



# Maintenance Management Order

**SUBJECT:** Preventive Maintenance Servicing Guidelines  
for Lockheed Martin (LM) Mail Staging Tower  
(MST) Shooting Star Bulk Staging Unit Phase  
3A and 3B

**DATE:** February 28, 2014

**TO:** All LM MST Sites

**NO:** MMO-043-14

**FILE CODE:** TM2

rorn:mm09077ah

This Maintenance Management Order (MMO) provides Operational and Preventive Maintenance Guidelines for the Lockheed Martin (LM) Mail Staging Tower (MST) Shooting Star Bulk Staging Unit Phase 3A and 3B. This bulletin applies to Acronym MST, Class Code CA.

Maintenance Managers are to use these preventive maintenance guidelines when preparing the route sheets for local maintenance personnel. It is the responsibility of each Maintenance Manager to ensure all WARNINGS, CAUTIONS, and NOTES are included with each applicable task as part of the preparation of any local route sheets.

The minimum maintenance skill level required to perform each task is included in the Minimum Skill Level column of each checklist. This does not preclude higher level employees from performing any of this work.

## **WARNING**

**Various products requiring Material Safety Data Sheets (MSDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current MSDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current MSDS be requested. Refer to MSDS for appropriate personal protective equipment.**

**WARNING**

The use of compressed or blown air is prohibited. An alternative cleaning method such as a HEPA filtered vacuum cleaner, a damp rag, lint-free cloth, or brush must be used in place of compressed or blown air.

**WARNING**

Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.

Direct any questions or comments concerning this bulletin to the MTSC HelpDesk, (800) 366-4123 or (405) 573-2123.



Robert E. Albert  
Manager  
Maintenance Technical Support Center  
HQ Maintenance Operations

- Attachments
1. Summary of Workload Estimate
  2. LM MST Shooting Star Bulk Staging Unit Phase 3A and 3B Master Checklist: 03-MST-CA-201-M: Daily
  3. LM MST Shooting Star Bulk Staging Unit Phase 3A and 3B Master Checklist: 03-MST-CA-202-M: Weekly
  4. LM MST Shooting Star Bulk Staging Unit Phase 3A and 3B Master Checklist: 03-MST-CA-203-M: Monthly
  5. LM MST Shooting Star Bulk Staging Unit Phase 3A and 3B Master Checklist: 03-MST-CA-204-M: Quarterly
  6. LM MST Shooting Star Bulk Staging Unit Phase 3A and 3B Master Checklist: 03-MST-CA-205-M: 3 Year

**ATTACHMENT 1**

**SUMMARY OF**

**WORKLOAD ESTIMATE**

**FOR**

**LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

**SUMMARY OF  
WORKLOAD ESTIMATE  
FOR  
LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

Operation	Routine Servicing (Hrs/Yr)	Repair* (Hrs/Yr)	Routine Servicing + Repair Time (Hrs/Yr)	Non-productive Time** (Hrs/Yr)	Total Servicing Per Machine (Hrs/Yr)
5	393.1	117.9	511.0	51.1	562.1
6	424.3	127.3	551.6	55.2	606.8
7	455.5	136.7	592.2	59.2	651.4

**NOTES**

\*Repair estimates based on 30% of servicing.

\*\*Based on 10% of total servicing and repair.

**ATTACHMENT 2**

**LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

**MASTER CHECKLIST**

03-MST-CA-201-M

Daily Time Total: Per Bulk Staging Unit - 36 Minutes

Refer to the MS-238 if additional maintenance information is required.

U.S. Postal Service  <b>Maintenance Checklist</b>	IDENTIFICATION													
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER			TYPE
	0	3	M	S	T				C	A	2	0	1	M
Equipment Nomenclature LM MST		Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence Daily			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

SAFETY STATEMENT	1.	<p><b>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Open equipment and inspect dust conditions. Check for suspicious dust or unusual debris. If any unusual substance is found notify supervisor prior to proceeding with any further action on the equipment.</b></p> <p><b>THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.</b></p> <p>When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner or a damp rag must be used in place of compressed or blown air. A lint-free cloth or brush may be used on optical equipment only when other cleaning methods cannot be used. Report safety deficiencies to your supervisor immediately upon detection.</p> <p><b>WARNING FOR EWP/PPE:</b> Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.</p>	2	All			
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div>  Be cautious when working around or on equipment when power has been applied.					
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div>  Severe injury or death can result if the Vertical Transfer Unit (VTU) falls. Do not walk or work under the VTU unless the long maintenance bar is deployed properly.					

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Equipment Nomenclature LM MST		Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence DAILY			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<b>WARNING</b>  <b>Eye protection (goggles or face shield) must be worn when releasing fluids from the Filter Regulator Separator (FRS) bowl.</b>					
FRS CHECK	2.	<b>Check the Filter Regulator Separator (FRS) Air Pressure Gauge and Bowl, and Main Control Cabinet Fans.</b>  While the BSU is running: 1. Check the FRS air pressure gauge for the correct air pressure of 90 +5 / -1 PSI. If necessary, adjust regulator knob located on top of the FRS to attain proper air pressure. 2. Drain any water in the FRS bowl by turning the release valve at the bottom of the bowl. 3. Check the operation of the two (2) intake fans located on the left and right (front) sides of the Main Control Cabinet and (1) exhaust fan located on top of Main Control Cabinet. 4. Verify the fan vents are free of foreign matter/debris.	3	9			
OVER ALL INSPECTION, TA AIR PRESSURE CHECK	3.	<b>Check Transfer Axis (TA) Air Pressure.</b>  Check the TA air pressure gauge, located on the side of the rear TA housing, for correct air pressure of 70 (+5 / -1) PSI.	3	9			
TA FUNCTION CHECK	4.	<b>Check TA for Proper Function Moving It by Hand.</b>  1. Terminate the STAR operation using the Cell Controller by selecting the CELL OFFLINE option. 2. At the cell controller, click on MAINT MODE button to display the Machine Control Page. 3. At the Cell Controller Machine Control Page, click on MAINTENANCE POSITION button. The VA carriage will move to a pre-set position on the VTU mast.	20	9			

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		<ol style="list-style-type: none"> <li>4. On the Cell Controller, access the Maintenance Mode screen, and select the Discrete I/O screen option.</li> <li>5. Select the Status screen option from the Discrete I/O screen.</li> <li>6. Verify the Enable PLC option is displayed at the Discrete I/O Status screen Safety Control section.</li> <li>7. Open the appropriate security-fenced gate, but do not enter.</li> <li>8. Select the Close option, and return to the Maintenance Mode screen to log off.</li> <li>9. Click Windows NT START button, and select SHUTDOWN. Select YES when prompted.</li> <li>10. Wait until the message appears "It is safe to turn off the computer", then power off the computer.</li> <li>11. Turn off Main Control Cabinet disconnect circuit breaker (CB-1).</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 5px; margin: 10px 0;"> <b>WARNING</b> </div> <p style="text-align: center;"><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>12. Perform a lockout/tagout of the Main Control Cabinet as prescribed by the current local lockout/restore procedures.</li> <li>13. Enter the security-fenced area, and engage the long maintenance bar beneath the VA Carriage assembly. Secure the long maintenance bar, so that downward movement of the VA Carriage is prevented.</li> <li>14. Visually check the VA, RA, and TA assemblies for obvious defects/damage.</li> <li>15. Perform the mail search.</li> <li>16. Ensure all materials and tools are removed.</li> <li>17. Remove the long maintenance bar, and secure it in the storage position.</li> </ol>					
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		18. Exit the safety fenced area and close gate(s) and secure interlock switches.					
		<div style="border: 1px solid black; padding: 5px; display: inline-block;"><b>WARNING</b></div>  <b>Be cautious when working around or on equipment when power has been applied.</b>					
RETURN TO SERVICE	5.	<b>Return to Service.</b> Restore equipment to service as prescribed by the current local lockout/restore procedures.	5	9			
CLEAN UP	6.	<b>Clean Up.</b> Ensure all tools, lubricants, rags, etc., are removed from the work area. Notify supervisor of any deficiencies.	3	ALL			

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**ATTACHMENT 3**

**LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

**MASTER CHECKLIST**

03-MST-CA-202-M

Weekly Time Total: Per Bulk Staging Unit - 237 Minutes

Refer to the MS-238 if additional maintenance information is required.

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	0	3	M	S	T					C	A	2	0	2
Equipment Nomenclature LM MST		Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence Weekly			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

SAFETY STATEMENT	1.	<p><b>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shutdown and lockout this machine. Open equipment and inspect dust conditions. Check for suspicious dust or unusual debris. If any unusual substance is found notify supervisor prior to proceeding with any further action on the equipment.</b></p> <p><b>THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.</b></p> <p>When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner or a damp rag must be used in place of compressed or blown air. A lint-free cloth or brush may be used on optical equipment only when other cleaning methods cannot be used. Report safety deficiencies to your supervisor immediately upon detection.</p> <p><b>WARNING FOR EWP/PPE:</b> Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.</p>	2	All			
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <p>Be cautious when working around or on equipment when power has been applied.</p>					
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <p>Severe injury or death can result if Vertical Transfer Unit (VTU) falls. Do not walk or work under VTU, unless VTU is supported by the long maintenance bar.</p>					

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CONDITION CHECK	2.	<p><b>Using Infrared and Ultrasound Equipment do a Broad Scan of BSU, Staying Outside of Fence. Verify that the Fans are Operational for the MCC, and Lights are on Cell Controller, IA, and DA Cabinets.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>The following step requires that the Crisplant Tilt Tray System has been running a minimum of 15 minutes prior to performing the IR and Ultrasound testing.</p> <p>Using an ultrasound gun, walk entire BSU perimeter while listening for any unusual noises. Note any discrepancies</p> <ol style="list-style-type: none"> <li>1. Using an ultrasound gun with the long range module attached, check for air leaks in the vicinity of the VTU. Note any discrepancies.</li> <li>2. Check Transfer Axis (TA) and Rotary Axis (RA) for air leaks using an ultrasound gun, with long range module attached, during operation of air cylinders and manifolds. Note any discrepancies.</li> <li>3. Using infrared camera, do a general scan of BSU looking for any abnormalities, if found, note the discrepancy. Be sure to scan bearings, motors, and electrical connections.</li> <li>4. Open all Main Control Cabinet doors; this should turn the fan motors off and the lights on in the cabinets.</li> <li>5. Press the Light, Fan On, and Off pushbuttons for the Main Control Cabinets and verify the 2 lights and 3 fans are operational.</li> <li>6. Carefully, reach behind Cell Controller chassis to feel outward airflow from the fan, and verify fan is operating properly and the vent is not obstructed.</li> <li>7. Close and secure all cabinet doors with latches/locking handles.</li> </ol>	15	9			
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		<b>NOTE</b>  A scissors lift, or other lifting device, may be necessary to access the IA and DA cabinet.  8. Verify that the IA Control Cabinet fan is operational.  9. Verify that the DA Control Cabinet fan is operational.					
CELL COMPUTER CLEANING	3.	<p><b>Check and Clean BSU Cell Controller Computer, Monitor, and Keyboard to Prevent the Buildup of Dust and Dirt.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>Prior to performing following, ensure BSU is empty and reported empty to TMS1 and TMS2 in accordance with local policy/procedure.</p> <div style="border: 1px solid black; padding: 2px; text-align: center; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>1. Perform a lockout/tagout of the Main Control Cabinet as prescribed by the current local lockout/restore procedures.</li> <li>2. Check the exterior of the cell controller computer, monitor, and keyboard for cracks, signs of corrosion, or moisture damage.</li> </ol> <div style="border: 1px solid black; padding: 2px; text-align: center; width: fit-content; margin: 10px auto;"><b>CAUTION</b></div> <p><b>Do not damage or loosen any of the cables or connectors at rear of the cell controller chassis.</b></p> <ol style="list-style-type: none"> <li>3. Open cell controller door carefully, pulling the cell controller chassis shelf outward until enough space is available to access rear panel of the chassis.</li> <li>4. Inspect all interconnect cables for signs of wear or damaged insulation. Ensure all</li> </ol>	5	9			

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		cable connections are firmly secured. 5. Clean the exterior of the cell controller computer, UPS, and monitor chassis with a clean damp cloth. 6. Clean the face of the monitor using standard CRT/monitor cleaner and wipe dry with a clean, dry cloth. 7. Carefully reposition cell controller chassis shelf to its original position then close and latch cabinet door. 8. Clean the keyboard using a vacuum cleaner with a brush attachment.					
IA CABINET FILTER	4.	<b>Clean Air Filter in Induction Axis (IA) Cabinet.</b>  <b>NOTE</b> A scissors lift, or other lifting device, may be necessary to access the IA cabinet. 1. Remove the IA cabinet fan filter grill cover located on the exterior of the IA Control Cabinet. 2. Remove the air filter, and clean using a vacuum cleaner. 3. Replace the filter and grill cover.	2	9			
DA CABINET FILTER	5.	<b>Clean Air Filter in Discharge Axis (DA) Cabinet.</b>  <b>NOTE</b> A scissors lift, or other lifting device, may be necessary to access the DA cabinet. 1. Remove the DA cabinet fan filter grill cover located on the exterior of the DA Control Cabinet. 2. Remove the air filter, and clean using a vacuum cleaner. 3. Replace the filter and grill cover.	2	9			

