23 19:59:33 | Lunde, Yanicka | 117 | On Scene
06/16/23 20:05:04 | Lunde, Yanicka | GUNDAIR | Off Duty
06/16/23 20:10:34 | Lunde, Yanicka | 4, 23 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 20:13:27 | Lunde, Yanicka | LEDS - Morrison
(08:09:23 PM)
Hey! Heather from State Patrol. I know I called and asked for suspect info, but my trooper is now asking for both of the
Deputies who were involved info as well please.
LEDS - Morrison
(08:10:25 PM)
Also, I have TRU Investigator Schultz coming out, but he's coming from out of Kronenwetter, WI so it will be about 2
hours before he gets to the scene. 533 is a TRU tech and will start the TRU process for him.
LEDS - Morrison
(08:13:40 PM)
If you need it for your CAD notes, our Case number is 000251-7121 Crash Doc# KRL0HNC3CT
```

```
06/16/23 20:14:17 | Lunde, Yanicka | SFD1 | Message - WE ARE STILL AT 162 DO WE STILL WANT ROAD CLOSED
06/16/23 20:14:46 | Lunde, Yanicka | SFD1 | Message - (d) WE SAID HWY 56 FOR DETOUR
06/16/23 20:14:56 | Lunde, Yanicka | 62 | Enroute
06/16/23 20:15:07 | Lunde, Yanicka | SFD1 | Message - WE'RE PULLING OUR UNITS BACK
06/16/23 20:19:00 | Lunde, Yanicka | 19 | Enroute
06/16/23 20:20:41 | JaDoul, Alexis | 117 | On Scene - 1946 arrival
06/16/23 20:26:02 | Lunde, Yanicka | GFD1 | Message - RESCUE TRUCK GOING TBACK TO STATION 3 TRUCKS
ON SCENE YET
06/16/23 20:26:39 | JaDoul, Alexis | DAVID SOLEY FROM WXOW 507-895-9960 LOOKING FOR UPDATE
06/16/23 20:26:57 | Lunde, Yanicka | SFD1 | Available
06/16/23 20:27:57 | JaDoul, Alexis | LEAH FROM WKVC 224-563-8216 ADVISED THEY ARE ALMOST ON SCENE
06/16/23 20:29:06 | Lunde, Yanicka | EG100 | On Scene
06/16/23 20:32:21 | McGregor Lindsey |
                                                      HAS BEEN NOTIFIED FOR DEPUTY BROWN. SHE HAS
CONTACTED
                                                IS ENR TO BE WITH BROWN
06/16/23 20:33:30 | Lunde, Yanicka | 62 | On Scene
06/16/23 20:33:42 | Lunde, Yanicka | 62 | Location Change (Location: STATE HIGHWAY 35/STATE HIGHWAY 56)
06/16/23 20:33:47 | Lunde, Yanicka | 62 | Arrived At (Location: STATE HIGHWAY 35/STATE HIGHWAY 56)
06/16/23 20:36:36 | Lunde, Yanicka | 19 | Location Change (Location: STATE HIGHWAY 35/GIANOLI RD)
06/16/23 20:36:40 | Lunde, Yanicka | 19 | Arrived At (Location: STATE HIGHWAY 35/GIANOLI RD)
06/16/23 20:38:11 | Lunde, Yanicka | GFD1 | Message - NEWS IS AT THE NORTH END WANTING TO TALK TO
THE SHERIFF
06/16/23 20:39:03 | McGregor, Lindsey | 62 | Clear Alarms
06/16/23 20:39:05 | Lunde, Yanicka | 1 | Message - IF WE GET ANYTHING EAST CALL JUNEAU ON THE PHONE
WITH THEIR SHERIFF NOW
06/16/23 20:39:16 | Lunde, Yanicka | 1 | Message - (d) PRESS ON THE NORTH END WANTING TO TALK TO YOU
06/16/23 20:39:25 | Lunde, Yanicka | 1 | Message - I'LL TRY TO TALK TO THEM IF I CAN
06/16/23 20:40:16 | Lunde, Yanicka | 4, 23 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 20:40:17 | Olson, Bruce | I TALKED TO PHIL HEWITT WITH THE HIGHWAY DEPT. AND HE ALREADY
MADE CONTACT WITH THE TRAFFIC MANAGEMENT CENTER ABOUT THE DETOUR SET UP.
06/16/23 20:50:21 | Lunde, Yanicka | 1 | Message - LT GREEN COMING INTO VERNON CO WILL CALL YOU
DIRECT
06/16/23 20:57:26 | Olson, Bruce | CALLED
06/16/23 21:13:49 | Krzewinski, Donald | 19 | On Scene
06/16/23 21:19:00 | Krzewinski, Donald | 19 | Clear Alarms
06/16/23 21:24:57 | Lunde, Yanicka | 1 | On Scene
06/16/23 21:25:01 | Lunde, Yanicka | 14 | On Scene
06/16/23 21:28:22 | Torgerson, Roy | 1 | Message - DCI arrived.
06/16/23 21:30:07 | Lunde, Yanicka | 1 | Clear Alarms
06/16/23 21:30:13 | Lunde, Yanicka | 14 | Clear Alarms
06/16/23 21:35:29 | Lunde, Yanicka | 3 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 21:35:32 | Lunde, Yanicka | 3 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 21:42:18 | JaDoul, Alexis | JUNEAU COUNTY LT GREEN WILL BE RESPONDING TO CALLS ON THE
EAST SIDE FOR AN HOUR PER SHERIFF TORGERSON'S REQUEST. LT GREEN'S BADGE NUMBER
06/16/23 21:42:52 | Lunde, Yanicka | WDFD1 | Message - TRUCK WITH BOAT WENT AROUND US ON PURPOSE
NORTH AT A HIGH RATE OF SPEED
06/16/23 21:44:46 | Lunde, Yanicka | 1 | Message - PUT US ALL ON POLICE ALTERNATE EVERYONE ELSE BACK
ON SHERIFF
06/16/23 21:44:58 | Lunde, Yanicka | 1 | Message - WE COPY ABOUT THE BOAT & TRUCK
06/16/23 21:47:02 | JaDoul, Alexis | LT GREEN'S BADGE NUMBER IS 5. PHONE NUMBER IS 608-
06/16/23 21:59:05 | Lunde, Yanicka | RFD1 | Available
06/16/23 22:09:25 | Lunde, Yanicka | 1 | Message - GENOA FIRE CAN SEND THEIR TRUCK WITH LIGHTING
DOWN HERE NOW
06/16/23 22:10:02 | Lunde, Yanicka | GFD1 | Message - (d) SEND YOUR TRUCK WITH LIGHTING DOWN BY 1 NOW
06/16/23 22:10:25 | Lunde, Yanicka | PER DEPUTY CAMPBELL DCI ARRIVED AT THE SHERIFFS OFFICE
06/16/23 22:12:30 | Lunde, Yanicka | 8 | Dispatched
06/16/23 22:12:33 | Lunde, Yanicka | 8 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 22:12:34 | Lunde, Yanicka | 8 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 22:38:25 | JaDoul, Alexis | ERIC WITH WI DOT CALLED LOOKING FOR AN UPDATE ON THE ROAD
CLOSURE. PER CAPTAIN DAVIG, ITS GOING TO BE A FEW MORE HOURS
06/16/23 22:42:10 | JaDoul, Alexis | 117 | Available
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06/16/23 22:42:39 | JaDoul, Alexis | 117 | On Scene
06/16/23 22:48:03 | Lunde, Yanicka | 20 | Off Duty (Location: Residence)
06/16/23 23:18:26 | Lunde, Yanicka | 4 | Off Duty (Location: Residence)
06/16/23 23:21:17 | Lunde, Yanicka | EG100 | Location Change (Location: VIROOUA)
06/16/23 23:47:10 | JaDoul, Alexis | PER CAPTAIN DAVIG, LT GREEN CAN BE RELEASED. MACH MESSAGE
SENT TO LT GREEN
06/16/23 23:50:29 | McGregor, Lindsey | EG100 | Available - BACK IN THE CITY
06/16/23 23:58:45 | McGregor, Lindsey | 14 | Message - 1 TOW TRUCK, GOING TO IMPOUND
06/17/23 00:01:58 | McGregor, Lindsey | 1 | Message - C&C TOWING ENR SHORTLY FROM LACROSSE, UNK
WHICH VEHICLE HE WILL BE GETTING
06/17/23 00:04:02 | Torgerson, Roy | 1 | Message - Only tow will be for the Boardman vehicle.
06/17/23 00:13:10 | McGregor, Lindsey | 14 | Message - VIA PHONE REQUESTED ANOTHER TOW FOR SQUAD
CAR
06/17/23 00:15:42 | JaDoul, Alexis | 3 | Location Change (Location: LAFARGE)
06/17/23 00:18:46 | JaDoul, Alexis | 1 | Message - SLEEPY HOLLOW ENROUTE WITH THE NEXT TOW
06/17/23 00:21:21 | JaDoul, Alexis | 1 | Message - F1241 - FOR SLEEPY HOLLOW TOW
06/17/23 00:29:57 | JaDoul, Alexis | 1 | Message - C&C IS HERE WITH TWO... ASK SLEEPY HOLLOW IF THEY CAN
STAND DOWN THIS ONE
06/17/23 00:30:13 | JaDoul, Alexis | 1 | Message - (D) CALLED MIKE, HE WILL STAND DOWN
06/17/23 00:41:02 | JaDoul, Alexis | 3 | Arrived At (Location: LAFARGE) - 23 WILL BE OFF DUTY, ILL BE HEADING
TO THE OFFICE
06/17/23 00:41:13 | JaDoul, Alexis | 23 | Off Duty (Location: Residence)
06/17/23 00:46:53 | McGregor, Lindsey | DAIRYLAND POWER CALLED AND ADVISED THEY HAVE NO CAMERAS
THAT COVER THAT SIDE OF WHERE THE IINCIDENT TOOK PLACE
06/17/23 00:52:19 | JaDoul, Alexis | 3 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 01:07:04 | McGregor, Lindsey | 3 | Busy (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 01:29:14 | JaDoul, Alexis | 14 | Location Change (Location: Impound - Inside) - BOTH TOWS
06/17/23 01:33:08 | JaDoul, Alexis | DFD1 | Location Change (Location: Station - Fire/EMS)
06/17/23 01:33:43 | JaDoul, Alexis | GFD1, GFR, WDFD1, WDFR | Location Change (Location: Station - Fire/EMS)
06/17/23 01:35:21 | JaDoul, Alexis | 1 | Message - CAN YOU CALL STOC AND HWY COMISSONER?
06/17/23 01:35:53 | JaDoul, Alexis | 1 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 01:36:13 | McGregor, Lindsey | STOC NOTIFIED THAT ROAD IS BACK OPEN
06/17/23 01:37:13 | Krzewinski, Donald | 19 | Available
06/17/23 01:38:53 | JaDoul, Alexis | DFD1 | Arrived At (Location: Station - Fire/EMS)
06/17/23 01:38:59 | JaDoul, Alexis | DFD1 | Available
06/17/23 01:39:23 | JaDoul, Alexis | CALLED HWY COM PHIL HEWITT, HE WAS NOTIFIED HWY IS BACK OPEN
06/17/23 01:40:05 | JaDoul, Alexis | 1 | Message - (D) HWY COM AND STOC WERE NOTIFED ROAD IS BACK
OPEN
06/17/23 01:44:16 | JaDoul, Alexis | 62 | Message - ILL BE MOVING SOME OF THE SIGNS TO THE SIDE IN
GENOA
06/17/23 01:46:25 | JaDoul, Alexis | WDFD1, WDFR | Arrived At (Location: Station - Fire/EMS)
06/17/23 01:46:37 | JaDoul, Alexis | WDFD1, WDFR | Available
06/17/23 01:48:35 | JaDoul, Alexis | 62 | Location Change (Location: VCSO - Vernon Co Sheriff Office) - ALL SIGNS
HAVE BEEN TURNED, HEADING BACK NOW
06/17/23 01:49:09 | JaDoul, Alexis | 117, SPTO | Available - PER 1
06/17/23 02:01:26 | JaDoul, Alexis | 14 | Arrived At (Location: Impound - Inside)
06/17/23 02:11:50 | JaDoul, Alexis | 62 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 02:11:54 | JaDoul, Alexis | 1 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 02:18:41 | JaDoul, Alexis | GFD1, GFR | Available
06/17/23 02:20:05 | JaDoul, Alexis | 8 | Available - PER 3
06/17/23 02:24:36 | JaDoul, Alexis | 14 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 02:24:45 | JaDoul, Alexis | 14 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 03:11:04 | JaDoul, Alexis | 1 | Off Duty (Location: Residence)
06/17/23 03:11:28 | JaDoul, Alexis | 62 | Available
06/17/23 03:14:02 | JaDoul, Alexis | 14 | Available
06/19/23 11:45:47 | Olson, Bruce | CORRECTION: THE ENTRY ON 06/16/23 AT 18:52:42 WAS NOT FROM RFD1
BUT IT WAS FROM STATE TROOPERS #533 AND #516 CALLING AND ASKING IF THEY SHOULD RESPOND TO
THIS INCIDENT...DISPATCH TOLD THEM TO RESPOND.
```



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

Printed on June 19, 2023

ROY TORGERSON, SHERIFF NATHAN CAMPBELL, CHIEF DEPUTY

CFS - Unit Response Times

CFS # CFS23-12398
Call Taker Lillian Clements

**Location** S5074 STATE HIGHWAY 35, GENOA, WI 54632

**Location Details** 

**Primary Incident Code** WELF: WELFARE CHECK **Additional Incident Code(s)** DI: DEATH INVESTIGATION

**CHASE: PURSUIT** 

Mod In Progress

Priority 1 Use Caution No

Primary Disposition Report Needed

Beat WEST

 Zone
 Town of Genoa

 Call Time
 06/16/23 17:51:10

 Completed Time
 06/17/23 03:14:02

### Reporters

### (Initial Reporter)

Sex Female DOB

Address S5074 STATE HWY 35

**GENOA, WI 54632** 

Home Phone (608) Home Phone (608) Home Phone (605)

Cell Phone (608)

**Report Time** 06/16/23 17:51:10

How Reported Phone (651)

**Contact Phone Comments** 

### **Other Names**

### **BOARDMAN, WILLIAM STEVEN (Patient)**

Sex Male DOB

Address S5074 STATE HIGHWAY 35

GENOA. WI 54632

Home Phone (608) Cell Phone (608)

**Comments** 

## **DESOTO FIRE DEPARTMENT (Other)**

Sex DOB

Address 57 CRAWFORD ST

**DESOTO, WI 54624** 

Home Phone (608) 648-3331

Comments

**GENOA FIRE DEPARTMENT (Other)** 

Sex DOB

Address 126 MAIN ST

**GENOA, WI 54632** 

**Home Phone** (608) 689-2151 **Home Phone** (608) 689-2561

Comments

**GENOA FIRST RESPONDERS (Other)** 

Sex DOB

Address 126 MAIN ST

**GENOA, WI 54632** 

Home Phone (608) 689-2151

**Comments** 

**GUNDERSEN AIR (Other)** 

Sex Unknown

DOB

Address 1910 SOUTH AVE

LACROSSE, WI 54601

Home Phone (800) 527-1200

Comments

**READSTOWN AMBULANCE (Other)** 

Sex DOB

Address 107 N RAILROAD ST

READSTOWN, WI 54652

Home Phone (608) 629-5100

Comments

STODDARD FIRE DEPARTMENT (Other)

Sex DOB

Address 188 N MAIN ST

STODDARD, WI 54658

Home Phone (608) 457-2118

**Comments** 

TRI-STATE AMBULANCE (Other)

Sex DOB

Address 235 COPELAND AVE

LACROSSE, WI 54601

**Cell Phone** (608) 606-1901 **Home Phone** (608) 775-5407 **Home Phone** (608) 784-4996 **Home Phone** (608) 637-8639

**Comments** 

**VERNON COUNTY CORONER (Other)** 

Sex DOB

Address 318 FAIRLANE DR

VIROQUA, WI 54665

Home Phone (608) 637-5284

Comments

**VERNON COUNTY EMERGENCY MANAGEMENT (Other)** 

Sex DOB

### **Address**

VIROQUA, WI 54665

Home Phone (608) 637-5267

**Comments** 

**VERNON COUNTY HIGHWAY DEPARTMENT (Other)** 

Sex DOB

**Address** 1335 RAILROAD AVE

VIROQUA, WI 54665

Home Phone (608) 637-5452

**Comments** 

WHEATLAND FIRE DEPARTMENT (Other)

Sex DOB

**Address** E2177 STATE HIGHWAY 82

**DE SOTO, WI 54624** 

Home Phone (608) 648-2600

Comments

WHEATLAND FIRST RESPONDERS (Other)

Sex DOB

**E2177 STATE HIGHWAY 82 Address** 

**DESOTO, WI 54624** 

Home Phone (608) 648-2600

Comments

WI DEPT OF JUSTICE (DCI) (Other)

Sex Unknown

DOB

**Address** PO BOX 7857

MADISON, WI 53707

Home Phone (608) 266-1221

**Comments** 

**WISCONSIN STATE PATROL (Other)** 

Sex DOB

**Address** 23928 LESTER MCMULLIN DR

**TOMAH, WI 54660** 

Home Phone (608) 374-0513

Comments

**Vehicles** 

SJ2723 WI (Other)

**Description** 2001 Black Dodge Dakota

BOARDMAN, WILLIAM STEVEN Owner

Responders

117 (Primary) 117 - Nigh, Betty COR DFD1 (Primary) DFD

EG100 (Primary) EG100 - Larson, Brandon **EMG** 

GFD1 (Primary) **GFD** GFR (Primary) **GFR GUNDAIR** (Primary) **GUNDAIR** RFD1 (Primary) **RFD** SFD

SFD1 (Primary)

| 1   | 1 - Torgerson, Roy  | VCSO (Primary)  |
|---|---|---|
| 2<br>3<br>4<br>8<br>14<br>19<br>20 (Primary)<br>23<br>62<br>WDFD1 (Primary)<br>WDFR (Primary)<br>SPTO (Primary) | 3 - Davig, Michael<br>4 - Bjerkos, Scott<br>8 - Egge, JoEllen<br>14 - Winchel, Sam<br>19 - Krzewinski, Donald<br>20 - Brueggeman, Bradley<br>23 - Brown, Jonathon<br>62 - Howell, Larry | VCSO (Primary) WDFD WDFR WSP |
|   |   |   |

### **Response Times**

Assigned06/16/23 18:03:30Enroute06/16/23 18:15:21Arrived06/16/23 18:32:09Leaving06/16/23 18:42:21Arrived At06/16/23 18:42:42Completed06/17/23 03:14:02

### IR / External Agency Numbers

VCSO-23-0704 PO: 14 - Winchel, Sam

### **Unit Response Times**

### **Non Unit Specific Times**

06/16/23 17:51:10 | New CFS

06/16/23 17:55:29 | DAUGHTER THINKS THAT HE NEEDS HELP, BUT HE WOULDN'T GO WILLINGLY, SHE IS ON

HER WAY UP NOW

06/16/23 17:57:06 | IS AFRAID HE IS GOING TO HURT HIMSELF

06/16/23 17:57:38 | MALE DOES HAVE BOND CONDITIONS THROUGH US CURRENTLY

06/16/23 18:54:30 | ATTEMPTED 1 AND 5 VIA PHONE

06/16/23 18:57:40 | STATE PATROL CALLED THEY ARE SEND 2 UNITS

06/16/23 19:01:08 GUNDERSEN AIR CALLED AND ADVISED THEY HAVE BEEN DISPATCHED BY THEIR UNIT,

NEED FIRE TO START A LANDING ZONE AT HELP SITE

06/16/23 19:04:48 | GUNDERSEN AIR 18 MINUTES OUT

06/16/23 19:08:23 | TSA AIR WAS NOTIFIED OF HELP LANDING ZONE, GENOA PARK

06/16/23 19:17:46 | CHRIS WITH DESOTO FIRE WILL SHUT DOWN 35 AT DESOTO

06/16/23 19:17:51 | CALLED STODDARD CHIEF, SEND OUT PAGE TO STATION

06/16/23 19:40:07 | PER SHERIFF TORGERSON, REQUEST TO CALL STATE PATROL AND ADVISE THEM THAT DCI WILL LEAD THE INVESTIGATION AND THAT WE WOULD STILL REQUEST THE TRU UNIT TO RESPOND.

NOTIFIED STPO DISPATCH AND THEY WILL GET SOMEONE HEADED THIS WAY, AND CALL AND LET US

KNOW WHEN SOMEONE IS ENR

06/16/23  $19:59:12 \mid$  CALLED STOC TO UPDATE THEM. STATE HIGHWAY 56 IN GENOA WILL BE DETOUR FFROM THE NORTH

06/16/23 20:13:27 | LEDS - Morrison

(08:09:23 PM)

:

Hey! Heather from State Patrol. I know I called and asked for suspect info, but my trooper is now asking for both of the Deputies who were involved info as well please.

LEDS - Morrison ( 08:10:25 PM )

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Also, I have TRU Investigator Schultz coming out, but he's coming from out of Kronenwetter, WI so it will be about 2 hours before he gets to the scene. 533 is a TRU tech and will start the TRU process for him.

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LEDS - Morrison
(08:13:40 PM)
If you need it for your CAD notes, our Case number is 000251-7121 Crash Doc# KRL0HNC3CT
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06/16/23 20:32:21 i
                                 HAS BEEN NOTIFIED FOR DEPUTY BROWN. SHE HAS CONTACTED
                                 IS ENR TO BE WITH BROWN
06/16/23 20:40:17 | I TALKED TO PHIL HEWITT WITH THE HIGHWAY DEPT. AND HE ALREADY MADE CONTACT
WITH THE TRAFFIC MANAGEMENT CENTER ABOUT THE DETOUR SET UP.
06/16/23 20:57:26 | CALLED
06/16/23 21:42:18 | JUNEAU COUNTY LT GREEN WILL BE RESPONDING TO CALLS ON THE EAST SIDE FOR
AN HOUR PER SHERIFF TORGERSON'S REQUEST. LT GREEN'S BADGE NUMBER
06/16/23 21:47:02 | LT GREEN'S BADGE NUMBER IS 5. PHONE NUMBER IS 608
06/16/23 22:10:25 | PER DEPUTY CAMPBELL DCI ARRIVED AT THE SHERIFFS OFFICE
06/16/23 22:38:25 | ERIC WITH WI DOT CALLED LOOKING FOR AN UPDATE ON THE ROAD CLOSURE. PER
CAPTAIN DAVIG. ITS GOING TO BE A FEW MORE HOURS
06/16/23 23:47:10 | PER CAPTAIN DAVIG, LT GREEN CAN BE RELEASED. MACH MESSAGE SENT TO LT
GREEN
06/17/23 00:46:53 | DAIRYLAND POWER CALLED AND ADVISED THEY HAVE NO CAMERAS THAT COVER THAT
SIDE OF WHERE THE IINCIDENT TOOK PLACE
06/17/23 01:36:13 | STOC NOTIFIED THAT ROAD IS BACK OPEN
06/17/23 01:39:23 | CALLED HWY COM PHIL HEWITT, HE WAS NOTIFIED HWY IS BACK OPEN
06/19/23 11:45:47 | CORRECTION: THE ENTRY ON 06/16/23 AT 18:52:42 WAS NOT FROM RFD1 BUT IT WAS
FROM STATE TROOPERS #533 AND #516 CALLING AND ASKING IF THEY SHOULD RESPOND TO THIS
INCIDENT...DISPATCH TOLD THEM TO RESPOND.
06/16/23 18:57:17 | Dispatched
06/16/23 20:39:05 | Message - IF WE GET ANYTHING EAST CALL JUNEAU ON THE PHONE WITH THEIR
SHERIFF NOW
06/16/23 20:39:16 | Message - (d) PRESS ON THE NORTH END WANTING TO TALK TO YOU
06/16/23 20:39:25 | Message - I'LL TRY TO TALK TO THEM IF I CAN
06/16/23 20:50:21 | Message - LT GREEN COMING INTO VERNON CO WILL CALL YOU DIRECT
06/16/23 21:24:57 | On Scene
06/16/23 21:28:22 | Message - DCI arrived.
06/16/23 21:30:07 | Clear Alarms
06/16/23 21:44:46 | Message - PUT US ALL ON POLICE ALTERNATE EVERYONE ELSE BACK ON SHERIFF
06/16/23 21:44:58 | Message - WE COPY ABOUT THE BOAT & TRUCK
06/16/23 22:09:25 | Message - GENOA FIRE CAN SEND THEIR TRUCK WITH LIGHTING DOWN HERE NOW
06/17/23 00:01:58 | Message - C&C TOWING ENR SHORTLY FROM LACROSSE, UNK WHICH VEHICLE HE WILL
BE GETTING
06/17/23 00:04:02 | Message - Only tow will be for the Boardman vehicle.
06/17/23 00:18:46 | Message - SLEEPY HOLLOW ENROUTE WITH THE NEXT TOW
06/17/23 00:21:21 | Message - F1241 - FOR SLEEPY HOLLOW TOW
06/17/23 00:29:57 | Message - C&C IS HERE WITH TWO... ASK SLEEPY HOLLOW IF THEY CAN STAND DOWN
THIS ONE
06/17/23 00:30:13 | Message - (D) CALLED MIKE, HE WILL STAND DOWN
06/17/23 01:35:21 | Message - CAN YOU CALL STOC AND HWY COMISSONER?
06/17/23 01:35:53 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 01:40:05 | Message - (D) HWY COM AND STOC WERE NOTIFED ROAD IS BACK OPEN
06/17/23 02:11:54 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 03:11:04 | Off Duty (Location: Residence)
06/16/23 19:19:49 | Dispatched
06/16/23 19:59:33 | On Scene
06/16/23 20:20:41 | On Scene - 1946 arrival
06/16/23 22:42:10 | Available
06/16/23 22:42:39 | On Scene
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## 117, SPTO

```
06/16/23 18:48:34 | Enroute
06/16/23 21:25:01 | On Scene
06/16/23 21:30:13 | Clear Alarms
06/16/23 23:58:45 | Message - 1 TOW TRUCK, GOING TO IMPOUND
06/17/23 00:13:10 | Message - VIA PHONE REQUESTED ANOTHER TOW FOR SQUAD CAR
06/17/23 01:29:14 | Location Change (Location: Impound - Inside) - BOTH TOWS
06/17/23 02:01:26 | Arrived At (Location: Impound - Inside)
06/17/23 02:24:36 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 02:24:45 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 03:14:02 | Available
06/16/23 20:19:00 | Enroute
06/16/23 20:36:36 | Location Change (Location: STATE HIGHWAY 35/GIANOLI RD)
06/16/23 20:36:40 | Arrived At (Location: STATE HIGHWAY 35/GIANOLI RD)
06/16/23 21:13:49 | On Scene
06/16/23 21:19:00 | Clear Alarms
06/17/23 01:37:13 | Available
06/16/23 18:53:05 | Enroute
06/16/23 18:53:09 | Available
06/16/23 18:03:30 | Dispatched
06/16/23 18:15:21 | Enroute
06/16/23 18:32:09 | On Scene
06/16/23 18:37:26 | Check Status (Time (minutes): 15)
06/16/23 18:40:25 | Message - SJ2723 - HE JUST TOOK OFF IN HIS VEHICLE
06/16/23 18:42:06 | Message - (D) DO YOU COPY?
06/16/23 18:42:21 | Location Change (Location: GIANOLI RD) - HEADING THERE NOW
06/16/23 18:42:42 | Arrived At (Location: GIANOLI RD)
06/16/23 18:47:28 | Message - 1080 23 HANGING OUTSIDE OF VEHICLE
06/16/23 19:02:38 | Clear Alarms
06/16/23 22:48:03 | Off Duty (Location: Residence)
06/16/23 18:42:59 | Dispatched
06/16/23 18:43:50 | Location Change (Location: GIANOLI RD) - DELAYED - TRYING TO GET VEHICLE STOPPED
LIGHTS AND SIRENS
06/16/23 18:43:55 | Arrived At (Location: GIANOLI RD) - GOT IT STOPPED
06/16/23 18:48:16 | Message - 1050
06/16/23 18:50:14 | Message - CPR IN PROGRESS
06/16/23 18:51:39 | Message -
06/16/23 18:51:43 | Message - EMT ON SC3ENE
06/17/23 00:41:13 | Off Duty (Location: Residence)
06/16/23 18:53:11 | Enroute
06/16/23 19:05:04 | On Scene
06/16/23 19:10:16 | Clear Alarms
06/16/23 21:35:29 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 21:35:32 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 00:15:42 | Location Change (Location: LAFARGE)
06/17/23 00:41:02 | Arrived At (Location: LAFARGE) - 23 WILL BE OFF DUTY, ILL BE HEADING TO THE OFFICE
06/17/23 00:52:19 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
```

06/16/23 19:04:51 | Enroute

06/17/23 01:07:04 | Busy (Location: VCSO - Vernon Co Sheriff Office)

```
06/16/23 19:31:48 | On Scene
06/16/23 19:36:54 | Clear Alarms
06/16/23 23:18:26 | Off Duty (Location: Residence)
06/16/23 20:10:34 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 20:40:16 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 20:14:56 | Enroute
06/16/23 20:33:30 | On Scene
06/16/23 20:33:42 | Location Change (Location: STATE HIGHWAY 35/STATE HIGHWAY 56)
06/16/23 20:33:47 | Arrived At (Location: STATE HIGHWAY 35/STATE HIGHWAY 56)
06/16/23 20:39:03 | Clear Alarms
06/17/23 01:44:16 | Message - ILL BE MOVING SOME OF THE SIGNS TO THE SIDE IN GENOA
06/17/23 01:48:35 | Location Change (Location: VCSO - Vernon Co Sheriff Office) - ALL SIGNS HAVE BEEN
TURNED, HEADING BACK NOW
06/17/23 02:11:50 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 03:11:28 | Available
06/16/23 22:12:30 | Dispatched
06/16/23 22:12:33 | Location Change (Location: VCSO - Vernon Co Sheriff Office)
06/16/23 22:12:34 | Arrived At (Location: VCSO - Vernon Co Sheriff Office)
06/17/23 02:20:05 | Available - PER 3
DFD1
06/16/23 19:41:25 | Dispatched
06/17/23 01:33:08 | Location Change (Location: Station - Fire/EMS)
06/17/23 01:38:53 | Arrived At (Location: Station - Fire/EMS)
06/17/23 01:38:59 | Available
DFD1, WDFD1
06/16/23 19:42:03 | Location Change (Location: STATE HIGHWAY 35/COUNTY ROAD UU)
EG100
06/16/23 19:59:18 | Enroute
06/16/23 20:29:06 I On Scene
06/16/23 23:21:17 | Location Change (Location: VIROQUA)
06/16/23 23:50:29 | Available - BACK IN THE CITY
GFD1
06/16/23 19:00:02 | Clear Alarms
06/16/23 19:08:28 | Message - CAN YOU SEND A THIRD PAGE TO BALL PARK FOR LANDING ZONE
06/16/23 19:09:29 | Message - THIRD PAGE
06/16/23 19:12:40 | Message - LANDING ZONE SECURED
06/16/23 19:16:30 | Message - 10-79 CANCEL AIRT LINK
06/16/23 20:26:02 | Message - RESCUE TRUCK GOING TBACK TO STATION 3 TRUCKS ON SCENE YET
06/16/23 20:38:11 | Message - NEWS IS AT THE NORTH END WANTING TO TALK TO THE SHERIFF
06/16/23 22:10:02 | Message - (d) SEND YOUR TRUCK WITH LIGHTING DOWN BY 1 NOW
GFD1, GFR
06/16/23 18:49:55 | Dispatched
06/16/23 18:50:53 | Message - SECOND PAGE
06/16/23 18:52:32 | Enroute
06/16/23 18:54:38 | On Scene
06/16/23 19:06:18 | Message - (D) GUNDERSEN AIR 18 MIN - 18
06/17/23 02:18:41 | Available
GFD1, GFR, WDFD1, WDFR
06/17/23 01:33:43 | Location Change (Location: Station - Fire/EMS)
GFR
```

06/16/23 18:53:00 | Message - ENROUTE WITH 2

### **GUNDAIR**

06/16/23 19:06:22 | Dispatched 06/16/23 20:05:04 | Off Duty

#### RFD1

06/16/23 18:52:42 | Enroute - HEADING DIRECT SELF 06/16/23 21:59:05 | Available

#### SFD1

06/16/23 19:18:33 | Dispatched - FIRST PAGE FOR TRAFFIC CONTROL

06/16/23 19:40:56 | Location Change (Location: STATE HIGHWAY 35/STATE HIGHWAY 162)

06/16/23 19:41:04 | Arrived At (Location: STATE HIGHWAY 35/STATE HIGHWAY 162)

06/16/23 20:14:17 | Message - WE ARE STILL AT 162 DO WE STILL WANT ROAD CLOSED THERE

06/16/23 20:14:46 | Message - (d) WE SAID HWY 56 FOR DETOUR

06/16/23 20:15:07 | Message - WE'RE PULLING OUR UNITS BACK

06/16/23 20:26:57 | Available

### **SPTO**

06/16/23 18:57:04 | Enroute

06/16/23 19:32:08 | On Scene

06/16/23 19:37:45 | Clear Alarms

#### WDFD1

06/16/23 19:35:55 | Dispatched

06/16/23 21:42:52 | Message - TRUCK WITH BOAT WENT AROUND US ON PURPOSE NORTH AT A HIGH RATE OF SPEED

### WDFD1, WDFR

06/17/23 01:46:25 | Arrived At (Location: Station - Fire/EMS)

06/17/23 01:46:37 | Available

### **WDFR**

06/16/23 19:45:37 | Dispatched

06/16/23 19:46:07 | Location Change (Location: WASHINGTON RD/STATE HIGHWAY 35)



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785

EMAIL: vcso@vernoncounty.org

NATHAN CAMPBELL, CHIEF DEPUTY

Tow Call - F1241

Printed on June 19, 2023

TC202300175 Reference # CFS# CFS23-12398 Added By McGregor, Lindsey

**Towed From** 

**Towed To** Impound - Inside

**Tow Operator C&C** Towing and Recovery

Plate # F1241

**Plate Expires** 

**Plate State** WI

Plate Type MUNICIPAL OFFICIAL VIN 1FM5K8AW3MNA20314

Vehicle Year 2021 **Vehicle Make** Ford **Vehicle Model** Explorer **Vehicle Style** SUV Vehicle Color 1 Black Vehicle Color 2 Black **Vehicle Features** P-3

Owner VERNON COUNTY SHERIFF'S OFFICE

Owner Driver

Hold No **Status** Active

**SQUAD CAR Comments** 

**Attempts** 

**Called At Tow Operator Call Result Comments** 06/17/23 00:15 C&C Towing and Recovery Available MIKE WILL TURN AROUND AND **C&C CAN TOW** 

BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5785 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

ROY TORGERSON, SHERIFF

NATHAN CAMPBELL, CHIEF DEPUTY

Tow Call - SJ2723

Printed on June 19, 2023

Reference # TC202300174
CFS # CFS23-12398
Added By McGregor, Lindsey

**Towed From** 

**Towed To** Impound - Inside

**Tow Operator** C&C Towing and Recovery

Plate # SJ2723 Plate Expires 2022 Plate State WI

Plate Type LIGHT TRUCK UNDER 10000 LBS

VIN 1B7GG26N11S113521

Vehicle Year 2001 Vehicle Make Dodge Vehicle Model Dakota

**Vehicle Style** 

Vehicle Color 1 Black Vehicle Color 2 Black

Vehicle Features Tracking Notes:

Owner WILLIAM STEVEN BOARDMAN

Owner Driver

Hold No Status Active

Comments

**Attempts** 

| Called At      | Tow Operator            | Call Result | Comments    |
|----------------|-------------------------|-------------|-------------|
| 06/17/23 00:04 | C&C Towing and Recovery | Available   | ENR SHORLTY |



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

ROY TORGERSON, SHERIFF NATHAN CAMPBELL, CHIEF DEPUTY

Tow Call Printed on June 19, 2023

Reference # TC202300173 CFS # CFS23-12398 Added By McGregor, Lindsey

Towed From Towed To

**Tow Operator** C&C Towing and Recovery

Plate # Plate Expires Plate State

Plate State Plate Type VIN

Vehicle Year
Vehicle Make
Vehicle Model
Vehicle Style
Vehicle Color 1
Vehicle Color 2
Vehicle Features

Owner Owner Driver

Hold No Status Active

Comments

**Attempts** 

| Called At      | Tow Operator            | Call Result | Comments        |
|----------------|-------------------------|-------------|-----------------|
| 06/16/23 23:59 | C&C Towing and Recovery | Available   | ENROUTE SHORTLY |

| STATE OF WISCONSIN, CIRCUIT COURT,   | COUNTY  |                                       |
|--|---|---------------------------------------|
| State of Wisconsin   | ☐ Amended   |                                       |
| -vs-<br>William Boardman   | Bail/Bond   |                                       |
| Derendant  | Case No. 20017  |                                       |
| Date of B  | Citation No.  |                                       |
| A. Monetary Conditions of Release  1. CASH BAIL: Cash bail of \$ 2. SIGNATURE BOND: Defendant and/oguarantees compliance with the terms of 3. PROPERTY BOND: Defendant and/oguarantees compliance with the terms of property (Description attached).  Surety name(s):  | or Surety this bond by pledging \$ 1,000 coe or Surety this bond by pledging \$         | <u> </u>                              |
| <ul> <li>B. Additional Conditions of Release</li> <li>Defendant shall appear on all court dates.</li> <li>Defendant shall give written notice to the Cler telephone number.</li> <li>Defendant shall not commit any crime.</li> <li>Defendant shall neither directly nor indirectly witnesses in this action.</li> <li>Other:</li> </ul> | ck of this Court within 48 hours of any ch<br>threaten, harass, intimidate or otherwise |                                       |
| If the defendant does not comply with the ter<br>with bail jumping, a warrant may be issued forfeited, and the defendant and/or surety may   | or the arrest of the defendant, the   | nt may be charged<br>bail/bond may be |
| Any restitution, recompense, fines, forfeiture paid out of the bail/bond without further noti  |   | efendant shall be                     |
| Federal law provides penalties for, and you may receiving or purchasing a firearm, including, but ammunition, pursuant to 18 U.S.C. §922(g)(8)-(9).  | not limited to, a rifle, shotgun, pistol,   |                                       |
| The sheriff shall detain the defendant in custody unti conditions of release, or is otherwise discharged.  | I the defendant has signed the bond, con  | mplied with the monetary              |
| I have received a copy of this bail/bond and I agree t   |   | 7 - 1                                 |
| Circuit Fourt Estations UNTY COURTHOUSE  | Date(s)   | Time(s)                               |
| 2ND FLOOR COURTROOM<br>VIROQUA WI 54665  | 8/30/2022   | 8:30am                                |
| Defendant's Signature  William Stayhor 5  Defendant's Address  | ZS × Telephone Number × Email Add   | dress                                 |
| 55074 St Huy 35GendAW15 5  | 4632  |                                       |
| Surety's Signature Date  | Telephone Number  |                                       |
| Surety's Address   | ( ) ( )   | 1000                                  |
| I have furnished the defendant with a copy of this   | document.   |                                       |
| 59 CT  | Signature M. ASS  | 6-28-2020<br>Date                     |

# **BOND CONDITIONS**

June 28, 2022

STATE OF WISCONSIN VS. William Boardman CASE NO. 2022CM117

# **Conditions:**

- Not to possess or consume alcohol.
