MAINTENANCE TECHNICAL SUPPORT CENTER
HEADQUARTERS MAINTENANCE OPERATIONS
UNITED STATES POSTAL SERVICE

Maintenance Management Order

SUBJECT: Network Distribution Center (NDC) Operational Maintenance Guidelines for the Singulate Scan Induction Unit

DATE: September 2, 2021

PUB NO: MMO-136-19

TO: Manager Maintenance, All NDCs

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This Maintenance Management Order (MMO) provides Network Distribution Center (NDC) Operational Maintenance Guidelines for the Singulate Scan Induction Unit (SSIU). This bulletin **supersedes MMO-076-12.** The acronym is SSIU. The class codes are AA, BA, CA, CB, DA, EA, FA, GA, HA, IA, and JA.

Actual workhour requirements and the frequency of tasks are dependent on site-specific configuration. Therefore, operational maintenance workhour requirements will vary day-to-day based on site specific machine utilization. Management may modify task frequencies to address local conditions.

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 Safety Data Sheets (SDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current SDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current SDS be requested. Refer to SDS 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

Moving conveyors may expose employees to personal safety hazards. Do not climb, sit, or walk on conveyors without first performing local Energy Control Procedure (ECP).

For questions or comments concerning this bulletin contact the MTSC HelpDesk, either online at **MTSC>HELPDESK>Create/Update Tickets** or call (800) 366-4123.

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Executive Manager
Maintenance Technical Support Center
Asset Maintenance Planning, Performance, and Support

Attachments: 1. Summary Workload Estimate for SSIU
2. Master Checklist: 09-SSIU-**-001-M

ATTACHMENT 1

SUMMARY

WORKLOAD ESTIMATE

FOR SSIU

SUMMARY

WORKLOAD ESTIMATE FOR SSIU

OPERATIONAL MAINTENANCE						
Days/Week	2 HSIU			3 HSIU		
	1 Tour Hrs/Yr	2 Tours Hrs/Yr	3 Tours Hrs/Yr	1 Tour Hrs/Yr	2 Tours Hrs/Yr	3 Tours Hrs/Yr
5 Days	450.67	901.34	1,352.01	472.33	944.66	1,416.99
6 Days	540.80	1081.60	1,622.40	566.80	1,133.60	1,700.40
7 Days	630.93	1,261.86	1892.79	661.27	1,322.54	1983.81

ATTACHMENT 2

SSIU MASTER CHECKLIST

09-SSIU-**-001-M

Time Total: 101 minutes

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Maintenance Checklist	WORK CODE		EQUIPMENT ACRONYM								CLASS CODE		NUMBER			TYPE
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Equipment Nomenclature	Equipment Model	Bulletin Filename	Occurrence
Singulate Scan Induction Unit		mm19050	Tourly

** Class Codes = AA, BA, CA, CB, DA, EA, FA, GA, HA, IA, & JA

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.	**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.** **THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.** **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.** **WARNING FOR EWP/PPE:** **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.** **WARNING: Be cautious when working around or on equipment when power has been applied.**	1	All			T
SYSTEM	2.	**Check SSIU Equipment Log**. Check Log Book for unresolved or suspected problem entries from previous tour. Investigate any unresolved problems.	3	09			T
SYSTEM	3.	**WARNING: Be cautious when working around or on equipment when power has been applied. Some of the following tasks require that the machine be running. Take precautions to prevent hair, clothing, tools, or test equipment from being caught in moving parts.** **Perform a System Walk Through.** Walk around the SSIU and perform the following tasks starting with the Recirculation Transport	30	09			T

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		Feed System (RTFS) and proceeding to the Singulator/Separator, Barcode Tunnel System (BTS), Singulation Verification System (SVS), Shoe Sorter, and High Speed Induction Units (HSIU). Note any anomalies found for further investigation and action. 1. Check for loose mail while performing all activities. Return mail to the locally designated location. 2. Assess condition of safety guarding. Note any that are missing or improperly secured. 3. Ensure start-up alarms and audio-visual indicators (light stacks) are operational. 4. Visually inspect emergency stop switches and pull-cords. Note any damaged or missing parts. 5. Ensure that all electrical cabinet doors are closed and latched. 6. Look around the machine for damaged conduits and wiring, and check support steel, framing, and access ladders for damage, cracks, and missing or loose fasteners. 7. Listen to the machine. Note any obvious abnormal or excessive noises coming from belts, bearings, motors, etc. 8. Check for unusual smells or odors around the machine as these may be indicative of an impending electrical or mechanical problem. 9. Ensure all dust/catch pans are free of mail and excessive amounts of dust or debris. 10. Ensure all Uninterruptible Power Supplies (UPSs) are operational with no red error LEDs illuminated or alarms sounding. 11. Ensure all photoeye sensors and reflectors are clean, not blocked by debris, and properly aligned (sensor LED shows blocked / unblocked as items pass by and does not flicker).					