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MCC CABINET FILTER	6.	<p><b>Clean the Two (2) Intake Fan Filters, on the Main Control Cabinet Doors, and the (1) Inner Cabinet Filter, Between the Two Sides of the Main Control Cabinet.</b></p> <ol style="list-style-type: none"> <li>1. Open all Main Control Cabinet doors.</li> <li>2. Remove fan filter grill covers located on exterior of left and right sides of Main Control Cabinet by gently pulling out at the corners.</li> <li>3. Remove the exterior air filters and clean using a vacuum cleaner.</li> <li>4. Reinstall exterior filters and filter grill covers. Exercise care when installing covers so they are not installed upside-down.</li> <li>5. Remove the interior filter grill cover in the computer control cabinet by gently pulling out at the corners.</li> <li>6. Remove the interior air filter and clean using a vacuum cleaner.</li> <li>7. Reinstall the interior filter and filter grill cover. Exercise care when installing the covers so they are not installed upside-down.</li> <li>8. Close and secure all cabinet doors with latches/locking handles.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>9. Restore equipment to service. Restore equipment to service as prescribed by the current local lockout/restore procedures.</li> </ol>	7	9			
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		<div style="border: 1px solid black; display: inline-block; padding: 2px;">CAUTION</div> <b>Ensure the Transfer Axis (TA) is fully retracted. Failure to comply with this precaution may result in BSU equipment damage.</b>					
TA CHECK	7.	<b>Check TA Alignment and Manifolds.</b> 1. Terminate the STAR operation using the Cell Controller by selecting the CELL OFFLINE option. 2. The green stack lights and the CSSS OK-TO-ENTER light begin to flash. 3. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position. 4. The green stack lights go Off. 5. Only at Cell Controller, click on MAINT MODE button to display Machine Control page. 6. At Cell Controller Machine Control page, click on the MAINTENANCE POSITION button. The VA carriage will move to a pre-set position on the VTU mast. 7. Click on the Status tab to display the Discreet I/O Status screen. 8. In the TA section of the Status page, click the Front Up checkbox. This will raise the front portion of the TA carriage. 9. Click the Front Up checkbox again to lower the front portion of TA carriage. 10. In the TA section of the Status page, click the Rear Up checkbox. This will raise the rear portion of the TA carriage. 11. Click the Rear Up checkbox again to lower rear portion of the TA carriage. Notify supervisor of any deficiencies found. 12. At the Cell Controller Machine Control page, at the MAINTENANCE MODE screen, click on the Pendant Enable pushbutton.	47	9			

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		<div style="border: 1px solid black; display: inline-block; padding: 2px;">CAUTION</div> <p><b>Closely observe the forks at each shelf level so the VA motion can be stopped if interference exists.</b></p> <p>13. Using the manual pendant, position the VA at the bottom SA shelf level. Extend the TA forks into the bottom/top SA shelf to determine if any interference exists between the TA forks and the bottom SA shelf.</p> <p>14. Using the manual pendant, carefully raise the VA to the top/bottom shelf level to determine if any interference exists between the TA forks and the SA shelves at any level.</p> <p>15. Record the shelf level(s) where any interference exists between the TA forks and the SA shelves.</p> <p>16. Retract the TA forks.</p> <p>17. Move the SA 5 – 10 racks.</p> <p>18. Repeat steps 8 thru 12 several times, until a complete revolution of the storage assembly (SA) is made.</p> <p>19. At the MAINTENANCE MODE screen, click on the Pendant Disable push button.</p>					
STAR CLEANING AND LUBRICATION	8.	<p><b>Clean, Check, and Lubricate Vertical Axis (VA), Transfer Axis (TA), and Rotary Axis (RA) Rollers and Tracks, Check RA and TA Belts and TA Set Screws. Clean Lower SA Safety Beam Sensors. Check Cradle to Carriage Mounting Bolts and TA Track Wheels. Check the VA, RA, TA, and SA1/SA2 Servo Motor Exhaust Fans for Proper Operation and the Pop-Up Assembly/Bolts for Damage.</b></p> <p>1. At the discrete I/O screen, click on the MAINT MODE button to display the Machine Control Page, if it is not already displayed.</p> <p>2. At the Cell Controller; under MAINTENANCE MODE Machine Control tab, in the Manual Move To section, select the Maintenance position button.</p>	30	9			

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		<p>3. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option on the Miscellaneous section.</p> <p>4. At the Discrete I/O screen, select the status screen option.</p> <p>5. Ensure the Enable PLC option is displayed in the Discrete I/O status Screen Safety Controls section. Click on the Disable PLC option to change the Enable PLC if required.</p> <p>6. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the motor fans. Control voltage is present at the controllers and sensors.</p> <p>7. Open the safety gates.</p> <p>8. Select the close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>9. Access the Windows NST START button at the lower screen display. Select the SHUTDOWN option. Select YES when prompted. Wait for the software to complete the shutdown process.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p style="text-align: center;"><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>10. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>11. Open the MCC Main Disconnect Circuit Breaker (CB1).</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p style="text-align: center;"><b>When performing maintenance inside MCC, perform system lockout/tagout procedures as prescribed by current local lockout/ restore procedures.</b></p>				
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U.S. Postal Service <b>Maintenance Checklist</b>	IDENTIFICATION													
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER			TYPE
	0	3	M	S	T				C	A	2	0	2	M
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p><b>Attach a red multi-lock hasp lockout device on Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise attach a multi-lock lockout device to the Main Disconnect Switch, S1 using a lock and signed tag.</b></p> <p>12. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>13. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install a lockout device and lock.</p> <p>14. Enter safety-fenced area. Engage long maintenance bar beneath VA carriage assembly, and secure it so that downward movement of the VA carriage is prevented.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>There are 8 VA rollers inside the VA that cannot be checked visually. However, the 4 upper and 4 lower rollers that are visible are indicative of the condition of all the rollers.</p>					
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		<p>15. Using a wiping rag or paper wipe with solvent on it, remove lubricant to check:</p> <ul style="list-style-type: none"> <li>a. Lower VA carriage and RA rollers and tracks.</li> <li>b. All TA rollers and tracks.</li> <li>c. Lower VA carriage and RA rollers and tracks.</li> </ul> <p>16. Check the lower VA, RA, and TA roller assemblies and tracks for signs of wear such as pitting, shavings, sharp edges, or rust. Rust may be removed using Scotch Bright or brass/bronze wool.</p> <p>17. Check TA belts for signs of fraying or cracking.</p> <p>18. Check all TA pulley set screws (12 ea /6 pulleys).</p> <p>19. Check TA pop-up assembly for binding or damage.</p> <p>20. Check all rubber stops (9 total; 4 on rear of the TA, and 4 on the front, 1 on the Pancake cylinder).</p> <ul style="list-style-type: none"> <li>a. Ensure no rubber stops are missing.</li> <li>b. Ensure that none of the rubber stops have shifted from their proper positions.</li> <li>c. Inspect for excessive wear.</li> </ul> <p>21. Check RA belts for signs of fraying or cracking.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Chemical proof goggles (with side shields), and rubber gloves must be worn when using CRC 3-36.</b></p> <p>22. Using a dry, clean cloth; apply a thin film of oil (CRC Industries 05003 or equivalent) to lower VA, RA, and all TA carriage assembly tracks.</p>				
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NOTE							
		<p>The remaining steps require the use of the VA Brake Release and Fan Power Assembly, P/N 243A046, part of the BSU special tools kit. An extension cord may also be required.</p> <p>23. Remove fan power cable from connector labeled 120V Fans located on junction box mounted on the rear of Main Control Cabinet.</p> <p>24. Plug the power cable into the connector labeled Fan Power on the VA brake release and fan power assembly tool.</p> <p>25. Plug the tool into an electrical outlet/power receptacle or convenience outlet.</p> <p>26. Turn the power switch on the rear of the tool to the ON position. The green LED next to the power switch should light.</p> <p>27. Turn the switch on the tool labeled Fan Power to the ON position. The green LED next to the Fan Power switch should light.</p> <p>28. Locate the VA; RA; TA, and SA1/SA2 fans. Verify the fans are operating properly, and that the vents are free from debris.</p> <p>29. Turn OFF the Fan Power on the tool.</p> <p>30. Turn OFF the power on the rear of the tool.</p> <p>31. Unplug the tool from the power receptacle.</p> <p>32. Unplug the fan power cable from the tool.</p> <p>33. Plug the fan power cable into the connector labeled 120V Fans on the Main Control Cabinet junction box.</p> <p>34. Move the long maintenance bar and secure it in the storage position.</p> <p>35. Remove all tools and equipment from inside the security-fenced area.</p> <p>36. Exit the safety-fenced area. Close and secure interlock switches and gates.</p>					

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		<p><b>WARNING</b></p> <p>Before performing the following steps you must don the appropriate PPE.</p> <p><b>WARNING</b></p> <p>Be cautious when working around or on equipment when power has been applied.</p> <p>37. Remove lockout device and lock. Place Main Disconnect Switch, S1 in the ON position.</p> <p>38. Restore air pressure to Filter Regulator Supply.</p> <p>39. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>40. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phase to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>41. Turn on the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>42. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>43. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>44. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p>					
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NOTE							
		<p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>45. Enter the USER NAME and PASSWORD.</p> <p>46. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with the TMS system.</p> <p>47. Review the CELL STATUS screen for errors. Review the Fault Description, and note any discrepancies.</p> <p>48. Physically close the safety gates.</p> <p>49. Select Maint Mode option from main screen.</p> <p>50. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>51. At the Discrete I/O screen, select the Status screen option.</p> <p>52. Click the Disable PLC button in the Safety Controls section.</p> <p>53. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>54. Select the Close button to return to the MAINTENANCE MODE screen.</p>					
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div>					
		<p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>55. Press E-STOP Reset and Power ON buttons.</p> <p>56. At the MAINTENANCE MODE screen, select Machine Control tab in the Homing section.</p>					



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		<p>Click on Home ALL.</p> <p>57. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>58. At the Discrete I/O screen, select the Status screen option.</p> <p>59. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC, if required.</p> <p>60. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>61. Open the safety gates.</p> <p>62. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>63. Access the Windows NT START button at the lower screen display. Select SHUTDOWN option. Select YES when prompted. Wait for the software to complete the shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>64. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>65. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by</b></p>					
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		<p><b>current local lockout/ restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise attach a multi-lock lockout device to Main Disconnect Switch, S1, using a lock and signed tag.</b></p> <p>66. Close the MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>67. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <p>68. Enter the safety-fenced area.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Chemical proof goggles (with side shields), and rubber gloves must be worn when using CRC 3-36.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b></p> <p>69. Using a wiping rag or paper wipe and solvent, remove lubricant from the:</p> <ol style="list-style-type: none"> <li>a. Upper VA carriage.</li> <li>b. RA assembly rollers and tracks.</li> </ol>					
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		<p>c. All accessible tracks and contact surfaces.</p> <p>70. Check the RA Dual-V groove rollers to ensure they properly seat on the circular track attached to the VTU. If these dual groove rollers are not seated properly on the circular tracks, adjustment will be required.</p> <p>71. Using a clean cloth, apply a thin layer of oil (CRC Industries 05003 or equivalent) to the upper VA carriage and RA roller and track assemblies.</p> <p>72. Using a feather duster or a brush, clean the 3 lower SA safety beam sensors (left, middle, and right).</p> <p>73. Using a 3/16" Allen wrench, check the cradle-to-carriage connection bolts (1 per side) to verify they are snug.</p> <p>74. Ensure TA and RA assemblies are in home positions.</p>					
IA CLEANING AND LUBRICATION	9.	<p><b>Check and Lubricate the Induction Axis (IA) Rollers and Tracks. Check IA 2 Floor Feed, 1 Drive, and 2 Timing Belts. Clean and Check IA Photocells.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p>Damage may occur to safety mats if they are not removed prior to moving lifting device across them, creating degraded E-Stop circuit operation. Remove any sections of safety mat in path of lift prior to moving lift device inside the safety fence area.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</p>	16	9			

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		<p style="text-align: center;"><b>NOTE</b></p> <p>A scissors lift, or other lifting device, is necessary to access the IA rollers and tracks.</p> <ol style="list-style-type: none"> <li>Using a wiping rag or paper wipe and solvent, clean IA roller and track assemblies.</li> <li>Check IA roller and track assemblies for signs of wear and/or damage such as pitting, shavings, or sharp edges.</li> </ol> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Chemical proof goggles (with side shields), and rubber gloves must be worn when using CRC 3-36.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b></p> <ol style="list-style-type: none"> <li>Using a clean, dry cloth, apply a thin film of CRC 3-36 lubricant (or equivalent) to the IA tracks.</li> <li>Visually check IA floor, drive, and timing belts for signs of wear such as fraying, cracking, or excessive wear.</li> <li>Clean IA photocells and associated reflectors with a clean cloth or paper wipe.</li> <li>Ensure all tools, lubricants, rags, and miscellaneous materials are removed from the area.</li> </ol>				
DA CLEANING AND LUBRICATION	10.	<b>Check and Lubricate Discharge Axis (DA) Rollers and Tracks. Check DA 2 Floor Feed, 1 Drive, and 2 Timing Belts. Clean and Check DA Photocells.</b>	15	9		