   Random Alcohol testing



# SHERIFF'S OFFICE COUNTY OF VERNON

1320 BAD AXE COURT VIROQUA, WISCONSIN 54665 BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780

JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

ROY R. TORGERSON, SHERIFF

DATE OWNER NOTIFIED: 6-23- 8

NATHAN CAMPBELL, CHIEF DEPUTY SHERIFF

# PROPERTY RECEIPT

| REFERENCE  | CASE#: UE        | 30 23      | 0704           |                  |         |
|------------|------------------|------------|----------------|------------------|---------|
| OFFICER AU | THORIZING I      | RELEASE:   | pecial Ags     | NT AJAM.         | FREdric |
|            |                  | PROPER     | TY DESCRIPTION |                  | D. O. 5 |
|            |                  |            |                |                  |         |
| ITEM NO.   | AMOUNT           | BRAND      | SER/MOD#       | DESCRIPTION      |         |
| /          | 6                | 6 K51      | 1 And K        | EY Chain         | ) •     |
|            |                  |            |                |                  |         |
|            |                  |            |                |                  |         |
|            |                  |            |                |                  |         |
|            |                  | December 1 | 96             |                  | et .    |
|            |                  |            |                |                  |         |
|            |                  |            |                |                  |         |
|            |                  |            |                |                  |         |
|            |                  |            |                |                  |         |
| RECEIVED E |                  | GNAVUKEI   |                | (PRINTED NAME)   |         |
| ADDRESS/PI | HONE             |            |                |                  |         |
|            | ACTE OF SECURITY | 1 Migues   | DAT            | E. 12/2/177/1972 |         |

# Wisconsin Division of Criminal Investigation

# Examination of Records 23-4795/34

Report Date: 07/10/2023

**Primary Information** 

Description: Drone photographs from Vernon County Emergency Management

Occurrence From: 06/22/2023 12:00
Occurrence To: 06/22/2023 12:00

Reporting LEO: Frederick, Adam L (Eau Claire Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/10/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

**Addresses** 

Relationship Address

Location of Event Vernon County Sheriff's Department, Viroqua, Wisconsin United States of America

Narrative begins on the following page.

07/12/2023 08:18:29 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/34

On June 19, 2023, at approximately 12:00 P.M., Special Agents (S/A) Adam L. Frederick and Michael K. Haverley met with Vernon County Emergency Management at the Vernon County Sheriff's Office. utilized Vernon County Emergency Management's drone to take still photographs of the scene shortly after the Officer Involved Critical Incident occurred.

A total of 14 images were captured and were subsequently turned over to S/A Frederick. said video of the scene was not obtained due to the time of day the drone began to fly. The images were uploaded to the critical incident folder.

# Wisconsin Division of Criminal Investigation

# Examination of Records 23-4795/35

Report Date: 07/10/2023

**Primary Information** 

Description: Additional narrative report received from VCSO

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/10/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

## **Synopsis**

On July 10, 2023, Wisconsin Department of Justice - Division of Criminal Investigation Special Agent Michael Haverley received an additional narrative report from the Vernon County Sheriff's Office (VCSO).

#### **Documents**

**Document** 

VCSO Inv. Scott Bjerkos narrative report

Narrative begins on the following page.

07/12/2023 08:19:07 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report
Case/Report Number: 23-4795 Additional narrative report received from VCSO

On July 10, 2023, Wisconsin Department of Justice - Division of Criminal Investigation Special Agent Michael Haverley received an additional narrative report from the Vernon County Sheriff's Office (VCSO). The report arrived via email from Lead Administrative Assistant Amy Dvorak. SA Haverley observed that this narrative report was a two-page report authored by Investigator (Inv.) Scott Bjerkos of VCSO.

# **ATTACHMENT:**

SA Haverley electronically attached Inv. Bjerkos' report with this DCI report.



BUSINESS: 608-637-2123 FAX: 608-638-5702 RECORDS: 608-638-5710 JAIL: 608-638-5780 JAIL FAX: 608-638-5785 EMAIL: vcso@vernoncounty.org

NATHAN CAMPBELL, CHIEF DEPUTY

Case Narrative for VCSO-23-0704 (06/16/23 19:00)

Printed on July 10, 2023

# Assisting Officer Report By Scott Bjerkos, 06/16/23 19:00

Case #VCSO-23-0704 Typed By Vicky Inman

This report is in regards to a death investigation.

DECEASED: William S. Boardman

On June 16, 2023, at approximately 7:00 PM, while I was off duty, I was monitoring radio traffic from my residence. After hearing about the critical incident that occurred in the Genoa area, I made contact with Captain Michael G. Davig. He instructed me to report to the scene on State Highway 35, just south of Genoa.

At approximately 7:04 PM, I went en route to the location.

At approximately 7:31 PM, I arrived on location.

Upon my arrival, I made contact with Sheriff Roy R. Torgerson and Captain Davig. I was informed the incident was an officer involved shooting. My assignment was to maintain personal contact with Deputy Sheriff Jonathon R. Brown, who was the deputy involved in the shooting.

I made contact with Deputy Brown. Deputy Brown's gun was previously taken into evidence by Sheriff Torgerson and Captain Davig. I provided Deputy Brown with my department issued 9-millimeter Glock pistol, and he placed it in his gun holster. I maintained personal contact with Deputy Brown during the remainder of the time on location.

Sheriff Torgerson and I made phone contact, and Sheriff Torgerson instructed me to take Deputy Brown to the sheriff's office.

At approximately 8:10 PM, I went en route and transported Deputy Brown to the sheriff's office.

At approximately 8:40 PM, I arrived at the sheriff's office.

Upon my arrival, I escorted Deputy Brown into the sheriff's office and maintained personal contact with him. I fielded calls from the WPPA representative. I made arrangements for the union representative to speak with Deputy Brown in the privacy of the squad room at the sheriff's office. While Deputy Brown was in the squad room speaking with the union representative, I stood outside the door in the hallway.

Later in the evening, Special Agent Adam L. Frederick with the Wisconsin Department of Justice, Division of Criminal Investigation arrived at the sheriff's office. Special Agent Frederick began taking photographs of the equipment Deputy Brown received.

A WPPA attorney and other representatives arrived on location to assist Deputy Brown, and I was able to clear from the call.

-- End of Report--

Investigator Scott D. Bjerkos Vernon County Sheriff's Office

Case VCSO-23-0704 Page 1 of 2

| Signed |                             | Date |  |
|--------|-----------------------------|------|--|
|        | Scott Bierkos, Investigator |      |  |

Case VCSO-23-0704 Page 2 of 2

# Wisconsin Division of Criminal Investigation

# Investigative 23-4795/36

Report Date: 07/10/2023

**Primary Information** 

Description: Forensic Mapping

Occurrence From: **07/07/2023**Occurrence To: **07/07/2023** 

Reporting LEO: Bender, Justin D (Wausau Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/13/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

**Addresses** 

Relationship Address

Location of Event State Highway 35, Genoa, WI, Wisconsin United States of America

**Subjects** 

Relationship Name Bio

Deceased Boardman, William S (Person) 61 yr. old, White, Male

<u>DOB</u>

**Documents** 

Document

**GNSS Forensic Mapping Measurement Log** 

**WSP Trooper Sukis Supplement Report** 

Narrative begins on the following page.

07/17/2023 08:43:06 Page 1 of 2

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/36

On Friday, June 16, 2023, Wisconsin Department of Justice / Division of Criminal Investigation (WI DOJ/DCI) Special Agents (SA) were requested by the Vernon County Sheriff's Office (VCSO) to investigate an Officer Involved Critical Incident (OICI) which occurred on State Highway 35 north of Gianoli Road in Vernon County, Wisconsin. The suspect, William S. Boardman, was fatally shot during the incident. The WI DOJ/DCI was requested by the VCSO to be the lead investigative agency for the OICI.

On Friday, July 7, 2023, WI DOJ/DCI SA Justin Bender responded to the incident scene to complete additional scene forensic mapping in reference to the OICI. The purpose of the mapping was to document known landmarks/locations at the scene that could be utilized in conjunction with body camera and video surveillance footage for the completion of a time-distance speed analysis. Wisconsin State Patrol (WSP) Trooper Christopher Sukis assisted during the follow-up.

# **Forensic Mapping:**

SA Bender and Trooper Sukis documented additional items/locations at the incident scene utilizing a Trimble R10 Global Navigation Satellite System (GNSS) survey instrument and TSC3 data collector. The Trimble R10 unit connects via portable Wi-Fi to the Wisconsin Continuously Operating Reference Stations (WISCORS) Network and its base stations located throughout the state. The 360-degree receiver supports signals from all existing and planned GNSS constellations and augmentation systems. The Trimble R10 combines the GNSS coordinates with the corrections from the WISCORS Network. The original job file was utilized during the mapping to properly merge the measured points collected by Trooper Sukis on June 16, 2023, with the additional items. The recorded data included, but was not limited to; roadway markings, highway signs, rumble strips, power poles, a Vernon County Highway Department Building and camera locations. The data was stored electronically for future processing and analysis.

## **DCI Report Attachments:**

SA Bender electronically attached the supplemental report completed by Trooper Sukis and the GNSS forensic mapping measurement log SA Bender collected as an attachment to this narrative report. The additional measured points on the log were point numbers 401-466. The remainder of the points (beginning of the log) were measured by Trooper Sukis on June 16, 2023.

# Wisconsin Department of Justice - Division of Criminal Investigation

Forensic Mapping Measurement Log

**Case Number: 23-4795 Date: July 7, 2023** 

**Instrument: Trimble R10 GNSS** 

**Operator: Special Agent Justin Bender** 

| <b>Point Number</b> | Northing (Y) | Easting (X) | Elevation (Z) | <b>Point Code</b> |
|---------------------|--------------|-------------|---------------|-------------------|
| IA New Albin        | 127936.191   | 595364.232  | 671.289       |                   |
| 1                   | 151392.917   | 611803.671  | 659.272       | CP1               |
| 2                   | 151127.62    | 611829.663  | 657.986       | CP2               |
| 100                 | 151117.427   | 611798.151  | 650.2         | TM1               |
| 101                 | 151132.301   | 611797.482  | 650.177       | TM1               |
| 102                 | 151145.111   | 611797.228  | 650.044       | TM1               |
| 103                 | 151157.811   | 611796.799  | 650.046       | TM1               |
| 104                 | 151170.287   | 611796.188  | 649.949       | TM1               |
| 105                 | 151179.482   | 611795.804  | 649.969       | TM1               |
| 106                 | 151189.072   | 611795.488  | 649.933       | TM1               |
| 107                 | 151199.131   | 611794.97   | 649.847       | TM1               |
| 108                 | 151207.457   | 611794.385  | 649.838       | TM1               |
| 109                 | 151217.824   | 611793.567  | 649.907       | TM1               |
| 110                 | 151227.141   | 611793.071  | 649.75        | TM1               |
| 111                 | 151235.003   | 611792.616  | 649.912       | TM1               |
| 112                 | 151241.988   | 611791.585  | 650.064       | TM1               |
| 113                 | 151248.216   | 611791.072  | 650.005       | TM1               |
| 114                 | 151254.769   | 611790.787  | 649.962       | TM1               |
| 115                 | 151261.474   | 611790.374  | 650.069       | TM1               |
| 116                 | 151268.431   | 611789.654  | 650.25        | TM1               |
| 117                 | 151276.34    | 611788.901  | 650.304       | TM1               |
| 118                 | 151283.612   | 611788.5    | 650.753       | TM1               |
| 119                 | 151291.47    | 611787.892  | 651.514       | TM1               |
| 120                 | 151298.16    | 611786.768  | 652.155       | TM1               |
| 121                 | 151302.448   | 611786.188  | 652.339       | TM1               |
| 122                 | 151306.784   | 611785.151  | 652.329       | TM1               |
| 123                 | 151313.514   | 611783.661  | 652.263       | TM1               |
| 124                 | 151388.767   | 611774.351  | 653.046       | TM2               |
| 125                 | 151401.232   | 611774.271  | 653.011       | TM2               |
| 126                 | 151407.445   | 611774.439  | 652.889       | TM2               |
| 127                 | 151415.961   | 611774.507  | 652.726       | TM2               |
| 128                 | 151427.96    | 611774.505  | 653.015       | TM2               |
| 129                 | 151442.365   | 611773.352  | 653.129       | TM2               |

| 130 | 151453.907 | 611772.72  | 653.182 | TM2   |
|-----|------------|------------|---------|-------|
| 131 | 151467.145 | 611771.99  | 653.162 | TM2   |
| 132 | 151480.24  | 611771.249 | 653.295 | TM2   |
| 133 | 151491.423 | 611770.968 | 653.49  | TM2   |
| 134 | 151510.054 | 611770.296 | 653.888 | TM2   |
| 135 | 151526.033 | 611769.492 | 654.023 | TM2   |
| 136 | 151542.304 | 611768.76  | 654.213 | TM2   |
| 137 | 151560.574 | 611768.362 | 654.229 | TM2   |
| 138 | 151576.084 | 611768.084 | 654.486 | TM2   |
| 139 | 151590.698 | 611768.928 | 654.245 | TM2   |
| 140 | 151603.927 | 611768.86  | 654.261 | TM2   |
| 141 | 151614.216 | 611768.541 | 654.453 | TM2   |
| 142 | 151630.909 | 611768.358 | 654.597 | TM2   |
| 143 | 151639.121 | 611768.512 | 654.661 | TM2   |
| 144 | 151645.379 | 611768.013 | 654.885 | TM2   |
| 145 | 151648.07  | 611767.431 | 655.07  | TM2   |
| 146 | 151661.539 | 611761.277 | 656.281 | AXL1  |
| 147 | 151661.502 | 611767.808 | 655.297 | AXL1  |
| 148 | 151652.295 | 611768.406 | 655.097 | AXL2  |
| 149 | 151652.031 | 611761.811 | 656.078 | AXL2  |
| 150 | 151656.27  | 611759.65  | 656.248 | BODY  |
| 151 | 151650.356 | 611758.679 | 656.149 | BODY  |
| 152 | 151647.991 | 611765.039 | 655.72  | TRUCK |
| 153 | 151647.83  | 611763.314 | 655.84  | TRUCK |
| 154 | 151648.111 | 611762.67  | 655.85  | TRUCK |
| 155 | 151650.737 | 611762.122 | 655.937 | TRUCK |
| 156 | 151654.27  | 611762.085 | 656.041 | TRUCK |
| 157 | 151659.199 | 611761.671 | 656.166 | TRUCK |
| 158 | 151662.818 | 611761.642 | 656.167 | TRUCK |
| 159 | 151663.669 | 611761.892 | 656.166 | TRUCK |
| 160 | 151664.063 | 611762.693 | 656.114 | TRUCK |
| 161 | 151664.33  | 611764.478 | 655.979 | TRUCK |
| 162 | 151664.149 | 611766.847 | 655.487 | TRUCK |
| 163 | 151663.625 | 611767.486 | 655.339 | TRUCK |
| 164 | 151660.298 | 611767.91  | 655.236 | TRUCK |
| 165 | 151655.075 | 611768.215 | 655.074 | TRUCK |
| 166 | 151649.809 | 611768.459 | 655     | TRUCK |
| 167 | 151648.234 | 611768.079 | 655.071 | TRUCK |
| 168 | 151647.908 | 611767.049 | 655.317 | TRUCK |
| 169 | 151648.008 | 611765.454 | 655.755 | TRUCK |
| 170 | 151773.851 | 611770.04  | 656.511 | EG1   |
| 171 | 151774.318 | 611765.125 | 657.155 | EA1   |
| 172 | 151774.162 | 611758.919 | 657.464 | FL1   |
| 173 | 151773.531 | 611747.073 | 657.861 | CL1   |
| 174 | 151773.353 | 611735.259 | 658.192 | FL2   |
| 175 | 151772.797 | 611728.903 | 658.262 | EA2   |
| 176 | 151773.851 | 611722.45  | 657.577 | EG2   |
|     |            |            |         |       |

| 177 | 151718.196 | 611721.616 | 657.137 | EG2    |
|-----|------------|------------|---------|--------|
| 178 | 151717.62  | 611727.148 | 657.776 | EA2    |
| 179 | 151717.056 | 611733.575 | 657.61  | FL2    |
| 180 | 151716.646 | 611745.283 | 657.328 | CL1    |
| 181 | 151716.301 | 611757.105 | 656.952 | FL1    |
| 182 | 151716.072 | 611763.196 | 656.641 | EA1    |
| 183 | 151715.583 | 611768.51  | 655.637 | EG1    |
| 184 | 151667.981 | 611766.666 | 655.315 | EG1    |
| 185 | 151667.869 | 611762.117 | 656.167 | EA1    |
| 186 | 151667.659 | 611756.006 | 656.394 | FL1    |
| 187 | 151667.573 | 611744.13  | 656.932 | CL1    |
| 188 | 151666.923 | 611732.434 | 657.203 | FL2    |
| 189 | 151666.897 | 611726.172 | 657.395 | EA2    |
| 190 | 151666.524 | 611720.767 | 656.765 | EG2    |
| 191 | 151618.686 | 611721.015 | 656.435 | EG2    |
| 192 | 151616.047 | 611726.044 | 656.698 | EA2    |
| 193 | 151616.765 | 611732.453 | 656.621 | FL2    |
| 194 | 151616.765 | 611744.269 | 656.272 | CL1    |
| 195 | 151617.536 | 611756.073 | 655.852 | FL1    |
| 196 | 151617.426 | 611762.208 | 655.564 | EA1    |
| 197 | 151617.556 | 611766.309 | 654.931 | EG1    |
| 198 | 151556.436 | 611766.996 | 654.468 | EG1    |
| 199 | 151556.448 | 611763.181 | 655.062 | EA1    |
| 200 | 151556.171 | 611756.951 | 655.392 | FL1    |
| 201 | 151555.285 | 611744.954 | 655.872 | CL1    |
| 202 | 151554.242 | 611733.475 | 656.218 | FL2    |
| 203 | 151553.296 | 611727.125 | 656.384 | EA2    |
| 204 | 151552.381 | 611722.067 | 655.744 | EG2    |
| 205 | 151483.317 | 611723.876 | 655.18  | EG2    |
| 206 | 151482.449 | 611729.218 | 655.641 | EA2    |
| 207 | 151480.517 | 611735.637 | 655.478 | FL2    |
| 208 | 151480.617 | 611747.221 | 655.161 | CL1    |
| 209 | 151480.938 | 611759.148 | 654.748 | FL1    |
| 210 | 151480.73  | 611765.33  | 654.415 | EA1    |
| 211 | 151480.944 | 611769.728 | 653.678 | EG1    |
| 212 | 151503.779 | 611758.45  | 654.82  | AXL3   |
| 213 | 151500.434 | 611752.637 | 655.052 | AXL3   |
| 214 | 151491.862 | 611757.317 | 654.85  | AXL4   |
| 215 | 151495.084 | 611763.189 | 654.664 | AXL4   |
| 216 | 151489.858 | 611762.15  | 654.527 | SQUAD1 |
| 217 | 151489.031 | 611759.959 | 654.617 | SQUAD1 |
| 218 | 151489.546 | 611758.953 | 654.7   | SQUAD1 |
| 219 | 151492.933 | 611756.831 | 654.81  | SQUAD1 |
| 220 | 151498.519 | 611753.748 | 654.987 | SQUAD1 |
| 221 | 151502.325 | 611751.858 | 655.095 | SQUAD1 |
| 222 | 151503.678 | 611752.858 | 655.093 | SQUAD1 |
| 223 | 151504.494 | 611752.481 | 655.142 | SQUAD1 |

| 224 | 151505.94  | 611755.071 | 655.133 | SQUAD1 |
|-----|------------|------------|---------|--------|
| 225 | 151505.314 | 611755.545 | 655.075 | SQUAD1 |
| 226 | 151505.412 | 611756.863 | 655.071 | SQUAD1 |
| 227 | 151504.941 | 611757.627 | 655.083 | SQUAD1 |
| 228 | 151502.032 | 611759.224 | 654.898 | SQUAD1 |
| 229 | 151497.617 | 611761.787 | 654.841 | SQUAD1 |
| 230 | 151493.471 | 611763.937 | 654.645 | SQUAD1 |
| 231 | 151491.461 | 611764.194 | 654.669 | SQUAD1 |
| 232 | 151406.175 | 611774.163 | 653.21  | EG1    |
| 233 | 151405.887 | 611768.931 | 653.898 | EA1    |
| 234 | 151405.242 | 611762.858 | 654.341 | FL1    |
| 235 | 151402.909 | 611751.248 | 654.656 | CL1    |
| 236 | 151401.834 | 611739.662 | 654.671 | FL2    |
| 237 | 151401.157 | 611733.358 | 654.531 | EA2    |
| 238 | 151399.5   | 611728.928 | 654.582 | EG2    |
| 239 | 151322.609 | 611734.889 | 653.692 | EG2    |
| 240 | 151322.974 | 611739.473 | 653.296 | EA2    |
| 241 | 151321.35  | 611746.072 | 653.642 | FL2    |
| 242 | 151322.163 | 611757.465 | 653.799 | CL1    |
| 243 | 151327.795 | 611768.746 | 653.134 | FL1    |
| 244 | 151331.683 | 611774.663 | 652.717 | EA1    |
| 245 | 151331.276 | 611780.341 | 652.48  | EG1    |
| 246 | 151272.209 | 611784.417 | 651.529 | EG1    |
| 247 | 151272.498 | 611780.158 | 651.929 | EA1    |
| 248 | 151272.461 | 611773.813 | 652.344 | FL1    |
| 249 | 151271.916 | 611761.975 | 652.657 | CL1    |
| 250 | 151270.808 | 611750.264 | 652.987 | FL2    |
| 251 | 151269.923 | 611743.787 | 653.196 | EA2    |
| 252 | 151271.412 | 611739.039 | 653.045 | EG2    |
| 253 | 151192.074 | 611741.818 | 651.573 | EG2    |
| 254 | 151193.125 | 611748.83  | 652.101 | EA2    |
| 255 | 151193.239 | 611757.144 | 652.123 | FL2    |
| 256 | 151194.34  | 611769.122 | 651.915 | CL1    |
| 257 | 151195.517 | 611780.685 | 651.559 | FL1    |
| 258 | 151196.382 | 611786.991 | 651.25  | EA1    |
| 259 | 151196.002 | 611791.595 | 650.767 | EG1    |
| 260 | 151164.174 | 611747.642 | 651.127 | EG2    |
| 261 | 151164.019 | 611753.415 | 651.715 | EA2    |
| 262 | 150935.622 | 611768.394 | 647.781 | EG2    |
| 263 | 150936.301 | 611775.671 | 648.325 | EA2    |
| 264 | 150936.196 | 611781.566 | 648.513 | FL2    |
| 265 | 150935.346 | 611793.719 | 648.745 | CL1    |
| 266 | 150936.065 | 611805.398 | 648.588 | FL1    |
| 267 | 150936.566 | 611811.93  | 648.636 | EA1    |
| 268 | 150936.089 | 611816.983 | 648.321 | EG1    |
| 269 | 150889.195 | 611809.453 | 647.942 | GLASS  |
| 270 | 150872.206 | 611798.292 | 648.123 | GLASS  |

| 271 | 150852.494 | 611793.93  | 647.939 | GLASS  |
|-----|------------|------------|---------|--------|
| 272 | 150824.068 | 611797.747 | 647.53  | GLASS  |
| 273 | 150779.025 | 611801.334 | 647.109 | GLASS  |
| 274 | 150738.544 | 611804.96  | 646.667 | GLASS  |
| 275 | 150719.029 | 611809.719 | 646.653 | GLASS  |
| 276 | 150694.345 | 611816.609 | 646.617 | GLASS  |
| 277 | 150689.207 | 611829.062 | 646.411 | GLASS  |
| 278 | 150701.607 | 611838.768 | 646.203 | GLASS  |
| 279 | 150740.537 | 611836.274 | 645.946 | GLASS  |
| 280 | 150871.262 | 611820.442 | 647.732 | GLASS  |
| 281 | 150798.994 | 611821.425 | 647.24  | GLAS2  |
| 282 | 150771.473 | 611824.511 | 646.907 | GLAS2  |
| 283 | 150731.592 | 611828.585 | 646.633 | GLAS2  |
| 284 | 150588.369 | 611850.782 | 645.186 | EG1    |
| 285 | 150588.855 | 611845.91  | 645.461 | EA1    |
| 286 | 150588.197 | 611839.729 | 645.74  | FL1    |
| 287 | 150586.667 | 611827.851 | 645.995 | CL1    |
| 288 | 150585.382 | 611815.903 | 645.676 | FL1    |
| 289 | 150584.611 | 611809.919 | 645.379 | EA1    |
| 290 | 150582.864 | 611804.684 | 644.804 | EG1    |
| 291 | 150482.688 | 611850.087 | 645.357 | FL1    |
| 292 | 150482.927 | 611856.171 | 645.147 | EA1    |
| 293 | 150482.621 | 611860.756 | 644.707 | EG1    |
| 294 | 150424.832 | 611860.975 | 645.094 | FL1    |
| 295 | 150425.342 | 611862.071 | 644.906 | EA1    |
| 296 | 150411.861 | 611874.898 | 645     | EA1    |
| 297 | 150353.282 | 611881.36  | 645.158 | EA1    |
| 298 | 150338.822 | 611870.499 | 644.985 | EA1    |
| 299 | 150345.9   | 611879.188 | 644.861 | EG3    |
| 300 | 150334.441 | 611875.522 | 644.717 | EG3    |
| 301 | 150336.227 | 611864.268 | 645.253 | FL3    |
| 302 | 149947.173 | 611911.667 | 644.691 | EG3    |
| 303 | 149946.476 | 611908.094 | 644.93  | EA1    |
| 304 | 149944.933 | 611902.23  | 645.071 | FL3    |
| 305 | 149943.125 | 611889.987 | 645.264 | CL1    |
| 306 | 149939.169 | 611878.474 | 644.99  | FL2    |
| 307 | 149938.107 | 611872.608 | 644.748 | EA2    |
| 308 | 149937.365 | 611869.076 | 644.579 | EG2    |
| 309 | 149823.431 | 611914.885 | 645.376 | AXL5   |
| 310 | 149824.121 | 611921.628 | 645.148 | AXL5   |
| 311 | 149814.7   | 611922.781 | 645.22  | AXL6   |
| 312 | 149814.028 | 611916.173 | 645.415 | AXL6   |
| 313 | 149813.984 | 611916.174 | 645.373 | AXL6   |
| 314 | 149810.527 | 611919.903 | 645.395 | SQUAD2 |
| 315 | 149827.564 | 611917.972 | 645.318 | SQUAD2 |
| 316 | 149616.171 | 611898.079 | 644.105 | EG2    |
| 317 | 149614.936 | 611902.877 | 644.579 | EA2    |
|     |            |            |         |        |

| 318 | 149615.553 | 611908.695 | 644.87  | FL2       |
|-----|------------|------------|---------|-----------|
| 319 | 149616.646 | 611920.718 | 645.222 | CL1       |
| 320 | 149617.679 | 611932.658 | 645.373 | FL3       |
| 321 | 149618.43  | 611938.859 | 645.413 | EA1       |
| 322 | 149618.906 | 611943.333 | 644.974 | EG3       |
| 323 | 151351.618 | 611761.046 | 653.456 | ACC       |
| 324 | 151336.669 | 611762.176 | 653.437 | ACC       |
| 3   | 151392.953 | 611803.806 | 659.21  | BS        |
| 401 | 150780.672 | 611880.231 | 657.673 | CAM-SOUTH |
| 402 | 150781.045 | 611876.163 | 657.776 | CAM-NOR   |
| 403 | 150784.015 | 611878.688 | 657.902 | SHOP      |
| 404 | 150740.031 | 611882.585 | 656.813 | SHOP      |
| 405 | 150744.376 | 611923.785 | 656.46  | SHOP      |
| 406 | 150596.838 | 611907.831 | 654.426 | SHOP2     |
| 407 | 150532.426 | 611913.925 | 654.996 | SHOP2     |
| 408 | 150535.183 | 611944.996 | 654.534 | SHOP2     |
| 409 | 149876.104 | 611924.197 | 643.017 | SIGN10    |
| 410 | 149876.845 | 611927.851 | 642.54  | SIGN10    |
| 411 | 149830.559 | 611913.747 | 645.288 | RUMBLE    |
| 412 | 149831.436 | 611913.673 | 645.285 | RUMBLE    |
| 413 | 149833.113 | 611913.533 | 645.269 | RUMBLE    |
| 414 | 149835.051 | 611913.432 | 645.285 | RUMBLE    |
| 415 | 149836.936 | 611913.265 | 645.276 | RUMBLE    |
| 416 | 149838.756 | 611913.095 | 645.294 | RUMBLE    |
| 417 | 149840.777 | 611912.887 | 645.254 | RUMBLE    |
| 418 | 149842.556 | 611912.637 | 645.267 | RUMBLE    |
| 419 | 149844.458 | 611912.497 | 645.288 | RUMBLE    |
| 420 | 149846.358 | 611912.376 | 645.267 | RUMBLE    |
| 421 | 149848.233 | 611912.157 | 645.206 | RUMBLE    |
| 422 | 149850.042 | 611911.974 | 645.213 | RUMBLE    |
| 423 | 149851.851 | 611911.788 | 645.241 | RUMBLE    |
| 424 | 149853.745 | 611911.592 | 645.247 | RUMBLE    |
| 425 | 149855.641 | 611911.444 | 645.212 | RUMBLE    |
| 426 | 149857.542 | 611911.319 | 645.2   | RUMBLE    |
| 427 | 149859.21  | 611911.088 | 645.18  | RUMBLE    |
| 428 | 149861.062 | 611910.945 | 645.203 | RUMBLE    |
| 429 | 149862.884 | 611910.713 | 645.159 | RUMBLE    |
| 430 | 149865.106 | 611910.576 | 645.2   | RUMBLE    |
| 431 | 149866.916 | 611910.453 | 645.214 | RUMBLE    |
| 432 | 149868.63  | 611910.3   | 645.193 | RUMBLE    |
| 433 | 149870.449 | 611910.063 | 645.17  | RUMBLE    |
| 434 | 149872.347 | 611909.858 | 645.154 | RUMBLE    |
| 435 | 149874.236 | 611909.755 | 645.16  | RUMBLE    |
| 436 | 150005.696 | 611857.57  | 642.392 | SIGN11    |
| 437 | 150040.158 | 611935.133 | 652.073 | PPOLE10   |
| 438 | 150287.897 | 611909.931 | 652.174 | PPOLE11   |
| 439 | 150349.457 | 611885.557 | 646.685 | SIGN15    |
|     |            |            |         |           |

| 440 | 150181.156 | 611867.998 | 645.3   | CL20              |
|-----|------------|------------|---------|-------------------|
| 441 | 150194.741 | 611866.633 | 645.387 | CL20              |
| 442 | 150219.552 | 611863.772 | 645.426 | CL21              |
| 443 | 150243.961 | 611861.609 | 645.451 | CL21              |
| 444 | 150279.776 | 611857.989 | 645.451 | CL22              |
| 445 | 150293.006 | 611856.67  | 645.464 | CL22              |
| 446 | 150316.011 | 611854.17  | 645.455 | CL23              |
| 447 | 150328.527 | 611852.986 | 645.47  | CL23              |
| 448 | 150365.069 | 611849.304 | 645.43  | CL24              |
| 449 | 150378.215 | 611848.102 | 645.419 | CL24              |
| 450 | 150415.122 | 611844.03  | 645.452 | CL25              |
| 451 | 150428.062 | 611842.834 | 645.464 | CL25              |
| 452 | 150417.924 | 611876.621 | 643.514 | STOP              |
| 453 | 150311.844 | 611829.984 | 643.852 | <b>NO-PASS</b>    |
| 454 | 150576.873 | 611863.625 | 644.027 | HIST-MRKR         |
| 455 | 150892.969 | 611824.315 | 646.223 | CULV              |
| 456 | 150898.529 | 611770.755 | 647.287 | SIGN30            |
| 457 | 150898.71  | 611767.395 | 646.543 | SIGN30            |
| 458 | 151194.101 | 611747.477 | 651.993 | <b>GUARD-FACE</b> |
| 459 | 151196.067 | 611782.057 | 651.54  | RUMBLE10          |
| 460 | 151152.328 | 611785.942 | 651.079 | RUMBLE10          |
| 461 | 151139.727 | 611787.038 | 650.907 | RUMBLE11          |
| 462 | 151095.961 | 611791.141 | 650.443 | RUMBLE11          |
| 463 | 150576.555 | 611841.917 | 645.579 | RUMBLE12          |
| 464 | 150532.537 | 611846.155 | 645.476 | RUMBLE12          |
| 465 | 150520.008 | 611847.193 | 645.491 | RUMBLE13          |
| 466 | 150476.88  | 611851.289 | 645.336 | RUMBLE13          |
|     |            |            |         |                   |

## SUPPLEMENT REPORT

LOCAL CASE NUMBER: VESO-23-0704 CALL FOR SERVICE: 000251-7121

TECHNICAL CRASH SCENE INVESTIGATOR: Trooper C. Sukis

**CASE TYPE:** Officer Involved Death



#### - FORWARD -

Crash Reconstruction is a comprehensive subject with many facets and specialty fields. The primary responsibility of the investigation is to document and preserve all available physical evidence. The following reconstruction is limited to the subjects stated herein. The author and the Wisconsin State Patrol reserve the right to conduct a more extensive analysis of the available material on a later date as necessity dictates.