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		12. Observe conveyor belting. Note any obvious problems with tracking, tension, or condition (worn, holes, frayed, torn lacing, missing strip belts, etc.). 13. Ensure that all chutes and transition plates are free of mail and debris. 14. Ensure that chutes are not obstructed and that mail is moving smoothly.					
SYSTEM: MAIL	4.	**Observe Mail Being Processed**. Note type, volume, and condition of mail in the system.	3	09			T
FIXED MECHANIZATION PROCESS CONTROL SYSTEM (FMPCS)	5.	**Obtain FMPCS Reports**. Perform the following tasks on the FMPCS Sorter Controller or Central Control Point (CCP) computer: 1. Run and print VOLUME REPORT for current tour. 2. Run and print VOLUME REPORT for the previous running tour.	3	10			T
SUPERVISORY PERSONAL COMPUTER (SPC):	6.	**Obtain SPC Reports**. Perform the following tasks on the SPC: 1. Run and print SUMMARY STATISTICS REPORT for the current tour. 2. Run and print SUMMARY RECIRCULATION REPORT for the current tour. 3. Run and print FAULT REPORT for the current tour. 4. Obtain fault report for previous running tour. 5. Obtain recirculation report from previous running tour.	7	10			T
SUPERVISORY PERSONAL COMPUTER (SPC):	7.	**Assess System Performance**. 1. Use the SPC report data obtained and the metrics provided in either the SSIU System Optimization or SSIU Operation guides to assess actual machine effectiveness.	10	10			T

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Determine actions required to improve operation.

Summary Statistics Report Targets	
Throughput	7000 – 8000 pph
Assigned to Sorter	>70% of Total Parcels Processed
Inducted to Sorter	>65% of Total Parcels Processed
Assigned to Recirculation	<30 % of Total Parcels Processed
Summary Recirculation Report Targets	
Not Singulated Parcels	<15% of Total Parcels Processed
No Read Parcels	<15% of Total Parcels Processed
Multi-Read Parcels	<5% of Total Parcels Processed
HSIU Full Parcels	<5% of Total Parcels Processed
Over Weight Parcels	<2% of Total Parcels Processed
No Weight Parcels	<2% of Total Parcels Processed
Over Size Parcels	<2% of Total Parcels Processed
Stray Parcels	<5% of Total Parcels Processed
Unknown Parcels	<2% of Total Parcels Processed

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		2. Check the FMPCS Volume Report paying particular attention to the “SSIU Problem” category in the “Reject Mail by Reason” section. A high number here indicates an SSIU mail tracking problem usually caused by misaligned or flickering induction unit photo eyes. FMPCS Volume Report Targets SSIU Problem: < .4% of Total Parcels Processed 3. Examine previous running tour fault reports and verify that outstanding issues have been corrected or reported. 4. Examine previous running tour recirculation reports. Address any mail flow problems that may still exist.					
SUPERVISORY PERSONAL COMPUTER (SPC): SPC	8.	**Monitor System Status**. Perform the following tasks on the SPC: 1. Click the OVERVIEW button. Check that the throughput (green graph) and recirculation (red graph) rates are within acceptable ranges (generally, green should be above red) and no anomalies are present on the SSIU system graphic. 2. Click on the DCS button. Check that all components shown (cameras, decoders, Net Multiplexer (MUX), Universal Recognition System (URS), Transport Image Server (TIS), etc. are green (functional). 3. Click on the READ RATES button. Check that the read rate for each camera is within the acceptable range and that no warnings are displayed. Note that these statistics now include OCR System read rates (ref. SMO-024-16). 4. Click on the ALARMS button and investigate any alarms that may be present.	5	10			T

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SEPARATION AND SINGULATION SYSTEM:	9.	**Observe Separation and Singulation System Operation**. Observe operation and watch for proper package separation and singulation.	3	09			T
DEBRIS REMOVAL SYSTEM:	10.	**Check Debris Removal System**. Check the debris removal system. Ensure that excessive debris is removed and that any mail found is returned to the locally designated location.	2	07			T
BARCODE SCAN TUNNEL:	11.	**Check Scan System Indicators**. 1. Verify that Accusort MUX PWR LED is on steady green, IDLE LED is flashing green, and TRIG LED is on steady yellow. 2. While the system is processing barcoded mail, check the LCD display on the Accusort MUX and ensure that decoded ZIP codes are appearing on the top line and that the camera/decoder status characters on the bottom line indicate normal operation. An asterisk and five question mark characters (* ? ? ? ? ?) appear on the display's bottom line. Each question mark is associated with a specific camera/decoder as follows (from left to right): Left, Right, Top/Front, Top/Back, and Bottom. An R will replace the question mark for each camera/decoder that has decoded the ZIP code displayed on the top line and an asterisk (*) will replace the question mark for any camera/decoder that is off line. The left-most character will always be an asterisk since there is no camera/decoder associated with this position. An asterisk in any other position indicates that the associated camera/decoder is off line and should be investigated. 3. Verify each (5) Accusort decoder's PWR LED is on steady green, IDLE LED is flashing green, and TRIG LED is flashing yellow as packages go by.	4	10			T