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		<p style="text-align: center;"><b>WARNING</b></p> <p><b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b></p> <ol style="list-style-type: none"> <li>Using a rag or paper with solvent, wipe clean the DA rollers and track assemblies.</li> <li>Check DA rollers and track assemblies for signs of wear or damage such as pitting, shavings, or sharp edges.</li> </ol> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Chemical proof goggles (with side shields), and rubber gloves must be worn when using CRC 3-36.</b></p> <ol style="list-style-type: none"> <li>Using a clean, dry cloth, apply a thin film of CRC 3-36 lubricant (or equivalent) to the DA tracks.</li> <li>Visually check DA floor, drive, and timing belts for signs such as fraying, cracking, or excessive wear.</li> <li>Clean DA photocells and associated reflectors with a clean cloth or paper wipe.</li> <li>Ensure all tools, lubricants, rags, and miscellaneous materials are removed from the area.</li> </ol>					
ESD SHOES CHECK SA1	11.	<p><b>Verify Proper Operation of ESD Shoes. Check Condition of Lower and Upper SA Drives Belts and Spreader Shoe Gaps (SA1).</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Ensure VA Carriage is in lowest position.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>A scissors lift, or other lifting device, is necessary to access Shelf Axis (SA) upper drive belts and to check operation of ESD shoes.</p>	32	9			

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		<p><b>NOTE</b></p> <p>Completion of this task requires some racks to be removed. All sites should have removed these racks previously and shelves disabled in PMAC for maintenance purposes on a daily basis.</p> <p>1. Exit safety fence area and close safety gate.</p> <div style="border: 1px solid black; padding: 2px; text-align: center; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <div style="border: 1px solid black; padding: 2px; text-align: center; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>2. Remove the lock and lockout device on the handle of Main Disconnect Switch S1.</p> <p>3. Place Main Disconnect Switch S1 in the ON (up) position.</p> <p>4. Restore air pressure to Filter Regulator Supply</p> <p>5. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>6. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>7. Turn On the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>8. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>9. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p>					
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		<p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>10. Double click on the SHORTCUT TO INTERFACE.EXE icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>11. Enter the USER NAME and PASSWORD.</p> <p>12. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with the TMS system.</p> <p>13. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>14. Physically close the safety gates.</p> <p>15. Select Maint Mode option from main screen.</p> <p>16. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>17. At the Discrete I/O screen, select the Status screen option.</p> <p>18. Click the Disable PLC button in the Safety Controls section.</p> <p>19. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p>					
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		<p>20. Select the Close button to return to the MAINTENANCE MODE screen.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>21. Press the E-Stop reset, and then the Power On button.</p> <p>22. Home ALL to get one of the ESD shoes close to the Home position.</p> <p>23. At the MAINTENANCE MODE screen, click on the Enable Pendant button.</p> <p>24. Position scissors lift outside the safety fence so ESD shoes may be observed. While using Pendant, rotate SA so the shoes transition into and out of end of one conductor strip rail, then into and out of other conductor strip rail (on other side of BSU). This step should be repeated for all 3 ESD shoes.</p> <p>25. As the SA rotates, visually check the top SA1 drive belt for signs of wear such as fraying or cracking.</p> <p>26. Position the SA so that the rack where the shelves have been removed is located next to SA1 drive belt.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Ensure the VA Carriage assembly is in its lowest position.</b></p> <p>27. Select the CELL OFFLINE option on any main screen header panel.</p> <p>28. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</p> <p>29. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</p>				
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U.S. Postal Service <b>Maintenance Checklist</b>	IDENTIFICATION													
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER			TYPE
	0	3	M	S	T				C	A	2	0	2	M
Equipment Nomenclature LM MST	Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence Weekly				

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p>30. The green stack lights go Off.</p> <p>31. Select Maint Mode option from main screen.</p> <p>32. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>33. At the Discrete I/O screen, select the Status screen option.</p> <p>34. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>35. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>36. Open the safety gates.</p> <p>37. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>38. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option and select YES when prompted. Wait for the software to complete the shutdown process.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>WARNING</b></p> </div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>39. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>40. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p>				
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					Run Hours	Pieces Fed (000)	Freq.

		<p><b>WARNING</b></p> <p>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</p> <p>41. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p>					
		<p><b>WARNING</b></p> <p>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the disconnect switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</p> <p>42. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p>					
		<p><b>WARNING</b></p> <p>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</p> <p>43. Locate the Main Air Valve, rotate the air supply shut-off valve to the EXH position.</p> <p>44. Install lockout device and lock to the Filter Regulator Supply.</p>					

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		<p>45. Enter the gated area.</p> <p>46. Remove covers over the SA1 lower belt drive.</p> <p>47. Visually check the SA1 lower drive belt for signs of wear such as fraying or cracking.</p> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Insert the feeler gauge as close to the center of the rack as possible.</p> <p>48. Check the lower SA1 spreader shoe gap with a 5/32" feeler gauge.</p> <p>49. Reinstall all lower SA1 drive belt covers previously removed.</p> <p>50. Repeat steps 47 and 48 for the upper SA1 belt and spreader shoes gap.</p> <p>51. Clean up and remove all tool and equipment from inside the safety fence area.</p>					
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ESD SHOES CHECK SA2	12.	<p><b>Verify Proper Operation of the ESD Shoes and Check Condition of Lower and Upper SA2 Drive Belts.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">The following task may require two people to complete depending on length of the BSU.</p> <p>1. Exit safety gate area and close safety gate.</p> <p>2. Remove the lock and lockout device on the handle of Main Disconnect Switch, S1.</p>	38	9			
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		<ol style="list-style-type: none"> <li>3. Place Main Disconnect Switch, S1 in the ON (up) position.</li> <li>4. Remove the lockout device on the Main Air Valve and rotate the air supply shut-off valve to the SUP position.</li> <li>5. Reset the Main Facilities STAR circuit breaker, as required.</li> <li>6. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</li> <li>7. Turn On the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</li> <li>8. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</li> <li>9. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <ol style="list-style-type: none"> <li>10. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <ol style="list-style-type: none"> <li>11. Enter the USER NAME and PASSWORD.</li> <li>12. The CELL STATUS screen appears after successful LOGIN. Wait for a green</li> </ol>					
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		<p>CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with TMS system.</p> <p>13. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>14. Physically close the safety gates.</p> <p>15. Select Maint Mode option from main screen.</p> <p>16. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>17. At the Discrete I/O screen, select the Status screen option.</p> <p>18. Click the Disable PLC button in the Safety Controls section.</p> <p>19. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>20. Select the Close button to return to the MAINTENANCE MODE screen.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>21. At the Main Control Cabinet, press E-Stop reset button, then the Power ON button.</p> <p>22. Home ALL to get one of the ESD shoes close to the Home position.</p> <p>23. At the MAINTENANCE MODE screen, under the Machine control tab, click on the Pendant Enable button.</p> <p>24. Position the scissors lift outside of the safety fence near SA2 end of the BSU so that the ESD shoes may be observed. While using the Pendant, rotate SA so shoes transition into and out of end of one conductor strip rail, then into and out the other conductor</p>				
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p>strip rail (on other side of BSU). Repeat this step for all 3 ESD shoes.</p> <p>25. As the SA rotates, visually check the top SA2 drive belt for signs of wear such as fraying or cracking.</p> <p>26. Position the SA so the rack, where the shelves have been removed, is located next to SA2 drive belt.</p> <p>27. Select the CELL OFFLINE option on any main screen header panel.</p> <p>28. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</p> <p>29. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</p> <p>30. The green stack lights go Off.</p> <p>31. Select Maint Mode option from main screen.</p> <p>32. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>33. At the Discrete I/O screen, select the Status screen option.</p> <p>34. Ensure Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on Disable PLC option to change to Enable PLC if required.</p> <p>35. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>36. Open the safety gates.</p> <p>37. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>38. Access the Windows NT START button at the lower screen display. Select</p>				
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					Run Hours	Pieces Fed (000)	Freq.

		<p>SHUTDOWN option, and select YES when prompted. Wait for software to complete shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>39. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>40. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <p>41. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>42. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p>				
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <b>Install a lockout/tagout device and lock on the pneumatic Main Air Valve to prevent equipment damage or injury to personnel.</b>  43. Rotate the air supply shut-off valve to the EXH position. 44. Install lockout device and lock as prescribed by the current local lockout/restore procedure. 45. Enter gated area near SA2 drive area. 46. Remove covers from the lower SA2 drive belt. 47. Check the lower SA2 drive belt for signs of wear such as fraying or cracking. 48. Check the lower SA2 spreader shoe gap with a 5/32" feeler gauge. 49. Reinstall SA2 drive belt covers previously removed. 50. Repeat steps 47 and 48 for the upper SA2 belt and spreader shoes gap. 51. Clean up all tools and equipment from the SA2 motor end of security fence area and secure gates.					
SA BEARING CLEANING AND LUBRICATION	13.	<b>Clean and Lubricate Turn-Around Bearing Plate at Both Ends of SA Structure.</b>  <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 10px auto;"><b>WARNING</b></div>  <b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b>  1. Enter gated area at turn end closest to SA2. 2. Using a wiping rag or paper wipe and solvent, clean top surface of turn-around bearing plates for load wheels.	14	9			



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		<b>WARNING</b>					
		<p><b>Chemical proof goggles (with side shields), and rubber gloves must be worn when using CRC 3-36.</b></p> <p>3. Using a clean, dry cloth apply a thin film of way oil (CRC Industries 03005 or equivalent) to top surface of the turn-around-bearing plates for the load wheel.</p> <p>4. Repeat steps 1 thru 3 above for the turn-around-bearing plate at the other end (SA1).</p>					
FRS BOWL CLEANING	14.	<p><b>Clean Filter Regulator Separator (FRS) Air Filter and Bowl.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Eye protection (goggles or face shield) must be worn when cleaning FRES bowl.</b></p> <p>1. Remove the FRS bowl and air filter.</p> <p>2. Clean inside the FRS bowl with a clean cloth or paper wipe.</p> <p>3. Replace the air filter and bowl.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>4. Remove lock and lockout device as prescribed by the current local lockout/restore procedures.</p> <p>5. Rotate the air supply shut-off valve to the SUP position.</p> <p>6. Verify the air pressure gauge on the FRS is indicating 90 +5/-1 PSI. Adjust if required.</p>	9	9			

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		<p>7. Ensure all tools, materials, and debris has been removed from the work area.</p> <p>8. Restore air pressure to the Filter Regulator Supply.</p> <p>9. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>10. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>11. Turn On the UPS, and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>12. Turn on the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>13. When prompted press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>14. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>15. Enter the USER NAME and PASSWORD.</p> <p>16. The CELL STATUS screen appears after</p>				
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		<p>successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status indicating the cell controller established communication with the TMS system.</p> <p>17. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>18. Physically close the safety gates.</p> <p>19. Select Maint Mode option from main screen.</p> <p>20. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>21. At the Discrete I/O screen, select the Status screen option.</p> <p>22. Click the Disable PLC button in the Safety Controls section.</p> <p>23. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>24. Select the Close button to return to the MAINTENANCE MODE screen.</p> <p>25. Press the yellow E-Stop RESET pushbutton to reset the E-Stop circuitry.</p> <div style="text-align: center; margin: 10px auto;"><b>NOTE</b></div> <p>The system pneumatics will pressurize, signifying the K1 E-Stop relay and the K19 Safety Mat relay have been reset.</p> <p>26. Press the green POWER ON pushbutton to apply power to the KP mainline contactor.</p> <p>27. Click on the CELL ONLINE button to place the STAR in the ONLINE mode of operation.</p>					
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		<p>The following events are completed:</p> <ul style="list-style-type: none"> <li>a) An audible signal will sound for five second followed by a quiet period of five seconds.</li> <li>b) All start-up lights flash at a 2 Hz rate for 10 seconds. The start-up lights are the two amber stack lights, the amber CSSS lamp, and the bottom orange MPAS lamps.</li> <li>c) At the top of the CELL STATUS screen messages are displayed PENDING ONLINE initialization. As the axis are homed and initialized, the amplifiers are checked, and RECONCILIATION of the STAR is accomplished.</li> <li>d) At the completion of reconciliation, the white stack lights illuminate steadily.</li> <li>e) The STATUS field at the top of the screen displays ONLINE.</li> </ul> <p style="text-align: center;"><b>NOTE</b></p> <p>The white stack light flashes if either the STAR encounters a Servo Drive Controller to Servo Drive Motor fault, or if the maintenance bar is deployed.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The Servo Drive Controller S1 reset button must be depressed to attempt to reset the fault code. Perform the power on sequence again by pressing the E-Stop Reset button and then the green POWER ON button.</p> <p>28. When ONLINE is completed, the flashing amber lights turn Off, and the green and white stack lights illuminate steadily, and ONLINE operation begin.</p>					
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CLEAN UP	15.	<p><b>Clean Up.</b></p> <p>Ensure all tools, lubricants, rags, and miscellaneous materials are removed from the work area. Notify supervisor of any deficiencies.</p>	3	All			
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**ATTACHMENT 4**

**LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

**MASTER CHECKLIST**

03-MST-CA-203-M

Monthly Time Total:

Per Bulk Staging Unit - 113 Minutes

Refer to the MS-238 if additional maintenance information is required.