## • Request for Assistance:

On June 16<sup>th</sup>, 2023, around 18:50, I was performing regular traffic enforcement on U.S. 61 near Rolling Ground. I overheard a Vernon County Sheriff's Department Deputy call out "shots fired" via the Vernon County Sheriff's Department radio channel. I began responding to the incident location on State Highway 35 with Trooper Marcus Meurer. Initial response was emergent but once we were notified the scene was secured we slowed our response.

I arrived on scene around 19:33. I spoke with Sheriff Roy Torgerson of the Vernon County Sheriff's Department who was in charge of the scene until members of the Division of Criminal Investigation (DCI) could arrive on scene. Sheriff Torgerson advised DCI was enroute and DCI was requesting the assistance of the Wisconsin State Patrol Technical Reconstruction Unit (TRU). Sergeant Randy Gordon of the Wisconsin State Patrol was the duty supervisor for the southwest region at the time of the incident. I informed him that I had all equipment necessary to map and photograph the incident. DCI was also requesting a 3D scan of the incident, and Trooper Courtney Mueller of the TRU was responding with a scanner. Lastly Vernon County requested the State Patrol write the crash involving the pickup and sheriff's vehicle. Trooper Marcus Meurer would be writing that crash.

### • Initial Scene Examination:

After being briefed on the incident, I examined the scene. State Highway 35 was closed and an alternate route had been established. State Highway 35 is a north/south road, and the evidence for the incident was primarily on the northbound lane and east side of the road.

While walking the scene, I located glass in the roadway near Gianoli Road. This was the estimated location of the shooting. I canvased this general area for the bullet casing with Trooper Meurer. We were unable to locate the casing.

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## • Photography:

I photographed the scene with my assigned Canon Rebel T6i camera. I took 309 digital photographs for this event. This included, but not limited to, the Dodge pickup, two Vernon County Ford Police Utility Vehicles, and other items of evidentiary value.

# • Forensic Mapping

A Global Navigational Satellite System (GNSS) Total Station was used to forensically map the roadway, vehicle, identified evidence, and topography. The unit consists of a Trimble R10 GNSS receiver, a graduated pole, and a Trimble TSC3 data collector (electronic memory) as seen in Figure 1 on the following page. The GNSS Total Station connects via portable Wi-Fi to the Wisconsin Continuously Operating Reference Stations (WISCORS) Network and its base stations located throughout the state. By combining the GNSS coordinates with the corrections from the WISCORS, it is possible to achieve measured positions accurate to under an inch. The combined measuring system allows the user to collect accurate three-dimensional data on points of interest. The measurements are stored in the unit's data collector, along with descriptive tags, until they can be downloaded into a computer application for further analysis. Detailed



measurements of the scene were collected including, but not limited to; roadway, evidence, vehicle, and other geographical markers.

# **Summary**

The primary objective of this investigation was to collect and preserve perishable scene evidence. All scene data that I collected was turned over to Trooper Courtney Mueller of the Wisconsin State Patrol Technical Reconstruction Unit. This ended my involvement with the incident.

End of Report

**Trooper Christopher Sukis** 

Technical Crash Scene Investigator

Wisconsin State Patrol SWR - Tomah Post

(608) 716-1738

ASE Certification - 5818-3720

STATE PATROL



000251-7121 Page 2 of 2

# Wisconsin Division of Criminal Investigation

# Investigative 23-4795/37

Report Date: 07/10/2023

**Primary Information** 

Description: Time-Distance Speed Analysis

Occurrence From: **07/10/2023**Occurrence To: **07/12/2023** 

Reporting LEO: Bender, Justin D (Wausau Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/13/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

**Addresses** 

Relationship Address

Evidence Located E428 Gianoli Rd, Genoa, Wisconsin 54632 United States of America

Evidence Located S4601 State Highway 35, GENOA, Wisconsin 54632 United States of America

Location of Event State Highway 35, Genoa, WI, Wisconsin United States of America

**Subjects** 

RelationshipNameBioDOBDeceasedBoardman, William S (Person)61 yr. old, White, Male

Narrative begins on the following page.

07/14/2023 08:10:06 Page 1 of 4

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/37

On Friday, June 16, 2023, Wisconsin Department of Justice / Division of Criminal Investigation (WI DOJ/DCI) Special Agents (SA) were requested by the Vernon County Sheriff's Office (VCSO) to investigate an Officer Involved Critical Incident (OICI) which occurred on State Highway 35 north of Gianoli Road in Vernon County, Wisconsin. The suspect, William S. Boardman, was fatally shot during the incident. The WI DOJ/DCI was requested by the VCSO to be the lead investigative agency for the OICI.

On Monday, July 10, 2023, WI DOJ/DCI SA Justin Bender completed a time-distance speed analysis in reference to the OICI. SA Bender is fully accredited by the Accreditation Commission for Traffic Accident Reconstructionists (ACTAR #2705). SA Bender utilized the following information for the speed analysis:

- Trimble R10 Global Navigation Satellite System (GNSS) data collected by SA Bender at the incident scene on Friday, July 7, 2023
- VCSO Deputy Jonathon Brown body worn camera
- VCSO Deputy Bradley Brueggeman body worn camera
- Video surveillance from the Vernon County Highway Department building located at E428 Gianoli Road, Genoa, Wisconsin
- Video surveillance from Dairyland Power Cooperative located at S4601 State Highway 35, Genoa, Wisconsin

#### **Video Evidence Review:**

SA Bender reviewed the available video evidence data to obtain specific time intervals in relation to measured locations at the incident scene. All of the video evidence data was independently reviewed by other members of the WI DOJ/DCI and should be referenced for more detailed information. The following lists the information obtained from the video evidence data:

#### Deputy Brown Body Worn Camera:

(Reference narrative report 23-4795/26 by WI DOJ/DCI SA Mary VanSchoyck)

- T23:46:**36**Z = Suspect vehicle fled from the traffic stop location
- T23:46:**58**Z = Deputy Brown discharged his firearm
- T23:47:11Z = Shots fired called by Deputy Brown
- T23:47:31Z = Suspect vehicle rear-ends Deputy Brueggeman's squad

In review of Deputy Brown's body worn camera, approximately **22 seconds** (58-36) elapsed from the time the suspect fled to the time Deputy Brown discharged his firearm.

This document contains neither recommendations nor conclusions of the Division of Criminal Investigation. It is the property of this Division, and is loaned to your agency. Its contents are not to be distributed outside your agency.

# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/37

### Deputy Brueggeman Body Worn Camera:

(Reference narrative report 23-4795/16 by WI DOJ/DCI SA Brian Trowbridge)

- T23:46:33Z = Suspect vehicle fled from the traffic stop location
- T23:47:08Z = Shots fired called by Deputy Brown
- T23:47:28Z = Squad rear-ended by suspect vehicle

In review of Deputy Brueggeman's body worn camera, the time frames were consistent with Deputy Brown's body worn camera. The time stamp on Deputy Brueggeman's body worn camera appeared to be approximately three seconds ahead of Deputy Brown's body worn camera.

### Vernon County Highway Department Camera Channel 1 (south facing camera):

(Reference narrative report 23-4795/30 by WI DOJ/DCI SA Wade Beardsley)

- 18:46:**32** = Suspect vehicle fled from the traffic stop location
- 18:46:47 = Suspect vehicle's front by the end of east fog line
- 18:46:51 = Suspect vehicle's front by a historical marker sign
- 18:46:**54** = Glass visible coming from suspect vehicle's passenger side window by the Vernon County Highway Department building from Deputy Brown discharging firearm

In review of the Vernon County Highway Department's south facing camera, approximately 22 seconds (54-32) elapsed from the time the suspect fled to the time Deputy Brown discharged his firearm.

# Vernon County Highway Department Camera Channel 2 (north facing camera):

(Reference narrative report 23-4795/30 by SA Beardsley)

- 18:46:53 = Suspect vehicle comes into the camera view
- 18:46:**54** = Glass visible coming from suspect vehicle's passenger side window by the Vernon County Highway Department building from Deputy Brown discharging firearm.

In review of the Vernon County Highway Department's north facing camera, the time frames were consistent with the south facing camera.

### Dairyland Power Cooperative Camera:

(Reference narrative report 23-4795/12 by SA Beardsley)

- 8:30 = Suspect vehicle fled from the traffic stop location
- 8:52 = Suspect vehicle by the Vernon County Highway Department building

In review of the Dairyland Power Cooperative camera, approximately **22 seconds** (52-30) elapsed from the time the suspect fled to where the vehicle can be seen by the Highway Department Building where Deputy Brown discharged his firearm.

#### **Time-Distance Speed Analysis:**

Page 2

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SA Bender completed the forensic data processing of the GNSS data utilizing Trimble Reveal (3D diagramming and analysis software). SA Bender identified multiple time-distance relationships utilizing the video evidence and forensic mapping data. The starting location of the suspect's vehicle was determined based on Deputy Brown's squad location, Gianoli Road sign, and measured rumble strips on State Highway 35. The suspect fled northbound on State Highway 35 for approximately 22 seconds and traveled approximately 900 feet to the location where Deputy Brown discharged his firearm. SA Bender determined the approximate acceleration, or time rate of change of velocity, of the suspect's vehicle as it sped up from a stop to the position where Deputy Brown discharged his firearm. SA Bender utilized the calculated acceleration rate to determine the ending velocity of the suspect's vehicle. Utilizing a finite iteration of the required inputs, the speed of the suspect's vehicle when Deputy Brown discharged firearm was approximately 53 – 57 MPH.

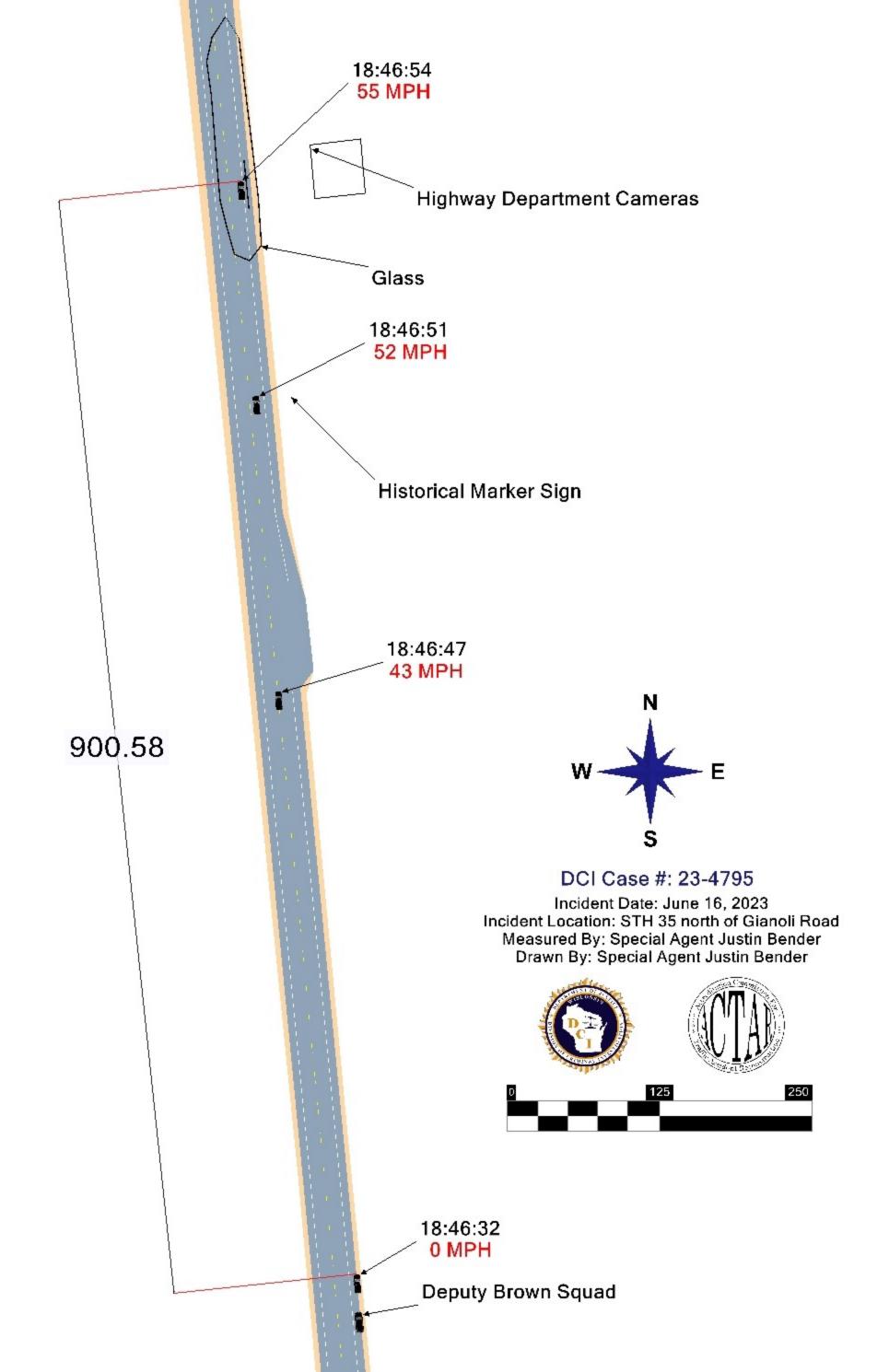
SA Bender completed a time-distance scene diagram utilizing the time stamps from the Vernon County Highway Department Camera Channel 1 (south facing camera). The following lists the identified suspect vehicle locations from the video and forensic mapping data:

- 18:46:**32** = Suspect vehicle fled from the traffic stop location o *0 MPH location on diagram (Suspect vehicle starting location)*
- 18:46:47 = Suspect vehicle's front was by the end of the east fog line
  - o <u>43 MPH</u> location on diagram (Approximately 482 feet north of starting location)
- 18:46:51 = Suspect vehicle's front by a historical marker sign
  - o <u>52 MPH</u> location on diagram (Approximately 725 feet north of starting location)
- 18:46:**54** = Glass visible coming from suspect vehicle's passenger side window by the Vernon County Highway Department building from Deputy Brown discharging firearm o 55 MPH location on diagram (Approximately 900 feet north of starting location)

All speed estimates and suspect vehicle locations calculated and depicted in the time-distance scene diagram are approximate and based on the available video evidence and forensic mapping data.

#### **DCI Electronic Records:**

SA Bender electronically uploaded the acceleration & velocity calculation report, finite iteration of ending velocity table, and time-distance scene diagram to the DCI electronic records repository.



# **Collision Dynamics Report**

Incident Date: 6/16/2023 Case Number: 23-4795

Incident Location: STH 35 north of Gianoli Road Case Name: Vernon County OICI

Involved Vehicles: Involved Parties: Case Comments:

#### 1. Acceleration Calculation - End of East Fog Line

Acceleration / deceleration factor from or to a stop over a unit of time.

$$f = \frac{2d}{gT^2}$$

 Input Value(s)
 Units
 Value

 d (distance)
 feet
 482.000

 T (time)
 seconds
 15.000

Result(s) for f (acceleration / deceleration factor) (g) 0.133

Solution Steps

g = acceleration due to gravity = 32.185 ft/sec2

d = distance = 482.000 feet

T = time = 15.000 seconds

$$f = \frac{2d}{gT^2}$$

$$f = \frac{2 \times 482}{32.185 \times 15^2}$$

$$f = \frac{964}{32.185 \times 225}$$

$$f = \frac{964}{7241.634}$$

$$f = 0.133$$

f = acceleration / deceleration factor = 0.133 g

#### Acceleration Calculation - Historical Marker Sign

Acceleration / deceleration factor from or to a stop over a unit of time.

$$f = \frac{2d}{gT^2}$$

| Input Value(s) | Units   | Value   |
|----------------|---------|---------|
| d (distance)   | feet    | 725.000 |
| T (time)       | seconds | 19.000  |

Result(s) for f (acceleration / deceleration factor) (g)

Solution Steps

g = acceleration due to gravity = 32.185 ft/sec2

d = distance = 725.000 feet

T = time = 19.000 seconds

$$f = \frac{2d}{gT^2}$$

$$f = \frac{2 \times 725}{32.185 \times 19^2}$$

$$f = \frac{1450}{32.185 \times 361}$$

$$f = \frac{1450}{11618.799}$$

$$f = 0.125$$

f = acceleration / deceleration factor = 0.125 g

#### 3. Acceleration Calculation - Location Deputy Brown Discharged Firearm

Acceleration / deceleration factor from or to a stop over a unit of time.

$$f = \frac{2d}{gT^2}$$

| Input Value(s) | Units   | Value   |
|----------------|---------|---------|
| d (distance)   | feet    | 900.000 |
| T (time)       | seconds | 22.000  |

Result(s) for f (acceleration / deceleration factor) (g) 0.116

Solution Steps

g = acceleration due to gravity = 32.185 ft/sec2

d = distance = 900.000 feet T = time = 22.000 seconds

$$f = \frac{2d}{gT^2}$$

$$f = \frac{2 \times 900}{32.185 \times 22^2}$$

$$f = \frac{1800}{32.185 \times 484}$$

$$f = \frac{1800}{15577.559}$$

f = 0.116

f = acceleration / deceleration factor = 0.116 g

# 4. Velocity Calculation - End of East Fog Line

Velocity of an acceleration/deceleration from or to a stop.

$$V = \sqrt{2fgd}$$

| Input Value(s)           | Units | Value   |
|--------------------------|-------|---------|
| f (accel / decel factor) | g     | 0.133   |
| d (distance)             | feet  | 482.000 |

Result(s) for V (velocity) (mph) 43.799

Solution Steps g = acceleration due to gravity = 32.185 ft/sec2 f = accel / decel factor = 0.133 g d = distance = 482.000 feet

$$V = \sqrt{2fgd}$$

$$V = \sqrt{2 \times 0.133 \times 32.185 \times 482}$$

$$V = \sqrt{0.266 \times 32.185 \times 482}$$

$$V = \sqrt{8.561 \times 482}$$

$$V = \sqrt{4126.508}$$

$$V = 64.238$$

V = velocity = 64.238 ft/sec = 43.799 mph

# 5. Velocity Calculation - Historical Marker Sign

Velocity of an acceleration/deceleration from or to a stop.

$$V = \sqrt{2fgd}$$

| Input Value(s)           | Units | Value   |
|--------------------------|-------|---------|
| f (accel / decel factor) | g     | 0.125   |
| d (distance)             | feet  | 725.000 |

Result(s) for V (velocity) (mph) 52.076

23-4795 3 CrashMath

Solution Steps g = acceleration due to gravity = 32.185 ft/sec2 f = accel / decel factor = 0.125 g d = distance = 725.000 feet

$$V = \sqrt{2fgd}$$

$$V = \sqrt{2 \times 0.125 \times 32.185 \times 725}$$

$$V = \sqrt{0.25 \times 32.185 \times 725}$$

$$V = \sqrt{8.046 \times 725}$$

$$V = \sqrt{5833.538}$$

$$V = 76.378$$

V = velocity = 76.378 ft/sec = 52.076 mph

# 6. Velocity Calculation - Location Deputy Brown Discharged Firearm

Velocity of an acceleration/deceleration from or to a stop.

$$V = \sqrt{2fgd}$$

| Input Value(s)           | Units | Value   |
|--------------------------|-------|---------|
| f (accel / decel factor) | g     | 0.116   |
| d (distance)             | feet  | 900.000 |

Result(s) for V (velocity) (mph) 55.894

Solution Steps g = acceleration due to gravity = 32.185 ft/sec2 f = accel / decel factor = 0.116 g d = distance = 900.000 feet

$$V = \sqrt{2fgd}$$

$$V = \sqrt{2 \times 0.116 \times 32.185 \times 900}$$

$$V = \sqrt{0.232 \times 32.185 \times 900}$$

$$V = \sqrt{7.467 \times 900}$$

$$V = \sqrt{6720.236}$$

$$V = 81.977$$

|                              | Interval           |           |        |          |             |             |            |                               |   |                   | AutoFill         |                 | ie.                |                 |                     | 2                    |                 |                |
|------------------------------|--------------------|-----------|--------|----------|-------------|-------------|------------|-------------------------------|---|-------------------|------------------|-----------------|--------------------|-----------------|---------------------|----------------------|-----------------|----------------|
|                              |                    | .0011     | 6      | .22      | .0002       | 0           |            |                               |   |                   |                  |                 | Cancel             |                 |                     | Graphics             | Formulae*       | Save .TDA File |
|                              | Maximum            | .1211     | 945    | 23.1     | .0246       | 0           |            |                               |   | Interval          | 1                |                 | Finite Differences |                 |                     | ō                    |                 |                |
|                              | Minimum            | 9         |        |          | .2          |             |            |                               |   | Range (+/-)       | 2                |                 | Finite Di          |                 |                     | lenu                 |                 | a              |
| lenu                         | I - Var            | .1096     | ce 855 | 20.9     | (1)         | (F) 0       |            | [K: D and S2]                 | • Final Speed [K: D and S1] • Dist + Time [K: S1 and S2]  |                   | ple              | )oc             | Iteration Tables   |                 | phics               | Iteration / FDA Menu | Formulae        | Open .TDA File |
| Iteration/FD Menu            | 6                  | € fa/Rate |        | o O Time | ා Speed (I) | ⊙ Speed (F) | Solve for: | O Initial Speed [K: D and S2] | © Final Speed [K: D and St]  ○ Dist + Time [K: St and S2] |                   | Clear Table      | □ Send to Doc   | Iterati            |                 | Tables and Graphics | I                    |                 |                |
|                              |                    |           |        |          |             |             |            | s                             |   |                   |                  |                 |                    | spuc            |                     |                      |                 |                |
|                              | 1154               |           |        |          |             |             |            | 2.5335 M/H/s                  | 3.7158 f/s/s  | 900 ft            | 4                | 300.0001 10     | 22 seconds         | 22.0092 seconds | 0234 M/H            | 0344 f/c             | C): 11 CO.      | 81.7837 f/s    |
| Output                       | Acceleration (fa): |           |        |          |             |             |            | Rate:                         | Rate:   | Distance (Event): | .(C3> 0) courtin | stalice (U>32). | Time (Event):      | Time (0>S2):    | Spood (Initial):    | Speed (Initial):     | Speed (Enal):   |                |
| no                           |                    |           |        |          |             |             |            |                               |   |                   | - 2              |                 |                    | F               | Ů                   | ה לי<br>י            |                 |                |
| lo                           | 1154               |           |        |          |             |             |            | Decrease by 1                 | ft 900  |                   | seconds 22       |                 |                    |                 |                     |                      | M/H 0           | H              |
| Time Distance - Acceleration | Factor             |           |        |          |             |             |            | of 4)                         |   |                   | secol            |                 |                    |                 |                     |                      |                 | H/W ()         |
| Time Distan                  | Acceleration       |           |        |          |             |             |            | Inputs: (2 of 4)              | Distance  | i                 | IIme             |                 |                    |                 |                     |                      | Speed (Initial) | Speed (Final)  |

|             |               |         | Speec  | <b>Speed (F)</b> 55.7616 M/H |            | Uncertainty  | Uncertainty (+/-) = 1.9691 M/H |             |
|-------------|---------------|---------|--------|------------------------------|------------|--------------|--------------------------------|-------------|
|             | Variable      | Nominal | Value  | Speed (F)                    | Difference | Difference^2 |                                | Average     |
| High:       | Friction (Mu) | .1154   | .1211  | 57.1221                      | 1.3605     | 1.8510       |                                |             |
| Low:        | Friction (Mu) | .1154   | .1096  | 54.3423                      | -1.4193    | 2.0145       |                                | 1.9328      |
| High:       | Distance      | 006     | 945    | 57.1387                      | 1.3770     | 1.8962       |                                |             |
| Low:        | Distance      | 006     | 855    | 54.3497                      | -1.4119    | 1.9935       |                                | 1.9448      |
| High:       | Time          | 22      | 23.1   | 55.7616                      | 0000       | 0000         |                                |             |
| Low:        | Time          | 22      | 20.9   | 55.7616                      | 0000       | 0000.        |                                | 0000        |
| High:       | (I) paedS     | 0       | .0246  | 55.7616                      | 0000.      | 0000.        |                                |             |
| Low:        | Speed (I)     | 0       | .0222  | 55.7616                      | 0000       | 0000         |                                | 0000        |
| High:       | Speed (F)     |         | 0      | 55.7616                      | 0000.      | 0000         |                                |             |
| Low:        | Speed (F)     |         | 0      | 55.7616                      | 0000       | 0000.        |                                | 0000        |
|             |               |         |        |                              |            |              | Sum:                           | 3.8776      |
|             |               |         |        |                              |            |              | Square Root:                   | 1.9691      |
|             |               |         | Y      |                              |            |              |                                |             |
| Auto~Cycler |               |         | Return | Previous Page                | age        | Next Page    | Page                           | Page 1 of 1 |

# Wisconsin Division of Criminal Investigation

# Examination of Records 23-4795/38

Report Date: 07/12/2023

**Primary Information** 

Description: Receipt of WSP-TRU Report, Mapping Files, Scene Photos

Occurrence From: **07/12/2023**Occurrence To: **07/12/2023** 

Reporting LEO: Bender, Justin D (Wausau Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/13/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

**Addresses** 

Relationship Address

Location of Event State Highway 35, Genoa, WI, Wisconsin United States of America

**Subjects** 

Relationship Name Bio

Deceased Boardman, William S (Person) 61 yr. old, White, Male

<u>DOB</u>

**Documents** 

Document

**TRU Letter to Assisting Department** 

Mueller 000251-7121 Supplement Report

Narrative begins on the following page.

07/14/2023 08:14:20 Page 1 of 2

Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/38

On Friday, June 16, 2023, Wisconsin Department of Justice / Division of Criminal Investigation (WI DOJ/DCI) Special Agents (SA) were requested by the Vernon County Sheriff's Office (VCSO) to investigate an Officer Involved Critical Incident (OICI) which occurred on State Highway 35 north of Gianoli Road in Vernon County, Wisconsin. The suspect, William S. Boardman, was fatally shot during the incident. The WI DOJ/DCI was requested by the VCSO to be the lead investigative agency for the OICI.

On Wednesday, July 12, 2023, WI DOJ/DCI SA Justin Bender received an e-mail from Wisconsin State Patrol (WSP) Technical Reconstruction Unit (TRU) Trooper Courtney Mueller regarding data files in reference to the OICI. The data SA Bender received consisted of three forensic mapping files (.csv file, .doc file, and .job file), 309 digital scene photographs, supplemental report completed by Trooper Mueller, eighteen (18) .jpg diagrams, and a TRU Letter to Assisting Department. It should be noted that WI DOJ/DCI SA Michael Haverley had previously received the eighteen (18) .jpg diagrams which were referenced in narrative report 23-4795/24.

# **DCI Electronic Records:**

SA Bender electronically uploaded the forensic mapping data and digital scene photographs SA Bender received from Trooper Mueller to the DCI electronic records repository.

# **DCI Report Attachments:**

SA Bender electronically attached the supplemental report completed by Trooper Mueller and TRU Letter to Assisting Department as attachments to this narrative report.



# **Wisconsin State Traffic Operations Center**

433 W. St. Paul Ave. Milwaukee, WI 53203 Phone: (414) 227-2126

July 12<sup>th</sup>, 2023

Re: Crash Reconstruction Case Number 000251-7121

Highway 35 South of Hwy 56

Genoa, WI June 16, 2023

Vernon Count Sheriff's Department 1320 Bad Axe Ct Viroqua, WI 54665

Below is a link to Box.com where you will find my narrative report, a scaled scene diagram, and scene photographs of the scene.

If you have any questions, please contact me at the number or email below.

