PRISON INDUSTRY AUTHORITY

Procedure Title:	Approved by:	Revision Level:	Page:
ROASTER	{Signature on File}	A	1 of 5
	Title of Approving Individual: Superintendent II Coffee Roasting & Grinding	Effective Date: 01-01-2012	Document No.: 15.12 - ROASTER
Organization Area Applicable to: Mule Creek State Prison, Coffee Roasting & Grinding			

1.0 SCOPE:

1.1 This document addresses the quality policy for maintaining total quality when roasting raw green coffee beans to a specific and consistent roast color. This procedure describes the process for operating the Jabez Burns R-23 Coffee Roaster safely.

2.0 RESPONSIBILITY:

2.1 Inmate

2.2 Supervisor

2.3 Superintendent II

3.0 DEFINITIONS:

3.1 Roaster: a machine used to roast green coffee beans.

3.1.1 A roaster comes in various sizes and methods of heat circulation.

3.1.2 Four basic types are gas, electric, hot air and propane.

3.2 Afterburner: a device used to eliminate smoke and particulate matter exhausted from the roaster.

3.3 Firebox: a chamber located underneath the coffee-roasting drum that collects chaff, chippings and other unwanted debris that falls from the beans through the roaster drum.

3.4 Water Quench: a water spraying method used to cool the beans down adding moisture and weight.

3.4.1 Water Quenching can also function as a fire suppression device.

3.5 Destoner: an air conveying device that is designed to remove any foreign material of higher weight density than the roasted beans, such as stones, nails and other objects that can damage the grinder and/or contaminate.

3.6 Purge: a safety function of the roaster gas system to flush out any gas that may be in the roasting system to avoid a possible explosion or fire.

3.7 Cooling Cart: a device used to circulate and cool roasted beans with air using paddles to stir the beans as the air is vacuumed through the beans until they are cooled.

3.8 Set-Point: a temperature control device used to set the desired temperature specifications for consistent roasting.

3.9 Chaff Drum: a device used to store the chaff removed from the roasted beans.

3.10 Green Beans: are raw coffee beans that have not yet been roasted.

3.11 Cyclone: a funnel device used to circulate the air in the Afterburner to create a whirlwind that works to draw chaff into the chaff drum.

3.12 Pilot: a device used to ignite the roasting afterburner flame and the flame directed into the roasting drum.

3.13 Charge Gate: a door used to drop green beans from the roaster hopper into the roaster drum.

3.14 Limit Control: a light that signals that all roaster limited function control features are working properly.

3.15 Inspection Door: a swing door located at the front of the roaster drum that can be opened outward towards the cooling cart in order to drop green beans into the roaster drum or pushed inward in order to drop roasted beans into the cooling cart.

3.16 Lube Delay: a light that signals that all roaster bearings have been properly lubed by the roaster lubing mechanism.

3.17 Chaff: the thin outer skin of the green bean that is removed from the bean as it transforms during roasting.

3.18 Moisture Density: the amount of water that is inherent within the raw green bean prior to the roasting process.

3.19 Charge: the process of loading raw green bean coffee beans into the roaster drum.

3.20 Overloading: the term to describe when the roaster hopper or roaster drum has been over filled with coffee beans to an unsafe weight level of 450 pounds or greater.

3.21 Under loading: the term to describe when the roaster hopper or roaster drum has been under filled with coffee beans to an unsafe weight level of 390 pounds or less.

3.22 Elevator: a conveying system used to deliver coffee beans to storage bins.

3.23 Roaster Alarm: an alarm mechanism used to notify the roaster operator the roaster has reached temperature settings.

3.24 Lock Pin: is the locking mechanism used to lock the inspection door on the front of the roasting drum in place.

3.25 Hopper: is the storage bin located at the top-front of the roaster drum used to stage green beans before roasting.

4.0 QUALITY CONTROL:

4.1 Maintain consistency in the four controlling variables (weight, temperature, origin, time) in roasting green coffee with precision and to pre-described specifications set by your supervisor.

4.2 Always ensure the precise weight of green beans are sent to the roaster hopper and charged into the roaster drum.

4.3 Always observe temperature changes consistently.

4.4 Make sure the settings are accurate to the identity of the blend and amount being roasted.

4.4.1 Always measure new crop or coffee bean density and make sure any adjustments (if needed and as directed by supervisor) are made to the roaster settings.