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SAFETY STATEMENT	1.	<p><b>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Open equipment and inspect dust conditions. Check for suspicious dust or unusual debris. If any unusual substance is found notify supervisor prior to proceeding with any further action on the equipment.</b></p> <p><b>THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.</b></p> <p>When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner, a damp cloth, lint-free cloth, or brush, must be used in place of compressed or blown air. Report safety deficiencies to your supervisor immediately upon detection.</p> <p><b>WARNING FOR EWP/PPE:</b> Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.</p>	2	All			
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <p>Be cautious when working around or on equipment when power has been applied.</p>					
		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <p>Severe injury or death can result if the VTU falls. Do not walk or work under the VTU unless supported by the long maintenance bar.</p>					

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		<p><b>NOTE</b></p> <p>The completion of this task will require some of the racks to be removed. All sites should have had these racks removed previously, and the shelves disabled in PMAC for maintenance purposes on a daily basis.</p> <p><b>NOTE</b></p> <p>Prior to performing following route, the BSU should be emptied and reported empty to TMS1 and TMS2 in accordance with local policy/procedure. This procedure should be performed by the shift prior to this route being assigned.</p>					
ESTOP CHECK	2.	<p><b>Check the Emergency Stop Switch, Emergency Stop Switch Light; Stack Lights, and Audible Alarm.</b></p> <ol style="list-style-type: none"> <li>1. On the cell controller screen, click on CELL OFFLINE.</li> <li>2. Verify that the green stack lights blink as the BSU completes all current transactions, and then go out while the audible alarm sounds. Also verify the white stack lights remain illuminated.</li> <li>3. Press the red EMERGENCY STOP button located on the door of the Main Control Cabinet.</li> <li>4. Verify the red EMERGENCY STOP switch and the red stack lights are illuminated. The red ERROR indicator lights on the mail personnel alert stations (MPAS) and on the cycle stop switch stations (CSSS) should also be illuminated.</li> <li>5. Deactivate the red EMERGENCY STOP switch by pulling the button back to the outward position.</li> <li>6. Press the yellow E-STOP RESET switch on the door of the Main Control Cabinet.</li> <li>7. Verify that the red stack lights and the red ERROR lights on the MPAS/CSSS go out. Wait at least 10 seconds before proceeding to</li> </ol>	2	9			

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		<p>the next step.</p> <p>8. Press the green POWER ON switch on the door of the Main Control Cabinet</p> <p>9. Verify the stack lights cycle quickly for a short duration (the audible alarm will sound in sequence with the cycling of lights), and that the white stack lights then illuminate steadily.</p>					
LANYARD CHECK	3.	<p><b>Check the Emergency Stop Lanyards Circuit.</b></p> <p>* Minutes per gate</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The equipment functions should stop, but have power applied.</p> <p>1. Pull any one of the E-Stop lanyards attached to the safety fence surrounding the BSU.</p> <p>2. Verify the red stack lights illuminate. All red MPAS/CSSS ERROR lights should also illuminate.</p> <p>3. Reset the blue E-Stop lanyard switch, located on the appropriate lanyard control box, to the RUN position.</p> <p>4. Press the yellow E-STOP RESET switch on the Main Control Cabinet door. The E-Stop circuitry will reset and the red stack lights and red MPAS/CSSS ERROR lights will go out. If not, notify your supervisor. Wait 10 seconds before pressing the red POWER ON button.</p> <p>5. Repeat steps 1 thru 4 above for each remaining E-Stop lanyard segment.</p> <p>6. Press the green POWER ON switch on the Main Control Cabinet. Verify that the stack lights cycle quickly, and then the white stack lights illuminate steadily.</p>	* 2	9			
SAFETY FENCE CHECK	4.	<p><b>Check Safety Fence Gate/Door Safety Interlock Switches.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>This procedure does not involve entering into the safety fence area.</p>	6	9			



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		<ol style="list-style-type: none"> <li>Open one sliding safety fence panel at a time to activate the E-STOP circuitry.</li> <li>Verify the red stack lights and MPAS/CSSS ERROR lights all illuminate.</li> <li>Press the yellow E-STOP RESET button on the Main Control Cabinet. The E-STOP circuitry should NOT reset due to the open sliding fence panel.</li> <li>Verify the E-STOP circuitry does not reset and the red stack lights and red MPAS/CSSS ERROR lights remain illuminated.</li> <li>Close and secure sliding safety fence panel.</li> <li>Press the yellow E-STOP RESET button on the Main Control Cabinet. The E-Stop circuitry should now reset as expected. Wait 10 seconds before proceeding to next step.</li> <li>Press the green POWER ON button on the Main Control Cabinet.</li> <li>Verify that the stack lights cycle quickly, and then the white stack lights illuminate steadily.</li> <li>Steps 1 thru 8 should be repeated for all gates.</li> </ol>					
VA BRAKE CHECK	5.	<p><b>Check VA Motor Brake.</b></p> <ol style="list-style-type: none"> <li>On the BSU cell controller, click on the MAINT MODE push button.</li> <li>The Maintenance Mode Machine Control display screen should appear. If necessary, click on the Machine Control tab to display the Maintenance Mode Machine Control display screen.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>CAUTION</b> </div> <p><b>Ensure the TA is fully retracted before moving the VA.</b></p> <ol style="list-style-type: none"> <li>At the MAINTENANCE MODE screen, click on the Home VA push button.</li> </ol>	15	9			

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		<ol style="list-style-type: none"> <li>4. Press EMERGENCY STOP switch.</li> <li>5. As an added safety precaution, attach a temporary "DO NOT OPERATE" sign to EMERGENCY STOP switch, during the VA brake check.</li> <li>6. In the Miscellaneous section, click on Discrete I/O push button to display the Discrete I/O screen.</li> <li>7. Click on the Status tab to display the Discrete I/O Status screen.</li> <li>8. On the Discrete I/O Status screen, in the Safety Controls section, click on Disable PLC push button.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Do not open any safety fence doors or gates.</b></p> <ol style="list-style-type: none"> <li>9. Click in the UNLOCK GATE check box. This will remove motor power and engage the motor brake.</li> <li>10. Click the Windows Start button at the bottom of the screen.</li> <li>11. Select Programs.</li> <li>12. Select Pwin32.</li> <li>13. Select Pwin32 on the next popup menu.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">If a black terminal screen is not displayed, click on the "Open Terminal" drop down.</p> <ol style="list-style-type: none"> <li>14. Type M82 in the black terminal screen and press Enter.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">If a Watch window is displayed and M82 is not listed in the Watch window, press Insert button, type in M82 and click on ADD button. Click on DONE button.</p>					
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		<p>15. Record the M82 value listed in the Watch window.</p> <p>16. Leave Pewin32 with the Watch window displayed on the monitor screen.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>17. Open the appropriate safety fence gate and enter the safety fence area.</p> <p>18. Place one mail tray weighing 50 pounds in each nest on the VA.</p> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Do not close gate.</p> <p>19. Exit the safety-fenced area.</p> <p>20. Record the M82 value in the Watch Window.</p> <p style="margin-left: 20px;">a. If this M82 value is less than the M82 value recorded prior to placing one 50-pound tray in each nest, the VA motor brake is slipping, and the VA motor must be replaced.</p> <p style="margin-left: 20px;">b. If this M82 value is the same as the M82 value recorded prior to placing one 50-pound tray in each nest, the brake is functioning correctly.</p> <p style="margin-left: 20px;">c. Exit PMAC Executive.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Do not go inside the BSU safety fence.</b></p> <p>21. Press Close push button in the lower right corner of the screen.</p> <p>22. At the MAINTENANCE MODE-Machine Control screen, press the LOG OFF push button at the bottom of the screen.</p>					
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		<p>23. Click right mouse button (right-click) on the Windows taskbar to activate the Windows NT Task Manager.</p> <p>24. Left-click on Task Manager.</p> <p>25. Click on the Processes tab to view the list of processes.</p> <p>26. Terminate the Interface.exe, Rengine.exe, and Motion.exe processes (if listed). By performing the following for each process:</p> <ol style="list-style-type: none"> <li>a. Highlight the individual process (Interface.exe, Rengine.exe, or Motion.exe processes).</li> <li>b. Click the End Process push button.</li> <li>c. Click YES to confirm.</li> <li>d. Repeat sub-steps a-c above until the Interface.exe, Rengine.exe, and Motion.exe processes are terminated (if listed).</li> </ol> <p>27. Press the Windows Start button at the bottom of the screen and select Shut Down.</p> <p>28. Select "Shutdown the Computer?" and press Yes button.</p> <p>29. When the message "It is safe to turn Off computer" is displayed, turn the power switch on the cell controller computer and monitor to the OFF position.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>30. Turn the power switch on the cell controller's uninterruptible power supply (UPS), located in the Main Control Cabinet, to the OFF position.</p> <p>31. Place the handle of Main Disconnect Switch, S1, located on the door of the Main Control Cabinet, in the OFF (down) position.</p> <p>32. Attach a lockout device and padlock to the handle of Main Disconnect Switch, S1.</p>				
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		<p><b>WARNING</b></p> <p><b>Ensure the VA carriage assembly is in its lowest position.</b></p> <p>33. Enter the safety-fenced area.</p> <p>34. Remove the weighted tray from each nest on the VA carriage assembly and place them outside the BSU safety fence.</p> <p>35. Ensure RA is rotated such that nest number 2 is adjacent to the SA.</p> <p>36. Visually check RA gearbox for any oil leaks; if any leaks are present, replace RA gearbox.</p> <p>37. Exit the safety-fenced area and close the safety gate.</p> <p><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>38. Remove padlock and lockout device from the handle of Main Disconnect Switch, S1.</p> <p>39. Place the Main Disconnect Switch, S1, in the ON (up) position.</p> <p>40. Remove the temporary sign "DO NOT OPERATE" from EMERGENCY STOP switch.</p> <p>41. Deactivate the EMERGENCY STOP switch by pulling button to its outward position.</p> <p>42. Press the yellow E-STOP RESET push button on the Main Control Panel.</p> <p>43. Turn ON the cell controller UPS.</p> <p>44. Turn ON cell controller computer and monitor.</p>					
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		45. Allow the cell controller to boot up completely. 46. Press the Ctrl-Alt-Delete keys to log on. 47. Log on or press OK button at log on screen.  <p style="text-align: center;"><b>NOTE</b></p> If the blue SSTAR icon is not available, the program may be accessed from the Windows Start button, using the RUN option, select Browse, select SS_Software.  48. Initiate the BSU software program by double-clicking the blue BSU icon labeled INTERFACE.EXE. 49. Log in to the cell controller when the login screen appears. 50. Press the green POWER ON button on the Main Control Cabinet. 51. Click on MAINT MODE push button. 52. At the MAINTENANCE MODE screen, click on: <ul style="list-style-type: none"> <li>a. Home VA button.</li> <li>b. After the VA has finished homing, click on Home RA button.</li> </ul>					
VA DRIVE BELT	6.	<p><b>Check the Tension of the Vertical Axis (VA) Drive Belt.</b></p> 1. On BSU Cell Controller, click on the MAINT MODE control button to display the Maintenance Mode display screen. The Maintenance Mode Machine Control display screen should appear. If necessary, click on Machine Control tab to display Maintenance Mode Machine Control display screen.  <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Severe injury or death can result if the VTU falls. Do not walk or work under the VTU, unless supporting it with the long maintenance bar.</b></p>	5	9			

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		<p><b>CAUTION</b></p> <p><b>Ensure the TA is fully retracted before moving the VA. Failure to comply may result in BSU equipment damage.</b></p> <ol style="list-style-type: none"> <li>2. Click on the Maintenance Position button. This places the VA Carriage at the pre-set maintenance position on the VTU mast.</li> <li>3. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</li> <li>4. At the Discrete I/O screen, select the Status screen option.</li> <li>5. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC, if required.</li> <li>6. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</li> <li>7. Open the safety gates.</li> <li>8. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</li> <li>9. Access Windows NT START button at lower screen display. Select SHUTDOWN option, and select YES when prompted. Wait for the software to complete the shutdown process.</li> </ol> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>10. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</li> </ol>				
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		<p>11. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;"><b>WARNING</b></div> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch, S1 using a lock and signed tag.</b></p> <p>12. Close the MCC doors. Perform lockout/tagout procedures as prescribed by current local lockout/restore procedures.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;"><b>WARNING</b></div> <p><b>Install a lockout/tagout device and lock on the pneumatic Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;"><b>WARNING</b></div> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>13. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p>				
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		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div>  <b>Severe injury or death can result if the VTU falls. Do not walk or work under the VTU, unless supporting it with the long maintenance bar.</b>  14. Enter the safety fenced area. Engage the long maintenance bar beneath VA Carriage and secure.  15. Set the force gauge, with a mid-range of 30 to 40 pounds, to the compression setting.  16. Place the sensing element of the force gauge against the center of the VA belt lower segment, at the point 37 1/2" above the top of the mast base plate, or 37 1/2" below the bottom of the VA carriage.  17. Press inward to deflect the belt until it just touches the mast.  18. Verify that the displayed value on the force gauge is 35 lbs +0 /-1/2 pound.					
TA DRIVE BELT	7.	<b>Check Tension on the TA Drive Belts.</b>  1. Set a force gauge, with a mid-range of 8 to 12 pounds, to its compression setting.  2. Determine the midpoint of the bottom segment of the left TA Drive belt.  3. Place a measuring tape or ruler at the midpoint of the left TA Drive Belt such that an inch marker on the tape aligns with the lower segment of the belt.  4. Press the sensing element of the force gauge upward against the lower segment of the left TA Drive Belt at the midpoint. When the distance between the upper and lower loops of the belt is exactly 1" (from top of tooth to top of tooth), record the displayed reading from the force gauge. The reading should be 6 +0 / -1/2 pounds.  5. Repeat steps 1 through 4 above for the right TA Drive Belt.	4	9			