Sincerely,

Trooper Courtney Mueller Crash Reconstruction Specialist-Technical Reconstruction Unit Courtneyj.mueller@dot.wi.gov 608-716-1706

| IA New Alb | 127936.2 | 595364.2             | 671.289     |            |
|------------|----------|----------------------|-------------|------------|
| 1          | 151392.9 | 611803.7             | 659.272 CP1 |            |
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| 103        | 151157.8 |                      | 650.046 TM1 | tm1        |
| 104        | 151170.3 |                      |             | tm1        |
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| 110        | 151227.1 |                      |             | tm1        |
| 111        | 151235   |                      |             | tm1        |
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| 116        | 151268.4 |                      |             | tm1        |
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| 131        | 151453.9 | 611772.7             | 653.162 TM2 | tm1        |
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| 133        | 151491.4 |                      | 653.49 TM2  | tm1        |
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| 141        | 151614.2 |                      | 654.453 TM2 | tm1        |
| 142        | 151630.9 |                      |             | tm1        |
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| - 13       | _5_555.1 | 311,00.3             | 33Z         |            |

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| 147 | 151661.5 | 611767.8             | 655.297 AXL1  | PICKUP |
| 148 | 151652.3 | 611768.4             | 655.097 AXL2  | PICKUP |
| 149 | 151652   | 611761.8             | 656.078 AXL2  | PICKUP |
| 150 | 151656.3 | 611759.7             | 656.248 BODY  | PICKUP |
| 151 | 151650.4 | 611758.7             | 656.149 BODY  | PICKUP |
| 152 | 151648   | 611765               | 655.72 TRUCK  | PICKUP |
| 153 | 151647.8 | 611763.3             | 655.84 TRUCK  | PICKUP |
| 154 | 151648.1 | 611762.7             | 655.85 TRUCK  | PICKUP |
| 155 | 151650.7 | 611762.1             | 655.937 TRUCK | PICKUP |
| 156 | 151654.3 | 611762.1             | 656.041 TRUCK | PICKUP |
| 157 | 151659.2 | 611761.7             | 656.166 TRUCK | PICKUP |
| 158 | 151662.8 | 611761.6             | 656.167 TRUCK | PICKUP |
| 159 | 151663.7 | 611761.9             | 656.166 TRUCK | PICKUP |
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| 164 | 151660.3 | 611767.9             | 655.236 TRUCK | PICKUP |
| 165 |          |                      | 655.074 TRUCK | PICKUP |
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| 166 | 151649.8 |                      | 655 TRUCK     | PICKUP |
| 167 | 151648.2 | 611768.1             | 655.071 TRUCK | PICKUP |
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| 169 | 151648   | 611765.5             | 655.755 TRUCK | PICKUP |
| 170 | 151773.9 | 611770               | 656.511 EG1   |        |
| 171 | 151774.3 | 611765.1             | 657.155 EA1   |        |
| 172 | 151774.2 | 611758.9             | 657.464 FL1   |        |
| 173 | 151773.5 | 611747.1             | 657.861 CL1   |        |
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| 175 |          | 611728.9             |               |        |
|     |          |                      | 657.577 EG2   |        |
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| 178 |          | 611727.1             | 657.776 EA2   |        |
| 179 |          |                      | 657.61 FL2    |        |
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| 189 | 151666.9 | 611726.2             | 657.395 EA2   |        |
| 190 | 151666.5 | 611720.8             | 656.765 EG2   |        |
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191 151618.7
                         656.435 EG2
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192
      151616
                611726
                         656.698 EA2
193 151616.8 611732.5
                         656.621 FL2
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196 151617.4 611762.2
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198 151556.4
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                         654.468 EG1
199 151556.4 611763.2
                         655.062 EA1
200 151556.2
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                         655.392 FL1
201 151555.3
                611745
                         655.872 CL1
202 151554.2 611733.5
                         656.218 FL2
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                         656.384 EA2
204 151552.4 611722.1
                         655.744 EG2
205 151483.3 611723.9
                          655.18 EG2
206 151482.4 611729.2
                         655.641 EA2
207 151480.5 611735.6
                         655.478 FL2
208 151480.6 611747.2
                         655.161 CL1
209 151480.9 611759.1
                         654.748 FL1
210 151480.7 611765.3
                         654.415 EA1
211 151480.9
              611769.7
                         653.678 EG1
212 151503.8 611758.5
                          654.82 AXL3
                                          SOUAD
213 151500.4
              611752.6
                         655.052 AXL3
                                          SOUAD
214 151491.9 611757.3
                          654.85 AXL4
                                          SOUAD
    151495.1 611763.2
215
                         654.664 AXL4
                                          SOUAD
216 151489.9
              611762.2
                         654.527 SQUAD1
217
      151489
                611760
                         654.617 SQUAD1
218 151489.5
                611759
                           654.7 SQUAD1
219 151492.9 611756.8
                          654.81 SQUAD1
220 151498.5
              611753.7
                         654.987 SQUAD1
221 151502.3 611751.9
                         655.095 SQUAD1
222 151503.7
              611752.9
                         655.093 SQUAD1
223 151504.5 611752.5
                         655.142 SQUAD1
224 151505.9 611755.1
                         655.133 SQUAD1
225 151505.3 611755.5
                         655.075 SQUAD1
226 151505.4 611756.9
                         655.071 SQUAD1
227 151504.9
              611757.6
                         655.083 SQUAD1
228
      151502 611759.2
                         654.898 SQUAD1
229
    151497.6 611761.8
                         654.841 SQUAD1
230 151493.5 611763.9
                         654.645 SQUAD1
231 151491.5
              611764.2
                         654.669 SQUAD1
232 151406.2 611774.2
                          653.21 EG1
233 151405.9 611768.9
                         653.898 EA1
234 151405.2 611762.9
                         654.341 FL1
235 151402.9 611751.2
                         654.656 CL1
    151401.8
236
             611739.7
                         654.671 FL2
237 151401.2 611733.4
                         654.531 EA2
```

```
238 151399.5 611728.9
                         654.582 EG2
239
    151322.6 611734.9
                         653.692 EG2
      151323 611739.5
240
                         653.296 EA2
241 151321.4 611746.1
                         653.642 FL2
242 151322.2 611757.5
                         653.799 CL1
243 151327.8 611768.7
                         653.134 FL1
244 151331.7 611774.7
                         652.717 EA1
245 151331.3 611780.3
                          652.48 EG1
246 151272.2 611784.4
                         651.529 EG1
247 151272.5 611780.2
                         651.929 EA1
248 151272.5 611773.8
                         652.344 FL1
249 151271.9
                611762
                         652.657 CL1
250 151270.8 611750.3
                         652.987 FL2
251 151269.9 611743.8
                         653.196 EA2
252 151271.4
                611739
                         653.045 EG2
253 151192.1 611741.8
                         651.573 EG2
254 151193.1 611748.8
                         652.101 EA2
255 151193.2 611757.1
                         652.123 FL2
256 151194.3 611769.1
                         651.915 CL1
257 151195.5 611780.7
                         651.559 FL1
258 151196.4
                611787
                          651.25 EA1
259
      151196 611791.6
                         650.767 EG1
    151164.2
260
              611747.6
                         651.127 EG2
261
      151164 611753.4
                         651.715 EA2
262 150935.6 611768.4
                         647.781 EG2
263 150936.3 611775.7
                         648.325 EA2
264 150936.2 611781.6
                         648.513 FL2
265 150935.3 611793.7
                         648.745 CL1
266 150936.1 611805.4
                         648.588 FL1
267 150936.6
              611811.9
                         648.636 EA1
268 150936.1
                611817
                         648.321 EG1
269 150889.2 611809.5
                         647.942 GLASS
270 150872.2 611798.3
                         648.123 GLASS
271 150852.5 611793.9
                         647.939 GLASS
272 150824.1 611797.7
                          647.53 GLASS
273
      150779 611801.3
                         647.109 GLASS
274 150738.5
                611805
                         646.667 GLASS
275
      150719 611809.7
                         646.653 GLASS
276 150694.3 611816.6
                         646.617 GLASS
277 150689.2 611829.1
                         646.411 GLASS
278 150701.6 611838.8
                         646.203 GLASS
279
    150740.5 611836.3
                         645.946 GLASS
280 150871.3 611820.4
                         647.732 GLASS
281
      150799 611821.4
                          647.24 GLAS2
                                           SOUAD
282 150771.5 611824.5
                         646.907 GLAS2
    150731.6 611828.6
                         646.633 GLAS2
283
284
    150588.4 611850.8
                         645.186 EG1
```

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285 150588.9 611845.9
                         645.461 EA1
286 150588.2 611839.7
                          645.74 FL1
287 150586.7 611827.9
                         645.995 CL1
288 150585.4 611815.9
                         645.676 FL1
289 150584.6 611809.9
                         645.379 EA1
290 150582.9 611804.7
                         644.804 EG1
291 150482.7 611850.1
                         645.357 FL1
292 150482.9 611856.2
                         645.147 EA1
293 150482.6 611860.8
                         644.707 EG1
294 150424.8
               611861
                         645.094 FL1
295 150425.3 611862.1
                         644.906 EA1
296 150411.9 611874.9
                            645 EA1
297 150353.3 611881.4
                         645.158 EA1
298 150338.8 611870.5
                         644.985 EA1
299 150345.9 611879.2
                         644.861 EG3
300 150334.4 611875.5
                         644.717 EG3
301 150336.2 611864.3
                         645.253 FL3
302 149947.2 611911.7
                         644.691 EG3
303 149946.5 611908.1
                          644.93 EA1
304 149944.9 611902.2
                         645.071 FL3
305 149943.1
               611890
                         645.264 CL1
306 149939.2 611878.5
                          644.99 FL2
307 149938.1 611872.6
                         644.748 EA2
308 149937.4 611869.1
                         644.579 EG2
309 149823.4 611914.9
                         645.376 AXL5
                                          SOUAD
310 149824.1 611921.6
                         645.148 AXL5
                                          SOUAD
311 149814.7 611922.8
                          645.22 AXL6
                                          SOUAD
312
      149814 611916.2
                         645.415 AXL6
                                          SOUAD
313
      149814 611916.2
                         645.373 AXL6
                                          SOUAD
314 149810.5 611919.9
                         645.395 SQUAD2
315 149827.6
               611918
                         645.318 SQUAD2
316 149616.2 611898.1
                         644.105 EG2
317 149614.9 611902.9
                         644.579 EA2
318 149615.6 611908.7
                          644.87 FL2
319 149616.6 611920.7
                         645.222 CL1
320 149617.7 611932.7
                         645.373 FL3
321 149618.4 611938.9
                         645.413 EA1
322 149618.9 611943.3
                         644.974 EG3
323 151351.6
               611761
                         653.456 ACC
                                          ACC
324 151336.7 611762.2
                         653.437 ACC
                                          ACC
 3
      151393 611803.8
                          659.21 BS
                                          BK ST
```

| Job name              | 000251-7121                 |
|-----------------------|-----------------------------|
| Creation date         | 16 Jun 2023                 |
| Version               | Trimble General Survey 3.00 |
| <b>Distance Units</b> | US survey feet              |
| Angle units           | Degrees                     |
| <b>Pressure Units</b> | inHg                        |
| Temperature<br>Units  | Fahrenheit                  |

| Coordinate system (Job) |  |  |  |
|-------------------------|--|--|--|
| System                  | United States/Counties/WCCS                            |  |  |
| Zone                    | Vernon   |  |  |
| Datum                   | WCCS Vernon  |  |  |
| Projection              |  |  |  |
| Projection              | Lambert Conformal Conic 2 Parallel                     |  |  |
| Origin lat              | 43°08'50.00000"N                                       |  |  |
| Origin long             | 90°47'00.00000"W                                       |  |  |
| False northing          | 0.000  |  |  |
| False easting           | 730000.000   |  |  |
| Parallel 1              | 43°41'00.00000"N                                       |  |  |
| Parallel 2              | 43°28'00.00000"N                                       |  |  |
| South azimuth (grid)    | No   |  |  |
| Grid coords             | Increase North-East                                    |  |  |
| Ellipsoid               | Semi-major axis: 20926496.667 Flattening: 298.26993872 |  |  |

| Local site        | Local site      |  |  |  |
|-------------------|-----------------|--|--|--|
| Type              | Grid            |  |  |  |
| Datum transformat | ion             |  |  |  |
| Type              | Three parameter |  |  |  |
| Semi-major axis   | 20925604.474    |  |  |  |
| Flattening        | 298.257223      |  |  |  |
| Translation X     | 0.000           |  |  |  |

| Translation Y      | 0.000   |
|--------------------|---------|
| Translation Z      | 0.000   |
| Vertical adjustmen | nt      |
| Geoid file         | G12A-WI |

# Collected Field Data (ECEF deltas: APC to APC)

| Corrections                |                     |
|----------------------------|---------------------|
| South azimuth (grid)       | No                  |
| Grid coords                | Increase North-East |
| Magnetic declination       | 0°00'00"            |
| Distances                  | Ground              |
| Neighborhood<br>adjustment | Off                 |

| Projection     |  |
|----------------|--|
| Projection     | Lambert Conformal Conic 2 Parallel                     |
| Origin lat     | 43°09'05.00000"N                                       |
| Origin long    | 90°00'00.00000"W                                       |
| False northing | 0.000  |
| False easting  | 684000.000   |
| Parallel 1     | 44°32'40.00000"N                                       |
| Parallel 2     | 44°10'50.00000"N                                       |
| Ellipsoid      | Semi-major axis: 20926590.860 Flattening: 298.27128127 |

| Local site        |                 |
|-------------------|-----------------|
| Type              | Grid            |
| Datum transformat | ion             |
| Type              | Three parameter |
| Semi-major axis   | 20925604.474    |
| Flattening        | 298.257223      |

| Translation X      | 0.000                       |
|--------------------|-----------------------------|
| Translation Y      | 0.000                       |
| Translation Z      | 0.000                       |
| Vertical adjustmen | nt                          |
| Geoid file         | G12A-WI                     |
| Coordinate system  | 1                           |
| System             | United States/Counties/WCCS |
| Zone               | Wood                        |
| Datum              | WCCS Wood                   |

| Projection     |  |
|----------------|--|
| Projection     | Transverse Mercator                                    |
| Origin lat     | 43°22'00.00000"N                                       |
| Origin long    | 90°00'00.00000"W                                       |
| False northing | 0.000  |
| False easting  | 483000.000   |
| Scale          | 0.9999900  |
| Ellipsoid      | Semi-major axis: 20926389.482 Flattening: 298.26841100 |

| Local site     |                             |
|----------------|-----------------------------|
| Type           | Grid                        |
| Coordinate sys | etem                        |
| System         | United States/Counties/WCCS |
| Zone           | Adams                       |
| Datum          | WCCS Adams                  |

| Feature library      |                   |
|----------------------|-------------------|
| Library name         | DSP Code List     |
| Library File<br>Name | DSP Code List.ddf |
| Attribute<br>Support | No                |

| Note              | Converted from GS v2.90 to GS v3.00                    |
|-------------------|--|
| Projection        |  |
| Projection        | Lambert Conformal Conic 2 Parallel                     |
| Origin lat        | 43°08'50.00000"N                                       |
| Origin long       | 90°47'00.00000"W                                       |
| False northing    | 0.000  |
| False easting     | 730000.000   |
| Parallel 1        | 43°41'00.00000"N                                       |
| Parallel 2        | 43°28'00.00000"N                                       |
| Ellipsoid         | Semi-major axis: 20926496.667 Flattening: 298.26993872 |
|                   |  |
| Local site        |  |
| Туре              | Grid   |
| Coordinate system | n  |
| System            | United States/Counties/WCCS                            |
| Zone              | Vernon   |
| Datum             | WCCS Vernon  |
|                   |  |
| Rover options     |  |
| Elevation<br>mask | 10 PDOP 6  |
| Rover options     |  |
| Elevation<br>mask | 10 PDOP 6  |
| Survey event      |  |
| Survey event      | Rover started  |
| , o <sub>j</sub>  | H=== : == =======                                      |

| Point | IA<br>New<br>Albin | Latitude | 43°29'49.45247''N | Longitude | 91°17'26.49741"W | Height | 568.464 | Code |  |
|-------|--------------------|----------|-------------------|-----------|------------------|--------|---------|------|--|
|-------|--------------------|----------|-------------------|-----------|------------------|--------|---------|------|--|

| GNSS receiver |         |
|---------------|---------|
| Receiver type | Unknown |

| ~ · · · · · · ·         | number          |                        |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
|-------------------------|-----------------|------------------------|----------------------|-------|-----------------|-----------------------|---------|---|----------------------------------|----------|------|--------------------|--|
| Firmw<br>version        |                 | 0                      |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Anteni                  | na type         | AdV Nu                 | ıll Ante             | nna   |                 |                       |         |   |                                  |          |      |                    |  |
| Measu<br>metho          | rement<br>d     | Antenna                | Antenna Phase Center |       |                 |                       |         |   |                                  |          |      |                    |  |
| Tape a                  | djustmen        | 0.000                  |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Horizo                  | ntal offse      | et 0.000               |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Vertica                 | al offset       | 0.000                  |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
|                         |                 |                        |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Base po                 |                 |                        |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Point                   |                 | Antenna<br>height      | 0.0                  | 000   | Type            | Coı                   | rrected | l |                                  |          |      |                    |  |
| Initializ               | zation eve      | nt: RTK in             | itialized            | 1     |                 |                       |         |   |                                  |          |      |                    |  |
| GPS<br>week             | 2266            | Seconds                | 52924                | 5 In  | itializat<br>pe | tion                  |         |   | Survey<br>type                   | Real tim | - 11 |                    |  |
|                         |                 | ,                      |                      |       |                 |                       |         |   |                                  | '        |      |                    |  |
| Tilt cal                | ibration st     | atus                   |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Event                   | Start<br>survey | Calibration expires in | Calibration 4d 17h   |       |                 | Calibration age limit |         |   | 30d Oh Sensor calibration status |          |      | Tilt calibrated OK |  |
| GNISS                   | receiver        |                        |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
|                         | er type         | R10                    |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
|                         | number          | 5521499                | 9772                 |       |                 |                       |         |   |                                  |          |      |                    |  |
| Firmw<br>version        | are             | 5.22                   |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
| Anteni                  | na type         | R10 Inte               | R10 Internal         |       |                 |                       |         |   |                                  |          |      |                    |  |
| Measurement Bottom of a |                 |                        | of quic              | k rel | ease            |                       |         |   |                                  |          |      |                    |  |
| Tape a                  | djustmen        | 0.000                  |                      |       |                 |                       |         |   |                                  |          |      |                    |  |
|                         | ntal offse      | et 0.000               | 0.000                |       |                 |                       |         |   |                                  |          |      |                    |  |
| Horizo                  | iitai oiist     | 0.000                  | 0.653                |       |                 |                       |         |   |                                  |          |      |                    |  |

|                   |       | Method              |     | Network<br>RTK | Tyl          | pe                   |        |      | Searc<br>class | h   | No     | rmal |            |            |     |
|-------------------|-------|---------------------|-----|----------------|--------------|----------------------|--------|------|----------------|-----|--------|------|------------|------------|-----|
| Antenna<br>height | 5.906 | Туре                | Uno | corrected      | Tilt<br>dist | t<br>tance           | 0      | .023 | Hz Pr          | ec  | 0      | .037 | Vt<br>Prec | 0.067      |     |
| QC 1              |       | PDOP                |     | 2.4            | GD           | OP                   |        | 3.3  | HDO            | P   |        | 1.1  | VDOI       | 2.2        |     |
|                   |       | Base<br>data<br>age |     | 3              | Sat          | ellites              |        | 12   | Positi<br>used | ons |        | 3    |            |            |     |
| QC 2              |       | VCV<br>xx (m²)      | (   | 0.000066       | VC<br>(m²    | CV xy <sup>2</sup> ) | 0.000  | 0088 | VCV<br>(m²)    | XZ  | -0.000 | 0064 |            |            |     |
|                   |       |                     |     |                | VC<br>(m²    | (V yy                | 0.000  | )285 | VCV<br>(m²)    | yz  | -0.000 | 0173 |            |            |     |
|                   |       |                     |     |                |              |                      |        |      | VCV<br>(m²)    | ZZ  | 0.000  | )194 |            |            |     |
| Point             | 2     | ΔΧ                  | 16  | 6680.747       | ΔΥ           |                      | 15679  | .422 | $\Delta Z$     |     | 16877  | .147 | Code       | CP2        |     |
|                   |       | Method              |     | Network<br>RTK | Tyl          | pe                   |        |      | Searc<br>class | h   | No     | rmal |            |            |     |
| Antenna<br>height | 5.906 | Туре                | Uno | corrected      | Tilt<br>dist | t<br>tance           | 0      | .018 | Hz Pr          | ec  | 0      | .036 | Vt<br>Prec | 0.062      |     |
| QC 1              |       | PDOP                |     | 1.9            | GD           | OP                   |        | 2.6  | HDO            | P   |        | 1.0  | VDOI       | 1.7        |     |
|                   |       | Base<br>data<br>age |     | 3              | Sat          | ellites              |        | 13   | Positi<br>used | ons |        | 3    |            |            |     |
| QC 2              |       | VCV<br>xx (m²)      | (   | 0.000062       | VC<br>(m²    | (V xy <sup>2</sup> ) | 0.000  | 0072 | VCV<br>(m²)    | XZ  | -0.000 | 0056 |            |            |     |
|                   |       |                     |     |                | VC<br>(m²    | (V yy                | 0.000  | )233 | VCV<br>(m²)    | yz  | -0.000 | )143 |            |            |     |
|                   |       |                     |     |                |              |                      |        |      | VCV<br>(m²)    | ZZ  | 0.000  | 0182 |            |            |     |
| Point             | 100   | ΔΧ                  |     | 16649.2        | 266          | ΔΥ                   |        | 1567 | 78.598         | ΔΖ  |        | 1686 | 64.274     | Code       | TN  |
|                   |       | Descript<br>1       | ion | t              | m1           | Descr<br>2           | iption |      |                |     |        |      |            |            |     |
|                   |       | Method              |     | Netw<br>R      | ork<br>TK    | Type                 |        |      | Topo<br>point  |     |        | N    | Iormal     |            |     |
| Antenna<br>height | 5.906 | Туре                |     | Uncorrec       | ted          | Tilt<br>distan       | ice    |      | 0.012          | Hz  | Prec   |      | 0.029      | Vt<br>Prec | 0.0 |
| QC 1              |       | PDOP                |     |                | 1.7          | GDO                  | P      |      | 2.2            | HD  | OP     |      | 0.9        | VDOP       |     |

|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| QC 2              |       | VCV xx (m²)   | 0.000027       | VCV xy<br>(m²)   | 0.000021  | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000123  | VCV yz<br>(m²) | -0.000069 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000114  |            |       |
| Point             | 101   | ΔΧ            | 16648.737      | ΔΥ               | 15688.875 | $\Delta Z$     | 16875.033 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.004     | Hz Prec        | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.5   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000027       | VCV xy (m²)      | 0.000020  | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000119  | VCV yz<br>(m²) | -0.000067 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000111  |            |       |
| Point             | 102   | ΔΧ            | 16648.606      | ΔΥ               | 15697.803 | $\Delta Z$     | 16884.223 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.025     | Hz Prec        | 0.030     | Vt<br>Prec | 0.047 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.5   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000030       | VCV xy<br>(m²)   | 0.000023  | VCV xz<br>(m²) | -0.000022 |            |       |

|                   |       |               |                | VCV yy<br>(m²)   | 0.000134  | VCV yz<br>(m²) | -0.000075 |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000125  |            |       |
| Point             | 103   | ΔΧ            | 16648.296      | ΔΥ               | 15706.560 | $\Delta Z$     | 16893.425 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.028     | Hz Prec        | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.5   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000026       | VCV xy (m²)      | 0.000020  | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000117  | VCV yz<br>(m²) | -0.000065 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000110  |            |       |
| Point             | 104   | ΔΧ            | 16647.805      | ΔΥ               | 15715.238 | $\Delta Z$     | 16902.396 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.019     | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.5   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000029       | VCV xy (m²)      | 0.000021  | VCV xz<br>(m²) | -0.000021 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000127  | VCV yz<br>(m²) | -0.000071 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000120  |            |       |
| Point             | 105   | ΔΧ            | 16647.507      | ΔΥ               | 15721.567 | $\Delta Z$     | 16909.071 | Code       | TM1   |

|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       | Method        | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.020     | Hz Prec        | 0.028     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.5   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000026       | VCV xy (m²)      | 0.000019  | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000113  | VCV yz<br>(m²) | -0.000063 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000107  |            |       |
| Point             | 106   | ΔΧ            | 16647.283      | ΔΥ               | 15728.206 | $\Delta Z$     | 16915.994 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.015     | Hz Prec        | 0.026     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.5   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000022       | VCV xy<br>(m²)   | 0.000016  | VCV xz<br>(m²) | -0.000016 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000095  | VCV yz<br>(m²) | -0.000053 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000090  |            |       |
| Point             | 107   | ΔΧ            | 16646.860      | ΔΥ               | 15735.209 | $\Delta Z$     | 16923.222 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Туре             | _         | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре           | Uncorrected    | Tilt<br>distance | 0.037     | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP           | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.4   |
|                   |       | Base data age  | 3              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000028       | VCV xy<br>(m²)   | 0.000020  | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000123  | VCV yz<br>(m²) | -0.000069 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000115  |            |       |
| Point             | 108   | ΔΧ             | 16646.354      | ΔΥ               | 15740.964 | $\Delta Z$     | 16929.247 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | -         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.019     | Hz Prec        | 0.026     | Vt<br>Prec | 0.041 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4       | HDOP           | 0.9       | VDOP       | 1.6   |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000023       | VCV xy<br>(m²)   | 0.000016  | VCV xz<br>(m²) | -0.000017 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000104  | VCV yz<br>(m²) | -0.000057 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000094  |            |       |
| Point             | 109   | ΔΧ             | 16645.633      | ΔΥ               | 15748.072 | $\Delta Z$     | 16936.804 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.021     | Hz Prec        | 0.025     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4       | HDOP           | 0.9       | VDOP       | 1.6   |
|                   |       | Base data age  | 1              | Satellites       | 14        | Positions used | 3         |            |       |

| QC 2              |       | VCV xx (m²)    | 0.000021       | VCV xy (m²)      | 0.000015  | VCV xz<br>(m²) | -0.000016 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |                |                | VCV yy<br>(m²)   | 0.000093  | VCV yz<br>(m²) | -0.000052 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000089  |            |       |
| Point             | 110   | ΔΧ             | 16645.227      | ΔΥ               | 15754.615 | $\Delta Z$     | 16943.444 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.019     | Hz Prec        | 0.037     | Vt<br>Prec | 0.057 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4       | HDOP           | 0.9       | VDOP       | 1.6   |
|                   |       | Base data age  | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000047       | VCV xy<br>(m²)   | 0.000033  | VCV xz<br>(m²) | -0.000035 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000191  | VCV yz<br>(m²) | -0.000109 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000192  |            |       |
| Point             | 111   | ΔΧ             | 16644.844      | ΔΥ               | 15759.923 | $\Delta Z$     | 16949.251 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.009     | Hz Prec        | 0.025     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP           | 1.7            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.4   |
|                   |       | Base data age  | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000021       | VCV xy<br>(m²)   | 0.000015  | VCV xz<br>(m²) | -0.000016 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000090  | VCV yz<br>(m²) | -0.000050 |            |       |

|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000088  |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 112   | ΔΧ             | 16643.876      | ΔΥ               | 15764.644     | $\Delta Z$     | 16954.413 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.042         | Hz Prec        | 0.026     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP           | 1.7            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.4   |
|                   |       | Base data age  | 1              | Satellites       | 14            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000022       | VCV xy<br>(m²)   | 0.000015      | VCV xz<br>(m²) | -0.000017 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000096      | VCV yz<br>(m²) | -0.000053 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000092  |            |       |
| Point             | 113   | ΔΧ             | 16643.423      | ΔΥ               | 15768.987     | $\Delta Z$     | 16958.883 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.030         | Hz Prec        | 0.025     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP           | 1.7            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base data age  | 1              | Satellites       | 14            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000020       | VCV xy (m²)      | 0.000012      | VCV xz<br>(m²) | -0.000014 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000088      | VCV yz<br>(m²) | -0.000048 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000089  |            |       |
| Point             | 114   | ΔΧ             | 16643.200      | ΔΥ               | 15773.539     | $\Delta Z$     | 16963.601 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |

|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.041     | Hz Prec        | 0.026     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP           | 1.7            | GDOP             | 2.2       | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base data age  | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000021       | VCV xy<br>(m²)   | 0.000014  | VCV xz<br>(m²) | -0.000016 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000091  | VCV yz<br>(m²) | -0.000050 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000091  |            |       |
| Point             | 115   | ΔΧ             | 16642.849      | ΔΥ               | 15778.089 | $\Delta Z$     | 16968.531 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.025     | Hz Prec        | 0.025     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP           | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age  | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000021       | VCV xy (m²)      | 0.000013  | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000089  | VCV yz<br>(m²) | -0.000049 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000090  |            |       |
| Point             | 116   | ΔΧ             | 16642.192      | ΔΥ               | 15782.765 | $\Delta Z$     | 16973.695 | Code       | TM1   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.002     | Hz Prec        | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP           | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |

|                   |       | Base data age            | 1              | Satellites       | 13        | Positions used | 3         |            |       |
|-------------------|-------|--------------------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| QC 2              |       | VCV xx (m²)              | 0.000033       | VCV xy (m²)      | 0.000032  | VCV xz<br>(m²) | -0.000028 |            |       |
|                   |       |                          |                | VCV yy<br>(m²)   | 0.000120  | VCV yz<br>(m²) | -0.000070 |            |       |
|                   |       |                          |                |                  |           | VCV zz<br>(m²) | 0.000104  |            |       |
| Point             | 117   | ΔΧ                       | 16641.512      | ΔΥ               | 15788.189 | ΔΖ             | 16979.460 | Code       | TM1   |
|                   |       | Description 1            | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method                   | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                     | Uncorrected    | Tilt<br>distance | 0.040     | Hz Prec        | 0.030     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                     | 1.7            | GDOP             | 2.2       | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base data age            | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)              | 0.000045       | VCV xy (m²)      | 0.000053  | VCV xz<br>(m²) | -0.000042 |            |       |
|                   |       |                          |                | VCV yy<br>(m²)   | 0.000152  | VCV yz<br>(m²) | -0.000092 |            |       |
|                   |       |                          |                |                  |           | VCV zz<br>(m²) | 0.000118  |            |       |
| Point             | 118   | ΔΧ                       | 16641.173      | ΔΥ               | 15792.882 | $\Delta Z$     | 16985.037 | Code       | TM1   |
|                   |       | Description 1            | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method                   | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                     | Uncorrected    | Tilt<br>distance | 0.018     | Hz Prec        | 0.032     | Vt<br>Prec | 0.053 |
| QC 1              |       | PDOP                     | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age            | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m <sup>2</sup> ) | 0.000055       | VCV xy (m²)      | 0.000068  | VCV xz<br>(m²) | -0.000053 |            |       |

|                   |       |               |                | VCV yy<br>(m²)   | 0.000176  | VCV yz<br>(m²) | -0.000108 |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000130  |            |       |
| Point             | 119   | ΔΧ            | 16640.628      | ΔΥ               | 15797.756 | $\Delta Z$     | 16991.254 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.043     | Hz Prec        | 0.032     | Vt<br>Prec | 0.052 |
| QC 1              |       | PDOP          | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000053       | VCV xy (m²)      | 0.000064  | VCV xz<br>(m²) | -0.000050 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000169  | VCV yz<br>(m²) | -0.000104 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000128  |            |       |
| Point             | 120   | ΔΧ            | 16639.557      | ΔΥ               | 15801.921 | $\Delta Z$     | 16996.538 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.013     | Hz Prec        | 0.031     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP          | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age | 2              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000047       | VCV xy (m²)      | 0.000054  | VCV xz<br>(m²) | -0.000044 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000156  | VCV yz<br>(m²) | -0.000094 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000123  |            |       |
| Point             | 121   | ΔΧ            | 16639.015      | ΔΥ               | 15804.753 | $\Delta Z$     | 16999.770 | Code       | TM1   |

|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.026     | Hz Prec        | 0.030     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP          | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000041       | VCV xy<br>(m²)   | 0.000045  | VCV xz<br>(m²) | -0.000037 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000138  | VCV yz<br>(m²) | -0.000083 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000113  |            |       |
| Point             | 122   | ΔΧ            | 16638.019      | ΔΥ               | 15807.767 | $\Delta Z$     | 17002.901 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.029     | Hz Prec        | 0.030     | Vt<br>Prec | 0.047 |
| QC 1              |       | PDOP          | 1.9            | GDOP             | 2.5       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age | 2              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000040       | VCV xy (m²)      | 0.000042  | VCV xz<br>(m²) | -0.000035 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000135  | VCV yz<br>(m²) | -0.000080 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000113  |            |       |
| Point             | 123   | ΔΧ            | 16636.593      | ΔΥ               | 15812.478 | $\Delta Z$     | 17007.726 | Code       | TM1   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.024         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP           | 1.9            | GDOP             | 2.5           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000037       | VCV xy (m²)      | 0.000038      | VCV xz<br>(m²) | -0.000033 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000127      | VCV yz<br>(m²) | -0.000075 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000108  |            |       |
| Point             | 124   | ΔΧ             | 16627.982      | ΔΥ               | 15863.931     | $\Delta Z$     | 17062.758 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.036         | Hz Prec        | 0.034     | Vt<br>Prec | 0.053 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000056       | VCV xy<br>(m²)   | 0.000054      | VCV xz<br>(m²) | -0.000069 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000139      | VCV yz<br>(m²) | -0.000105 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000174  |            |       |
| Point             | 125   | ΔΧ             | 16628.019      | ΔΥ               | 15872.547     | $\Delta Z$     | 17071.767 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.042         | Hz Prec        | 0.034     | Vt<br>Prec | 0.054 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |

| QC 2              |       | VCV xx (m²)    | 0.000059       | VCV xy (m²)      | 0.000056  | VCV xz<br>(m²) | -0.000074 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |                |                | VCV yy<br>(m²)   | 0.000139  | VCV yz<br>(m²) | -0.000108 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000183  |            |       |
| Point             | 126   | ΔΧ             | 16628.248      | ΔΥ               | 15876.913 | $\Delta Z$     | 17076.185 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.051     | Hz Prec        | 0.036     | Vt<br>Prec | 0.056 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 4              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000062       | VCV xy<br>(m²)   | 0.000059  | VCV xz<br>(m²) | -0.000077 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000151  | VCV yz<br>(m²) | -0.000115 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000194  |            |       |
| Point             | 127   | ΔΧ             | 16628.398      | ΔΥ               | 15882.899 | $\Delta Z$     | 17082.244 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.037     | Hz Prec        | 0.034     | Vt<br>Prec | 0.054 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000058       | VCV xy (m²)      | 0.000055  | VCV xz<br>(m²) | -0.000073 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000136  | VCV yz<br>(m²) | -0.000106 |            |       |

|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000181  |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 128   | ΔΧ             | 16628.506      | ΔΥ               | 15890.958     | $\Delta Z$     | 17091.137 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.026         | Hz Prec        | 0.040     | Vt<br>Prec | 0.057 |
| QC 1              |       | PDOP           | 1.5            | GDOP             | 2.0           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 14            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000057       | VCV xy<br>(m²)   | 0.000042      | VCV xz<br>(m²) | -0.000041 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000210      | VCV yz<br>(m²) | -0.000107 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000185  |            |       |
| Point             | 129   | ΔΧ             | 16627.487      | ΔΥ               | 15900.822     | $\Delta Z$     | 17101.649 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.037         | Hz Prec        | 0.041     | Vt<br>Prec | 0.060 |
| QC 1              |       | PDOP           | 1.5            | GDOP             | 2.0           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 14            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000067       | VCV xy<br>(m²)   | 0.000057      | VCV xz<br>(m²) | -0.000043 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000242      | VCV yz<br>(m²) | -0.000116 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000182  |            |       |
| Point             | 130   | ΔΧ             | 16626.963      | ΔΥ               | 15908.748     | ΔΖ             | 17110.047 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |

|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Туре           | Uncorrected    | Tilt<br>distance | 0.014     | Hz Prec        | 0.071     | Vt<br>Prec | 0.105 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000222       | VCV xy (m²)      | 0.000196  | VCV xz<br>(m²) | -0.000244 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000582  | VCV yz<br>(m²) | -0.000383 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000677  |            |       |
| Point             | 131   | ΔΧ             | 16626.358      | ΔΥ               | 15917.898 | $\Delta Z$     | 17119.623 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.025     | Hz Prec        | 0.052     | Vt<br>Prec | 0.077 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.4   |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000122       | VCV xy (m²)      | 0.000107  | VCV xz<br>(m²) | -0.000146 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000291  | VCV yz<br>(m²) | -0.000209 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000383  |            |       |
| Point             | 132   | ΔΧ             | 16625.738      | ΔΥ               | 15926.838 | $\Delta Z$     | 17129.200 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.050     | Hz Prec        | 0.051     | Vt<br>Prec | 0.076 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.4   |