4.4.2 The moister and denser the bean the slower it roasts and the higher the temperature the beans will absorb.

4.4.3 Maintain the same temperature settings throughout your roast session.

4.4.4 Correlate the time of the roast fairly accurately with the final color, style, and taste of the roasted beans.

4.4.5 Temperature and atmospheric pressure from moisture density both affect roasting time.

4.4.6 Maintain consistency from session to session, following all pre described settings from your supervisor.

4.5 Conduct a Sieve Photovolt Test and Flavor Evaluation on raw samples prior to purchase and after its received.

5.0 QUALITY PROCEDURE:

5.1 Fill bean hopper with the specific blend and amount to be roasted.

5.1.1 Blends may vary in type and weight so ensure the correct amount and type is used.

5.2 Always set the temperature and water setting according to blend specifications.

5.2.1 Maintain prescribed operating conditions for specific stages.

5.3 When roasting, always follow the described cycle of detailed Work Instructions completely.

5.4 Never leave the roaster unattended while it is in operation or when the roaster temperature is above 100° degrees.

6.0 WORK INSTRUCTIONS:

START-UP

6.1 Close and secure lower suction Firebox door.

6.2 Open water line for water quenching.

6.3 Attach water and air hose nozzles, then pre water the chaff barrel.

6.4 Ensure a Chaff Drum (a 50gl. Barrel) is located underneath the Afterburner funnel.

6.5 Remove, clean and replace Afterburner ignition eye.

6.6 Log in the daily roast schedule onto the Roaster Production Log (COF 15.12-F013)

6.7 Switch roaster control power at panel to "On" then, wait for Lube Delay light to turn green.

6.8 Switch Destoner fan to "On" and blow the bottom of the cooling cart.

6.9 Check temperature and water quench settings using the form Roaster Temp/Quench Specs (COF 15.12-F012).

6.10 Ensure Afterburner pilot switch and auto water quench switch is in the "On" position.

6.11 When lube delay light completes then switch – Roaster/Drive/Burner fan to "Run".

6.12 When limits complete lights press start purge button.

6.13 Wait for purge to complete and light to come on.

OPERATING

6.14 Open the front Tryer Gate of the roaster drum so beans enter the roaster drum before charging.

6.15 Switch roaster charge to "open" to allow green beans to move from the hopper to the roasting drum.

6.15.1 When green beans have finished dropping into the roaster drum then "close" charge gate.

6.16 Close and secure with the locking pin the roaster front gate to the drum during the roasting process.

6.16.1 Ensure roaster charge gate is closed by checking that the Caution-Gate Ajar red light is off.

6.17 Press "Start Roast" button.

6.18 Signal the Green Bean crew using a flashlight for raw beans to be sent into the hopper for the next roast.

6.19 When Afterburner Pilot lights green (Roaster #1 @ 240° and Roaster #2 @ 330°), the Afterburner switch will light green.

6.19.1 If Afterburner pilot does not light green on Roaster #1 then press the reset button located on the back of the control panel and ensure Afterburner pilot lights amber.

6.19.1.1 Repeat the reset process on the Afterburner pilot until it is lit.

6.19.1.1.1 Report pilot issues to the supervisor if malfunction persists.

6.19.2 If Afterburner pilot does not light green on Roaster #2 then switch it "Off" and "On" to get it to reset itself.

6.20 Prior to the roast reaching its target temperature set-point (as set by the supervisor), switch Cooler and Destoner Fan & Cooler Drive to "Run."

6.21 Once the roast has reached its target temperature set-point and the alarm has activated press the Acknowledge button.

6.22 Open lower suction box door slowly being careful not to allow sparks or debris out and then air spray out all debris towards the back of the roaster drum chamber exhaust and then secure close the door.

6.23 Spray water into the after burner barrel thoroughly with twenty (20) or so short spurts and check that no embers are burning.

6.24 After water quenching light is complete open upper roaster door by pushing door inward to remove beans.

6.25 When Cooling Cart beans are cooled switch Cooler Discharge Gate to "Open" and discharge beans from Cooling Car to Destoner Hopper, once transfer is complete then switch to "Close."

6.26 Then switch the Destoner holding bin discharge gate to "Open", once complete then close.

6.27 Pull roaster door open and repeat, beginning at Operating Instruction 8.14.

6.28 Repeat this Roaster Operation Procedure until the days roasting is complete.

6.29 Release the last roast for the days production needs into the cooling cart.

SHUT DOWN

6.30 Reset water quench dial to 5 minutes then press, "Quench" after all beans have left the drum.

6.30.1 Immediately turn water source valve "Off."

6.30.2 Open water source again briefly "On" then "Off" and repeat 2 or 3 times per 5-minute cycle.

6.30.3 Water source valve should remain "Off" when completed.

6.31 Always leave upper and lower roasting chamber doors open.

6.32 Spray air to clean inside and around all areas of roaster.

6.33 Send final roast when completely cooled through the Destoner to the grinder holding bin.

6.34 Spray air to clean inside and around all areas of cooling cart.

6.35 Spray air to clean inside and around all areas of roaster.

6.36 Send final roast when completely cooled through the Destoner to the grinder holding bin.

6.37 Spray air to clean inside and around all areas of cooling cart.

6.38 Completely wet down the chaff thoroughly inside the chaff barrel. If the barrel is full then you must replace with an empty barrel for the Afterburner.

6.39 Repeat steps 8.30-8.30.3 three (3) times, or as needed, to cool the roaster to at least below 100°.

6.40 Sweep, mop and clean roasting area and cooling cart daily or as needed.

6.41 Open both cooling cart doors and blow out all debris underneath the cooling cart and entire area.

6.42 At 100° or below turn "Quench" timer back to 1 minute and 30 seconds and then switch Roaster/Drive/Burner/Fan switch to "Stop" and then Control Power switch "Off."

6.43 Before leaving the roaster for the day, switch the Control Power switch "On" to ensure the roaster temperature is below 125° and dropping to a safe level and then Control Power switch "Off."

7.0 ASSOCIATED DOCUMENTS:

7.1 Roast Profile Temps (COF 15.12-F012)

7.2 Roaster Production Log (COF 15.12-F013)

7.3 Daily Roast Sheet (COF 15.12-F011)

8.0 RECORD RETENTION TABLE:

Identification	Storage	Retention	Disposition	Protection
Daily Roast Sheet (COF 15.12-F011)	Office	1 Year	Shred	Locked
Roast Profile Temps (COF 15.12-F012)	Office	1 Year	Shred	Locked
Roaster Production Log (COF 15.12-F013)	Office	1 Year	Shred	Locked

9.0 REVISION HISTORY:

Date:	Rev.	Description of Revision:
	A	Initial Release

**** End of Procedure ****