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TA TIMING BELT	8.	<p><b>Check Tension on TA Timing Belt.</b></p> <ol style="list-style-type: none"> <li>Set the special tool (P/N 241A801) at the midpoint of the timing belt between the pulleys.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>Placing the tool so that the edge touches the bottom of the frame correctly positions the tool between the pulleys.</p> <ol style="list-style-type: none"> <li>Check that the pointer on the tool is between the two lines on the tool.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>This verifies the belt tension is set at <math>3 \pm 0.5</math> lbs with a 1/16" belt deflection.</p> <ol style="list-style-type: none"> <li>If the pointer is not between the two lines, notify supervisor.</li> </ol>	2	9			
RA DRIVE BELT	9.	<p><b>Check Tension on the RA Drive Belt.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>A ladder may be required to perform this check.</p> <ol style="list-style-type: none"> <li>Set a push/pull type tension gauge, with a mid-range of 8-16 pounds, to its compression setting.</li> <li>Using a straight edge and tape measure, determine the midpoint of either free segment of the RA drive belt. This is measured from the points at which the belt segment joins either pulley.</li> <li>Make a temporary mark on the RA bottom plate so that 1/8" of belt compression can be observed.</li> <li>Press the sensing element of the force gauge against the midpoint of either free segment of the RA Drive Belt. When the sensing element has been compressed 1/8", record the displayed reading from the force gauge. The reading should be <math>12 \pm 1/2</math> pounds.</li> </ol>	2	9			

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RA TIMING BELT	10.	<p><b>Check Tension of RA Timing Belt.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>The RA timing belt is located on the underside of the VTU carriage.</p> <ol style="list-style-type: none"> <li>Remove RA timing belt cover by removing 4 screws.</li> <li>Set a push/pull type tension gauge, with a mid-range of 4-8 pounds, to its compression setting.</li> <li>Using a straight edge and tape measure, determine the midpoint of either free segment of the RA timing belt. This is measured from the points at which the belt segment joins either pulley.</li> <li>Make a temporary mark on the mounting plate so that 1/8" of belt compression can be observed.</li> <li>Press the sensing element of the force gauge against the midpoint of the free segment of the RA Timing Belt. When the sensing element has been compressed 1/8", record the displayed reading from the force gauge. Reading should be 6 ± 1/2 pounds.</li> <li>Reinstall RA timing belt cover.</li> </ol>	2	9			
TA, RA AIR HOSE	11.	<p><b>Visually Check TA and RA Air Hoses Underneath VA Carriage Assembly.</b></p> <p>Visually check the TA and RA air hoses, underneath the VA carriage assembly, for signs of wear and cracking at the air cylinders and manifolds.</p>	3	9			
VA GEARBOX	12.	<p><b>Visually Check VA Gearbox for Any Oil Leaks.</b></p> <p>If any leaks are present, replace the VA gearbox.</p>	1	9			

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VA AIR PRESSURE	13.	<p><b>Check the VA Stop Cushion Air Pressures.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>The stop cushion air pressure is specified to be 8 ± 1/2 PSI. Ensure the air gauge, used for this task is designed to accurately measure the stop cushion air pressure.</p> <ol style="list-style-type: none"> <li>1. With a standard air gauge, check air pressure of both VA stop cushions for 8 ± 1/2 PSI.</li> <li>2. If pressure is low, add air with a standard tire air pump. If air pressure is too high, reduce air pressure to 8 ± 1/2 PSI.</li> <li>3. Ensure all tools, materials, and debris are removed from the work area.</li> <li>4. Exit the safety fence area and close the safety gate.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>5. Remove the lock and lockout device from the handle of Main Disconnect Switch S1.</li> <li>6. Move the handle of Main Disconnect Switch S1, located on the door of the Main Control Cabinet, to the (ON) position.</li> <li>7. In the Manual Move To section, enter 1.</li> <li>8. Click on Move VA button to move it to its lowest position.</li> <li>9. Select the CELL OFFLINE option on any main screen header panel.</li> <li>10. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</li> <li>11. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</li> <li>12. The green stack lights go Off.</li> <li>13. Select Maint Mode option from main screen.</li> </ol>	3	9			
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		<p>14. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>15. At the Discrete I/O screen, select the Status screen option.</p> <p>16. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>17. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>18. Open the safety gates.</p> <p>19. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>20. Access the Windows NT START button at the lower screen display. Select SHUTDOWN option, and select YES when prompted. Wait for software to complete shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>21. Open the MCC doors; turn Off computer, monitor, and UPS.</p> <p>22. Open the MCC's Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/ restore procedures. Attach a red multi-lock hasp lockout</b></p>				
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		<p>device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</p> <p>23. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The main facility circuit breaker listed on the MCC exterior must be locked out to completely remove all system power.</p> <p>24. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <p>25. Attach a lockout device to the handle of Disconnect Switch S1, and secure the lockout device with padlock.</p>					
IA BELTS	14.	<p><b>Check the Tension of the Induction Axis (IA) Feed Floor Belts and Drive Belt.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p>Damage may occur to the safety mats if they are not removed prior to moving the lifting device across them, creating degraded E-Stop circuit operation. Remove any sections of the safety mat in the path of the lift prior to moving the lift device inside the safety fence area.</p>	2	9			

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		<b>NOTE</b>  A scissors lift, or other lift device, may be required to access the IA to perform these checks.  1. Check the tension of each of the two belts on the IA feed floor. There is no specific tension measurement for the feed floor belts. Optimally, the belts should be taut, but not tight, and each of the two belts on the feed floor should be similarly tensioned.  2. Check tension of the IA lift station drive belt. There is no specific tension measurement for the lift station drive belt. Optimally, the belt should be taut, but not tight. The lift station should be able to be moved easily by hand without any noticeable belt slack when the drive belt is correctly adjusted.					
DA BELTS	15.	<p><b>Check the Tension of the Discharge Axis (DA) Feed Floor Belts and Drive Belt.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>A scissors lift, or other lift device, may be required to access the DA to perform these checks.</p> <p>1. Check the tension of each of the two belts on the DA feed floor. There is no specific tension measurement for the feed floor belts. Optimally, the belts should be taut, but not tight, and each of the two belts on the feed floor should be similarly tensioned.</p> <p>2. Check tension of the DA lift station drive belt. There is no specific tension measurement for the lift station drive belt. Optimally, the belt should be taut, but not tight. The lift station should be able to be moved easily by hand without any noticeable belt slack when the drive belt is correctly adjusted.</p>	2	9			

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SA WHEEL LUBRICATION	16.	<p><b>Lubricate Shelf Axis (SA) Guide Wheels.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Open the appropriate turn-end safety-fenced gate, but do not enter.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>A bypass key will need to be installed into one of the turn-end safety fence locks to gain access prior to performing this task.</p> <ol style="list-style-type: none"> <li>Restore the air pressure to the Filter Regulator Supply.</li> </ol> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>Reset the Main Facilities STAR circuit breaker, as required.</li> <li>Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC's power supplies and the internal fans will come on.</li> <li>Turn on the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</li> <li>Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</li> <li>When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</li> </ol>	50	9			
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		<p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>7. Double click on the SHORTCUT TO INTERFACE.EXE icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>8. Enter the USER NAME and PASSWORD.</p> <p>9. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status indicating the cell controller establishes communication with the TMS system.</p> <p>10. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Close the appropriate turn-end safety-fenced gate, but do not enter.</b></p> <p>11. Using a bypass key, go to the appropriate safety fence lock and insert the key.</p> <p>12. Physically close the safety gates.</p> <p>13. Select Maint Mode option from Main screen.</p> <p>14. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>15. At the Discrete I/O screen, select the Status</p>					
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		<p>screen option.</p> <p>16. Click the Disable PLC button in the Safety Controls section.</p> <p>17. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>18. Select the Close Button to return to the MAINTENANCE MODE screen.</p> <p>19. Leave one gate that is bypassed for access.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>SA guide wheels require lubrication on a periodic basis to prevent excessive wear and minimize noise levels when storage unit cycles. A scissors lift, or other lifting device, is necessary to access SA guide wheel (upper) lube points.</p> <p>20. Position the scissors lift outside the safety fence, if possible, at the end of SA for access to the top of the unit.</p> <p>21. At the MAINTENANCE MODE screen, enable the pendent.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Chemical proof goggles (with side shields), and rubber gloves must be worn when using CRC 3-36.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>Exercise care when lubricating the SA guide wheel upper lube points. Wipe off excess oil immediately after spraying.</p> <p>22. Locate lube points and carefully lubricate 4 places (top and bottom of the 2 guide wheels)</p>					
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		<p>using CRC 3-36 Technical Grade (Part # 03003) spray.</p> <p>23. Use the Manual Pendant to jog the RSS to place the next rack in the proper position at the turn end.</p> <p>24. Repeat steps 22 thru 24 until all upper guide wheels have been lubricated.</p> <p>25. Locate lube points and lubricate 4 places (both sides of load bearing wheel) on bottom of rack using CRC 3-36 Technical Grade (Part # 03003) spray.</p> <p>26. Use the Manual Pendant to jog the RSS to place the next rack in the proper position at the turn end.</p> <p>27. Repeat steps 25 and 26 until all lower guide wheels have been lubricated.</p> <p>28. With the Pendant raise the VA/RATA assembly to the Maintenance position.</p> <p>29. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>30. At the Discrete I/O screen, select the Status screen option.</p> <p>31. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>32. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Close the appropriate turn-end safety-fenced gate, but do not enter.</b></p>				
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		<p>33. Remove the bypass key.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>34. Close and secure interlock switches and gates.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>35. Reset the Main Facilities STAR circuit breaker, if required.</p> <p>36. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>37. Turn on the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>38. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>39. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>40. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p>					
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NOTE							
		<p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>41. Enter the USER NAME and PASSWORD.</p> <p>42. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller establishes communication with the TMS system.</p> <p>43. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>44. Physically close the safety gates.</p> <p>45. Select Maint Mode option from Main screen.</p> <p>46. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>47. At the Discrete I/O screen, select the Status screen option.</p> <p>48. Click the Disable PLC button in the Safety Controls section.</p> <p>49. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>50. Select the Close button to return to the MAINTENANCE MODE screen.</p>					
TA, RA HOSES/ BSU MATS	17.	<p><b>Check TA and RA Air Hoses and BSU Safety Mats.</b></p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;">CAUTION</div> <p><b>Ensure TA is fully retracted before moving the VA. Failure to comply with this precaution may result in BSU equipment damage.</b></p>	8	9			

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		<p>At the MAINTENANCE MODE screen, perform the following:</p> <ol style="list-style-type: none"> <li>1. In the Manual Move To section enter 1 in the VA carriage box.</li> <li>2. Click on Move VA to lower the VA carriage to the lowest position.</li> <li>3. Select the CELL OFFLINE option on any main screen header panel.</li> <li>4. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</li> <li>5. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</li> <li>6. The green stack lights go Off.</li> <li>7. Select Maint Mode option from main screen.</li> <li>8. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</li> <li>9. At the Discrete I/O screen, select the Status screen option.</li> <li>10. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</li> <li>11. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</li> <li>12. Open the safety gates.</li> <li>13. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</li> <li>14. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option and select YES when prompted. Wait for software to complete</li> </ol>					
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		<p>shutdown process.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <ol style="list-style-type: none"> <li>15. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</li> <li>16. Open the MCC Main Disconnect Circuit Breaker (CB-1).</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;"><b>WARNING</b></div> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <ol style="list-style-type: none"> <li>17. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;"><b>WARNING</b></div> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the disconnect switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <ol style="list-style-type: none"> <li>18. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</li> </ol>					
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		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <p><b>Install a lockout/tagout device and lock on the pneumatic Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <p>19. Rotate the air supply shut-off valve to the EXH position.</p> <p>20. Install lockout device and lock as prescribed by the current local lockout/restore procedure.</p> <p>21. Enter the fenced area check the TA and RA air hoses on top of the VA carriage assembly for signs of wear or cracking at the air cylinders and manifolds.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Due to construction of the safety mat, the weight required to activate the mat must be placed in a small area such as a footprint. Distributing the weight over a larger area, such as the size of a mail tray, may prevent the safety mat from being activated.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The safety mat is activated by a weight of 25 pounds placed on a 2.26" diameter disk or a 2" by 2" square object.</p> <p>22. Stack one or more objects with a total weight of 25 pounds in an area size of a 2.26" disk or a 2" by 2" square object on a section of safety mat, on one side of the VA.</p> <p>23. Exit the fenced area and close the safety gate.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 10px;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p>					
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U.S. Postal Service <b>Maintenance Checklist</b>	IDENTIFICATION													
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER			TYPE
	0	3	M	S	T				C	A	2	0	3	M
Equipment Nomenclature LM MST	Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence Monthly				