|                   |       | Base data age | 1              | Satellites       | 13        | Positions used | 3         |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| QC 2              |       | VCV xx (m²)   | 0.000121       | VCV xy (m²)      | 0.000106  | VCV xz<br>(m²) | -0.000147 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000284  | VCV yz<br>(m²) | -0.000207 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000382  |            |       |
| Point             | 133   | ΔΧ            | 16625.560      | ΔΥ               | 15934.408 | $\Delta Z$     | 17137.436 | Code       | TM2   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.016     | Hz Prec        | 0.067     | Vt<br>Prec | 0.102 |
| QC 1              |       | PDOP          | 1.5            | GDOP             | 2.0       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000225       | VCV xy (m²)      | 0.000194  | VCV xz<br>(m²) | -0.000365 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000341  | VCV yz<br>(m²) | -0.000384 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000808  |            |       |
| Point             | 134   | ΔΧ            | 16625.057      | ΔΥ               | 15946.969 | $\Delta Z$     | 17151.208 | Code       | TM2   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.025     | Hz Prec        | 0.041     | Vt<br>Prec | 0.058 |
| QC 1              |       | PDOP          | 1.5            | GDOP             | 2.0       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000066       | VCV xy (m²)      | 0.000056  | VCV xz<br>(m²) | -0.000049 |            |       |

|                   |       |               |                | VCV yy<br>(m²)   | 0.000217  | VCV yz<br>(m²) | -0.000109 |            |       |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000179  |            |       |
| Point             | 135   | ΔΧ            | 16624.402      | ΔΥ               | 15957.897 | $\Delta Z$     | 17162.877 | Code       | TM2   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.019     | Hz Prec        | 0.040     | Vt<br>Prec | 0.057 |
| QC 1              |       | PDOP          | 1.5            | GDOP             | 2.0       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000065       | VCV xy (m²)      | 0.000052  | VCV xz<br>(m²) | -0.000048 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000211  | VCV yz<br>(m²) | -0.000106 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000180  |            |       |
| Point             | 136   | ΔΧ            | 16623.820      | ΔΥ               | 15968.984 | $\Delta Z$     | 17174.795 | Code       | TM2   |
|                   |       | Description 1 | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.017     | Hz Prec        | 0.043     | Vt<br>Prec | 0.061 |
| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.3       | HDOP           | 1.0       | VDOP       | 1.4   |
|                   |       | Base data age | 3              | Satellites       | 14        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000073       | VCV xy<br>(m²)   | 0.000062  | VCV xz<br>(m²) | -0.000052 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000244  | VCV yz<br>(m²) | -0.000119 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000194  |            |       |
| Point             | 137   | ΔΧ            | 16623.594      | ΔΥ               | 15981.569 | $\Delta Z$     | 17188.043 | Code       | TM2   |

|                   |       | Description 1 | tm1            | Description 2    |               |                |           |            |       |
|-------------------|-------|---------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec        | 0.043     | Vt<br>Prec | 0.061 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 5              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000072       | VCV xy<br>(m²)   | 0.000059      | VCV xz<br>(m²) | -0.000051 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000239      | VCV yz<br>(m²) | -0.000119 |            |       |
|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000198  |            |       |
| Point             | 138   | ΔΧ            | 16623.459      | ΔΥ               | 15992.076     | $\Delta Z$     | 17199.457 | Code       | TM2   |
|                   |       | Description 1 | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре          | Uncorrected    | Tilt<br>distance | 0.025         | Hz Prec        | 0.042     | Vt<br>Prec | 0.059 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 2              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000070       | VCV xy (m²)      | 0.000056      | VCV xz<br>(m²) | -0.000049 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000226      | VCV yz<br>(m²) | -0.000112 |            |       |
|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000190  |            |       |
| Point             | 139   | ΔΧ            | 16624.444      | ΔΥ               | 16002.305     | $\Delta Z$     | 17209.883 | Code       | TM2   |
|                   |       | Description 1 | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | _             | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре           | Uncorrected    | Tilt<br>distance | 0.010         | Hz Prec        | 0.042     | Vt<br>Prec | 0.060 |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000071       | VCV xy<br>(m²)   | 0.000057      | VCV xz<br>(m²) | -0.000050 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000232      | VCV yz<br>(m²) | -0.000114 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000195  |            |       |
| Point             | 140   | ΔΧ             | 16624.500      | ΔΥ               | 16011.411     | $\Delta Z$     | 17219.480 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.005         | Hz Prec        | 0.042     | Vt<br>Prec | 0.059 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000070       | VCV xy<br>(m²)   | 0.000055      | VCV xz<br>(m²) | -0.000049 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000225      | VCV yz<br>(m²) | -0.000111 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000190  |            |       |
| Point             | 141   | ΔΧ             | 16624.274      | ΔΥ               | 16018.368     | $\Delta Z$     | 17227.067 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.040         | Hz Prec        | 0.043     | Vt<br>Prec | 0.059 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 2              | Satellites       | 13            | Positions used | 3         |            |       |

| QC 2              |       | VCV xx (m²)    | 0.000071       | VCV xy (m²)      | 0.000056  | VCV xz<br>(m²) | -0.000050 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |                |                | VCV yy<br>(m²)   | 0.000229  | VCV yz<br>(m²) | -0.000112 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000194  |            |       |
| Point             | 142   | ΔΧ             | 16624.247      | ΔΥ               | 16029.770 | $\Delta Z$     | 17239.261 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.019     | Hz Prec        | 0.043     | Vt<br>Prec | 0.060 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 2              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000072       | VCV xy<br>(m²)   | 0.000056  | VCV xz<br>(m²) | -0.000050 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000233  | VCV yz<br>(m²) | -0.000113 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000196  |            |       |
| Point             | 143   | ΔΧ             | 16624.477      | ΔΥ               | 16035.379 | $\Delta Z$     | 17245.256 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.021     | Hz Prec        | 0.046     | Vt<br>Prec | 0.063 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 2              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000081       | VCV xy<br>(m²)   | 0.000062  | VCV xz<br>(m²) | -0.000056 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000260  | VCV yz<br>(m²) | -0.000126 |            |       |

|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000221  |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 144   | ΔΧ             | 16624.033      | ΔΥ               | 16039.538     | $\Delta Z$     | 17249.944 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.037         | Hz Prec        | 0.044     | Vt<br>Prec | 0.061 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base data age  | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000076       | VCV xy<br>(m²)   | 0.000063      | VCV xz<br>(m²) | -0.000053 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000253      | VCV yz<br>(m²) | -0.000119 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000202  |            |       |
| Point             | 145   | ΔΧ             | 16623.474      | ΔΥ               | 16041.269     | $\Delta Z$     | 17252.019 | Code       | TM2   |
|                   |       | Description 1  | tm1            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.044     | Vt<br>Prec | 0.060 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000077       | VCV xy (m²)      | 0.000061      | VCV xz<br>(m²) | -0.000053 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000232      | VCV yz<br>(m²) | -0.000116 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000208  |            |       |
| Point             | 146   | ΔΧ             | 16617.429      | ΔΥ               | 16049.782     | $\Delta Z$     | 17262.588 | Code       | AXL1  |
|                   |       | Description 1  | PICKUP         | Description 2    |               |                |           |            |       |

|                   |         | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|---------|---------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906   | Type          | Uncorrected    | Tilt<br>distance | 0.024         | Hz Prec        | 0.043     | Vt<br>Prec | 0.059 |
| QC 1              |         | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |         | Base data age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |         | VCV xx (m²)   | 0.000074       | VCV xy<br>(m²)   | 0.000056      | VCV xz<br>(m²) | -0.000050 |            |       |
|                   |         |               |                | VCV yy<br>(m²)   | 0.000228      | VCV yz<br>(m²) | -0.000110 |            |       |
|                   |         |               |                |                  |               | VCV zz<br>(m²) | 0.000199  |            |       |
| Point             | 147     | ΔΧ            | 16623.975      | ΔΥ               | 16050.354     | ΔΖ             | 17261.909 | Code       | AXL1  |
|                   |         | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|                   |         | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906   | Type          | Uncorrected    | Tilt<br>distance | 0.019         | Hz Prec        | 0.065     | Vt<br>Prec | 0.092 |
| QC 1              |         | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |         | Base data age | 1              | Satellites       | 13            | Positions used | 2         |            |       |
| QC 2              |         | VCV xx (m²)   | 0.000185       | VCV xy<br>(m²)   | 0.000142      | VCV xz<br>(m²) | -0.000254 |            |       |
|                   |         |               |                | VCV yy<br>(m²)   | 0.000350      | VCV yz<br>(m²) | -0.000289 |            |       |
|                   |         |               |                |                  |               | VCV zz<br>(m²) | 0.000646  |            |       |
| Warning           | s (147) | Poor          | precision      |                  |               |                |           |            |       |
| Point             | 148     | ΔΧ            | 16624.488      | ΔΥ               | 16044.143     | $\Delta Z$     | 17255.102 | Code       | AXL2  |
|                   |         | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|                   |         | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906   | Type          | Uncorrected    | Tilt<br>distance | 0.051         | Hz Prec        | 0.040     | Vt<br>Prec | 0.054 |

| QC 1              |       | PDOP          | 1.7            | GDOP             | 2.2       | HDOP           | 1.0       | VDOP       | 1.3   |
|-------------------|-------|---------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       | Base data age | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000059       | VCV xy<br>(m²)   | 0.000047  | VCV xz<br>(m²) | -0.000043 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000192  | VCV yz<br>(m²) | -0.000087 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000161  |            |       |
| Point             | 149   | ΔΧ            | 16617.877      | ΔΥ               | 16043.368 | $\Delta Z$     | 17255.561 | Code       | AXL2  |
|                   |       | Description 1 | PICKUP         | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Туре             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.052     | Hz Prec        | 0.041     | Vt<br>Prec | 0.055 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000063       | VCV xy (m²)      | 0.000049  | VCV xz (m²)    | -0.000044 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000204  | VCV yz<br>(m²) | -0.000092 |            |       |
|                   |       |               |                |                  |           | VCV zz<br>(m²) | 0.000170  |            |       |
| Point             | 150   | ΔΧ            | 16615.753      | ΔΥ               | 16046.204 | $\Delta Z$     | 17258.742 | Code       | BODY  |
|                   |       | Description 1 | PICKUP         | Description 2    |           |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.036     | Hz Prec        | 0.042     | Vt<br>Prec | 0.057 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 4              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000068       | VCV xy (m²)      | 0.000050  | VCV xz (m²)    | -0.000046 |            |       |

|                   |       |                |                | VCV yy<br>(m²)   | 0.000218  | VCV yz<br>(m²) | -0.000099 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000182  |            |       |
| Point             | 151   | ΔΧ             | 16614.729      | ΔΥ               | 16042.218 | $\Delta Z$     | 17254.385 | Code       | BODY  |
|                   |       | Description 1  | PICKUP         | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.046     | Hz Prec        | 0.027     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000029       | VCV xy<br>(m²)   | 0.000021  | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000090  | VCV yz<br>(m²) | -0.000041 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000076  |            |       |
| Point             | 152   | ΔΧ             | 16621.072      | ΔΥ               | 16040.786 | $\Delta Z$     | 17252.400 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.013     | Hz Prec        | 0.032     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 5              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000038       | VCV xy<br>(m²)   | 0.000030  | VCV xz<br>(m²) | -0.000027 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000130  | VCV yz<br>(m²) | -0.000061 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000104  |            |       |
| Point             | 153   | ΔΧ             | 16619.344      | ΔΥ               | 16040.619 | $\Delta Z$     | 17252.359 | Code       | TRUCK |

|                   |       | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|-------------------|-------|---------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Method        | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec        | 0.028     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000029       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000093      | VCV yz<br>(m²) | -0.000042 |            |       |
|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000078  |            |       |
| Point             | 154   | ΔΧ            | 16618.702      | ΔΥ               | 16040.816     | $\Delta Z$     | 17252.567 | Code       | TRUCK |
|                   |       | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.013         | Hz Prec        | 0.027     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000028       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000090      | VCV yz<br>(m²) | -0.000040 |            |       |
|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000076  |            |       |
| Point             | 155   | ΔΧ            | 16618.178      | ΔΥ               | 16042.573     | $\Delta Z$     | 17254.527 | Code       | TRUCK |
|                   |       | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Туре             |               | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Type             | Uncorrected    | Tilt<br>distance | 0.040     | Hz Prec             | 0.028     | Vt<br>Prec | 0.037 |
|-------------------|-------|------------------|----------------|------------------|-----------|---------------------|-----------|------------|-------|
| QC 1              |       | PDOP             | 1.6            | GDOP             | 2.2       | HDOP                | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age    | 2              | Satellites       | 13        | Positions used      | 3         |            |       |
| QC 2              |       | VCV xx (m²)      | 0.000029       | VCV xy (m²)      | 0.000021  | VCV xz<br>(m²)      | -0.000019 |            |       |
|                   |       |                  |                | VCV yy<br>(m²)   | 0.000092  | VCV yz<br>(m²)      | -0.000041 |            |       |
|                   |       |                  |                |                  |           | VCV zz<br>(m²)      | 0.000078  |            |       |
| Point             | 156   | ΔΧ               | 16618.173      | ΔΥ               | 16044.933 | $\Delta \mathbf{Z}$ | 17257.159 | Code       | TRUCK |
|                   |       | Description 1    | PICKUP         | Description 2    |           |                     |           |            |       |
|                   |       | Method           | Network<br>RTK | Type             |           | Search class        | Normal    |            |       |
| Antenna<br>height | 5.906 | Type             | Uncorrected    | Tilt<br>distance | 0.036     | Hz Prec             | 0.027     | Vt<br>Prec | 0.036 |
| QC 1              |       | PDOP             | 1.6            | GDOP             | 2.2       | HDOP                | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age    | 1              | Satellites       | 13        | Positions used      | 3         |            |       |
| QC 2              |       | VCV xx (m²)      | 0.000028       | VCV xy (m²)      | 0.000020  | VCV xz<br>(m²)      | -0.000019 |            |       |
|                   |       |                  |                | VCV yy<br>(m²)   | 0.000089  | VCV yz<br>(m²)      | -0.000040 |            |       |
|                   |       |                  |                |                  |           | VCV zz<br>(m²)      | 0.000075  |            |       |
| Point             | 157   | ΔΧ               | 16617.803      | ΔΥ               | 16048.246 | $\Delta Z$          | 17260.815 | Code       | TRUCK |
|                   |       | Description 1    | PICKUP         | Description 2    |           |                     |           |            |       |
|                   |       | Method           | Network<br>RTK | Type             |           | Search class        | Normal    |            |       |
| Antenna<br>height | 5.906 | Type             | Uncorrected    | Tilt<br>distance | 0.013     | Hz Prec             | 0.027     | Vt<br>Prec | 0.036 |
| QC 1              |       | PDOP             | 1.6            | GDOP             | 2.2       | HDOP                | 0.9       | VDOP       | 1.3   |
|                   |       | Base data<br>age | 1              | Satellites       | 13        | Positions used      | 3         |            |       |

| QC 2              |       | VCV xx (m²)    | 0.000028       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000019 |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                |                | VCV yy<br>(m²)   | 0.000089      | VCV yz<br>(m²) | -0.000040 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000076  |            |       |
| Point             | 158   | ΔΧ             | 16617.809      | ΔΥ               | 16050.739     | $\Delta Z$     | 17263.438 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.018         | Hz Prec        | 0.028     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 2              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000029       | VCV xy<br>(m²)   | 0.000021      | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000092      | VCV yz<br>(m²) | -0.000041 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000078  |            |       |
| Point             | 159   | ΔΧ             | 16618.066      | ΔΥ               | 16051.322     | ΔZ             | 17264.055 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.027     | Vt<br>Prec | 0.036 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000028       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000089      | VCV yz<br>(m²) | -0.000040 |            |       |

|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000075  |            |       |
|-------------------|-------|---------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 160   | ΔΧ            | 16618.872      | ΔΥ               | 16051.617     | ΔZ             | 17264.307 | Code       | TRUCK |
|                   |       | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.026         | Hz Prec        | 0.027     | Vt<br>Prec | 0.036 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000028       | VCV xy<br>(m²)   | 0.000020      | VCV xz<br>(m²) | -0.000018 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000088      | VCV yz<br>(m²) | -0.000039 |            |       |
|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000074  |            |       |
| Point             | 161   | ΔΧ            | 16620.661      | ΔΥ               | 16051.867     | $\Delta Z$     | 17264.415 | Code       | TRUCK |
|                   |       | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method        | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type          | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.027     | Vt<br>Prec | 0.036 |
| QC 1              |       | PDOP          | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)   | 0.000028       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000018 |            |       |
|                   |       |               |                | VCV yy<br>(m²)   | 0.000088      | VCV yz<br>(m²) | -0.000039 |            |       |
|                   |       |               |                |                  |               | VCV zz<br>(m²) | 0.000074  |            |       |
| Point             | 162   | ΔΧ            | 16623.036      | ΔΥ               | 16052.057     | $\Delta Z$     | 17263.954 | Code       | TRUCK |
|                   |       | Description 1 | PICKUP         | Description 2    |               |                |           |            |       |

|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Туре           | Uncorrected    | Tilt<br>distance | 0.050         | Hz Prec        | 0.051     | Vt<br>Prec | 0.067 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 2              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000096       | VCV xy (m²)      | 0.000063      | VCV xz<br>(m²) | -0.000062 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000297      | VCV yz<br>(m²) | -0.000131 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000259  |            |       |
| Point             | 163   | ΔΧ             | 16623.671      | ΔΥ               | 16051.792     | ΔΖ             | 17263.475 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.039         | Hz Prec        | 0.048     | Vt<br>Prec | 0.062 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4           | HDOP           | 1.0       | VDOP       | 1.5   |
|                   |       | Base data age  | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000084       | VCV xy<br>(m²)   | 0.000055      | VCV xz<br>(m²) | -0.000048 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000268      | VCV yz<br>(m²) | -0.000112 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000215  |            |       |
| Point             | 164   | ΔΧ             | 16624.066      | ΔΥ               | 16049.566     | ΔΖ             | 17260.995 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.030         | Hz Prec        | 0.037     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP           | 1.9            | GDOP             | 2.5           | HDOP           | 1.1       | VDOP       | 1.5   |

| QC 2              |       | VCV xx<br>(m²) | 0.000032       | VCV xy<br>(m²)   | 0.000023  | VCV xz<br>(m²) | -0.000021 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.058     | Hz Prec        | 0.030     | Vt<br>Prec | 0.039 |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
|                   |       | Description 1  | PICKUP         | Description 2    |           |                |           |            |       |
| Point             | 166   | ΔΧ             | 16624.519      | ΔΥ               | 16042.500 | $\Delta Z$     | 17253.234 | Code       | TRUCK |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000089  |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000090  | VCV yz<br>(m²) | -0.000044 |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000031       | VCV xy (m²)      | 0.000021  | VCV xz<br>(m²) | -0.000022 |            |       |
|                   |       | Base data age  | 1              | Satellites       | 11        | Positions used | 3         |            |       |
| QC 1              |       | PDOP           | 2.1            | GDOP             | 2.9       | HDOP           | 1.2       | VDOP       | 1.8   |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.034     | Hz Prec        | 0.028     | Vt<br>Prec | 0.038 |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
|                   |       | Description 1  | PICKUP         | Description 2    |           |                |           |            |       |
| Point             | 165   | ΔΧ             | 16624.324      | ΔΥ               | 16046.080 | $\Delta Z$     | 17257.100 | Code       | TRUCK |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000132  |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000161  | VCV yz<br>(m²) | -0.000069 |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000051       | VCV xy (m²)      | 0.000034  | VCV xz<br>(m²) | -0.000031 |            |       |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |

|                   |       |                |                | VCV yy<br>(m²)   | 0.000103  | VCV yz<br>(m²) | -0.000044 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000084  |            |       |
| Point             | 167   | ΔΧ             | 16624.124      | ΔΥ               | 16041.369 | $\Delta Z$     | 17252.140 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.033     | Hz Prec        | 0.027     | Vt<br>Prec | 0.035 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000027       | VCV xy<br>(m²)   | 0.000019  | VCV xz<br>(m²) | -0.000017 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000086  | VCV yz<br>(m²) | -0.000036 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000070  |            |       |
| Point             | 168   | ΔΧ             | 16623.087      | ΔΥ               | 16040.984 | $\Delta Z$     | 17252.069 | Code       | TRUCK |
|                   |       | Description 1  | PICKUP         | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.030     | Hz Prec        | 0.027     | Vt<br>Prec | 0.035 |
| QC 1              |       | PDOP           | 1.6            | GDOP             | 2.2       | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base data age  | 1              | Satellites       | 13        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000027       | VCV xy<br>(m²)   | 0.000019  | VCV xz<br>(m²) | -0.000017 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000086  | VCV yz<br>(m²) | -0.000037 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000071  |            |       |
| Point             | 169   | ΔΧ             | 16621.487      | ΔΥ               | 16040.765 | $\Delta Z$     | 17252.437 | Code       | TRUCK |

|                   |         | Des<br>1   | cripti      | on   | PI       | CKUP            | Descrip<br>2    | otion |    |                |                |           |        |      |            |
|-------------------|---------|------------|-------------|------|----------|-----------------|-----------------|-------|----|----------------|----------------|-----------|--------|------|------------|
|                   |         | Me         | thod        |      | Ne       | etwork<br>RTK   | Type            |       |    | Topo<br>point  | Searc<br>class | h         | No     | rmal |            |
| Antenna<br>height | 5.906   | Тур        | oe .        |      | Unco     | rrected         | Tilt<br>distanc | ee    |    | 0.053          | Hz Pı          | ec        | 0      | .027 | Vt<br>Prec |
| QC 1              |         | PD         | OP          |      |          | 1.6             | GDOP            |       |    | 2.1            | HDO            | P         |        | 0.9  | VDO        |
|                   |         | Bas<br>age | e data      | ı    |          | 1               | Satellit        | es    |    | 13             | Positi<br>used | ons       |        | 3    |            |
| QC 2              |         | VC<br>(m²  | V xx<br>)   |      | 0.0      | 000027          | VCV x (m²)      | y     | 0. | 000019         | VCV<br>(m²)    | XZ        | -0.000 | 0017 |            |
|                   |         |            |             |      |          |                 | VCV y<br>(m²)   | y     | 0. | 000086         | VCV<br>(m²)    | yz        | -0.000 | 0037 |            |
|                   |         |            |             |      |          |                 |                 |       |    |                | VCV<br>(m²)    | ZZ        | 0.000  | 0071 |            |
| Initializati      | ion eve | nt: R      | RTK no      | ot i | nitializ | zed             |                 |       |    |                |                |           |        |      |            |
| GPS<br>week       | 2266    | Sec        | onds        | 53   | 32340    | Initial<br>type | ization         | On    |    | Survey<br>type |                | al-<br>ne |        |      |            |
| Survey ev         | ent     |            |             |      |          |                 |                 |       |    |                |                |           |        |      |            |
| Survey ev         | vent    | E          | nd sur      | vey  | /        |                 |                 |       |    |                |                |           |        |      |            |
| Rover opt         | ions    |            |             |      |          |                 |                 |       |    |                |                |           |        |      |            |
| Elevation<br>mask | 1       | 10         | PDO<br>mask |      |          | 6               |                 |       |    |                |                |           |        |      |            |
| Rover opt         | ions    |            |             |      |          |                 |                 |       |    |                |                |           |        |      |            |
| Elevation<br>mask | 1       | 10         | PDO<br>mask |      |          | 6               |                 |       |    |                |                |           |        |      |            |
| Rover opt         | ions    |            |             |      |          |                 |                 |       |    |                |                |           |        |      |            |
| Elevation<br>mask | 1       | 10         | PDO<br>mask |      |          | 6               |                 |       |    |                |                |           |        |      |            |
| Rover opt         | ions    |            |             |      |          |                 |                 |       |    |                |                |           |        |      |            |
| Elevation<br>mask |         | 10         | PDO<br>mask |      |          | 6               |                 |       |    |                |                |           |        |      |            |

0.035

1.3

| Surve            | y event      | Rover s                | tarted    |                 |                     |        |           |                         |             |                          |
|------------------|--------------|------------------------|-----------|-----------------|---------------------|--------|-----------|-------------------------|-------------|--------------------------|
|                  | ,            | I I                    |           |                 |                     |        |           |                         |             |                          |
| GNSS             | receiver     |                        |           |                 |                     |        |           |                         |             |                          |
| Receiv           | er type      | Unknov                 | /n        |                 |                     |        |           |                         |             |                          |
| Serial           | number       |                        |           |                 |                     |        |           |                         |             |                          |
| Firmv<br>versio  |              | 0                      |           |                 |                     |        |           |                         |             |                          |
| Anten            | na type      | AdV Nu                 | ıll Anten | na              |                     |        |           |                         |             |                          |
| Measu<br>metho   | rement<br>d  | Antenna                | n Phase C | Center          |                     |        |           |                         |             |                          |
| Tape a           | adjustmen    | t 0.000                |           |                 |                     |        |           |                         |             |                          |
| Horizo           | ontal offse  | t 0.000                |           |                 |                     |        |           |                         |             |                          |
| Vertic           | al offset    | 0.000                  |           |                 |                     |        |           |                         |             |                          |
|                  |              |                        |           |                 |                     |        |           |                         |             |                          |
| Base p           | _            |                        |           |                 |                     |        |           |                         |             |                          |
| Point            |              | Antenna<br>height      | 0.0       | 00 <b>Typ</b>   | e Coi               | rected | 1         |                         |             |                          |
| Initiali         | zation ever  | nt: RTK in             | itialized |                 |                     |        |           |                         |             |                          |
| GPS<br>week      | 2266         | Seconds                | 532852    | Initial<br>type | ization             |        | the s     | Survey<br>type          | Real<br>tim |                          |
|                  |              |                        |           |                 |                     |        |           |                         |             |                          |
| Tilt cal         | libration st | atus                   |           |                 |                     |        |           |                         |             |                          |
| Event            |              | Calibration expires in |           |                 | libratio<br>e limit | n      | 30d<br>0h | Senso<br>calib<br>statu | ration      | Tilt<br>calibrated<br>OK |
| GNSS             | receiver     |                        |           |                 |                     |        |           |                         |             |                          |
| Receiv           | er type      | R10                    |           |                 |                     |        |           |                         |             |                          |
| Serial           | number       | 5521499                | 9772      |                 |                     |        |           |                         |             |                          |
| ~                | 70M0         |                        |           |                 |                     |        |           |                         |             |                          |
| Firmv<br>version |              | 5.22                   |           |                 |                     |        |           |                         |             |                          |

| Measurement method | Bottom of quick release |
|--------------------|-------------------------|
| Tape adjustment    | 0.000                   |
| Horizontal offset  | 0.000                   |
| Vertical offset    | 0.653                   |

| Point             | 170   | ΔΧ                          | 16627.245      | ΔΥ               | 16126.853     | ΔΖ             | 17344.161 | Code       | EG1   |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.019         | Hz Prec        | 0.031     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000034       | VCV xy (m²)      | 0.000022      | VCV xz<br>(m²) | -0.000023 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000102      | VCV yz<br>(m²) | -0.000044 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000097  |            |       |
| Point             | 171   | ΔΧ                          | 16622.326      | ΔΥ               | 16126.796     | ΔΖ             | 17344.925 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.039         | Hz Prec        | 0.028     | Vt<br>Prec | 0.036 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000029       | VCV xy (m²)      | 0.000018      | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000084      | VCV yz<br>(m²) | -0.000038 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000082  |            |       |
| Point             | 172   | ΔΧ                          | 16616.114      | ΔΥ               | 16126.574     | ΔΖ             | 17345.000 | Code       | FL1   |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.031     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000035       | VCV xy (m²)      | 0.000023      | VCV xz<br>(m²) | -0.000025 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000104      | VCV yz<br>(m²) | -0.000047 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000102  |            |       |
| Point             | 173   | ΔΧ                  | 16604.259      | ΔΥ               | 16126.062     | ΔΖ             | 17344.771 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.028         | Hz Prec        | 0.032     | Vt<br>Prec | 0.041 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000037       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²) | -0.000026 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000109      | VCV yz<br>(m²) | -0.000049 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000106  |            |       |
| Point             | 174   | ΔΧ                  | 16592.440      | ΔΥ               | 16125.908     | ΔΖ             | 17344.825 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.025         | Hz Prec        | 0.030     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP                | 1.4            | GDOP             | 1.8           | HDOP           | 0.9       | VDOP       | 1.1   |

|                   |       | Base<br>data<br>age | 1              | Satellites       | 14            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000017 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000100      | VCV yz<br>(m²) | -0.000039 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000080  |            |       |
| Point             | 175   | ΔΧ                  | 16586.079      | ΔΥ               | 16125.588     | ΔΖ             | 17344.446 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.035     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000043       | VCV xy<br>(m²)   | 0.000029      | VCV xz<br>(m²) | -0.000031 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000129      | VCV yz<br>(m²) | -0.000059 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000126  |            |       |
| Point             | 176   | ΔΧ                  | 16579.647      | ΔΥ               | 16126.925     | $\Delta Z$     | 17344.712 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.017         | Hz Prec        | 0.034     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000041       | VCV xy<br>(m²)   | 0.000027      | VCV xz<br>(m²) | -0.000029 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000122      | VCV yz<br>(m²) | -0.000055 |            |       |

|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000121  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------|-----------|------------|-------|
| Point             | 177   | ΔΧ                  | 16578.296      | ΔΥ               | 16088.907     | $\Delta Z$      | 17304.078 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.019         | Hz Prec         | 0.029     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP                | 1.4            | GDOP             | 1.8           | HDOP            | 0.9       | VDOP       | 1.1   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 14            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000030       | VCV xy<br>(m²)   | 0.000019      | VCV xz<br>(m²)  | -0.000016 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000096      | VCV yz<br>(m²)  | -0.000038 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000077  |            |       |
| Point             | 178   | ΔΧ                  | 16583.812      | ΔΥ               | 16087.950     | ΔΖ              | 17304.123 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.041         | Hz Prec         | 0.030     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                | 1.4            | GDOP             | 1.8           | HDOP            | 0.9       | VDOP       | 1.1   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 14            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000032       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²)  | -0.000017 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000103      | VCV yz<br>(m²)  | -0.000040 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000082  |            |       |
| Point             | 179   | ΔΧ                  | 16590.235      | ΔΥ               | 16087.567     | ΔΖ              | 17303.624 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search<br>class | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.032         | Hz Prec         | 0.031     | Vt<br>Prec | 0.040 |

| QC 1              |       | PDOP                        | 1.4            | GDOP             | 1.8           | HDOP           | 0.9       | VDOP       | 1.1   |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 14            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000035       | VCV xy (m²)      | 0.000023      | VCV xz<br>(m²) | -0.000018 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000114      | VCV yz<br>(m²) | -0.000045 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000090  |            |       |
| Point             | 180   | ΔΧ                          | 16601.941      | ΔΥ               | 16087.280     | $\Delta Z$     | 17303.178 | Code       | CL1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.008         | Hz Prec        | 0.033     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000040       | VCV xy (m²)      | 0.000026      | VCV xz<br>(m²) | -0.000022 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000128      | VCV yz<br>(m²) | -0.000052 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000105  |            |       |
| Point             | 181   | ΔΧ                          | 16613.764      | ΔΥ               | 16087.105     | $\Delta Z$     | 17302.715 | Code       | FL1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.026         | Hz Prec        | 0.034     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age         | 3              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000042       | VCV xy (m²)      | 0.000031      | VCV xz<br>(m²) | -0.000026 |            |       |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000139      | VCV yz<br>(m²)  | -0.000059 |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------|-----------|------------|-------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000111  |            |       |
| Point             | 182   | ΔΧ                  | 16619.856      | ΔΥ               | 16087.065     | ΔΖ              | 17302.358 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.023         | Hz Prec         | 0.034     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP            | 1.1       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000042       | VCV xy (m²)      | 0.000035      | VCV xz<br>(m²)  | -0.000027 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²)  | -0.000063 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000113  |            |       |
| Point             | 183   | ΔΧ                  | 16625.180      | ΔΥ               | 16087.361     | ΔΖ              | 17301.333 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.031         | Hz Prec         | 0.033     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP            | 1.1       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy (m²)      | 0.000034      | VCV xz<br>(m²)  | -0.000027 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000144      | VCV yz<br>(m²)  | -0.000061 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000109  |            |       |
| Point             | 184   | ΔΧ                  | 16622.893      | ΔΥ               | 16054.825     | ΔΖ              | 17266.611 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search<br>class | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.038         | Hz Prec        | 0.029     | Vt<br>Prec | 0.040 |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP                        | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000031       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²) | -0.000021 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000112      | VCV yz<br>(m²) | -0.000049 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000085  |            |       |
| Point             | 185   | ΔΧ                          | 16618.331      | ΔΥ               | 16054.211     | ΔΖ             | 17267.100 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.013         | Hz Prec        | 0.031     | Vt<br>Prec | 0.041 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000035       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²) | -0.000022 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000110      | VCV yz<br>(m²) | -0.000049 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000099  |            |       |
| Point             | 186   | ΔΧ                          | 16612.215      | ΔΥ               | 16054.010     | $\Delta Z$     | 17267.080 | Code       | FL1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna height    | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.038         | Hz Prec        | 0.031     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP                        | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 13            | Positions used | 3         |            |       |

| QC 2              |       | VCV<br>xx (m²)              | 0.000034       | VCV xy (m²)      | 0.000023      | VCV xz<br>(m²) | -0.000022 |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000107      | VCV yz<br>(m²) | -0.000048 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000097  |            |       |
| Point             | 187   | ΔΧ                          | 16600.332      | ΔΥ               | 16053.772     | $\Delta Z$     | 17267.343 | Code       | CL1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.040         | Hz Prec        | 0.032     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000036       | VCV xy<br>(m²)   | 0.000025      | VCV xz<br>(m²) | -0.000023 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000116      | VCV yz<br>(m²) | -0.000051 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000104  |            |       |
| Point             | 188   | ΔΧ                          | 16588.628      | ΔΥ               | 16053.336     | $\Delta Z$     | 17267.013 | Code       | FL2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.023         | Hz Prec        | 0.034     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000041       | VCV xy (m²)      | 0.000028      | VCV xz<br>(m²) | -0.000026 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000132      | VCV yz<br>(m²) | -0.000059 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000118  |            |       |