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		4. Verify that the Accusort DM-3000 dimensioning unit's POWER and LASER ON LEDs are on steady green, PE and AUX IN LEDs are flashing yellow as packages go by, the TACH LED appears steady yellow while conveyor is running, and no LEDs are on red continuously.					
BARCODE SCAN TUNNEL: ILLUMINATION	12.	**Check Illumination System**. 1. Check that all SI20 sodium lights are operational. Ensure that they are free of excessive dust and debris. 2. Ensure bottom camera illumination array is functional (turns on as packages pass by) and free of dust and debris.	2	09			T
BARCODE SCAN TUNNEL: OPTICAL COMPONENTS	13.	**Check Optical Components**. Ensure camera lenses, sensors, reflectors, and mirrors (especially bottom camera mirror) are free of dust and debris.	2	09			T
WEIGH SYSTEM:	14.	**Verify Scale Operation**. Check that weight results are displaying on the scale controller display and that they seem reasonable for the packages being weighed.	2	09			T
OPTICAL CHARACTER RECOGNITHION (OCR) SYSTEM:	15.	**Verify Optical Character Recognition (OCR) System Status**. Log onto the Transport/Image Server (T/IS) and perform the following tasks: 1. Check that all components shown (T/IS, NetMux, Image Capture, etc.) are green (functional). 2. Check that the Universal Reco block is green and says either "URS Online" or "URS xxxxx" where "xxxxx" represents a token number. Anything else, such as "URS Online 90%" indicates URS degradation (accelerator/s off line) that requires further investigation. 3. Check that the numbers in each of the green Image Capture blocks are incrementing.	2	10			T

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SINGULATION VERIFICATION SYSTEM:	16.	**Check Dimensioning Scanner and Reference Bar.** 1. Ensure that the Black Reference Bar is free of dust and debris. 2. Check that dimensioning unit (DSN950) results (length, width, height, etc.) are displaying on the dimensioning frame display panel and that they seem reasonable for the packages being measured.	3	09			T
SINGULATION VERIFICATION SYSTEM: OPTICAL COMPONENTS	17.	**Check Optical Components**. Ensure scanner lenses, sensors, and reflectors are free of dust and debris.	2	09			T
SINGULATION VERIFICATION SYSTEM: DATA COLLECTION SYSTEM (DCS)	18.	**Check Data Collection System (DCS) Computer Tracking Log**. 1. Press CTRL-ALT-2 on the DCS computer to display the tracking log (can be left running). 2. Monitor the log and note if excessive (>10%) SingRes=N (non-singulated) or SingRes=? (unknown singulation) results are present. Also check that weight results are being displayed and that they seem reasonable.	2	10			T
SHOE SORTER:	19.	**Check Air Supply Regulator**. Ensure supply air regulator gauge reads 80 psi.	1	09			T
SHOE SORTER: SLATTED SHOE CONVEYOR	20.	**Check Slatted Shoe Sorter Conveyor Condition**. 1. Ensure that no mail or debris is jammed in the shoe sorter mechanism (between the carrier slats, shoes, chains, etc.). 2. On the Orsco oiler, verify that the white Power On light is lit, that the oil level in the reservoir is adequate, and that the input air pressure gauge reads 80 psi. 3. Verify that the slat carrying chains are being adequately lubricated. The chains should appear wet but not dripping or slinging oil.	4	09			T

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		4. Verify that the shoes move smoothly without binding during the divert process and that none are damaged or missing. 5. Check that diverters are not banging or excessively noisy. 6. Check for and note the presence of any bent or otherwise damaged slats. 7. Visually check that the white plastic carrying chain hold-down blocks mounted on the inside frame rail at the exit of the drive-end bullwheel appear undamaged and properly adjusted (almost touching chain at closest point). 8. Verify that the slats are running true and not skewed. Note any apparent skewing as this may indicate that a chain has jumped a tooth.					
HIGH SPEED INDUCTION UNIT: (HSIU)	21.	**Assess Condition Of High Speed Induction Units (HSIUs).** 1. Note any conveyor belts (including strip belts) that are worn, missing, or damaged. 2. Verify that the RUN light on the HSIU control panel is illuminated steady green. 3. Observe induction units and note if packages appear to be sliding excessively when conveyors stop and start. This is an indication that the surface of the conveyor belting is worn and too slick. 4. Verify that the induction units appear to be inducting packages properly onto the parcel sorting machine (PSM) and that there is not an inordinate amount of mail on the floor between the HSIU and PSM. Return any mail found to the locally designated location. * time per unit	5*	10			T
REPORT:	22.	**Report.** 1. Report deficiencies to supervisor so that appropriate work orders can be generated for further action.	3	All			T

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		2. Document any anomalies found along with actions taken in the equipment log book. 3. Inform incoming tour of any open logs and outstanding equipment or operational issues.					