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>24. Remove the lock and lockout device from Main Disconnect Switch, S1.</p> <p>25. Place Main Disconnect Switch, S1 on the ON position.</p> <p>26. Press the yellow E-STOP RESET Button on the Main Control Cabinet.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 10px auto;"><b>WARNING</b></div> <p><b>If the red stack lights do not remain illuminated and the E-Stop circuitry does reset, notify your supervisor. Failure to comply may result in potentially hazardous conditions due to degraded E-Stop circuitry.</b></p> <p>27. Verify the red stack lights and the MPAS/CSSS ERROR lights remain illuminated indicating the E-Stop circuitry has failed to reset due to the safety mat being activated.</p> <p>28. Place the handle of Main Disconnect Switch, S1, located on the Main Control Cabinet in the OFF position.</p> <p>29. Attach a lockout device to Main Disconnect Switch, S1 and secure with a lock.</p> <p>30. Manually unlock the safety gate Spartan interlock using the manual interlock key.</p> <p>31. Open the safety gate and enter the fenced area.</p> <p>32. Repeating steps 20 thru 29 until all mats have been checked. (Approx.10ea)</p> <p>33. Exit fenced area and close the safety gate.</p> <p>34. Manually lock the safety gate Spartan interlock using the manual interlock key.</p>				
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		<p><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>35. Remove the lock and lockout device from Main Disconnect Switch, S1.</p> <p>36. Restore the air pressure to the Filter Regulator Supply</p> <p>37. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>38. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>39. Turn on the UPS, and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>40. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>41. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>42. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p>					
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		<p>43. Enter the USER NAME and PASSWORD.</p> <p>44. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status indicating the cell controller establishes communication with the TMS system.</p> <p>45. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>46. Physically close the safety gates.</p> <p>47. Select Maint Mode option from main screen.</p> <p>48. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>49. At the Discrete I/O screen, select the Status screen option.</p> <p>50. Click the Disable PLC button in the Safety Controls section.</p> <p>51. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>52. Select the Close button to return to the MAINTENANCE MODE screen.</p> <p>53. Press the yellow E-Stop RESET pushbutton to reset the E-Stop circuitry.</p> <div style="text-align: center; margin: 10px auto;"> <b>NOTE</b> </div> <p>The system pneumatics will pressurize, signifying the K1 E-Stop relay and the K19 Safety Mat relay have been reset.</p> <p>54. Press the green POWER ON pushbutton to apply power to the KP mainline contactor.</p>				
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		<p>55. As power is applied, the following happens simultaneously:</p> <ul style="list-style-type: none"> <li>a. An audible tone sounds from the Mail Personnel Alert Station (MPAS) and the CycleStop Switch Station (CSSS) Panels.</li> <li>b. The stack lights flash at a two hertz rate for about 20 seconds and then the white stack light illuminates steadily.</li> <li>c. All system drives are initialized and perform an internal self-test.</li> </ul> <p>56. Click on the CELL ONLINE button to place the STAR in the ONLINE mode of operation. The following events are completed:</p> <ul style="list-style-type: none"> <li>a. An audible signal will sound for five second followed by a quiet period of five seconds.</li> <li>b. All start-up lights flash at a 2 Hz rate for 10 seconds. The start-up lights are the two amber stack lights, the amber CSSS lamp, and the bottom orange MPAS lamps.</li> <li>c. At the top of the CELL STATUS screen messages are displayed PENDING ONLINE initialization. As the axis are homed and initialized, the amplifiers are checked and RECONCILIATION of the STAR is accomplished.</li> <li>d. At the completion of reconciliation, the white stack lights illuminate steadily.</li> <li>e. The STATUS field at the top of the screen displays ONLINE.</li> </ul> <p style="text-align: center;"><b>NOTE</b></p> <p>The white stack light flashes if either the STAR encounters a Servo Drive Controller to Servo Drive Motor fault, or if the maintenance bar is deployed.</p> <p>57. When ONLINE is completed, the flashing amber lights turn off, and the green and white</p>					
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		stack lights illuminate steadily, and ONLINE operation begins.					
CLEAN UP	18.	<b>Clean Up.</b> Ensure all tools, lubricants, rags, and miscellaneous are removed from the work area. Notify supervisor of any deficiencies.	2	All			

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**ATTACHMENT 5**

**LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

**MASTER CHECKLIST**

03-MST-CA-204-M

Quarterly Time Total: Per Bulk Staging Unit - 122 Minutes

**SPECIAL TOOLS NEEDED TO PERFORM THIS ROUTE.**

Standard Commercial Grease Gun with Grease  
Feather Duster  
Extension Pole  
Standard/Short Level (Torpedo)  
Wiping Rags/Paper cloth  
Scissor lift or other Lifting device  
Safety Harness and Straps  
Basic MPE tools

Refer to the MS-238 if additional maintenance information is required.

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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SAFETY STATEMENT	1.	<p><b>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Open equipment and inspect dust conditions. Check for suspicious dust or unusual debris. If any unusual substance is found notify supervisor prior to proceeding with any further action on the equipment.</b></p> <p><b>THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.</b> When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner, a damp cloth, lint-free cloth, or brush, must be used in place of compressed or blown air. Report safety deficiencies to your supervisor immediately upon detection.</p> <p><b>WARNING FOR EWP/PPE:</b> Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.</p>	2	All			
		<p style="text-align: center;"><b>NOTE</b></p> <p>A scissors lift, or other device, may be necessary to access the IA and DA Control Cabinets.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The completion of this task will require some of the racks to be removed. All sites should have had these racks removed previously and the shelves disabled in PMAC for maintenance purposes on a daily basis.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Open all gates required to accomplish the following tasks.</p>					



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IA & DA CABINET CLEANING	2.	<p><b>Clean Exterior of Main Control, Induction Axis (IA) and Discharge Axis (DA) Control Cabinets.</b></p> <ol style="list-style-type: none"> <li>1. At the cell controller, click on the CELL OFFLINE button to take the BSU off-line. The BSU will complete all current transactions, and then come to a controlled stop at the home position.</li> <li>2. Select the CELL OFFLINE option on any main screen header panel.</li> <li>3. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</li> <li>4. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</li> <li>5. The green stack lights go Off.</li> <li>6. Select the Maint Mode option from the main screen.</li> <li>7. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</li> <li>8. At the Discrete I/O screen, select the Status screen option.</li> <li>9. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</li> <li>10. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes the 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at controllers and sensors.</li> <li>11. Open the safety gates.</li> <li>12. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</li> <li>13. Access the Windows NT START button at</li> </ol>	12	9			
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		<p>the lower screen display. Select the SHUTDOWN option, and select YES when prompted. Wait for the software to complete the shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>14. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>15. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <p>16. Close the MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch, S1 in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>17. Locate the facility main power distribution</p>					
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		<p>panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <div style="text-align: center; border: 1px solid black; padding: 2px;"><b>WARNING</b></div> <p><b>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <p>18. Rotate the air supply shut-off valve to the EXH position.</p> <p>19. Install lockout device and lock as prescribed by the current local lockout/restore procedure.</p> <p>20. Using vacuum, clean exterior of Main Control Cabinet. Use a damp cloth (if required) to remove excessive dust.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>A scissors lift, or other lift device, may be necessary to access the IA and DA Control Cabinets.</p> <p>21. Using a vacuum, clean the exterior of the IA and DA Control Cabinets. Use a damp cloth (if required) to remove excessive dust.</p>					
SA SENSOR INSPECTION	3.	<p><b>Clean Upper Safety Beam Sensors and SA Shelf Presence Sensors.</b></p> <p>1. Enter the safety-fenced area, opened in previous item.</p> <p>2. Using a feather duster on an extension pole, clean upper SA left safety beam sensor, upper SA middle safety beam sensor, and upper SA right safety beam sensor.</p> <p>3. Using a feather duster on an extension pole, clean the lens on each SA tray present sensor (one sensor per shelf).</p>	10	9			
VA BEARING, CABLES, SHEAVES, INSPECTION	4.	<p><b>Clean, Inspect, and Lubricate VA Pillow Block Bearings, VA Counter Weight Cables, and Sheaves on top of the VA Mast and Upper VA Railings.</b></p>	19	9			

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		<p><b>NOTE</b></p> <p>A scissors lift, or other lift device, is necessary to access VA pillow block bearings the sheave bearings and the upper portion of the VA mast.</p> <ol style="list-style-type: none"> <li>1. Access the 2 VA pillow block bearings and the 2 counter weight grease fittings at the top of the VTU mast (2 on each side), clean them.</li> <li>2. Using a standard commercial grease gun, grease each fitting with Mobil Grease (Moblith SHC 460 or equivalent).</li> <li>3. Clean, inspect, and lubricate VA mast rails and counterweight cables that are accessible as the lift unit lowers.</li> <li>4. Remove the platform lift from inside the BSU security fence area.</li> <li>5. Ensure all tools, lubricants, rags, etc., are removed from the work area.</li> <li>6. Exit the safety fence area, and close the safety gate.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <ol style="list-style-type: none"> <li>7. Restore the air pressure to the Filter Regulator Supply</li> <li>8. Reset the Main Facilities STAR circuit breaker, as required.</li> <li>9. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</li> </ol>					
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		<p>10. Turn on the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>11. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>12. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>13. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>14. Enter the USER NAME and PASSWORD.</p> <p>15. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with the TMS system.</p> <p>16. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>17. Physically close the safety gates.</p> <p>18. Select Maint Mode option from main screen.</p> <p>19. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under</p>					
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		<p>the Miscellaneous section.</p> <p>20. At the Discrete I/O screen, select the Status screen option.</p> <p>21. Click the Disable PLC button in the Safety Controls section.</p> <p>22. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>23. Select the Close button to return to the MAINTENANCE MODE screen.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>24. Press the yellow E-Stop RESET pushbutton to reset the E-Stop circuitry.</p> <div style="text-align: center; margin: 10px auto;"> <b>NOTE</b> </div> <p>The system pneumatics will pressurize, signifying the K1 E-Stop relay and the K19 Safety Mat relay have been reset.</p> <p>25. Press the green POWER ON pushbutton to apply power to the KP mainline contactor.</p> <p>26. As power is applied the following happens simultaneously:</p> <ol style="list-style-type: none"> <li>a. An audible tone sounds from the Mail Personnel Alert Station (MPAS) and the Cycle Stop Switch Station (CSSS) Panels.</li> <li>b. The stack lights flash at a two hertz rate for about 20 seconds and then the white stack light illuminates steadily.</li> <li>c. All system drives are initialized and perform an internal self-test.</li> </ol> <p>27. Click on the CELL ONLINE button to place the STAR in the ONLINE mode of operation. The following events are completed:</p>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p>a. An audible signal will sound for five second followed by a quiet period of five seconds.</p> <p>b. All start-up lights flash at a 2 Hz rate for 10 seconds. The start-up lights are the two amber stack lights, the amber CSSS lamp, and the bottom orange MPAS lamps.</p> <p>c. At the top of the CELL STATUS screen, messages are displayed PENDING ONLINE initialization. As the axis are homed and initialized, the amplifiers are checked and RECONCILIATION of the STAR is accomplished.</p> <p>d. At the completion of reconciliation, the white stack lights illuminate steadily.</p> <p>e. The STATUS field at the top of the screen displays ONLINE.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The white stack light flashes if either the STAR encounters a Servo Drive Controller to Servo Drive Motor fault, or if the maintenance bar is deployed.</p> <p>28. When ONLINE is completed, the flashing amber lights turn Off, and the green and white stack lights illuminate steadily, and ONLINE operation begins.</p>					
UPS check	5.	<p><b>Check Operation of Uninterruptible Power Supply (UPS).</b></p> <p>1. Select the CELL OFFLINE option on any main screen header panel.</p> <p>2. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</p> <p>3. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position</p> <p>4. The green stack lights go Off.</p>	12	9			

U.S. Postal Service  <b>Maintenance Checklist</b>	IDENTIFICATION												
	WORK CODE		EQUIPMENT ACRONYM					CLASS CODE		NUMBER			TYPE
	0	3	M	S	T				C	A	2	0	4
Equipment Nomenclature LM MST		Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B					Bulletin Filename mm09077ah			Occurrence Quarterly			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p>5. Select Maint Mode option from main screen.</p> <p>6. Turn Off.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If the monitor and cell controller remain powered-up, the UPS is operating correctly.</p> <p>7. Wait approximately 5 minutes.</p> <p>8. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>9. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes 480 VAC from the servo drive controllers and power to motor fans. Control voltage is present at controllers and sensors.</p> <p>10. Open the safety gates.</p> <p>11. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>12. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option, and select YES when prompted. Wait for the software to complete the shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>13. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>14. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p>					
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U.S. Postal Service  <b>Maintenance Checklist</b>	IDENTIFICATION												
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p><b>WARNING</b></p> <p>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</p> <p>15. Close the MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</p> <p>16. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <p style="text-align: center;"><b>WARNING</b></p> <p>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</p>					
CABLE, SHEAVES, V GROVE GUIDE WHEELS INSPECTION	6.	Clean, Inspect, and Lubricate the Counter Weight Cables, Sheaves, V- Grove Guide Wheels.	64	9			
		<p><b>NOTE</b></p> <p>Two people required for this item.</p>					