| Point             | 189   | ΔΧ                          | 16582.364      | ΔΥ               | 16053.289     | $\Delta Z$     | 17267.103 | Code       | EA2   |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.009         | Hz Prec        | 0.034     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000042       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000026 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000133      | VCV yz<br>(m²) | -0.000059 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000118  |            |       |
| Point             | 190   | ΔΧ                  | 16576.966      | ΔΥ               | 16053.585     | ΔΖ             | 17266.377 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.014         | Hz Prec        | 0.032     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.2   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000037       | VCV xy (m²)      | 0.000026      | VCV xz<br>(m²) | -0.000023 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000120      | VCV yz<br>(m²) | -0.000053 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000106  |            |       |
| Point             | 191   | ΔΧ                  | 16576.768      | ΔΥ               | 16020.855     | ΔΖ             | 17231.487 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.022         | Hz Prec        | 0.029     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.2   |

|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000019 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000100      | VCV yz<br>(m²) | -0.000044 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000088  |            |       |
| Point             | 192   | ΔΧ                  | 16581.768      | ΔΥ               | 16018.757     | ΔΖ             | 17229.776 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.027         | Hz Prec        | 0.030     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.2   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy<br>(m²)   | 0.000023      | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000107      | VCV yz<br>(m²) | -0.000047 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000093  |            |       |
| Point             | 193   | ΔΧ                  | 16588.184      |                  | 16019.194     | $\Delta Z$     | 17230.268 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.031         | Hz Prec        | 0.029     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 1.0       | VDOP       | 1.2   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy<br>(m²)   | 0.000021      | VCV xz<br>(m²) | -0.000018 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000101      | VCV yz<br>(m²) | -0.000044 |            |       |

|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000088  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------|-----------|------------|-------|
| Point             | 194   | ΔΧ                  | 16600.003      | ΔΥ               | 16019.237     | $\Delta Z$      | 17230.073 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.007         | Hz Prec         | 0.031     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP            | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000034       | VCV xy<br>(m²)   | 0.000026      | VCV xz<br>(m²)  | -0.000021 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000120      | VCV yz<br>(m²)  | -0.000052 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000096  |            |       |
| Point             | 195   | ΔΧ                  | 16611.819      | ΔΥ               | 16019.863     | ΔΖ              | 17230.388 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.034         | Hz Prec         | 0.030     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP            | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000034       | VCV xy<br>(m²)   | 0.000027      | VCV xz<br>(m²)  | -0.000021 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000121      | VCV yz<br>(m²)  | -0.000052 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000093  |            |       |
| Point             | 196   | ΔΧ                  | 16617.956      | ΔΥ               | 16019.888     | ΔΖ              | 17230.134 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search<br>class | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec         | 0.031     | Vt<br>Prec | 0.043 |

| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Base<br>data<br>age | 3              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000036       | VCV xy (m²)      | 0.000030      | VCV xz<br>(m²) | -0.000023 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000132      | VCV yz<br>(m²) | -0.000058 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000098  |            |       |
| Point             | 197   | ΔΧ                  | 16622.067      | ΔΥ               | 16020.363     | $\Delta Z$     | 17229.807 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.030     | Vt<br>Prec | 0.041 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000032       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²) | -0.000020 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000119      | VCV yz<br>(m²) | -0.000051 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000088  |            |       |
| Point             | 198   | ΔΧ                  | 16622.186      | ΔΥ               | 15978.569     | $\Delta Z$     | 17185.203 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.017         | Hz Prec        | 0.024     | Vt<br>Prec | 0.034 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000020       | VCV xy (m²)      | 0.000017      | VCV xz<br>(m²) | -0.000012 |            |       |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000081      | VCV yz<br>(m²) | -0.000034 |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000060  |            |       |
| Point             | 199   | ΔΧ                  | 16618.362      | ΔΥ               | 15978.214     | ΔΖ             | 17185.607 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec        | 0.026     | Vt<br>Prec | 0.035 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 13            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000023       | VCV xy<br>(m²)   | 0.000017      | VCV xz<br>(m²) | -0.000013 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000083      | VCV yz<br>(m²) | -0.000036 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000067  |            |       |
| Point             | 200   | ΔΧ                  | 16612.125      | ΔΥ               | 15977.895     | $\Delta Z$     | 17185.610 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.032         | Hz Prec        | 0.027     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000026       | VCV xy<br>(m²)   | 0.000022      | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000104      | VCV yz<br>(m²) | -0.000045 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000076  |            |       |
| Point             | 201   | ΔΧ                  | 16600.115      | ΔΥ               | 15977.149     | ΔΖ             | 17185.252 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.034         | Hz Prec               | 0.029     | Vt<br>Prec | 0.040 |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------------|-----------|------------|-------|
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP                  | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | <b>Positions</b> used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000029       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²)        | -0.000016 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000114      | VCV yz<br>(m²)        | -0.000050 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)        | 0.000084  |            |       |
| Point             | 202   | ΔΧ                  | 16588.622      | ΔΥ               | 15976.384     | $\Delta Z$            | 17184.690 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class          | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.023         | Hz Prec               | 0.027     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP                  | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used        | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000027       | VCV xy (m²)      | 0.000018      | VCV xz<br>(m²)        | -0.000013 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000092      | VCV yz<br>(m²)        | -0.000042 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)        | 0.000080  |            |       |
| Point             | 203   | ΔΧ                  | 16582.262      | ΔΥ               | 15975.724     | ΔΖ                    | 17184.094 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search<br>class       | Normal    |            |       |
| Antenna height    | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.026         | Hz Prec               | 0.027     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP                  | 1.0       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used        | 3         |            |       |

| QC 2              |       | VCV<br>xx (m²)              | 0.000026       | VCV xy (m²)      | 0.000017      | VCV xz<br>(m²) | -0.000012 |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000088      | VCV yz<br>(m²) | -0.000040 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000078  |            |       |
| Point             | 204   | ΔΧ                          | 16577.207      | ΔΥ               | 15975.648     | $\Delta Z$     | 17182.971 | Code       | EG2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.025     | Vt<br>Prec | 0.033 |
| QC 1              |       | PDOP                        | 1.9            | GDOP             | 2.5           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000022       | VCV xy (m²)      | 0.000014      | VCV xz<br>(m²) | -0.000010 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000073      | VCV yz<br>(m²) | -0.000034 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000065  |            |       |
| Point             | 205   | ΔΧ                          | 16578.373      | ΔΥ               | 15928.432     | ΔΖ             | 17132.545 | Code       | EG2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.029         | Hz Prec        | 0.027     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                        | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000026       | VCV xy (m²)      | 0.000023      | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000102      | VCV yz<br>(m²) | -0.000043 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000071  |            |       |
| Point             | 206   | ΔΧ                          | 16583.699      | ΔΥ               | 15927.406     | ΔΖ             | 17132.254 | Code       | EA2   |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.019         | Hz Prec        | 0.027     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000025       | VCV xy (m²)      | 0.000022      | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000100      | VCV yz<br>(m²) | -0.000043 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000069  |            |       |
| Point             | 207   | ΔΧ                  | 16590.101      | ΔΥ               | 15926.079     | $\Delta Z$     | 17130.767 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.018         | Hz Prec        | 0.026     | Vt<br>Prec | 0.037 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000025       | VCV xy (m²)      | 0.000022      | VCV xz<br>(m²) | -0.000014 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000097      | VCV yz<br>(m²) | -0.000041 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000067  |            |       |
| Point             | 208   | ΔΧ                  | 16601.689      | ΔΥ               | 15926.172     | ΔΖ             | 17130.666 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.028     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |

|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000027       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000108      | VCV yz<br>(m²) | -0.000046 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000074  |            |       |
| Point             | 209   | ΔΧ                  | 16613.624      | ΔΥ               | 15926.481     | ΔΖ             | 17130.660 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.027     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000026       | VCV xy (m²)      | 0.000023      | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000106      | VCV yz<br>(m²) | -0.000045 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000071  |            |       |
| Point             | 210   | ΔΧ                  | 16619.807      | ΔΥ               | 15926.469     | ΔΖ             | 17130.304 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.032         | Hz Prec        | 0.027     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000026       | VCV xy<br>(m²)   | 0.000023      | VCV xz<br>(m²) | -0.000014 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000104      | VCV yz<br>(m²) | -0.000044 |            |       |

|                   |       |                     |     |                |              |                |        |      | VCV<br>(m²)    | ZZ         | 0.000                   | 0070  |            |            |       |
|-------------------|-------|---------------------|-----|----------------|--------------|----------------|--------|------|----------------|------------|-------------------------|-------|------------|------------|-------|
| Point             | 211   | ΔΧ                  | 10  | 6624.218       | ΔΥ           |                | 15927  | .073 | ΔΖ             |            | 17129                   | .968  | Code       | EG1        |       |
|                   |       | Method              |     | Network<br>RTK | Tyl          | pe             |        | -    | Searc<br>class | h          | No                      | rmal  |            |            |       |
| Antenna<br>height | 5.906 | Type                | Uno | corrected      | Tilt<br>dist | t<br>tance     | 0      | .015 | Hz Pr          | ec         | 0                       | 0.028 | Vt<br>Prec | 0.039      |       |
| QC 1              |       | PDOP                |     | 1.8            | GD           | OP             |        | 2.4  | HDO            | P          |                         | 1.1   | VDO        | P 1.5      |       |
|                   |       | Base<br>data<br>age |     | 1              | Sat          | ellites        |        | 12   | Positi<br>used | ons        |                         | 3     |            |            |       |
| QC 2              |       | VCV<br>xx (m²)      | (   | 0.000028       | VC<br>(m²    | (V xy          | 0.000  | 0024 | VCV<br>(m²)    | XZ         | -0.000                  | 0015  |            |            |       |
|                   |       |                     |     |                | VC<br>(m²    | (V yy          | 0.000  | 0112 | VCV<br>(m²)    | yz         | -0.000                  | 0047  |            |            |       |
|                   |       |                     |     |                |              |                |        |      | VCV<br>(m²)    | ZZ         | 0.000                   | 0075  |            |            |       |
| Point             | 212   | ΔΧ                  |     | 16613.         | 140          | ΔΥ             |        | 1594 | 12.181         | ΔΖ         |                         | 1714  | 47.258     | Code       | AXL3  |
|                   |       | Descript<br>1       | ion | SOU            | AD           | Descr<br>2     | iption |      |                |            |                         |       |            |            |       |
|                   |       | Method              |     | Netw<br>R      | ork<br>TK    | Type           |        |      | Topo<br>point  |            |                         | N     | Vormal     |            |       |
| Antenna<br>height | 5.906 | Туре                |     | Uncorrec       | ted          | Tilt<br>distan | ce     |      | 0.043          | Hz         | Prec                    |       | 0.027      | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                |     |                | 1.8          | GDO            | P      |      | 2.4            | HD         | OP                      |       | 1.1        | VDOP       | 1.5   |
|                   |       | Base dat            | a   |                | 1            | Satelli        | ites   |      | 12             | Pos<br>use | sitions<br>ed           |       | 3          |            |       |
| QC 2              |       | VCV xx (m²)         |     | 0.000          | 027          | VCV (m²)       | хy     | 0.0  | 00023          | VC<br>(m²  | CV xz<br><sup>2</sup> ) | -0.0  | 00014      |            |       |
|                   |       |                     |     |                |              | VCV (m²)       | уу     | 0.0  | 00109          | VC<br>(m²  | CV yz                   | -0.0  | 00046      |            |       |
|                   |       |                     |     |                |              |                |        |      |                | VC<br>(m²  | CV zz                   | 0.0   | 00072      |            |       |
| Point             | 213   | ΔΧ                  |     | 16607.2        | 292          | ΔΥ             |        | 1593 | 39.810         | ΔZ         |                         | 1714  | 14.971     | Code       | AXL3  |
|                   |       | Descript<br>1       | ion | SOU            | AD           | Descr<br>2     | iption |      |                |            |                         |       |            |            |       |

|                   |       | Method         | Network<br>RTK | Type             | _             | Search class   | Normal    |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.025         | Hz Prec        | 0.028     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base data age  | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000028       | VCV xy (m²)      | 0.000025      | VCV xz<br>(m²) | -0.000015 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000115      | VCV yz<br>(m²) | -0.000048 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000076  |            |       |
| Point             | 214   | ΔΧ             | 16611.894      | ΔΥ               | 15933.967     | $\Delta Z$     | 17138.639 | Code       | AXL4  |
|                   |       | Description 1  | SOUAD          | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.009         | Hz Prec        | 0.029     | Vt<br>Prec | 0.041 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |
|                   |       | Base data age  | 3              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000031       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²) | -0.000017 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000124      | VCV yz<br>(m²) | -0.000053 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000081  |            |       |
| Point             | 215   | ΔΧ             | 16617.798      | ΔΥ               | 15936.218     | $\Delta Z$     | 17140.868 | Code       | AXL4  |
|                   |       | Description 1  | SOUAD          | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.061         | Hz Prec        | 0.028     | Vt<br>Prec | 0.040 |
| QC 1              |       | PDOP           | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5   |

|       |     | Base data   | a              | 1   | Satelli       | tes          |            | 12             | Pos<br>use | itions<br>d |      | 3     |      |     |
|-------|-----|-------------|----------------|-----|---------------|--------------|------------|----------------|------------|-------------|------|-------|------|-----|
| QC 2  |     | VCV xx (m²) | 0.0000         |     | VCV y<br>(m²) | 0.           |            | 0025           | VC<br>(m²  | V xz        | -0.0 | 00015 |      |     |
|       |     |             |                |     | VCV y<br>(m²) | 0.           | .000       | 0119           | VC<br>(m²  | V yz        | -0.0 | 00050 |      |     |
|       |     |             |                |     |               |              |            |                |            | V zz        | 0.0  | 00078 |      |     |
| Point | 216 | ΔΧ          | 16616.712      | ΔΥ  |               | 15932.73     | 5 <b>Δ</b> | Z              |            | 17136       | .983 | Code  | SQUA | AD1 |
|       |     | Method      | Network<br>RTK | Тур | oe e          | Topo<br>poin |            | Searcl<br>lass | h          | No          | rmal |       |      |     |

| Point             | 216   | $\Delta X$          | 16616.712      | $\Delta Y$       | 15932.735     | $\Delta Z$     | 17136.983 | Code       | SQUAD1 |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|--------|
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.037         | Hz Prec        | 0.028     | Vt<br>Prec | 0.039  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000027       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²) | -0.000014 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000112      | VCV yz<br>(m²) | -0.000047 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000073  |            |        |
| Point             | 217   | ΔΧ                  | 16614.513      | ΔΥ               | 15932.139     | ΔΖ             | 17136.437 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.025         | Hz Prec        | 0.028     | Vt<br>Prec | 0.039  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000027       | VCV xy<br>(m²)   | 0.000024      | VCV xz<br>(m²) | -0.000014 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000114      | VCV yz<br>(m²) | -0.000048 |            |        |

|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000074  |            |        |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|--------|
| Point             | 218   | ΔΧ                  | 16613.511      | ΔΥ               | 15932.451     | $\Delta Z$     | 17136.864 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.032         | Hz Prec        | 0.028     | Vt<br>Prec | 0.039  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000028       | VCV xy<br>(m²)   | 0.000024      | VCV xz<br>(m²) | -0.000014 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000115      | VCV yz<br>(m²) | -0.000048 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000074  |            |        |
| Point             | 219   | ΔΧ                  | 16611.419      | ΔΥ               | 15934.743     | $\Delta Z$     | 17139.385 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec        | 0.028     | Vt<br>Prec | 0.040  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000028       | VCV xy (m²)      | 0.000025      | VCV xz (m²)    | -0.000014 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000119      | VCV yz<br>(m²) | -0.000050 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000076  |            |        |
| Point             | 220   | ΔΧ                  | 16608.386      | ΔΥ               | 15938.518     | ΔZ             | 17143.543 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             |               | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.054         | Hz Prec        | 0.028     | Vt<br>Prec | 0.040  |

| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|--------|
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000028       | VCV xy (m²)      | 0.000025      | VCV xz<br>(m²) | -0.000013 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000118      | VCV yz<br>(m²) | -0.000050 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000076  |            |        |
| Point             | 221   | ΔΧ                  | 16606.530      | ΔΥ               | 15941.096     | $\Delta Z$     | 17146.368 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.055         | Hz Prec        | 0.029     | Vt<br>Prec | 0.041  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000029       | VCV xy (m²)      | 0.000025      | VCV xz<br>(m²) | -0.000014 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000123      | VCV yz<br>(m²) | -0.000052 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000079  |            |        |
| Point             | 222   | ΔΧ                  | 16607.543      | ΔΥ               | 15942.012     | ΔΖ             | 17147.351 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Type             |               | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.014         | Hz Prec        | 0.030     | Vt<br>Prec | 0.042  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²) | -0.000015 |            |        |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000132      | VCV yz<br>(m²)  | -0.000056 |            |        |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------|-----------|------------|--------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000084  |            |        |
| Point             | 223   | ΔΧ                  | 16607.174      | ΔΥ               | 15942.546     | $\Delta Z$      | 17147.975 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.058         | Hz Prec         | 0.030     | Vt<br>Prec | 0.044  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP            | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used  | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²)  | -0.000015 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000141      | VCV yz<br>(m²)  | -0.000059 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000089  |            |        |
| Point             | 224   | ΔΧ                  | 16609.776      | ΔΥ               | 15943.503     | $\Delta Z$      | 17149.026 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             |               | Search class    | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec         | 0.031     | Vt<br>Prec | 0.045  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP            | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000035       | VCV xy (m²)      | 0.000030      | VCV xz<br>(m²)  | -0.000016 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000148      | VCV yz<br>(m²)  | -0.000063 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000094  |            |        |
| Point             | 225   | ΔΧ                  | 16610.245      | ΔΥ               | 15943.105     | ΔΖ              | 17148.534 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             |               | Search<br>class | Normal    |            |        |

| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.014         | Hz Prec        | 0.031     | Vt<br>Prec | 0.044  |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|--------|
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000015 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000143      | VCV yz<br>(m²) | -0.000060 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000090  |            |        |
| Point             | 226   | ΔΧ                  | 16611.564      | ΔΥ               | 15943.152     | $\Delta Z$     | 17148.607 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.045         | Hz Prec        | 0.030     | Vt<br>Prec | 0.043  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000032       | VCV xy (m²)      | 0.000028      | VCV xz<br>(m²) | -0.000015 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000138      | VCV yz<br>(m²) | -0.000058 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000087  |            |        |
| Point             | 227   | ΔΧ                  | 16612.324      | ΔΥ               | 15942.805     | $\Delta Z$     | 17148.278 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | _             | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.034         | Hz Prec        | 0.030     | Vt<br>Prec | 0.043  |
| QC 1              |       | PDOP                | 1.8            | GDOP             | 2.4           | HDOP           | 1.1       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |        |

| QC 2              |       | VCV<br>xx (m²)              | 0.000033       | VCV xy (m²)      | 0.000028      | VCV xz<br>(m²)      | -0.000015 |            |        |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|---------------------|-----------|------------|--------|
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000140      | VCV yz<br>(m²)      | -0.000059 |            |        |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)      | 0.000088  |            |        |
| Point             | 228   | ΔΧ                          | 16613.896      | ΔΥ               | 15940.906     | $\Delta Z$          | 17146.049 | Code       | SQUAD1 |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class        | Normal    |            |        |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.014         | Hz Prec             | 0.030     | Vt<br>Prec | 0.043  |
| QC 1              |       | PDOP                        | 1.9            | GDOP             | 2.5           | HDOP                | 1.2       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used      | 3         |            |        |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000031       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²)      | -0.000014 |            |        |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000134      | VCV yz<br>(m²)      | -0.000057 |            |        |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)      | 0.000085  |            |        |
| Point             | 229   | ΔΧ                          | 16616.417      | ΔΥ               | 15937.860     | $\Delta Z$          | 17142.820 | Code       | SQUAD1 |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class        | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.042         | Hz Prec             | 0.030     | Vt<br>Prec | 0.044  |
| QC 1              |       | PDOP                        | 1.9            | GDOP             | 2.5           | HDOP                | 1.2       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used      | 3         |            |        |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000032       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²)      | -0.000013 |            |        |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000141      | VCV yz<br>(m²)      | -0.000061 |            |        |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)      | 0.000091  |            |        |
| Point             | 230   | ΔΧ                          | 16618.532      | ΔΥ               | 15935.107     | $\Delta \mathbf{Z}$ | 17139.689 | Code       | SQUAD1 |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|--------|
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.029         | Hz Prec        | 0.030     | Vt<br>Prec | 0.043  |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP           | 1.2       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000025      | VCV xz<br>(m²) | -0.000012 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000135      | VCV yz<br>(m²) | -0.000060 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000089  |            |        |
| Point             | 231   | ΔΧ                  | 16618.769      | ΔΥ               | 15933.700     | $\Delta Z$     | 17138.250 | Code       | SQUAD1 |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.044         | Hz Prec        | 0.030     | Vt<br>Prec | 0.043  |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP           | 1.2       | VDOP       | 1.5    |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |        |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000025      | VCV xz<br>(m²) | -0.000011 |            |        |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000135      | VCV yz<br>(m²) | -0.000060 |            |        |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000089  |            |        |
| Point             | 232   | ΔΧ                  | 16627.956      | ΔΥ               | 15875.811     | ΔZ             | 17075.485 | Code       | EG1    |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |        |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.039         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045  |
| QC 1              |       | PDOP                | 2.5            | GDOP             | 3.4           | HDOP           | 1.3       | VDOP       | 2.1    |

|                   |       | Base<br>data<br>age | 2              | Satellites       | 10            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000030       | VCV xy (m²)      | 0.000022      | VCV xz<br>(m²) | -0.000006 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²) | -0.000069 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000091  |            |       |
| Point             | 233   | ΔΧ                  | 16622.711      | ΔΥ               | 15875.207     | ΔΖ             | 17075.730 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.021         | Hz Prec        | 0.029     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                | 2.5            | GDOP             | 3.4           | HDOP           | 1.3       | VDOP       | 2.1   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000028       | VCV xy<br>(m²)   | 0.000021      | VCV xz<br>(m²) | -0.000006 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000144      | VCV yz<br>(m²) | -0.000066 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000087  |            |       |
| Point             | 234   | ΔΧ                  | 16616.626      |                  | 15874.549     | $\Delta Z$     | 17075.545 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.040         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 2.5            | GDOP             | 3.4           | HDOP           | 1.3       | VDOP       | 2.1   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000030       | VCV xy<br>(m²)   | 0.000022      | VCV xz<br>(m²) | -0.000006 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000154      | VCV yz<br>(m²) | -0.000071 |            |       |

|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000093  |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 235   | ΔΧ                          | 16604.991      | ΔΥ               | 15872.920     | $\Delta Z$     | 17074.026 | Code       | CL1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.047         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 2.5            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.1   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000029       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000005 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²) | -0.000070 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000091  |            |       |
| Point             | 236   | ΔΧ                          | 16593.397      | ΔΥ               | 15872.373     | ΔΖ             | 17073.213 | Code       | FL2   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.023         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                        | 2.5            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.1   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000030       | VCV xy<br>(m²)   | 0.000021      | VCV xz<br>(m²) | -0.000005 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000153      | VCV yz<br>(m²) | -0.000071 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000093  |            |       |
| Point             | 237   | ΔΧ                          | 16587.090      | ΔΥ               | 15872.120     | ΔΖ             | 17072.601 | Code       | EA2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.061         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |

| QC 1              |       | PDOP                        | 2.5            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.1   |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000029       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000005 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²) | -0.000070 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000090  |            |       |
| Point             | 238   | ΔΧ                          | 16582.644      | ΔΥ               | 15871.020     | $\Delta Z$     | 17071.419 | Code       | EG2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.038         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000030       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000005 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000152      | VCV yz<br>(m²) | -0.000067 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000083  |            |       |
| Point             | 239   | ΔΧ                          | 16587.893      | ΔΥ               | 15818.575     | $\Delta Z$     | 17015.112 | Code       | EG2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                        | 2.4            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.0   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000028       | VCV xy (m²)      | 0.000019      | VCV xz<br>(m²) | -0.000004 |            |       |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000144      | VCV yz<br>(m²) | -0.000064 |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000079  |            |       |
| Point             | 240   | ΔΧ                  | 16592.487      | ΔΥ               | 15819.032     | ΔΖ             | 17015.121 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.013         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000029       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000004 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000151      | VCV yz<br>(m²) | -0.000067 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000082  |            |       |
| Point             | 241   | ΔΧ                  | 16599.063      | ΔΥ               | 15817.546     | $\Delta Z$     | 17014.209 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.004         | Hz Prec        | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000029       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000004 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000148      | VCV yz<br>(m²) | -0.000066 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000080  |            |       |
| Point             | 242   | ΔΧ                  | 16610.459      | ΔΥ               | 15817.790     | ΔΖ             | 17014.950 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.009         | Hz Prec        | 0.029     | Vt<br>Prec | 0.044 |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP                        | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000029       | VCV xy (m²)      | 0.000019      | VCV xz<br>(m²) | -0.000004 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²) | -0.000067 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000081  |            |       |
| Point             | 243   | ΔΧ                          | 16621.802      | ΔΥ               | 15821.952     | ΔΖ             | 17018.617 | Code       | FL1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.007         | Hz Prec        | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                        | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000028       | VCV xy (m²)      | 0.000019      | VCV xz<br>(m²) | -0.000003 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000146      | VCV yz<br>(m²) | -0.000065 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000078  |            |       |
| Point             | 244   | ΔΧ                          | 16627.761      | ΔΥ               | 15824.829     | ΔΖ             | 17021.169 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna height    | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.016         | Hz Prec        | 0.026     | Vt<br>Prec | 0.041 |
| QC 1              |       | PDOP                        | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |

| QC 2              |       | VCV<br>xx (m²)              | 0.000023       | VCV xy (m²)      | 0.000012      | VCV xz<br>(m²) | 0.000000  |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000128      | VCV yz<br>(m²) | -0.000056 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000070  |            |       |
| Point             | 245   | ΔΧ                          | 16633.438      | ΔΥ               | 15824.619     | $\Delta Z$     | 17020.734 | Code       | EG1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.018         | Hz Prec        | 0.027     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                        | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000026       | VCV xy (m²)      | 0.000015      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000139      | VCV yz<br>(m²) | -0.000061 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000075  |            |       |
| Point             | 246   | ΔΧ                          | 16636.971      | ΔΥ               | 15784.534     | $\Delta Z$     | 16977.293 | Code       | EG1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.041         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 2.3            | GDOP             | 3.1           | HDOP           | 1.3       | VDOP       | 1.9   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000029       | VCV xy (m²)      | 0.000018      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000157      | VCV yz<br>(m²) | -0.000070 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000084  |            |       |
| Point             | 247   | ΔΧ                          | 16632.709      | ΔΥ               | 15784.519     | $\Delta Z$     | 16977.762 | Code       | EA1   |

|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|-----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.008         | Hz Prec         | 0.028     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                        | 2.4            | GDOP             | 3.3           | HDOP            | 1.3       | VDOP       | 2.0   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 10            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000028       | VCV xy (m²)      | 0.000016      | VCV xz<br>(m²)  | -0.000001 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000148      | VCV yz<br>(m²)  | -0.000067 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)  | 0.000080  |            |       |
| Point             | 248   | ΔΧ                          | 16626.359      | ΔΥ               | 15784.305     | ΔΖ              | 16977.996 | Code       | FL1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.035         | Hz Prec         | 0.028     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 2.4            | GDOP             | 3.3           | HDOP            | 1.3       | VDOP       | 2.0   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 10            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000028       | VCV xy (m²)      | 0.000016      | VCV xz<br>(m²)  | -0.000001 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000148      | VCV yz<br>(m²)  | -0.000068 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)  | 0.000081  |            |       |
| Point             | 249   | ΔΧ                          | 16614.513      | ΔΥ               | 15783.914     | $\Delta Z$      | 16977.771 | Code       | CL1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search<br>class | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.063         | Hz Prec         | 0.032     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                        | 2.4            | GDOP             | 3.3           | HDOP            | 1.3       | VDOP       | 2.0   |

|                   |       | Base<br>data<br>age | 2              | Satellites       | 10            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000036       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000190      | VCV yz<br>(m²) | -0.000086 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000100  |            |       |
| Point             | 250   | ΔΧ                  | 16602.789      | ΔΥ               | 15783.119     | $\Delta Z$     | 16977.150 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.031         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 2.4            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.0   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000030       | VCV xy<br>(m²)   | 0.000016      | VCV xz<br>(m²) | 0.000000  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000159      | VCV yz<br>(m²) | -0.000073 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000085  |            |       |
| Point             | 251   | ΔΧ                  | 16596.302      |                  | 15782.472     | $\Delta Z$     | 16976.628 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.033         | Hz Prec        | 0.033     | Vt<br>Prec | 0.054 |
| QC 1              |       | PDOP                | 2.4            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.0   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 10            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000041       | VCV xy<br>(m²)   | 0.000022      | VCV xz<br>(m²) | 0.000000  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000216      | VCV yz<br>(m²) | -0.000101 |            |       |

|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000117  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------|-----------|------------|-------|
| Point             | 252   | ΔΧ                  | 16591.570      | ΔΥ               | 15783.691     | $\Delta Z$      | 16977.585 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.035         | Hz Prec         | 0.033     | Vt<br>Prec | 0.054 |
| QC 1              |       | PDOP                | 2.4            | GDOP             | 3.3           | HDOP            | 1.3       | VDOP       | 2.0   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 10            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy<br>(m²)   | 0.000021      | VCV xz<br>(m²)  | 0.000001  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000214      | VCV yz<br>(m²)  | -0.000101 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000117  |            |       |
| Point             | 253   | ΔΧ                  | 16593.625      | ΔΥ               | 15730.040     | ΔΖ              | 16919.092 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.049         | Hz Prec         | 0.029     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP            | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²)  | -0.000002 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000147      | VCV yz<br>(m²)  | -0.000065 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000079  |            |       |
| Point             | 254   | ΔΧ                  | 16600.637      | ΔΥ               | 15730.256     | ΔΖ              | 16920.245 | Code       | EA2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search<br>class | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.042         | Hz Prec         | 0.030     | Vt<br>Prec | 0.046 |

| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC I              |       |                     | 2.0            | GDOI             | 2.0           | прот           | 1.1       | VDOI       | 1.0   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000034       | VCV xy (m²)      | 0.000022      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000162      | VCV yz<br>(m²) | -0.000072 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000087  |            |       |
| Point             | 255   | ΔΧ                  | 16608.950      | ΔΥ               | 15730.172     | ΔΖ             | 16920.375 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.026         | Hz Prec        | 0.030     | Vt<br>Prec | 0.047 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000035       | VCV xy (m²)      | 0.000022      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000164      | VCV yz<br>(m²) | -0.000073 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000088  |            |       |
| Point             | 256   | ΔΧ                  | 16620.940      | ΔΥ               | 15730.869     | $\Delta Z$     | 16921.075 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.036         | Hz Prec        | 0.030     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000002 |            |       |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000155      | VCV yz<br>(m²) | -0.000069 |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000084  |            |       |
| Point             | 257   | ΔΧ                  | 16632.518      | ΔΥ               | 15731.732     | ΔΖ             | 16921.728 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.039         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000032       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²) | -0.000067 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000081  |            |       |
| Point             | 258   | ΔΧ                  | 16638.835      | ΔΥ               | 15732.440     | $\Delta Z$     | 16922.166 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.011         | Hz Prec        | 0.033     | Vt<br>Prec | 0.051 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 3              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000043       | VCV xy (m²)      | 0.000036      | VCV xz<br>(m²) | -0.000009 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000203      | VCV yz<br>(m²) | -0.000088 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000101  |            |       |