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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p><b>NOTE</b></p> <p>A scissors lift, or other lift device, and a safety harness assembly are necessary to access sheave bearings and cables on BSU.</p> <p><b>NOTE</b></p> <p>A complete set of shelves (top to bottom) must be removed prior to performing this task.</p> <ol style="list-style-type: none"> <li>1. Select Maint Mode option from main screen.</li> <li>2. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</li> <li>3. At the Discrete I/O screen, select the Status screen option.</li> <li>4. Click the Disable PLC button in the Safety Controls section.</li> <li>5. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</li> <li>6. Select the CLOSE button to return to the MAINTENANCE MODE screen.</li> </ol> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <ol style="list-style-type: none"> <li>7. Press the yellow E-Stop RESET pushbutton to reset the E-Stop circuitry.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>The system pneumatics will pressurize, signifying the K1 E-Stop relay and the K19 Safety Mat relay have been reset.</p> <ol style="list-style-type: none"> <li>8. Press the green POWER ON pushbutton to apply power to the KP mainline contactor.</li> </ol>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p>9. As power is applied the following happens simultaneously:</p> <ul style="list-style-type: none"> <li>a. An audible tone sounds from the Mail Personnel Alert Station (MPAS) and the CycleStop Switch Station (CSSS) Panels.</li> <li>b. The stack lights flash at a two hertz rate for about 20 seconds and then the white stack light illuminates steadily.</li> <li>c. All system drives are initialized and perform an internal self-test.</li> </ul> <p>10. Click on the CELL ONLINE button to place the STAR in the ONLINE mode of operation. The following events are completed:</p> <ul style="list-style-type: none"> <li>a. An audible signal will sound for five second followed by a quiet period of five seconds.</li> <li>b. All start-up lights flash at a 2 Hz rate for 10 seconds. The start-up lights are the two amber stack lights, the amber CSSS lamp and the bottom orange MPAS lamps.</li> <li>c. At the top of the CELL STATUS screen messages are displayed PENDING ONLINE initialization. As the axes are homed and initialized, the amplifiers are checked and reconciliation of the STAR is accomplished.</li> <li>d. At the completion of reconciliation, the white stack lights illuminate steadily.</li> <li>e. The STATUS field at the top of the screen displays ONLINE.</li> </ul> <p style="text-align: center;"><b>NOTE</b></p> <p>The white stack light flashes if either the STAR encounters a Servo Drive Controller to Servo Drive Motor fault, or if the maintenance bar is deployed.</p> <p>11. When ONLINE is completed, the flashing amber lights turn off, and the green and white</p>				
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p>stack lights illuminate steadily, and ONLINE operation begins.</p> <p>12. On the Maintenance Mode Screen, click on the Machine Control tab and Home All tab.</p> <p>13. Go to the manual move section and enter the highest value (top row on your BSU) in the Move to box. Click on Move VA button.</p> <p>14. Staying in the Manual Move section, proceed to the Move To Bin box and enter the value that will place the empty rack (no shelves) directly centered on the counter weight. Click on Move SA button.</p> <p>15. Visually ensure that the empty rack is centered on counter weight. Use of pendant may be required.</p> <p>16. At the Discrete I/O screen, select the Status screen option.</p> <p>17. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>18. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, KP Main Motor Contactor is opened. This removes 480 VAC from servo drive controllers and power to motor fans. Control voltage is present at controllers and sensors.</p> <p>19. Open the safety gates.</p> <p>20. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>21. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option, and select YES when prompted. Wait for the software to complete the shutdown process.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>WARNING</b> </div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p>22. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>23. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <p>24. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>25. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <p>26. Rotate the air supply shut-off valve to the EXH position.</p>				
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		<p>27. Install lockout device and lock as prescribed by the current local lockout/restore procedure.</p> <p>28. Open the gate, allowing access to the counter weight.</p> <p>29. Using a wiping rag, clean the V-groove guide wheels/grease fittings inspect for cracks, excessive wear, and proper adjustment.</p> <p>30. Place a level on top of counter weight to ensure it is level and will travel up and down smoothly.</p> <p>31. Remove the level.</p> <p>32. Using a standard commercial grease gun, grease each fitting with Mobil Grease (Moblith SHC 460 or equivalent). Clean off excess grease after application.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>A scissors lift, or other lift device, is necessary to access the counter weight, sheave, and cable assemblies.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Depending on the lift type this procedure may require exiting the lifting device. Fall protection must be worn as prescribed by the current local policy.</p> <p>33. Following each cable (2), clean and inspect for fraying, kinks, and proper tracking in sheaves. Inspect sheaves for wear, proper alignment, and proper operation. Reapply cable lubricant and repeat step 32 for grease fittings. Clean off any excess grease after application.</p> <p>34. Ensure all tools, lubricants; rags, and miscellaneous materials are removed from inside the safety-fenced area.</p> <p>35. Close safety fence gates.</p>					
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		<p><b>WARNING</b></p> <p>Before performing the following steps you must don the appropriate PPE.</p> <p><b>WARNING</b></p> <p>Be cautious when working around or on equipment when power has been applied.</p> <p>36. Remove lock and lockout device and place Main Disconnect Switch, S1 in on position.</p> <p>37. Restore the air pressure to the Filter Regulator Supply.</p> <p>38. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>39. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>40. Turn on the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>41. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>42. When prompted press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>43. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Run Hours	Pieces Fed (000)	Freq.
		<p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>44. Enter the USER NAME and PASSWORD.</p> <p>45. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status indicating the cell controller establishes communication with the TMS system.</p> <p>46. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>47. Physically close the safety gates.</p> <p>48. Select Maint Mode option from main screen.</p> <p>49. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>50. At the Discrete I/O screen, select the Status screen option.</p> <p>51. Click the Disable PLC button in the Safety Controls section.</p> <p>52. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>53. Select the Close button to return to the MAINTENANCE MODE screen.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>54. Press the yellow E-Stop RESET pushbutton to reset the E-Stop circuitry.</p>					



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					Run Hours	Pieces Fed (000)	Freq.

NOTE							
		<p>The system pneumatics will pressurize, signifying the K1 E-Stop relay and the K19 Safety Mat relay have been reset.</p> <p>55. Press the green POWER ON pushbutton to apply power to the KP mainline contactor.</p> <p>56. As power is applied the following happens simultaneously:</p> <ul style="list-style-type: none"> <li>a. An audible tone sounds from the Mail Personnel Alert Station (MPAS) and the CycleStop Switch Station (CSSS) Panels.</li> <li>b. The stack lights flash at a two hertz rate for about 20 seconds and then the white stack light illuminates steadily.</li> <li>c. All system drives are initialized and perform an internal self-test.</li> </ul> <p>57. Click on the CELL ONLINE button to place the STAR in the ONLINE mode of operation. The following events are completed:</p> <ul style="list-style-type: none"> <li>a. An audible signal will sound for five second followed by a quiet period of five seconds.</li> <li>b. All start-up lights flash at a 2 Hz rate for 10 seconds. The start-up lights are two amber stack lights, amber CSSS lamp and bottom orange MPAS lamps.</li> <li>c. At the top of the CELL STATUS screen messages are displayed PENDING ONLINE initialization. As the axis are homed and initialized, the amplifiers are checked and RECONCILIATION of the STAR is accomplished.</li> <li>d. At the completion of reconciliation, the white stack lights illuminate steadily.</li> <li>e. The STATUS field at the top of the screen displays ONLINE.</li> </ul>					

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					Run Hours	Pieces Fed (000)	Freq.

		<b>NOTE</b>  The white stack light flashes if either the STAR encounters a Servo Drive Controller to Servo Drive Motor fault, or if the maintenance bar is deployed.  58. When ONLINE is completed, the flashing amber lights turn Off, and the green and white stack lights illuminate steadily, and ONLINE operation begins.					
CLEAN UP	7.	<b>Clean Up.</b>  Ensure all tools, lubricants, rags, etc., are removed from the work area. Notify supervisor of any deficiencies.	3	ALL			

**ATTACHMENT 6**

**LM MST SHOOTING STAR BULK STAGING UNIT PHASE 3A AND 3B**

**MASTER CHECKLIST**

03-MST-CA-205-M

3-Year Time Total: Per Bulk Staging Unit - 171 Minutes

Refer to the MS-238 if additional maintenance information is required.

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SAFETY STATEMENT	1.	<p><b>COMPLY WITH ALL SAFETY PRECAUTIONS. Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Open equipment and inspect dust conditions. Check for suspicious dust or unusual debris. If any unusual substance is found notify supervisor prior to proceeding with any further action on the equipment.</b></p> <p><b>THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.</b></p> <p>When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner or a damp rag must be used in place of compressed or blown air. A lint-free cloth or brush may be used on optical equipment only when other cleaning methods can not be used. Report safety deficiencies to your supervisor immediately upon detection.</p> <p><b>WARNING FOR EWP/PPE:</b> Steps contained in this bulletin may require the use of Personal Protective Equipment (PPE). Refer to the current Electrical Work Plan (EWP) MMO for appropriate PPE requirements.</p>	2	All			
		<p style="text-align: center;"><b>NOTE</b></p> <p>Prior to performing the following route, the BSU should be emptied and reported empty to TMS1 and TMS2 in accordance with local policy/ procedure. This procedure should be performed by the shift prior to this route being assigned.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The completion of this task will require some of the racks to be removed. All sites should have had these racks removed previously and the shelves disabled in PMAC for maintenance purposes on a daily basis.</p>					

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RSS OIL CHANGE	2	<p><b>Change Oil in Rotating Staging Structure (RSS) Gear Reducers.</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Two people required for this task.</p> <ol style="list-style-type: none"> <li>1. Select the CELL OFFLINE option on any main screen header panel.</li> <li>2. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</li> <li>3. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</li> <li>4. The green stack lights go Off.</li> <li>5. Select Maint Mode option from main screen.</li> <li>6. At the Machine Control Page, click on the MAINTENANCE POSITION button. The VA carriage will move to a pre-set position on the VTU mast.</li> <li>7. Determine which shelves are to be removed to access one of the RSS gear reducers. Removal of two shelves is recommended.</li> <li>8. At the MAINTENANCE MODE Machine Control tab, in the Manual Move to section, enter the appropriate number and click on the MOVE SA pushbutton to locate a rack of shelves at the end of the machine.</li> <li>9. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</li> <li>10. At the Discrete I/O screen, select the Status screen option.</li> <li>11. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</li> <li>12. Select the UNLOCK THE GATE option. The pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the</li> </ol>	167	9			
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U.S. Postal Service <b>Maintenance Checklist</b>	IDENTIFICATION														
	WORK CODE		EQUIPMENT ACRONYM						CLASS CODE		NUMBER			TYPE	
	0	3	M	S	T					C	A	2	0	5	M
Equipment Nomenclature LM MST		Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence 3-Year				

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p>KP Main Motor Contactor is opened. This removes 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>13. Open the safety gates.</p> <p>14. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>15. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option. Select YES when prompted. Wait for the software to complete the shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>16. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>17. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>When performing maintenance inside MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the main facility circuit breaker; and secure with a lock and signed tag. Otherwise attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <p>18. Close the MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p>					
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U.S. Postal Service <b>Maintenance Checklist</b>	IDENTIFICATION													
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>19. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p>					
		<p><b>WARNING</b></p> <p><b>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <p>20. Rotate the air supply shut-off valve to the EXH position.</p> <p>21. Install lockout device and lock as prescribed by the current local lockout/restore procedure.</p> <p>22. Enter safety-fenced area and engage long maintenance bar under VA carriage assembly and secure to prevent downward motion of VA carriage.</p>					
		<p><b>NOTE</b></p> <p>The following step to remove the SA shelves requires two people. One person should support each shelf, while the other person removes the mounting bolts and nuts. The time for the step to remove the SA shelves has been doubled to account for two people.</p> <p>23. Using a 9/16" socket and wrench, remove the shelves by removing the three bolts, washers, and nylon locking nuts holding each shelf to the bin structure (the second</p>					

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		<p>person should support the shelf as it is removed). Dispose of the nylon locking nuts removed.</p> <p>24. Place the removed shelves in a secure location safely away from the BSU equipment and maintenance activity area.</p> <p>25. Place the long maintenance bar in the storage position and secure it.</p> <p>26. Exit safety fenced area, close gates, and secure interlock switches and gates.</p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>27. Restore the air pressure to the Filter Regulator Supply</p> <p>28. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>29. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>30. Turn On the UPS, and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>31. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>32. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>33. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>34. Enter the USER NAME and PASSWORD.</p> <p>35. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with the TMS system.</p> <p>36. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>37. Physically close the safety gates.</p> <p>38. Select Maint Mode option from main screen.</p> <p>39. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>40. At the Discrete I/O screen, select the Status screen option.</p> <p>41. Click the Disable PLC button in the Safety Controls section.</p> <p>42. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p>					
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		<p>43. Select the Close button to return to the MAINTENANCE MODE screen.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>44. Press the E-Stop Reset and the Power ON buttons.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>CAUTION</b></div> <p><b>Do not move the VA or the RA.</b></p> <p>45. At the MAINTENANCE MODE-Machine Control screen, click on Enable Pendant push button.</p> <p>46. Using the pendant, move the SA to position the rack, from which the shelves were previously removed, adjacent to the SA1/RSS gear reducer.</p> <p>47. Select the CELL OFFLINE option on any main screen header panel.</p> <p>48. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</p> <p>49. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</p> <p>50. The green stack lights go Off.</p> <p>51. Select Maint Mode option from main screen.</p> <p>52. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>53. At the Discrete I/O screen, select the Status screen option.</p> <p>54. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>55. Select the UNLOCK THE GATE option. The</p>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
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		<p>pneumatic system purge valve is automatically activated, removing air pressure from the system. In addition, the KP Main Motor Contactor is opened. This removes 480 VAC from the servo drive controllers and the power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>56. Open the safety gates.</p> <p>57. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>58. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option, and select YES when prompted. Wait for the software to complete the shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>59. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>60. Open the MCC's Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>When performing maintenance inside the MCC, perform system lockout/tagout procedures as prescribed by the current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the main facility circuit breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <p>61. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p>					
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Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq.

		<p style="text-align: center;"><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>62. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <p>63. Rotate the air supply shut-off valve to the EXH position.</p> <p>64. Install lockout device and lock as prescribed by the current local lockout/restore procedure.</p> <p>65. Enter the safety-fenced area, and engage the long maintenance bar underneath the VA carriage assembly, and secure it so downward motion of the VA carriage is prevented.</p> <p>66. Using a 5/32" Allen wrench, remove cover(s) over the lower SA Drive belt.</p> <p>67. Position a drain pan (of sufficient size to contain at least 2.14 gallons) under the drain plug in the RSS gear reducer casing.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Discard or dispose of chemical soaked materials according to MSDS and in accordance with local procedures.</b></p> <p>68. Using a wiping rag or paper wipe, clean dirt</p>					
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		<p>from the oil drain plug and the oil fill plug.</p> <p>69. Place a protective cover over the SA1 belt, the SA1 belt drive sprocket and any electrical connections/terminals in close proximity with the gear box and/or drain pan to ensure oil does not drain on the SA belt, SA drive belt sprocket(s), or the electrical terminals.</p> <p>70. Using a 6 mm Allen wrench, remove both fill plugs.</p> <p>71. Using a clean straw or similar item, determine the oil level in the gearbox. The oil in a full gearbox should measure approximately 5".</p> <p>72. Position a trough or offset funnel under the drain plug to drain the oil into the drain pan.</p> <p>73. Using a 6 mm Allen wrench, remove drain plug from the gear casing.</p> <p>74. Drain gear oil from crankcase.</p> <p>75. After oil has drained from crankcase, reinstall drain plug and ensure it is tight.</p> <p>76. Make sure the SA1 drive belt; electrical connections, and electrical terminals are covered to prevent any oil from being spilled on them.</p> <p>77. Carefully add 2.14 gallons of new Mobil Gear 630 (or equivalent) oil.</p> <p>78. Verify oil level measures approximately 5".</p> <p>79. Reinstall both fill plugs and ensure they are tight.</p> <p>80. Clean any oil spilled in the process.</p> <p>81. Remove protective covers used to prevent oil spillage on SA1 drive belt, electrical connections, and electrical terminals.</p> <p>82. Using a 5/32" Allen wrench, re-install cover(s), previously removed, over the lower SA1 drive belt.</p> <p>83. Ensure all tools, materials, and equipment</p>					
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		<p>are moved away from the SA prior to the SA being moved.</p> <p>84. Place the long maintenance bar in the storage position, and secure it.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>85. Exit the safety fenced area, close gate(s), and secure interlock switches.</p> <p>86. Restore the air pressure to the Filter Regulator Supply</p> <p>87. Reset the Main Facilities STAR circuit breaker, as required.</p> <p>88. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>89. Turn On the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>90. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>91. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p>					
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		<p>92. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball, or press SHIFT-TAB.</p> <p>93. Enter the USER NAME and PASSWORD.</p> <p>94. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with the TMS system.</p> <p>95. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p> <p>96. Physically close the safety gates.</p> <p>97. Select Maint Mode option from main screen.</p> <p>98. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>99. At the Discrete I/O screen, select the Status screen option.</p> <p>100. Click the Disable PLC button in the Safety Controls section.</p> <p>101. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>102. Select the Close button to return to the MAINTENANCE MODE screen.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p>					
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		<p>103. Press the E-Stop Reset and the Power ON buttons.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p><b>Ensure the TA is fully retracted before moving the SA.</b></p> <p style="text-align: center;"><b>CAUTION</b></p> <p><b>Ensure the VA and RA are not moved.</b></p> <p>104. At the MAINTENANCE MODE-Machine Control screen, click on Home SA.</p> <p>105. At the Machine Control screen, make the appropriate entry in the Manual Move to section and click on the MOVE SA to move the SA such that the racks, from which the shelves have been removed, are located to allow access to the other gear reducer (SA2/RSS).</p> <p>106. At the MAINTENANCE MODE-Machine Control screen, click on Enable Pendant push button.</p> <p>107. Using the pendant, move the SA to position the rack, from which the shelves were previously removed, adjacent to the other gear reducer (SA2/RSS).</p> <p>108. Select the CELL OFFLINE option on any main screen header panel.</p> <p>109. The green stack lights and the CSSS OK-TO-ENTER light begin to flash.</p> <p>110. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</p> <p>111. The green stack lights go Off.</p> <p>112. Select Maint Mode option from main screen.</p> <p>113. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>114. At the Discrete I/O screen, select the Status screen option.</p>				
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		<p>115. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>116. Select the UNLOCK THE GATE option. The pneumatic system purge valve automatically activates, removing air pressure from the system. The KP Main Motor Contactor opens. This removes 480 VAC from servo drive controllers and power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>117. Open the safety gates.</p> <p>118. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>119. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option and select YES when prompted. Wait for the software to complete the shutdown process.</p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>120. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p> <p>121. Open MCC Main Disconnect Circuit Breaker (CB-1).</p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>When performing maintenance inside MCC, perform system lockout/ tagout procedures as prescribed by current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p>					
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		<p>122. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the disconnect switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>123. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</b></p> <p>124. Rotate the air supply shut-off valve to the EXH position.</p> <p>125. Install lockout device and lock as prescribed by current local lockout/restore procedure.</p> <p>126. Enter the safety-fenced area at SA2/RSS.</p> <p>127. Repeat steps 66 through 83 for the SA2/RSS gear box.</p> <p>128. Enter the safety-fenced area.</p> <p>129. At the Machine Control screen, make the appropriate entry in the Manual Move to section to move the SA such that the rack(s), from which the shelves were previously removed, are located on turn end.</p> <p>130. Select the CELL OFFLINE option on any main screen header panel.</p> <p>131. The green stack lights and the CSSS OK-</p>				
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		<p>TO-ENTER light begin to flash.</p> <p>132. The cell controller completes all transactions and comes to a controlled stop. The VTU returns to the HOME position.</p> <p>133. The green stack lights go Off.</p> <p>134. Select Maint Mode option from main screen.</p> <p>135. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option at the Miscellaneous section.</p> <p>136. At the Discrete I/O screen, select the Status screen option.</p> <p>137. Ensure the Enable PLC option is displayed at the Discrete I/O Status Screen Safety Controls section. Click on the Disable PLC option to change to Enable PLC if required.</p> <p>138. Select the UNLOCK THE GATE option. The pneumatic system purge valve automatically activates, removing air pressure from the system. The KP Main Motor Contactor opens. This removes 480 VAC from servo drive controllers and power to the motor fans. Control voltage is present at the controllers and sensors.</p> <p>139. Open the safety gates.</p> <p>140. Select the Close option. Return to the MAINTENANCE MODE screen to LOG OFF.</p> <p>141. Access the Windows NT START button at the lower screen display. Select the SHUTDOWN option and select YES when prompted. Wait for the software to complete the shutdown process.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>WARNING</b></p> </div> <p style="text-align: center;"><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p>142. Open the MCC doors; turn Off the computer, the monitor, and the UPS.</p>					
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	0	3	M	S	T					C	A	2	0	5
Equipment Nomenclature LM MST		Equipment Model Shooting Star Bulk Staging Unit Phase 3A and 3B						Bulletin Filename mm09077ah			Occurrence 3-Year			

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		<p>143. Open the MCC Main Disconnect Circuit Breaker (CB-1).</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>When performing maintenance inside MCC, perform system lockout/ tagout procedures as prescribed by current local lockout/restore procedures. Attach a red multi-lock hasp lockout device on the Main Facility Circuit Breaker; and secure with a lock and signed tag. Otherwise, attach a multi-lock lockout device to the Main Disconnect Switch S1 using a lock and signed tag.</b></p> <p>144. Close MCC doors. Perform lockout/tagout procedures as prescribed by the current local lockout/restore procedures.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>480 VAC is present on the line side of CB1 with the Main Disconnect Switch in the OFF position. Severe injury or death from electrocution will occur if the line side of the Main Disconnect Switch is contacted. The Main Facility Circuit Breaker listed on the MCC exterior must be locked out to completely remove all system power.</b></p> <p>145. Locate the facility Main Power Distribution Panel. Disconnect STAR circuit breaker power, and install lockout device and lock.</p> <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"><b>WARNING</b></div> <p><b>Install a lockout/tagout device and lock on the pneumatics Main Air Valve to prevent equipment damage or injury to personnel.</b></p>					
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		<p style="text-align: center;"><b>NOTE</b></p> <p>The following step to install the SA shelves requires two people. One person should support each shelf, while the other person installs the mounting bolts and new nuts.</p> <p>146. Rotate the air supply shut-off valve to the EXH position.</p> <p>147. Install lockout device and lock as prescribed by the current local lockout/restore procedure.</p> <p>148. Enter the safety-fenced area and engage the long maintenance bar underneath the VA carriage assembly and secure it so downward motion of the VA carriage is prevented.</p> <p>149. Reinstall the shelves removed earlier. With one person supporting each shelf, secure the shelves with 3 bolts, washers, and 3 new 3/8" nylon locking nuts.</p> <p>150. Ensure all materials and tools are removed.</p> <p>151. Remove maintenance bar and secure it in the storage position.</p> <p>152. Exit the safety fenced area and close gate(s) and secure interlock switches.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Before performing the following steps you must don the appropriate PPE.</b></p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>153. Restore the air pressure to the Filter Regulator Supply.</p> <p>154. Reset the Main Facilities STAR circuit breaker, as required.</p>					

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		<p>155. Position the Main Disconnect Switch (CB-1) to apply 480 VAC 3-phases to the MCC. The MCC power supplies and the internal fans will come on.</p> <p>156. Turn on the UPS and allow the internal self diagnostic routine to complete and the green LED to illuminate.</p> <p>157. Turn On the monitor and the cell controller. Allow to the cell controller to boot up.</p> <p>158. When prompted, press Ctrl-Alt-Delete to access the Windows NT Logon box. At the password default prompt, press ENTER and wait one minute for all processes to start.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If one minute has not elapsed before the SHORTCUT TO INTERFACE.EXE Icon is activated, a prompt screen will appear advising SHORTCUT TO INTERFACE.EXE is terminated due to ORACLE not available.</p> <p>159. Double click on the SHORTCUT TO INTERFACE.EXE Icon. The STAR Console Login screen appears.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The LOGIN name of the user who last successfully logged into the system appears initially in this field. To return to the LOGIN name window, click it with the trackball or press SHIFT-TAB.</p> <p>160. Enter the USER NAME and PASSWORD.</p> <p>161. The CELL STATUS screen appears after successful LOGIN. Wait for a green CONNECTED to appear at the right of the NETWORK status, indicating the cell controller established communication with the TMS system.</p> <p>162. Review the CELL STATUS screen for errors. Review the Fault Description and note any discrepancies.</p>					
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		<p>163. Physically close the safety gates.</p> <p>164. Select Maint Mode option from main screen.</p> <p>165. Access the MAINTENANCE MODE screen. Select the Discrete I/O screen option under the Miscellaneous section.</p> <p>166. At the Discrete I/O screen, select the Status screen option.</p> <p>167. Click the Disable PLC button in the Safety Controls section.</p> <p>168. Under the Safety Controls section, uncheck the UNLOCK GATE option to ensure the safety gates are locked.</p> <p>169. Select the CLOSE button to return to the MAINTENANCE MODE screen.</p> <p style="text-align: center;"><b>WARNING</b></p> <p><b>Be cautious when working around or on equipment when power has been applied.</b></p> <p>170. Press the yellow E-Stop RESET pushbutton to reset the E-Stop circuitry.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>The system pneumatics will pressurize, signifying the K1 E-Stop relay and the K19 Safety Mat relay have been reset.</p> <p>171. Press the green POWER ON pushbutton to apply power to the KP mainline contactor.</p> <p>172. As power is applied the following happens simultaneously:</p> <ol style="list-style-type: none"> <li>a. An audible tone sounds from the Mail Personnel Alert Station (MPAS) and the CycleStop Switch Station (CSSS) Panels.</li> <li>b. The stack lights flash at a two hertz rate for about 20 seconds and then the white stack light illuminates steadily.</li> </ol>					
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		<p>c. All system drives are initialized and perform an internal self-test.</p> <p>173. Click on the CELL ONLINE button to place the STAR in the ONLINE mode of operation. The following events are completed:</p> <ol style="list-style-type: none"> <li>a. An audible signal will sound for five second followed by a quiet period of five seconds.</li> <li>b. All start-up lights flash at a 2 Hz rate for 10 seconds. The start-up lights are the two amber stack lights, the amber CSSS lamp, and the bottom orange MPAS lamps.</li> <li>c. At the top of the CELL STATUS screen messages are displayed PENDING ONLINE initialization. As the axis are homed and initialized, the amplifiers are checked and RECONCILIATION of the STAR is accomplished.</li> <li>d. At the completion of reconciliation, the white stack lights illuminate steadily.</li> <li>e. The STATUS field at the top of the screen displays ONLINE.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>The white stack light flashes if either the STAR encounters a Servo Drive Controller to Servo Drive Motor fault, or if the maintenance bar is deployed.</p> <p>174. When ONLINE is completed the flashing amber lights turn off, and the green and white stack lights illuminate steadily, and ONLINE operation begins.</p>					
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CLEAN UP		<b>Clean Up.</b> Ensure all tools, lubricants, rags, etc., are removed from the work area. Notify supervisor of any deficiencies.	2	ALL			
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