| Point             | 259   | ΔΧ                  | 16643.442      | ΔΥ               | 15732.447     | ΔΖ             | 16921.576 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec               | 0.030     | Vt<br>Prec | 0.046 |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|-----------------------|-----------|------------|-------|
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP                  | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | <b>Positions</b> used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000034       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²)        | -0.000002 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000160      | VCV yz<br>(m²)        | -0.000071 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)        | 0.000086  |            |       |
| Point             | 260   | ΔΧ                          | 16599.192      | ΔΥ               | 15711.034     | ΔΖ                    | 16898.591 | Code       | EG2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class          | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.009         | Hz Prec               | 0.029     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP                  | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used        | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000032       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²)        | -0.000002 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000151      | VCV yz<br>(m²)        | -0.000066 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²)        | 0.000077  |            |       |
| Point             | 261   | ΔΧ                          | 16604.953      | ΔΥ               | 15710.399     | ΔΖ                    | 16898.906 | Code       | EA2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search<br>class       | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.028         | Hz Prec               | 0.028     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP                  | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used        | 3         |            |       |

| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000030       | VCV xy (m²)      | 0.000019      | VCV xz<br>(m²) | -0.000002 |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000142      | VCV yz<br>(m²) | -0.000063 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000074  |            |       |
| Point             | 262   | ΔΧ                          | 16617.839      | ΔΥ               | 15555.603     | $\Delta Z$     | 16730.753 | Code       | EG2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.054         | Hz Prec        | 0.030     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000035       | VCV xy<br>(m²)   | 0.000023      | VCV xz<br>(m²) | -0.000003 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000166      | VCV yz<br>(m²) | -0.000072 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000085  |            |       |
| Point             | 263   | ΔΧ                          | 16625.112      | ΔΥ               | 15555.547     | $\Delta Z$     | 16731.648 | Code       | EA2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 1.9            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000033       | VCV xy (m²)      | 0.000021      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000156      | VCV yz<br>(m²) | -0.000069 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000081  |            |       |
| Point             | 264   | ΔΧ                          | 16631.003      | ΔΥ               | 15555.234     | ΔΖ             | 16731.723 | Code       | FL2   |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.031         | Hz Prec        | 0.032     | Vt<br>Prec | 0.049 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000038       | VCV xy (m²)      | 0.000023      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000181      | VCV yz<br>(m²) | -0.000080 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000095  |            |       |
| Point             | 265   | ΔΧ                  | 16643.142      | ΔΥ               | 15554.264     | ΔΖ             | 16731.315 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec        | 0.032     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000039       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²) | -0.000002 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000188      | VCV yz<br>(m²) | -0.000084 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000099  |            |       |
| Point             | 266   | ΔΧ                  | 16654.828      | ΔΥ               | 15554.667     | ΔΖ             | 16731.772 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.064         | Hz Prec        | 0.031     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |

|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)              | 0.000035       | VCV xy (m²)      | 0.000018      | VCV xz<br>(m²) | 0.000002  |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000175      | VCV yz<br>(m²) | -0.000076 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000093  |            |       |
| Point             | 267   | ΔΧ                          | 16661.362      | ΔΥ               | 15554.861     | ΔΖ             | 16732.194 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.029     | Vt<br>Prec | 0.045 |
| QC 1              |       | PDOP                        | 1.9            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000032       | VCV xy<br>(m²)   | 0.000017      | VCV xz<br>(m²) | 0.000001  |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000157      | VCV yz<br>(m²) | -0.000069 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000083  |            |       |
| Point             | 268   | ΔΧ                          | 16666.415      |                  | 15554.671     | $\Delta Z$     | 16731.651 | Code       | EG1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.015         | Hz Prec        | 0.032     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                        | 2.5            | GDOP             | 3.3           | HDOP           | 1.3       | VDOP       | 2.1   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000041       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000006 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000187      | VCV yz<br>(m²) | -0.000086 |            |       |

|                   |       |                     |                |                  |           | VCV zz<br>(m²) | 0.000098  |            |       |
|-------------------|-------|---------------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
| Point             | 269   | ΔΧ                  | 16658.451      | ΔΥ               | 15522.766 | $\Delta Z$     | 16697.380 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Туре             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.029     | Hz Prec        | 0.027     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6       | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11        | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000029       | VCV xy (m²)      | 0.000016  | VCV xz<br>(m²) | 0.000000  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000138  | VCV yz<br>(m²) | -0.000063 |            |       |
|                   |       |                     |                |                  |           | VCV zz<br>(m²) | 0.000073  |            |       |
| Point             | 270   | ΔΧ                  | 16647.129      | ΔΥ               | 15511.127 | $\Delta Z$     | 16685.151 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Туре             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.040     | Hz Prec        | 0.027     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.6       | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12        | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000029       | VCV xy<br>(m²)   | 0.000016  | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000139  | VCV yz<br>(m²) | -0.000062 |            |       |
|                   |       |                     |                |                  |           | VCV zz<br>(m²) | 0.000071  |            |       |
| Point             | 271   | ΔΧ                  | 16642.585      | ΔΥ               | 15497.755 | ΔΖ             | 16670.723 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Туре             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.016     | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |

| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6       | HDOP           | 1.0       | VDOP       | 1.7   |
|-------------------|-------|-----------------------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11        | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000033       | VCV xy (m²)      | 0.000014  | VCV xz<br>(m²) | 0.000003  |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000156  | VCV yz<br>(m²) | -0.000074 |            |       |
|                   |       |                             |                |                  |           | VCV zz<br>(m²) | 0.000086  |            |       |
| Point             | 272   | ΔΧ                          | 16646.140      | ΔΥ               | 15478.396 | ΔΖ             | 16649.858 | Code       | GLASS |
|                   |       | Method                      | Network<br>RTK | Туре             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.014     | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6       | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11        | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000033       | VCV xy<br>(m²)   | 0.000014  | VCV xz<br>(m²) | 0.000003  |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000154  | VCV yz<br>(m²) | -0.000075 |            |       |
|                   |       |                             |                |                  |           | VCV zz<br>(m²) | 0.000087  |            |       |
| Point             | 273   | ΔΧ                          | 16649.309      | ΔΥ               | 15447.601 | $\Delta Z$     | 16616.943 | Code       | GLASS |
|                   |       | Method                      | Network<br>RTK | Type             |           | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.029     | Hz Prec        | 0.030     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6       | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11        | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000035       | VCV xy (m²)      | 0.000014  | VCV xz<br>(m²) | 0.000004  |            |       |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000165      | VCV yz<br>(m²) | -0.000081 |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000095  |            |       |
| Point             | 274   | ΔΧ                  | 16652.559      | ΔΥ               | 15419.963     | $\Delta Z$     | 16587.319 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.022         | Hz Prec        | 0.030     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000038       | VCV xy (m²)      | 0.000016      | VCV xz<br>(m²) | 0.000003  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000168      | VCV yz<br>(m²) | -0.000080 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000094  |            |       |
| Point             | 275   | ΔΧ                  | 16657.134      | ΔΥ               | 15406.442     | ΔΖ             | 16573.186 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.028         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000034       | VCV xy (m²)      | 0.000015      | VCV xz<br>(m²) | 0.000003  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000152      | VCV yz<br>(m²) | -0.000073 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000087  |            |       |
| Point             | 276   | ΔΧ                  | 16663.791      | ΔΥ               | 15389.337     | ΔΖ             | 16555.301 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Туре             |               | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.030         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000034       | VCV xy<br>(m²)   | 0.000015      | VCV xz<br>(m²) | 0.000003  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000153      | VCV yz<br>(m²) | -0.000074 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000089  |            |       |
| Point             | 277   | ΔΧ                  | 16676.196      | ΔΥ               | 15385.725     | $\Delta Z$     | 16551.485 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.042         | Hz Prec        | 0.029     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy (m²)      | 0.000014      | VCV xz<br>(m²) | 0.000003  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000150      | VCV yz<br>(m²) | -0.000073 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000087  |            |       |
| Point             | 278   | ΔΧ                  | 16686.020      | ΔΥ               | 15394.247     | ΔΖ             | 16560.364 | Code       | GLASS |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.028         | Hz Prec        | 0.031     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |

| QC 2              |         | VCV<br>xx (m²)      | 0.000038       | VCV xy (m²)      | 0.000016      | VCV xz<br>(m²) | 0.000003  |            |       |
|-------------------|---------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |         |                     |                | VCV yy<br>(m²)   | 0.000168      | VCV yz<br>(m²) | -0.000082 |            |       |
|                   |         |                     |                |                  |               | VCV zz<br>(m²) | 0.000099  |            |       |
| Point             | 279     | ΔΧ                  | 16683.897      | ΔΥ               | 15421.303     | $\Delta Z$     | 16588.387 | Code       | GLASS |
|                   |         | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906   | Туре                | Uncorrected    | Tilt<br>distance | 0.012         | Hz Prec        | 0.033     | Vt<br>Prec | 0.053 |
| QC 1              |         | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.2       | VDOP       | 1.6   |
|                   |         | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 2         |            |       |
| QC 2              |         | VCV<br>xx (m²)      | 0.000047       | VCV xy (m²)      | 0.000028      | VCV xz<br>(m²) | -0.000005 |            |       |
|                   |         |                     |                | VCV yy<br>(m²)   | 0.000200      | VCV yz<br>(m²) | -0.000103 |            |       |
|                   |         |                     |                |                  |               | VCV zz<br>(m²) | 0.000116  |            |       |
| Warning           | s (279) | Po                  | oor precision  |                  |               |                |           |            |       |
| Point             | 280     | ΔΧ                  | 16669.272      | ΔΥ               | 15510.367     | ΔΖ             | 16684.283 | Code       | GLASS |
|                   |         | Method              | Network<br>RTK | Туре             | _             | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906   | Туре                | Uncorrected    | Tilt<br>distance | 0.009         | Hz Prec        | 0.051     | Vt<br>Prec | 0.081 |
| QC 1              |         | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.3   |
|                   |         | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |         | VCV<br>xx (m²)      | 0.000104       | VCV xy (m²)      | 0.000041      | VCV xz<br>(m²) | 0.000010  |            |       |
|                   |         |                     |                | VCV yy<br>(m²)   | 0.000471      | VCV yz<br>(m²) | -0.000232 |            |       |
|                   |         |                     |                |                  |               | VCV zz<br>(m²) | 0.000275  |            |       |

| Point             | 281   | ΔΧ                  | 1      | 6669.5       | 582          | ΔΥ             |        | 1546 | 0.909          | $\Delta Z$ |              | 1663 | 31.581     | Code       | GLAS2 |
|-------------------|-------|---------------------|--------|--------------|--------------|----------------|--------|------|----------------|------------|--------------|------|------------|------------|-------|
|                   |       | Descript<br>1       | ion    | SOU          | AD           | Descri<br>2    | iption |      |                |            |              |      |            |            |       |
|                   |       | Method              |        | Netwo        | ork<br>TK    | Type           |        |      | Topo<br>point  |            |              | N    | lormal     |            |       |
| Antenna<br>height | 5.906 | Type                | Un     | ncorrec      | ted          | Tilt<br>distan | ice    |      | 0.018          | Hz         | Prec         |      | 111154     | Vt<br>Prec | 0.088 |
| QC 1              |       | PDOP                |        |              | 2.0          | GDOI           | P      |      | 2.6            | HD         | OP           |      | 1.1        | VDOP       | 1.6   |
|                   |       | Base dat            | ta     |              | 1            | Satelli        | ites   |      | 11             | Pos<br>use | sitions<br>d |      | 3          |            |       |
| QC 2              |       | VCV xx (m²)         |        | 0.0001       | 132          | VCV : (m²)     | xy     | 0.0  | 00093          | VC<br>(m²  | V xz         | -0.0 | 00031      |            |       |
|                   |       |                     |        |              |              | VCV (m²)       | уу     | 0.0  | 00546          | VC<br>(m²  | V yz         | -0.0 | 00289      |            |       |
|                   |       |                     |        |              |              |                |        |      |                | VC<br>(m²  | V zz         | 0.0  | 00308      |            |       |
| Point             | 282   | ΔΧ                  | 1667   | 2.413        | ΔΥ           |                | 15442  | .132 | ΔZ             |            | 16611        | .421 | Code       | GLAS       | 2     |
|                   |       | Method              | Net    | twork<br>RTK | Tyl          | pe             |        |      | Searc<br>class | h          | No           | rmal |            |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorr | rected       | Tilt<br>dist | t<br>tance     | 0      | .044 | Hz Pr          | ec         | 0            | .062 | Vt<br>Prec | 0.09       | 8     |
| QC 1              |       | PDOP                |        | 2.0          | GD           | OP             |        | 2.6  | HDO            | P          |              | 1.1  | VDOP       | 1.         | .6    |
|                   |       | Base<br>data<br>age |        | 2            | Sat          | ellites        |        | 12   | Positi<br>used | ons        |              | 3    |            |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.00   | 00155        | VC<br>(m²    | V xy           | 0.000  | 0062 | VCV<br>(m²)    | XZ         | 0.000        | 0011 |            |            |       |
|                   |       |                     |        |              | VC<br>(m²    | V yy           | 0.000  | 0683 | VCV<br>(m²)    | yz         | -0.000       | )337 |            |            |       |
|                   |       |                     |        |              |              |                |        |      | VCV<br>(m²)    | ZZ         | 0.000        | 0402 |            |            |       |
| Point             | 283   | ΔΧ                  | 1667   | 6.115        | ΔΥ           |                | 15414  | .778 | ΔΖ             |            | 16582        | .349 | Code       | GLAS       | 2     |
|                   |       | Method              | Net    | twork<br>RTK | Tyl          | pe             |        | -    | Searc<br>class | h          | No           | rmal |            |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorr | rected       | Tilt<br>dist | t<br>tance     | 0      | .040 | Hz Pr          | ·ec        | 0            | .028 | Vt<br>Prec | 0.04       | -5    |
| QC 1              |       | PDOP                |        | 1.6          | GD           | OP             |        | 2.1  | HDO            | P          |              | 0.9  | VDOP       | 1.         | .3    |

|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy (m²)      | 0.000013      | VCV xz<br>(m²) | 0.000002  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000145      | VCV yz<br>(m²) | -0.000072 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000086  |            |       |
| Point             | 284   | ΔΧ                  | 16696.982      | ΔΥ               | 15316.744     | ΔZ             | 16477.654 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.025         | Hz Prec        | 0.030     | Vt<br>Prec | 0.049 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000041       | VCV xy (m²)      | 0.000027      | VCV xz<br>(m²) | -0.000009 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000168      | VCV yz<br>(m²) | -0.000090 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000100  |            |       |
| Point             | 285   | ΔΧ                  |                |                  | 15316.967     | $\Delta Z$     | 16478.177 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.018         | Hz Prec        | 0.030     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000042       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000010 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000174      | VCV yz<br>(m²) | -0.000094 |            |       |

|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000104  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 286   | ΔΧ                  | 16685.920      | ΔΥ               | 15316.421     | ΔΖ             | 16477.868 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.022         | Hz Prec        | 0.028     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000038       | VCV xy<br>(m²)   | 0.000029      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000151      | VCV yz<br>(m²) | -0.000079 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000086  |            |       |
| Point             | 287   | ΔΧ                  | 16674.026      | ΔΥ               | 15315.392     | ΔΖ             | 16476.890 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.039         | Hz Prec        | 0.029     | Vt<br>Prec | 0.047 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000038       | VCV xy<br>(m²)   | 0.000030      | VCV xz<br>(m²) | -0.000013 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000153      | VCV yz<br>(m²) | -0.000080 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000088  |            |       |
| Point             | 288   | ΔΧ                  | 16662.073      | ΔΥ               | 15314.950     | ΔΖ             | 16475.692 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.035         | Hz Prec        | 0.029     | Vt<br>Prec | 0.048 |

| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP                  | 1.1       | VDOP       | 1.6   |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------------|-----------|------------|-------|
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | <b>Positions</b> used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy (m²)      | 0.000031      | VCV xz<br>(m²)        | -0.000014 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000159      | VCV yz<br>(m²)        | -0.000084 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)        | 0.000092  |            |       |
| Point             | 289   | ΔΧ                  | 16656.087      | ΔΥ               | 15314.740     | $\Delta Z$            | 16474.906 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class          | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.040         | Hz Prec               | 0.029     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP                  | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used        | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy (m²)      | 0.000031      | VCV xz<br>(m²)        | -0.000014 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000159      | VCV yz<br>(m²)        | -0.000084 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)        | 0.000092  |            |       |
| Point             | 290   | ΔΧ                  | 16650.846      | ΔΥ               | 15314.045     | $\Delta Z$            | 16473.223 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class          | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.022         | Hz Prec               | 0.029     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                | 1.9            | GDOP             | 2.5           | HDOP                  | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used        | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy (m²)      | 0.000031      | VCV xz<br>(m²)        | -0.000014 |            |       |

|                   |       |                     |                | VCV yy<br>(m²)   | 0.000159      | VCV yz<br>(m²) | -0.000084 |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000092  |            |       |
| Point             | 291   | ΔΧ                  | 16695.288      | ΔΥ               | 15243.814     | ΔΖ             | 16401.189 | Code       | FL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.051         | Hz Prec        | 0.029     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy<br>(m²)   | 0.000029      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000165      | VCV yz<br>(m²) | -0.000092 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000101  |            |       |
| Point             | 292   | ΔΧ                  | 16701.377      | ΔΥ               | 15244.022     | $\Delta Z$     | 16401.241 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.036         | Hz Prec        | 0.029     | Vt<br>Prec | 0.049 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000040       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000164      | VCV yz<br>(m²) | -0.000092 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000101  |            |       |
| Point             | 293   | ΔΧ                  | 16705.965      | ΔΥ               | 15244.049     | ΔΖ             | 16400.734 | Code       | EG1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.004         | Hz Prec        | 0.030     | Vt<br>Prec | 0.051 |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000042       | VCV xy (m²)      | 0.000030      | VCV xz<br>(m²) | -0.000013 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000172      | VCV yz<br>(m²) | -0.000096 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000106  |            |       |
| Point             | 294   | ΔΧ                          | 16705.633      | ΔΥ               | 15203.946     | $\Delta Z$     | 16359.126 | Code       | FL1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.026         | Hz Prec        | 0.029     | Vt<br>Prec | 0.049 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000040       | VCV xy (m²)      | 0.000028      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000162      | VCV yz<br>(m²) | -0.000091 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000101  |            |       |
| Point             | 295   | ΔΧ                          | 16706.738      | ΔΥ               | 15204.414     | ΔΖ             | 16359.370 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.004         | Hz Prec        | 0.029     | Vt<br>Prec | 0.049 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.1       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |

| QC 2              |       | VCV<br>xx (m²)              | 0.000039       | VCV xy<br>(m²)   | 0.000027      | VCV xz<br>(m²) | -0.000012 |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000159      | VCV yz<br>(m²) | -0.000090 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000099  |            |       |
| Point             | 296   | ΔΧ                          | 16719.433      | ΔΥ               | 15194.829     | ΔΖ             | 16349.715 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.010         | Hz Prec        | 0.030     | Vt<br>Prec | 0.051 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000042       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000013 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000173      | VCV yz<br>(m²) | -0.000098 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000109  |            |       |
| Point             | 297   | ΔΧ                          | 16725.340      | ΔΥ               | 15154.237     | $\Delta Z$     | 16307.401 | Code       | EA1   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.028         | Hz Prec        | 0.029     | Vt<br>Prec | 0.050 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000041       | VCV xy (m²)      | 0.000028      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000166      | VCV yz<br>(m²) | -0.000094 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000105  |            |       |
| Point             | 298   | ΔΧ                          | 16714.347      | ΔΥ               | 15144.591     | $\Delta Z$     | 16296.761 | Code       | EA1   |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.036         | Hz Prec        | 0.028     | Vt<br>Prec | 0.049 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.6   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000038       | VCV xy (m²)      | 0.000026      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000157      | VCV yz<br>(m²) | -0.000089 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000099  |            |       |
| Point             | 299   | ΔΧ                  | 16723.104      | ΔΥ               | 15149.404     | ΔΖ             | 16301.838 | Code       | EG3   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.022         | Hz Prec        | 0.032     | Vt<br>Prec | 0.055 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base<br>data<br>age | 3              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000049       | VCV xy (m²)      | 0.000036      | VCV xz<br>(m²) | -0.000018 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000197      | VCV yz<br>(m²) | -0.000113 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000125  |            |       |
| Point             | 300   | ΔΧ                  | 16719.332      | ΔΥ               | 15141.678     | ΔΖ             | 16293.421 | Code       | EG3   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.018         | Hz Prec        | 0.030     | Vt<br>Prec | 0.051 |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.7   |

|                   |       | Base<br>data<br>age         | 1              | Satellites       | 11            | Positions used | 3         |            |       |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)              | 0.000042       | VCV xy (m²)      | 0.000029      | VCV xz<br>(m²) | -0.000013 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000174      | VCV yz<br>(m²) | -0.000099 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000111  |            |       |
| Point             | 301   | ΔΧ                          | 16708.089      | ΔΥ               | 15142.720     | ΔΖ             | 16295.041 | Code       | FL3   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                        | Uncorrected    | Tilt<br>distance | 0.055         | Hz Prec        | 0.027     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                        | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000035       | VCV xy (m²)      | 0.000024      | VCV xz<br>(m²) | -0.000011 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000138      | VCV yz<br>(m²) | -0.000079 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000091  |            |       |
| Point             | 302   | ΔΧ                          | 16751.823      | ΔΥ               | 14874.215     | ΔΖ             | 16012.910 | Code       | EG3   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.021         | Hz Prec        | 0.024     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 0.9       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 12            | Positions used | 2         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000025       | VCV xy<br>(m²)   | 0.000010      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000105      | VCV yz<br>(m²) | -0.000054 |            |       |

|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000067  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|-----------------|-----------|------------|-------|
| Point             | 303   | ΔΧ                  | 16748.241      | ΔΥ               | 14873.625     | ΔΖ              | 16012.555 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.016         | Hz Prec         | 0.024     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP            | 0.9       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000024       | VCV xy<br>(m²)   | 0.000008      | VCV xz<br>(m²)  | 0.000001  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000100      | VCV yz<br>(m²)  | -0.000052 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000064  |            |       |
| Point             | 304   | ΔΧ                  | 16742.362      | ΔΥ               | 14872.564     | ΔΖ              | 16011.512 | Code       | FL3   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class    | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.028         | Hz Prec         | 0.024     | Vt<br>Prec | 0.038 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP            | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used  | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000023       | VCV xy (m²)      | 0.000008      | VCV xz<br>(m²)  | 0.000001  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000099      | VCV yz<br>(m²)  | -0.000051 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²)  | 0.000063  |            |       |
| Point             | 305   | ΔΧ                  | 16730.100      | ΔΥ               | 14871.395     | ΔΖ              | 16010.287 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search<br>class | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.033         | Hz Prec         | 0.023     | Vt<br>Prec | 0.037 |

| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 0.8       | VDOP       | 1.4   |
|-------------------|-------|-----------------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000023       | VCV xy (m²)      | 0.000007      | VCV xz<br>(m²) | 0.000001  |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000096      | VCV yz<br>(m²) | -0.000050 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000062  |            |       |
| Point             | 306   | ΔΧ                          | 16718.556      | ΔΥ               | 14869.072     | $\Delta Z$     | 16007.188 | Code       | FL2   |
|                   |       | Method                      | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.025         | Hz Prec        | 0.026     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age         | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m <sup>2</sup> ) | 0.000029       | VCV xy (m²)      | 0.000009      | VCV xz<br>(m²) | 0.000001  |            |       |
|                   |       |                             |                | VCV yy<br>(m²)   | 0.000123      | VCV yz<br>(m²) | -0.000064 |            |       |
|                   |       |                             |                |                  |               | VCV zz<br>(m²) | 0.000079  |            |       |
| Point             | 307   | ΔΧ                          | 16712.686      | ΔΥ               | 14868.620     | $\Delta Z$     | 16006.228 | Code       | EA2   |
|                   |       | Method                      | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                        | Uncorrected    | Tilt<br>distance | 0.040         | Hz Prec        | 0.025     | Vt<br>Prec | 0.039 |
| QC 1              |       | PDOP                        | 1.6            | GDOP             | 2.1           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age         | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)              | 0.000025       | VCV xy (m²)      | 0.000008      | VCV xz<br>(m²) | 0.000001  |            |       |

|                   |       |                     |      |                | VC<br>(m²    | V yy           | 0.000  | 0106 | VCV<br>(m²)    | yz         | -0.000               | 0056 |            |            |       |
|-------------------|-------|---------------------|------|----------------|--------------|----------------|--------|------|----------------|------------|----------------------|------|------------|------------|-------|
|                   |       |                     |      |                |              |                |        |      | VCV<br>(m²)    | ZZ         | 0.000                | 0069 |            |            |       |
| Point             | 308   | ΔΧ                  | 10   | 6709.149       | ΔΥ           |                | 14868  | .293 | $\Delta Z$     |            | 16005                | .560 | Code       | EG2        |       |
|                   |       | Method              |      | Network<br>RTK | Tyl          | pe             |        | -    | Searc<br>class | h          | No                   | rmal |            |            |       |
| Antenna<br>height | 5.906 | Туре                | Un   | corrected      | Tilt<br>dist | t<br>tance     | 0      | .035 | Hz Pr          | ec         | 0                    | .025 | Vt<br>Prec | 0.040      |       |
| QC 1              |       | PDOP                |      | 1.6            | GD           | OP             |        | 2.1  | HDO            | P          |                      | 0.8  | VDOI       | P 1.4      |       |
|                   |       | Base<br>data<br>age |      | 1              | Sat          | ellites        |        | 12   | Positi<br>used | ons        |                      | 3    |            |            |       |
| QC 2              |       | VCV<br>xx (m²)      |      | 0.000026       | VC<br>(m²    | V xy           | 0.000  | 0008 | VCV<br>(m²)    | XZ         | 0.000                | 0001 |            |            |       |
|                   |       |                     |      |                | VC<br>(m²    | V yy           | 0.000  | )109 | VCV<br>(m²)    | yz         | -0.000               | 0057 |            |            |       |
|                   |       |                     |      |                |              |                |        |      | VCV<br>(m²)    | ZZ         | 0.000                | 0071 |            |            |       |
| Point             | 309   | ΔΧ                  |      | 16753.         | 865          | ΔΥ             |        | 1478 | 38.400         | ΔΖ         |                      | 1592 | 23.724     | Code       | AXL5  |
|                   |       | Descript<br>1       | tion | SOU            | AD           | Descri<br>2    | iption |      |                |            |                      |      |            |            |       |
|                   |       | Method              |      | Netw<br>R      | ork<br>TK    | Type           |        |      | Topo<br>point  |            |                      | N    | Iormal     |            |       |
| Antenna<br>height | 5.906 | Туре                |      | Uncorrec       | ted          | Tilt<br>distan | ice    |      | 0.056          | Hz         | Prec                 |      | 0.025      | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                |      |                | 2.0          | GDO            | P      |      | 2.6            | HD         | OP                   |      | 1.0        | VDOP       | 1.7   |
|                   |       | Base dat            | ta   |                | 1            | Satelli        | ites   |      | 11             | Pos<br>use | sitions<br>ed        |      | 3          |            |       |
| QC 2              |       | VCV xx<br>(m²)      |      | 0.000          | 029          | VCV (m²)       | хy     | 0.0  | 00017          | VC<br>(m²  | CV xz <sup>2</sup> ) | -0.0 | 80000      |            |       |
|                   |       |                     |      |                |              | VCV (m²)       | уу     | 0.0  | 00120          | VC<br>(m²  | CV yz <sup>2</sup> ) | -0.0 | 00070      |            |       |
|                   |       |                     |      |                |              |                |        |      |                | VC<br>(m²  | CV zz                | 0.0  | 00082      |            |       |
| Point             | 310   | ΔΧ                  |      | 16760.         | 617          | ΔΥ             |        | 1478 | 38.922         | $\Delta Z$ |                      | 1592 | 24.093     | Code       | AXL5  |

|                   |       | Description 1  | SOUAD          | Description 2    |               |                |           |            |       |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.009         | Hz Prec        | 0.025     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP           | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base data age  | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000029       | VCV xy<br>(m²)   | 0.000017      | VCV xz<br>(m²) | -0.000008 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000118      | VCV yz<br>(m²) | -0.000070 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000081  |            |       |
| Point             | 311   | ΔΧ             | 16761.680      | ΔΥ               | 14782.357     | $\Delta Z$     | 15917.320 | Code       | AXL6  |
|                   |       | Description 1  | SOUAD          | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.024         | Hz Prec        | 0.024     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP           | 2.0            | GDOP             | 2.6           | HDOP           | 1.0       | VDOP       | 1.7   |
|                   |       | Base data age  | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx (m²)    | 0.000027       | VCV xy (m²)      | 0.000016      | VCV xz<br>(m²) | -0.000008 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000113      | VCV yz<br>(m²) | -0.000067 |            |       |
|                   |       |                |                |                  |               | VCV zz<br>(m²) | 0.000079  |            |       |
| Point             | 312   | ΔΧ             | 16755.063      | ΔΥ               | 14781.870     | ΔΖ             | 15916.942 | Code       | AXL6  |
|                   |       | Description 1  | SOUAD          | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             |               | Search class   | Normal    |            |       |

| Antenna<br>height | 5.906 | Type                |     | Uncorrec       | eted      | Tilt<br>distan | ice    |      | 0.050          | Hz         | Prec        |      | 0.024      | Vt<br>Prec | 0.042 |
|-------------------|-------|---------------------|-----|----------------|-----------|----------------|--------|------|----------------|------------|-------------|------|------------|------------|-------|
| QC 1              |       | PDOP                |     |                | 2.0       | GDO            | P      |      | 2.7            | HD         | OP          |      | 1.0        | VDOP       | 1.7   |
|                   |       | Base dat            | a   |                | 1         | Satelli        | ites   |      | 11             | Pos<br>use | itions<br>d |      | 3          |            |       |
| QC 2              |       | VCV xx<br>(m²)      |     | 0.0000         | 027       | VCV (m²)       | хy     | 0.0  | 00016          | VC<br>(m²  | V xz<br>)   | -0.0 | 00008      |            |       |
|                   |       |                     |     |                |           | VCV (m²)       | уу     | 0.0  | 00111          | VC<br>(m²  | V yz<br>)   | -0.0 | 00066      |            |       |
|                   |       |                     |     |                |           |                |        |      |                | VC<br>(m²  | V zz<br>)   | 0.0  | 00078      |            |       |
| Point             | 313   | ΔΧ                  |     | 16755.0        | 065       | ΔΥ             |        | 1478 | 31.870         | $\Delta Z$ |             | 1591 | 6.880      | Code       | AXL6  |
|                   |       | Descript<br>1       | ion | SOU            | AD        | Descr<br>2     | iption |      |                |            |             |      |            |            |       |
|                   |       | Method              |     | Netw<br>R      | ork<br>TK | Type           |        |      | Topo<br>point  |            |             | N    | ormal      |            |       |
| Antenna<br>height | 5.906 | Type                |     | Uncorrec       | eted      | Tilt<br>distan | ice    |      | 0.012          | Hz         | Prec        |      | 0.024      | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP                |     |                | 2.0       | GDO            | P      |      | 2.7            | HD         | OP          |      | 1.0        | VDOP       | 1.7   |
|                   |       | Base dat            | a   |                | 1         | Satelli        | ites   |      | 11             | Pos<br>use | itions<br>d |      | 3          |            |       |
| QC 2              |       | VCV xx (m²)         |     | 0.0000         | 028       | VCV (m²)       | хy     | 0.0  | 00016          | VC<br>(m²  | V xz<br>)   | -0.0 | 80000      |            |       |
|                   |       |                     |     |                |           | VCV (m²)       | yy     | 0.0  | 00115          | VC<br>(m²  | V yz<br>)   | -0.0 | 00069      |            |       |
|                   |       |                     |     |                |           |                |        |      |                | VC<br>(m²  | V zz<br>)   | 0.0  | 00081      |            |       |
| Point             | 314   | ΔΧ                  | 10  | 6758.760       | ΔΥ        |                | 14779  | .407 | ΔZ             |            | 15914       | .405 | Code       | SQUA       | AD2   |
|                   |       | Method              |     | Network<br>RTK | Tyl       | pe             |        |      | Searc<br>class | h          | No          | rmal |            |            |       |
| Antenna<br>height | 5.906 | Type                | Uno | corrected      | Til       | t<br>tance     | 0      | .033 | Hz Pr          | ec         | 0           | .024 | Vt<br>Prec | 0.         | 039   |
| QC 1              |       | PDOP                |     | 1.6            | GD        | OP             |        | 2.1  | HDO            | P          |             | 0.8  | VDOI       | P          | 1.4   |
|                   |       | Base<br>data<br>age |     | 1              | Sat       | ellites        |        | 12   | Positi<br>used | ons        |             | 3    |            |            |       |

| QC 2              |       | VCV<br>xx (m²)      | 0.000025       | VCV xy<br>(m²)   | 0.000007      | VCV xz<br>(m²) | 0.000000  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000102      | VCV yz<br>(m²) | -0.000055 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000069  |            |       |
| Point             | 315   | ΔΧ                  | 16756.991      | ΔΥ               | 14791.236     | ΔZ             | 15926.690 | Code       | SQUAI |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.045         | Hz Prec        | 0.028     | Vt<br>Prec | 0.0   |
| QC 1              |       | PDOP                | 2.0            | GDOP             | 2.7           | HDOP           | 1.0       | VDOP       | 1     |
|                   |       | Base<br>data<br>age | 3              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000035       | VCV xy (m²)      | 0.000020      | VCV xz<br>(m²) | -0.000012 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000139      | VCV yz<br>(m²) | -0.000082 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000100  |            |       |
| Point             | 316   | ΔΧ                  | 16735.129      | ΔΥ               | 14646.813     | ΔZ             | 15772.590 | Code       | EG2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.030         | Hz Prec        | 0.028     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.1           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000033       | VCV xy (m²)      | 0.000009      | VCV xz<br>(m²) | 0.000000  |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000138      | VCV yz<br>(m²) | -0.000075 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000095  |            |       |
| Point             | 317   | ΔΧ                  | 16739.908      | ΔΥ               | 14645.534     | $\Delta Z$     | 15772.040 | Code       | EA2   |

|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.023         | Hz Prec        | 0.027     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000008      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000129      | VCV yz<br>(m²) | -0.000072 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000091  |            |       |
| Point             | 318   | ΔΧ                  | 16745.726      | ΔΥ               | 14645.645     | ΔΖ             | 15772.710 | Code       | FL2   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.043         | Hz Prec        | 0.027     | Vt<br>Prec | 0.044 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000031       | VCV xy (m²)      | 0.000008      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000129      | VCV yz<br>(m²) | -0.000072 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000092  |            |       |
| Point             | 319   | ΔΧ                  | 16757.752      | ΔΥ               | 14645.929     | ΔΖ             | 15773.791 | Code       | CL1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.010         | Hz Prec        | 0.028     | Vt<br>Prec | 0.046 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |

|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| QC 2              |       | VCV<br>xx (m²)      | 0.000034       | VCV xy (m²)      | 0.000009      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000139      | VCV yz<br>(m²) | -0.000078 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000100  |            |       |
| Point             | 320   | ΔΧ                  | 16769.697      | ΔΥ               | 14646.320     | ΔΖ             | 15774.690 | Code       | FL3   |
|                   |       | Method              | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.011         | Hz Prec        | 0.029     | Vt<br>Prec | 0.047 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000035       | VCV xy<br>(m²)   | 0.000009      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000142      | VCV yz<br>(m²) | -0.000080 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000102  |            |       |
| Point             | 321   | ΔΧ                  | 16775.903      |                  | 14646.699     | $\Delta Z$     | 15775.286 | Code       | EA1   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type                | Uncorrected    | Tilt<br>distance | 0.038         | Hz Prec        | 0.029     | Vt<br>Prec | 0.047 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 1              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000035       | VCV xy<br>(m²)   | 0.000009      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000145      | VCV yz<br>(m²) | -0.000081 |            |       |

|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000104  |            |       |
|-------------------|-------|---------------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
| Point             | 322   | ΔΧ                  | 16780.387      | ΔΥ               | 14647.265     | $\Delta Z$     | 15775.346 | Code       | EG3   |
|                   |       | Method              | Network<br>RTK | Туре             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Туре                | Uncorrected    | Tilt<br>distance | 0.035         | Hz Prec        | 0.029     | Vt<br>Prec | 0.048 |
| QC 1              |       | PDOP                | 1.6            | GDOP             | 2.2           | HDOP           | 0.8       | VDOP       | 1.4   |
|                   |       | Base<br>data<br>age | 2              | Satellites       | 12            | Positions used | 3         |            |       |
| QC 2              |       | VCV<br>xx (m²)      | 0.000036       | VCV xy (m²)      | 0.000009      | VCV xz<br>(m²) | -0.000001 |            |       |
|                   |       |                     |                | VCV yy<br>(m²)   | 0.000147      | VCV yz<br>(m²) | -0.000082 |            |       |
|                   |       |                     |                |                  |               | VCV zz<br>(m²) | 0.000106  |            |       |

|  |      | nt: RTK n |        |                |        |        |       |  |  |
|--|------|-----------|--------|----------------|--------|--------|-------|--|--|
| GPS  | 2266 | Seconds   | 538360 | Initialization | On the | Survey | Real- |  |  |
| GPS week 2266 Seconds 538369 Initialization type On the fly type Real-time |      |           |        |                |        |        |       |  |  |

| Initializ | Initialization event: RTK initialized |         |        |                |        |        |       |  |  |  |  |  |
|-----------|---------------------------------------|---------|--------|----------------|--------|--------|-------|--|--|--|--|--|
| GPS       | 2266                                  | Seconds | 520202 | Initialization | On the | Survey | Real- |  |  |  |  |  |
| week      | 2200                                  | Seconus | 330303 | type           | fly    | type   | time  |  |  |  |  |  |

| Point             | 323   | ΔΧ             | 16614.322      | ΔΥ               | 15838.271     | $\Delta Z$     | 17036.071 | Code       | ACC   |
|-------------------|-------|----------------|----------------|------------------|---------------|----------------|-----------|------------|-------|
|                   |       | Description 1  | ACC            | Description 2    |               |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | Topo<br>point | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.020         | Hz Prec        | 0.022     | Vt<br>Prec | 0.043 |
| QC 1              |       | PDOP           | 2.1            | GDOP             | 2.8           | HDOP           | 0.9       | VDOP       | 1.9   |
|                   |       | Base data age  | 1              | Satellites       | 11            | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000021       | VCV xy (m²)      | 0.000010      | VCV xz<br>(m²) | -0.000008 |            |       |

|                   |       |                |                | VCV yy<br>(m²)   | 0.000105  | VCV yz<br>(m²) | -0.000072 |            |       |
|-------------------|-------|----------------|----------------|------------------|-----------|----------------|-----------|------------|-------|
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000087  |            |       |
| Point             | 324   | ΔΧ             | 16615.312      | ΔΥ               | 15827.964 | $\Delta Z$     | 17025.230 | Code       | ACC   |
|                   |       | Description 1  | ACC            | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.035     | Hz Prec        | 0.022     | Vt<br>Prec | 0.042 |
| QC 1              |       | PDOP           | 2.1            | GDOP             | 2.8       | HDOP           | 0.9       | VDOP       | 1.9   |
|                   |       | Base data age  | 1              | Satellites       | 11        | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000020       | VCV xy<br>(m²)   | 0.000009  | VCV xz<br>(m²) | -0.000007 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000103  | VCV yz<br>(m²) | -0.000071 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000086  |            |       |
| Point             | 3     | ΔΧ             | 16657.375      | ΔΥ               | 15861.827 | $\Delta Z$     | 17070.153 | Code       | BS    |
|                   |       | Description 1  | BK ST          | Description 2    |           |                |           |            |       |
|                   |       | Method         | Network<br>RTK | Type             | _         | Search class   | Normal    |            |       |
| Antenna<br>height | 5.906 | Type           | Uncorrected    | Tilt<br>distance | 0.031     | Hz Prec        | 0.029     | Vt<br>Prec | 0.059 |
| QC 1              |       | PDOP           | 2.7            | GDOP             | 3.7       | HDOP           | 1.3       | VDOP       | 2.3   |
|                   |       | Base data age  | 1              | Satellites       | 9         | Positions used | 3         |            |       |
| QC 2              |       | VCV xx<br>(m²) | 0.000045       | VCV xy<br>(m²)   | 0.000061  | VCV xz<br>(m²) | -0.000036 |            |       |
|                   |       |                |                | VCV yy<br>(m²)   | 0.000223  | VCV yz<br>(m²) | -0.000140 |            |       |
|                   |       |                |                |                  |           | VCV zz<br>(m²) | 0.000130  |            |       |

Survey event

| Survey event | End survey |
|--------------|------------|
|--------------|------------|

## **Reduced points**

| Point |     | New<br>Albin | North    | 127936.191 | East       | 59536  | 4.232 | Eleva  | tion | 671.2 | 89 | Code  |      |     |
|-------|-----|--------------|----------|------------|------------|--------|-------|--------|------|-------|----|-------|------|-----|
| Point |     | 1            | North    | 151392.917 | East       | 61180  | 3.671 | Eleva  | tion | 659.2 | 72 | Code  | (    | CP1 |
| Point |     | 2            | North    | 151127.620 | East       | 61182  | 9.663 | Eleva  | tion | 657.9 | 86 | Code  | (    | CP2 |
| Point | 100 | Nort         | th       | 151117.427 | East       |        | 61179 | 98.151 | Elev | ation | 65 | 0.200 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 101 | Nort         | th       | 151132.301 | East       |        | 61179 | 97.482 | Elev | ation | 65 | 0.177 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 102 | Nort         | th       | 151145.111 | East       |        | 61179 | 97.228 | Elev | ation | 65 | 0.044 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 103 | Nort         | th       | 151157.811 | East       |        | 61179 | 96.799 | Elev | ation | 65 | 0.046 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 104 | Nort         | th       | 151170.287 | East       |        | 61179 | 96.188 | Elev | ation | 64 | 9.949 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 105 | Nort         | th       | 151179.482 | East       |        | 61179 | 95.804 | Elev | ation | 64 | 9.969 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 106 | Nort         | th       | 151189.072 | East       |        | 61179 | 95.488 | Elev | ation | 64 | 9.933 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |
| Point | 107 | Nort         | th       | 151199.131 | East       |        | 61179 | 94.970 | Elev | ation | 64 | 9.847 | Code | TM1 |
|       |     | Desc<br>1    | cription | tm1        | Descr<br>2 | iption |       |        |      |       |    |       |      |     |

| Point | 108 | North         | 151207.457 | East          | 611794.385 | Elevation | 649.838 | Code | TM1 |
|-------|-----|---------------|------------|---------------|------------|-----------|---------|------|-----|
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 109 | North         | 151217.824 | East          | 611793.567 | Elevation | 649.907 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 110 | North         | 151227.141 | East          | 611793.071 | Elevation | 649.750 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 111 | North         | 151235.003 | East          | 611792.616 | Elevation | 649.912 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 112 | North         | 151241.988 | East          | 611791.585 | Elevation | 650.064 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 113 | North         | 151248.216 | East          | 611791.072 | Elevation | 650.005 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 114 | North         | 151254.769 | East          | 611790.787 | Elevation | 649.962 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 115 | North         | 151261.474 | East          | 611790.374 | Elevation | 650.069 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 116 | North         | 151268.431 | East          | 611789.654 | Elevation | 650.250 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 117 | North         | 151276.340 | East          | 611788.901 | Elevation | 650.304 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 118 | North         | 151283.612 | East          | 611788.500 | Elevation | 650.753 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 119 | North         | 151291.470 | East          | 611787.892 | Elevation | 651.514 | Code | TM1 |

|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
|-------|-----|---------------|------------|---------------|------------|-----------|---------|------|-----|
| Point | 120 | North         | 151298.160 | East          | 611786.768 | Elevation | 652.155 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 121 | North         | 151302.448 | East          | 611786.188 | Elevation | 652.339 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 122 | North         | 151306.784 | East          | 611785.151 | Elevation | 652.329 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 123 | North         | 151313.514 | East          | 611783.661 | Elevation | 652.263 | Code | TM1 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 124 | North         | 151388.767 | East          | 611774.351 | Elevation | 653.046 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 125 | North         | 151401.232 | East          | 611774.271 | Elevation | 653.011 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 126 | North         | 151407.445 | East          | 611774.439 | Elevation | 652.889 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 127 | North         | 151415.961 | East          | 611774.507 | Elevation | 652.726 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 128 | North         | 151427.960 | East          | 611774.505 | Elevation | 653.015 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 129 | North         | 151442.365 | East          | 611773.352 | Elevation | 653.129 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 130 | North         | 151453.907 | East          | 611772.720 | Elevation | 653.182 | Code | TM2 |

|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
|-------|-----|---------------|------------|---------------|------------|-----------|---------|------|-----|
| Point | 131 | North         | 151467.145 | East          | 611771.991 | Elevation | 653.162 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 132 | North         | 151480.240 | East          | 611771.249 | Elevation | 653.295 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 133 | North         | 151491.423 | East          | 611770.968 | Elevation | 653.490 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 134 | North         | 151510.054 | East          | 611770.296 | Elevation | 653.888 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 135 | North         | 151526.033 | East          | 611769.492 | Elevation | 654.023 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 136 | North         | 151542.304 | East          | 611768.760 | Elevation | 654.213 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 137 | North         | 151560.574 | East          | 611768.362 | Elevation | 654.229 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 138 | North         | 151576.084 | East          | 611768.084 | Elevation | 654.486 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 139 | North         | 151590.698 | East          | 611768.928 | Elevation | 654.245 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 140 | North         | 151603.927 | East          | 611768.860 | Elevation | 654.261 | Code | TM2 |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |     |
| Point | 141 | North         | 151614.216 | East          | 611768.541 | Elevation | 654.453 | Code | TM2 |

|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |      |
|-------|-----|---------------|------------|---------------|------------|-----------|---------|------|------|
| Point | 142 | North         | 151630.909 | East          | 611768.358 | Elevation | 654.597 | Code | TM2  |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |      |
| Point | 143 | North         | 151639.121 | East          | 611768.512 | Elevation | 654.661 | Code | TM2  |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |      |
| Point | 144 | North         | 151645.379 | East          | 611768.013 | Elevation | 654.885 | Code | TM2  |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |      |
| Point | 145 | North         | 151648.070 | East          | 611767.431 | Elevation | 655.070 | Code | TM2  |
|       |     | Description 1 | tm1        | Description 2 |            |           |         |      |      |
| Point | 146 | North         | 151661.539 | East          | 611761.277 | Elevation | 656.281 | Code | AXL1 |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |      |
| Point | 147 | North         | 151661.502 | East          | 611767.808 | Elevation | 655.297 | Code | AXL1 |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |      |
| Point | 148 | North         | 151652.295 | East          | 611768.406 | Elevation | 655.097 | Code | AXL2 |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |      |
| Point | 149 | North         | 151652.031 | East          | 611761.811 | Elevation | 656.078 | Code | AXL2 |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |      |
| Point | 150 | North         | 151656.270 | East          | 611759.650 | Elevation | 656.248 | Code | BODY |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |      |
| Point | 151 | North         | 151650.356 | East          | 611758.679 | Elevation | 656.149 | Code | BODY |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |      |
| Point | 152 | North         | 151647.991 | East          | 611765.039 | Elevation | 655.720 | Code | TRUC |

|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
|-------|-----|---------------|------------|---------------|------------|-----------|---------|------|-------|
| Point | 153 | North         | 151647.830 | East          | 611763.314 | Elevation | 655.840 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 154 | North         | 151648.111 | East          | 611762.670 | Elevation | 655.850 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 155 | North         | 151650.737 | East          | 611762.122 | Elevation | 655.937 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 156 | North         | 151654.270 | East          | 611762.085 | Elevation | 656.041 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 157 | North         | 151659.199 | East          | 611761.671 | Elevation | 656.166 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 158 | North         | 151662.818 | East          | 611761.642 | Elevation | 656.167 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 159 | North         | 151663.669 | East          | 611761.892 | Elevation | 656.166 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 160 | North         | 151664.063 | East          | 611762.693 | Elevation | 656.114 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 161 | North         | 151664.330 | East          | 611764.478 | Elevation | 655.979 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 162 | North         | 151664.149 | East          | 611766.847 | Elevation | 655.487 | Code | TRUCK |
|       |     | Description 1 | PICKUP     | Description 2 |            |           |         |      |       |
| Point | 163 | North         | 151663.625 | East          | 611767.486 | Elevation | 655.339 | Code | TRUCK |

|       |     | Description 1    | PICKUP     | Descriptio 2    | n       |        |      |        |    |       |      |       |
|-------|-----|------------------|------------|-----------------|---------|--------|------|--------|----|-------|------|-------|
| Point | 164 | North            | 151660.298 | East            | 6117    | 67.910 | Elev | ation  | 65 | 5.236 | Code | TRUCK |
|       |     | Description 1    | PICKUP     | Descriptio 2    | n       |        |      |        |    |       |      |       |
| Point | 165 | North            | 151655.075 | East            | 6117    | 68.215 | Elev | vation | 65 | 5.074 | Code | TRUCK |
|       |     | Description 1    | PICKUP     | Descriptio 2    | n       |        |      |        |    |       |      |       |
| Point | 166 | North            | 151649.809 | East            | 6117    | 68.459 | Elev | vation | 65 | 5.000 | Code | TRUCK |
|       |     | Description 1    | PICKUP     | Descriptio 2    | n       |        |      |        |    |       |      |       |
| Point | 167 | North            | 151648.234 | East            | 6117    | 68.079 | Elev | vation | 65 | 5.071 | Code | TRUCK |
|       |     | Description 1    | PICKUP     | Descriptio 2    | n       |        |      |        |    |       |      |       |
| Point | 168 | North            | 151647.908 | East            | 6117    | 67.049 | Elev | vation | 65 | 5.317 | Code | TRUCK |
|       |     | Description 1    | PICKUP     | Descriptio 2    | n       |        |      |        |    |       |      |       |
| Point | 169 | North            | 151648.008 | East            | 6117    | 65.454 | Elev | vation | 65 | 5.755 | Code | TRUCK |
|       |     | Description 1    | PICKUP     | Descriptio<br>2 | n       |        |      |        |    |       |      |       |
| Point |     | 170 <b>North</b> | 151773.851 | East 611        | 770.040 | Eleva  | tion | 656.5  | 11 | Code  | E    | G1    |
| Point |     | 171 <b>North</b> | 151774.318 | East 611        | 765.125 | Eleva  | tion | 657.1  | 55 | Code  | E    | A1    |
| Point |     | 172 <b>North</b> | 151774.162 | East 611        | 758.919 | Eleva  | tion | 657.4  | 64 | Code  | F    | FL1   |
| Point |     | 173 <b>North</b> | 151773.531 | East 611        | 747.073 | Eleva  | tion | 657.8  | 61 | Code  | C    | CL1   |
| Point |     | 174 <b>North</b> | 151773.353 | East 611        | 735.259 | Eleva  | tion | 658.1  | 92 | Code  | F    | FL2   |
| Point |     | 175 <b>North</b> | 151772.797 | East 611        | 728.903 | Eleva  | tion | 658.2  | 62 | Code  | E    | ZA2   |
| Point |     | 176 <b>North</b> | 151773.851 | East 611        | 722.450 | Eleva  | tion | 657.5  | 77 | Code  | E    | G2    |
| Point |     | 177 North        | 151718.196 | East 611        | 721.616 | Eleva  | tion | 657.1  | 37 | Code  | E    | G2    |
| Point |     | 178 <b>North</b> | 151717.620 | East 611        | 727.148 | Eleva  | tion | 657.7  | 76 | Code  | E    | 2A2   |
| Point |     | 179 <b>North</b> | 151717.056 | East 611        | 733.575 | Eleva  | tion | 657.6  | 10 | Code  | F    | FL2   |
| Point |     | 180 <b>North</b> | 151716.646 | East 611        | 745.283 | Eleva  | tion | 657.3  | 28 | Code  |      | CL1   |
| Point |     | 181 <b>North</b> | 151716.301 | East 611        | 757.105 | Eleva  | tion | 656.9  | 52 | Code  | F    | FL1   |

| Point | 182 | North | 151716.072 | East | 611763.196 | Elevation | 656.641 | Code | EA1 |
|-------|-----|-------|------------|------|------------|-----------|---------|------|-----|
| Point | 183 | North | 151715.583 | East | 611768.510 | Elevation | 655.637 | Code | EG1 |
| Point | 184 | North | 151667.981 | East | 611766.666 | Elevation | 655.315 | Code | EG1 |
| Point | 185 | North | 151667.869 | East | 611762.117 | Elevation | 656.167 | Code | EA1 |
| Point | 186 | North | 151667.659 | East | 611756.006 | Elevation | 656.394 | Code | FL1 |
| Point | 187 | North | 151667.573 | East | 611744.130 | Elevation | 656.932 | Code | CL1 |
| Point | 188 | North | 151666.923 | East | 611732.434 | Elevation | 657.203 | Code | FL2 |
| Point | 189 | North | 151666.897 | East | 611726.172 | Elevation | 657.395 | Code | EA2 |
| Point | 190 | North | 151666.524 | East | 611720.767 | Elevation | 656.765 | Code | EG2 |
| Point | 191 | North | 151618.686 | East | 611721.015 | Elevation | 656.435 | Code | EG2 |
| Point | 192 | North | 151616.047 | East | 611726.044 | Elevation | 656.698 | Code | EA2 |
| Point | 193 | North | 151616.765 | East | 611732.453 | Elevation | 656.621 | Code | FL2 |
| Point | 194 | North | 151616.765 | East | 611744.269 | Elevation | 656.272 | Code | CL1 |
| Point | 195 | North | 151617.536 | East | 611756.073 | Elevation | 655.852 | Code | FL1 |
| Point | 196 | North | 151617.426 | East | 611762.208 | Elevation | 655.564 | Code | EA1 |
| Point | 197 | North | 151617.556 | East | 611766.309 | Elevation | 654.931 | Code | EG1 |
| Point | 198 | North | 151556.436 | East | 611766.996 | Elevation | 654.468 | Code | EG1 |
| Point | 199 | North | 151556.448 | East | 611763.181 | Elevation | 655.062 | Code | EA1 |
| Point | 200 | North | 151556.171 | East | 611756.951 | Elevation | 655.392 | Code | FL1 |
| Point | 201 | North | 151555.285 | East | 611744.954 | Elevation | 655.872 | Code | CL1 |
| Point | 202 | North | 151554.242 | East | 611733.475 | Elevation | 656.218 | Code | FL2 |
| Point | 203 | North | 151553.296 | East | 611727.125 | Elevation | 656.384 | Code | EA2 |
| Point | 204 | North | 151552.381 | East | 611722.067 | Elevation | 655.744 | Code | EG2 |
| Point | 205 | North | 151483.317 | East | 611723.876 | Elevation | 655.180 | Code | EG2 |
| Point | 206 | North | 151482.449 | East | 611729.218 | Elevation | 655.641 | Code | EA2 |
| Point | 207 | North | 151480.517 | East | 611735.637 | Elevation | 655.478 | Code | FL2 |
| Point | 208 | North | 151480.617 | East | 611747.221 | Elevation | 655.161 | Code | CL1 |
| Point | 209 | North | 151480.938 | East | 611759.148 | Elevation | 654.748 | Code | FL1 |

| Point |           | 210       | North      | 151480.730 | East          | 61176       | 5.330 | Eleva                | tion | 654.4   | 15  | Code  | E    | A1   |
|-------|-----------|-----------|------------|------------|---------------|-------------|-------|----------------------|------|---------|-----|-------|------|------|
| Point | 211 North |           | 151480.944 | East       | 61176         | 9.728 Eleva |       | tion   653.6°        |      | 78 Code |     | E     | G1   |      |
| Point | 212       | Nor       | th         | 151503.779 | East          | East        |       | 611758.450 <b>El</b> |      | vation  | 65  | 4.820 | Code | AXL3 |
|       |           | Desc<br>1 | cription   | SOUAD      | Desci<br>2    | ription     |       |                      |      |         |     |       |      |      |
| Point | 213       | Nor       | th         | 151500.434 | East          |             | 6117: | 52.637               | Elev | vation  | 65  | 5.052 | Code | AXL3 |
|       |           | Dese      | cription   | SOUAD      | Description 2 |             |       |                      |      |         |     |       |      |      |
| Point | 214       | Nor       | th         | 151491.862 | East          |             | 6117: | 57.317               | Elev | vation  | 65  | 4.850 | Code | AXL4 |
|       |           | Desc<br>1 | cription   | SOUAD      | Desci<br>2    | ription     |       |                      |      |         |     |       |      |      |
| Point | 215       | Nor       | th         | 151495.084 | East          |             | 61170 | 63.189               | Elev | vation  | 65  | 4.664 | Code | AXL4 |
|       |           | Deso<br>1 | cription   | SOUAD      | Desci<br>2    | ription     |       |                      |      |         |     |       |      |      |
| Point |           | 216       | North      | 151489.858 | East          | 611762      | 2.150 | Elevat               | ion  | 654.52  | 7   | Code  | SQUA | D1   |
| Point |           | 217       | North      | 151489.031 | East          | 611759      | 9.959 | Elevat               | ion  | 654.61  | 7 ( | Code  | SQUA | D1   |
| Point |           | 218       | North      | 151489.546 | East          | 611758      | 3.953 | Elevat               | ion  | 654.70  | 0   | Code  | SQUA | D1   |
| Point |           | 219       | North      | 151492.933 | East          | 611756      | 5.831 | Elevat               | ion  | 654.81  | 0   | Code  | SQUA | D1   |
| Point |           | 220       | North      | 151498.519 | East          | 611753      | 3.748 | Elevat               | ion  | 654.98  | 7 ( | Code  | SQUA | D1   |
| Point |           | 221       | North      | 151502.325 | East          | 611751      | 1.858 | Elevat               | ion  | 655.09  | 5 ( | Code  | SQUA | D1   |
| Point |           | 222       | North      | 151503.678 | East          | 611752      | 2.858 | Elevat               | ion  | 655.09  | 3 ( | Code  | SQUA | D1   |
| Point |           | 223       | North      | 151504.494 | East          | 611752      | 2.481 | Elevat               | ion  | 655.14  | 2   | Code  | SQUA | D1   |
| Point |           | 224       | North      | 151505.940 | East          | 611755      | 5.071 | Elevat               | ion  | 655.13  | 3 ( | Code  | SQUA | D1   |
| Point |           | 225       | North      | 151505.314 | East          | 611755      | 5.545 | Elevat               | ion  | 655.07  | 5   | Code  | SQUA | D1   |
| Point |           | 226       | North      | 151505.412 | East          | 611756      | 5.863 | Elevat               | ion  | 655.07  | 1 ( | Code  | SQUA | D1   |
| Point |           | 227       | North      | 151504.941 | East          | 611757      | 7.627 | Elevat               | ion  | 655.08  | 3 ( | Code  | SQUA | D1   |
| Point |           | 228       | North      | 151502.032 | East          | 611759      | 9.224 | Elevat               | ion  | 654.89  | 8   | Code  | SQUA | D1   |
| Point |           | 229       | North      | 151497.617 | East          | 611761      | 1.787 | Elevat               | ion  | 654.84  | 1   | Code  | SQUA | D1   |
| Point |           | 230       | North      | 151493.471 | East          | 611763      | 3.937 | Elevat               | ion  | 654.64  | 5 ( | Code  | SQUA | D1   |
| Point |           | 231       | North      | 151491.461 | East          | 611764      | 1.194 | Elevat               | ion  | 654.66  | 9 ( | Code  | SQUA | D1   |

| Point | 232 | North | 151406.175 | East | 611774.163 | Elevation | 653.210 | Code | EG1 |
|-------|-----|-------|------------|------|------------|-----------|---------|------|-----|
| Point | 233 | North | 151405.887 | East | 611768.931 | Elevation | 653.898 | Code | EA1 |
| Point | 234 | North | 151405.242 | East | 611762.858 | Elevation | 654.341 | Code | FL1 |
| Point | 235 | North | 151402.909 | East | 611751.248 | Elevation | 654.656 | Code | CL1 |
| Point | 236 | North | 151401.834 | East | 611739.662 | Elevation | 654.671 | Code | FL2 |
| Point | 237 | North | 151401.157 | East | 611733.358 | Elevation | 654.531 | Code | EA2 |
| Point | 238 | North | 151399.500 | East | 611728.928 | Elevation | 654.582 | Code | EG2 |
| Point | 239 | North | 151322.609 | East | 611734.889 | Elevation | 653.692 | Code | EG2 |
| Point | 240 | North | 151322.974 | East | 611739.473 | Elevation | 653.296 | Code | EA2 |
| Point | 241 | North | 151321.350 | East | 611746.072 | Elevation | 653.642 | Code | FL2 |
| Point | 242 | North | 151322.163 | East | 611757.465 | Elevation | 653.799 | Code | CL1 |
| Point | 243 | North | 151327.795 | East | 611768.746 | Elevation | 653.134 | Code | FL1 |
| Point | 244 | North | 151331.683 | East | 611774.663 | Elevation | 652.717 | Code | EA1 |
| Point | 245 | North | 151331.276 | East | 611780.341 | Elevation | 652.480 | Code | EG1 |
| Point | 246 | North | 151272.209 | East | 611784.417 | Elevation | 651.529 | Code | EG1 |
| Point | 247 | North | 151272.498 | East | 611780.158 | Elevation | 651.929 | Code | EA1 |
| Point | 248 | North | 151272.461 | East | 611773.813 | Elevation | 652.344 | Code | FL1 |
| Point | 249 | North | 151271.916 | East | 611761.975 | Elevation | 652.657 | Code | CL1 |
| Point | 250 | North | 151270.808 | East | 611750.264 | Elevation | 652.987 | Code | FL2 |
| Point | 251 | North | 151269.923 | East | 611743.787 | Elevation | 653.196 | Code | EA2 |
| Point | 252 | North | 151271.412 | East | 611739.039 | Elevation | 653.045 | Code | EG2 |
| Point | 253 | North | 151192.074 | East | 611741.818 | Elevation | 651.573 | Code | EG2 |
| Point | 254 | North | 151193.125 | East | 611748.830 | Elevation | 652.101 | Code | EA2 |
| Point | 255 | North | 151193.239 | East | 611757.144 | Elevation | 652.123 | Code | FL2 |
| Point | 256 | North | 151194.340 | East | 611769.122 | Elevation | 651.915 | Code | CL1 |
| Point | 257 | North | 151195.517 | East | 611780.685 | Elevation | 651.559 | Code | FL1 |
| Point | 258 | North | 151196.382 | East | 611786.991 | Elevation | 651.250 | Code | EA1 |
| Point | 259 | North | 151196.002 | East | 611791.595 | Elevation | 650.767 | Code | EG1 |

| Point | 285       | North    | 150588.855 | East       | 61184  | 5.910 | Eleva | tion | 645.4  | 61  | Code  | Е    | A1  |
|-------|-----------|----------|------------|------------|--------|-------|-------|------|--------|-----|-------|------|-----|
| Point | 284       | North    | 150588.369 | East       | 61185  | 0.782 | Eleva | tion | 645.13 | 86  | Code  | E    | G1  |
| Point | 283       | North    | 150731.592 | East       | 61182  | 8.585 | Eleva | tion | 646.63 | 33  | Code  | GLA  | S2  |
| Point | 282       | North    | 150771.473 | East       | 61182  | 4.511 | Eleva | tion | 646.90 | 07  | Code  | GLA  | S2  |
|       | Desc<br>1 | cription | SOUAD      | Descr<br>2 | iption |       |       |      |        |     |       |      |     |
| Point | 281 North |          | 150798.994 | East       |        | 61182 | 1.425 | Elev | ation  | 64′ | 7.240 | Code | GLA |
| Point | 280       | North    | 150871.262 | East       | 61182  | 0.442 | Eleva | tion | 647.7  | 32  | Code  | GLA  | SS  |
| Point | 279       | North    | 150740.537 | East       | 61183  | 6.274 | Eleva | tion | 645.9  | 46  | Code  | GLA  | SS  |
| Point | 278       | North    | 150701.607 | East       | 61183  | 8.768 | Eleva | tion | 646.20 | 03  | Code  | GLA  | SS  |
| Point | 277       | North    | 150689.207 | East       | 61182  | 9.062 | Eleva | tion | 646.4  | 11  | Code  | GLA  | SS  |
| Point | 276       | North    | 150694.345 | East       | 61181  | 6.609 | Eleva | tion | 646.6  | 17  | Code  | GLA  | SS  |
| Point | 275       | North    | 150719.029 | East       | 61180  | 9.719 | Eleva | tion | 646.6  | 53  | Code  | GLA  | SS  |
| Point | 274       | North    | 150738.544 | East       | 61180  | 4.960 | Eleva | tion | 646.6  | 67  | Code  | GLA  | SS  |
| Point | 273       | North    | 150779.025 | East       | 61180  | 1.334 | Eleva | tion | 647.10 | 09  | Code  | GLA  | SS  |
| Point | 272       | North    | 150824.068 | East       | 61179  | 7.747 | Eleva | tion | 647.5  | 30  | Code  | GLA  | SS  |
| Point | 271       | North    | 150852.494 | East       | 61179  | 3.930 | Eleva | tion | 647.93 | 39  | Code  | GLA  | SS  |
| Point | 270       | North    | 150872.206 | East       | 61179  | 8.292 | Eleva | tion | 648.12 | 23  | Code  | GLA  | SS  |
| Point | 269       | North    | 150889.195 | East       | 61180  | 9.453 | Eleva | tion | 647.9  | 42  | Code  | GLA  | SS  |
| Point | 268       | North    | 150936.089 | East       | 61181  | 6.983 | Eleva | tion | 648.32 | 21  | Code  | Е    | G1  |
| Point | 267       | North    | 150936.566 | East       | 61181  | 1.930 | Eleva | tion | 648.63 | 36  | Code  | E    | A1  |
| Point | 266       | North    | 150936.065 | East       | 61180  | 5.398 | Eleva | tion | 648.5  | 88  | Code  | F    | L1  |
| Point | 265       | North    | 150935.346 | East       | 61179  | 3.719 | Eleva | tion | 648.7  | 45  | Code  | C    | L1  |
| Point | 264       | North    | 150936.196 | East       | 61178  | 1.566 | Eleva | tion | 648.5  | 13  | Code  | F    | FL2 |
| Point | 263       | North    | 150936.301 | East       | 61177  | 5.671 | Eleva | tion | 648.32 | 25  | Code  | Е    | A2  |
| Point | 262       | North    | 150935.622 | East       | 61176  | 8.394 | Eleva | tion | 647.73 | 81  | Code  | Е    | G2  |
| Point | 261       | North    | 151164.019 | East       | 61175  | 3.415 | Eleva | tion | 651.7  | 15  | Code  | Е    | A2  |
| Point | 260       | North    | 151164.174 | East       | 61174  | 7.642 | Eleva | tion | 651.12 | 27  | Code  | E    | G2  |

| Point |     | 286       | North    | 150588.197 | East        | 61183  | 39.729 | Eleva  | tion | 645.7 | 40  | Code  | F    | FL1 |
|-------|-----|-----------|----------|------------|-------------|--------|--------|--------|------|-------|-----|-------|------|-----|
| Point |     | 287       | North    | 150586.667 | East        | 61182  | 27.851 | Eleva  | tion | 645.9 | 95  | Code  | C    | CL1 |
| Point |     | 288       | North    | 150585.382 | East        | 61181  | 5.903  | Eleva  | tion | 645.6 | 76  | Code  | F    | FL1 |
| Point |     | 289       | North    | 150584.611 | East        | 61180  | 9.919  | Eleva  | tion | 645.3 | 79  | Code  | E    | A1  |
| Point |     | 290       | North    | 150582.864 | East        | 61180  | )4.684 | Eleva  | tion | 644.8 | 04  | Code  | E    | G1  |
| Point |     | 291       | North    | 150482.688 | East        | 61185  | 50.087 | Eleva  | tion | 645.3 | 57  | Code  | F    | FL1 |
| Point |     | 292       | North    | 150482.927 | East        | 61185  | 6.171  | Eleva  | tion | 645.1 | 47  | Code  | E    | A1  |
| Point |     | 293       | North    | 150482.621 | East        | 61186  | 60.756 | Eleva  | tion | 644.7 | 07  | Code  | E    | G1  |
| Point |     | 294       | North    | 150424.832 | East        | 61186  | 50.975 | Eleva  | tion | 645.0 | 94  | Code  | F    | FL1 |
| Point |     | 295       | North    | 150425.342 | East        | 61186  | 52.071 | Eleva  | tion | 644.9 | 06  | Code  | E    | A1  |
| Point |     | 296       | North    | 150411.861 | East        | 61187  | 74.898 | Eleva  | tion | 645.0 | 00  | Code  | E    | A1  |
| Point |     | 297       | North    | 150353.282 | East        | 61188  | 31.360 | Eleva  | tion | 645.1 | 58  | Code  | E    | A1  |
| Point |     | 298       | North    | 150338.822 | East        | 61187  | 70.499 | Eleva  | tion | 644.9 | 85  | Code  | E    | A1  |
| Point |     | 299       | North    | 150345.900 | East        | 61187  | 79.188 | Eleva  | tion | 644.8 | 61  | Code  | E    | G3  |
| Point |     | 300       | North    | 150334.441 | East        | 61187  | 75.522 | Eleva  | tion | 644.7 | 17  | Code  | E    | G3  |
| Point |     | 301       | North    | 150336.227 | East        | 61186  | 64.268 | Eleva  | tion | 645.2 | 53  | Code  | F    | FL3 |
| Point |     | 302       | North    | 149947.173 | East        | 61191  | 1.667  | Eleva  | tion | 644.6 | 91  | Code  | E    | G3  |
| Point |     | 303       | North    | 149946.476 | East        | 61190  | 08.094 | Eleva  | tion | 644.9 | 30  | Code  | E    | A1  |
| Point |     | 304       | North    | 149944.933 | East        | 61190  | )2.230 | Eleva  | tion | 645.0 | 71  | Code  | F    | FL3 |
| Point |     | 305       | North    | 149943.125 | East        | 61188  | 39.987 | Eleva  | tion | 645.2 | 64  | Code  | C    | CL1 |
| Point |     | 306       | North    | 149939.169 | East        | 61187  | 78.474 | Eleva  | tion | 644.9 | 90  | Code  | F    | FL2 |
| Point |     | 307       | North    | 149938.107 | East        | 61187  | 72.608 | Eleva  | tion | 644.7 | 48  | Code  | E    | A2  |
| Point |     | 308       | North    | 149937.365 | East        | 61186  | 59.076 | Eleva  | tion | 644.5 | 79  | Code  | E    | G2  |
| Point | 309 | Nort      | th       | 149823.431 | East        |        | 61191  | 4.885  | Elev | ation | 64. | 5.376 | Code | AXI |
|       |     | Desc<br>1 | cription | SOUAD      | Descr<br>2  | iption |        |        |      |       |     |       |      |     |
| Point | 310 | Nort      | th       | 149824.121 | East        |        | 61192  | 21.628 | Elev | ation | 64. | 5.148 | Code | AXI |
|       |     | Desc<br>1 | cription | SOUAD      | Descri<br>2 | iption |        |        |      |       |     |       |      |     |

| Point | 311 | Nor       | th       | 149814.700 | East       |         | 6119   | 22.781             | Ele  | vation | 64      | 5.220 | Code | AXL  |  |
|-------|-----|-----------|----------|------------|------------|---------|--------|--------------------|------|--------|---------|-------|------|------|--|
|       |     |           | cription | SOUAD      |            | ription |        |                    |      |        |         |       |      |      |  |
| Point | 312 | Nor       | th       | 149814.028 | East       | East    |        | 1916.173 Elevation |      | vation | 645.415 |       | Code | AXL6 |  |
|       |     | Desc<br>1 | cription | SOUAD      | Desci<br>2 | ription |        |                    |      |        |         |       |      |      |  |
| Point | 313 | Nor       | th       | 149813.984 | East       | East    |        | 16.174             | Ele  | vation | 64      | 5.373 | Code | AXL  |  |
|       |     | Desc<br>1 | cription | SOUAD      | Desci<br>2 | ription |        |                    |      |        |         |       |      |      |  |
| Point |     | 314       | North    | 149810.527 | East       | 611919  | 9.903  | Elevati            | ion  | 645.39 | 5       | Code  | SQUA | .D2  |  |
| Point |     | 315       | North    | 149827.564 | East       | 611917  | 7.972  | Elevati            | ion  | 645.31 | 8       | Code  | SQUA | .D2  |  |
| Point |     | 316       | North    | 149616.171 | East       | 61189   | 8.079  | Eleva              | tion | 644.1  | 05      | Code  | E    | G2   |  |
| Point |     | 317       | North    | 149614.936 | East       | 61190   | 2.877  | Eleva              | tion | 644.5  | 79      | Code  | E    | A2   |  |
| Point |     | 318       | North    | 149615.553 | East       | 61190   | 8.695  | Eleva              | tion | 644.8  | 70      | Code  | I    | FL2  |  |
| Point |     | 319       | North    | 149616.646 | East       | 61192   | 20.718 | Eleva              | tion | 645.2  | 22      | Code  | (    | CL1  |  |
| Point |     | 320       | North    | 149617.679 | East       | 61193   | 2.658  | Eleva              | tion | 645.3  | 73      | Code  | I    | FL3  |  |
| Point |     | 321       | North    | 149618.430 | East       | 61193   | 8.859  | Eleva              | tion | 645.4  | 13      | Code  | E    | ZA1  |  |
| Point |     | 322       | North    | 149618.906 | East       | 61194   | 3.333  | Eleva              | tion | 644.9  | 74      | Code  | E    | G3   |  |
| Point | 323 | Nor       | th       | 151351.618 | East       |         | 6117   | 61.046             | Ele  | vation | 65      | 3.456 | Code | ACC  |  |
|       |     | Desc<br>1 | cription | ACC        | Desci<br>2 | ription |        |                    |      |        |         |       |      |      |  |
| Point | 324 | Nor       | th       | 151336.669 | East       |         | 6117   | 62.176             | Ele  | vation | 65      | 3.437 | Code | ACC  |  |
|       |     | Desc<br>1 | cription | ACC        | Desci<br>2 | ription |        |                    |      |        |         |       |      |      |  |
| Point | 3   | Nort      | th       | 151392.953 | East       |         | 61180  | 03.806             | Ele  | vation | 65      | 9.210 | Code | BS   |  |
|       |     | Desc<br>1 | cription | BK ST      | Descr<br>2 | ription |        |                    |      |        |         |       |      |      |  |

## Wisconsin Division of Criminal Investigation

### Memo to File 23-4795/39

Report Date: 07/12/2023

**Primary Information** 

Description: Manual transmission shifter position in subject's vehicle

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/12/2023

Approved By: Heiser, Shane T (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On July 11, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley completed follow-up on the manual transmission shifter position of the subject's vehicle.

Narrative begins on the following page.

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# Wisconsin Division of Criminal Investigation Case Report Case/Report Number:

On July 11, 2023, Wisconsin Department of Justice - Division of Criminal Investigation (DCI) Special Agent (SA) Michael Haverley completed follow-up on the manual transmission shifter position of the subject's vehicle. SA Justin Bender asked SA Haverley what position the shifter was in during his speed estimation analysis.

SA Haverley inquired about this with Sheriff Roy Torgerson of the Vernon County Sheriff's Office (VCSO). Sheriff Torgerson copied SA Haverley on an email as he checked with VCSO Sergeant (Sgt.) Sam Winchel. Sgt. Winchel responded that he never touched the vehicle and he told the tow company to tow "as-is" and not to touch the interior so it should have still been in the gear it was.

SA Haverley checked with SA Jay Greeno who assisted in the search of the subject's vehicle at the storage facility after it was towed. SA Greeno advised that the shifter was in a downward position towards the seat. SA Greeno stated that he knew that because he had to move it up to get the vehicle into neutral. SA Haverley performed an internet search and viewed a shifter diagram for a 2001 Dodge Dakota pickup truck with a V8 motor. 2nd gear and 4th gear are at the bottom. SA Greeno and SA Haverley determined that the truck was likely in 4th gear as it traveled an estimated highway speed during the incident, however it is unknown if it could have been in 2nd gear and going the same speed(s) at higher RPM. SA Haverley checked with SA David Kleinhans, but he did not have any knowledge of this.

#### **REVIEW OF PHOTOS/VIDEOS BY SA HAVERLEY:**

Photographs captured by Sgt. Winchel and reported on under 23-4795/33 of this case file were reviewed. SA Haverley observed an image with the file name ending with "IMG 20230616 194306746 kWB.jpg" showed the shift position down.

The body worn camera footage from Deputy Brown, which was reported on under 23-4795/26 of this case file was reviewed. SA Haverley found a view of the shifter at 05:30 of the recording, which appears to be right after Deputy Brown fired his weapon.

## Wisconsin Division of Criminal Investigation

## Investigative 23-4795/40

Report Date: 07/17/2023

**Primary Information** 

Description: Receipt of WSCL Autopsy Photo-Log

Occurrence From: **07/06/2023**Occurrence To: **07/06/2023** 

Reporting LEO: Folkers, Kenneth J (Madison Special Assignments DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/19/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

| Subjects     |  |                         |            |
|--------------|--|-------------------------|------------|
| Relationship | <u>Name</u>                            | <u>Bio</u>              | <u>DOB</u> |
| Mentioned    | Ertl, John R (Crime Lab Personnel)     | White, Male             |            |
| Mentioned    | Naleid, Trevor W (Crime Lab Personnel) |                         |            |
| Deceased     | Boardman, William S (Person)           | 61 yr. old, White, Male |            |

| Documents                 |  |
|---------------------------|--|
| <u>Document</u>           |  |
| M23-1645-1 WSCL Photo Log |  |

Narrative begins on the following page.

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# Wisconsin Division of Criminal Investigation Case Report Case/Report Number: 23-4795/40 Receipt of WSCL Autopsy Photo-Log

On Friday, June 16, 2023, Special Agents (SA) from the Wisconsin Department of Justice-Division of Criminal Investigation (WI DOJ-DCI) were assigned to assist the Vernon County Sheriff's Office (VESO) with an officer-involved death investigation (OID) in Genoa, WI. DCI SA Kenneth Folkers was assigned to attend the autopsy of William S. Boardman (DCI report number 23-4795/8).

On Thursday, July 6, 2023, Wisconsin State Crime Laboratory (WSCL) Forensic Scientist John Ertl invited SA Folkers by email to a Sharefile folder entitled 'M23-1645' (the WSCL-Madison case number). The Sharefile folder contained a 4-page PDF document that was the photo-log of the seventy-two (72) photographs which were taken by WSCL Forensic Scientist Trevor Naleid at the autopsy of William S. Boardman on Monday, June 19, 2023. The 4-page photo-log will be attached to this report.

Please reference the following case numbers for additional information: Autopsy #23-285 and WSCL #M23-1645.

NO FURTHER ACTION TAKEN

## Wisconsin Division of Criminal Investigation

### Memo to File 23-4795/41

Report Date: 07/19/2023

**Primary Information** 

Description: Information related to Deputy Brown's squad camera

Reporting LEO: Haverley, Michael K (Eau Claire Narcotics DCI / Wisconsin Division of Criminal Investigation)

Report Status: Approved
Report Status Date: 07/19/2023

Approved By: Vosters, Jake E (Wisconsin Division of Criminal Investigation)

#### **Synopsis**

On July 18, 2023, Wisconsin Department of Justice - Division of Criminal Investigation Special Agent (SA) Michael Haverley followed up with Vernon County Sheriff Roy Torgerson regarding the appearance of the video footage obtained from Deputy Brown's squad camera.

Narrative begins on the following page.

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Wisconsin Division of Criminal Investigation Case Report
Case/Report Number: 23-4795/41 Information related to Deputy Brown's squad camera

#### **SYNOPSIS:**

On July 18, 2023, Wisconsin Department of Justice - Division of Criminal Investigation Special Agent (SA) Michael Haverley followed up with Vernon County Sheriff Roy Torgerson regarding the appearance of the video footage obtained from Deputy Brown's squad camera.

#### APPEARANCE OF DEPUTY BROWN'S SQUAD VIDEO:

SA Haverley recalled discussing the upside down appearance of Deputy Brown's squad camera video footage with Vernon County Sheriff's Office (VCSO) and other DCI personnel when the video was first observed during the early stages of this investigation. SA Haverley recalled asking VCSO why the squad camera video footage appeared the way it did during review.

SA Haverley contacted Sheriff Torgerson and asked about the appearance of the video footage. SA Haverley inquired if this was "normal" format for this squad vehicle or if something different had occurred. SA Haverley requested Sheriff Torgerson to please check with Sgt. Sam Winchel or other VCSO supervisors if he was not familiar with why this squad video was upside down. Sheriff Torgerson advised SA Haverley that they have at least one other camera that is also recording upside down. Sheriff Torgerson advised that they had worked with Digital Ally, which is the video solutions/software company they used for squad video. Sheriff Torgerson advised that Digital Ally is aware of the problem and they need to send the cameras in. On July 19, 2023, Sheriff Torgerson updated SA Haverley that VCSO is in contact with Digital Ally regarding the squad cameras. SA Haverley also mentioned to Sheriff Torgerson that the times/dates of their squad cameras should be checked and confirmed as well.