ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
5.2.2.2.1.9	Accomplish PM for Area Lighting	Perform tasks at specified frequencies in accordance with MTS #E-10.	1,246 tasks	See paragraph 5.2.2.2.1
5.2.2.2.1.10	Accomplish PM for Electric Meters	Perform tasks at specified frequencies in accordance with MTS #E-11.	29 tasks	See Paragraph 5.2.2.2.1
5.2.2.2.2	Accomplish PM for Roads, Bridges & Storm Drains	No tasks have been specified by the government. The contractor shall develop, schedule and perform any tasks necessary (if applicable) to achieve system reliability and the required availability.	See Below	Submit as part of PM plan (5.2.2.1.1). Schedule and perform concurred tasks.
5.2.2.2.2.1	Accomplish PM for Road System	Contractor shall maintain smooth, even driving surfaces free of vegetation and potholes.	There are approximately 31 miles of primary and 15 miles of secondary roads.	
5.2.2.2.2.2	Accomplish PM for Bridges (Other than Bascule Bridge)	Contractor shall maintain structure to insure safe passage of appropriate vehicles at rated load. Driving surfaces shall be maintained smooth and even. Any barrier shall be repaired as necessary.	Contractor Determined	
5.2.2.2.2.3	Accomplish PM for Storm Drains	Contractor shall insure all Storm Drains are clear of debris and vegetation and are capable of allowing water to drain freely.	Contractor Determined	
5.2.2.2.3	Accomplish PM for Potable Water System	The contractor shall perform all tasks at the specified frequencies in accordance with the Maintenance Task Sheets (MTS) for the Potable Water System.	See Below	Perform all PM tasks on schedule and retain documentation attesting to its completion. Document

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
				in accordance with paragraphs 5.2.2.5 through 5.2.2.5.3.
5.2.2.2.3.1	Accomplish PM for Wellhouse Systems	Perform tasks at specified frequencies in accordance with MTS #PW-1, #PW-2 and #PW-3.	47 tasks	See paragraph 5.2.2.2.3
5.2.2.2.3.2	Accomplish PM for No. 3 Elevated Tank Pumphouse System	Perform tasks at specified frequencies in accordance with MTS #PW-4.	16 tasks	See paragraph 5.2.2.2.3
5.2.2.2.4	Accomplish PM for Canals, Locks Docks, Bascule Bridge, and Tugboat	The Contractor shall perform all tasks at the specified frequencies in accordance with the Maintenance Task Sheets (MTS) for Marine Systems and Equipment as defined below.	See Below	
5.2.2.2.4.1	Accomplish PM for Canal System and Associated Structures	Perform tasks at specified frequencies in accordance with MTS # MO1	1 task	Perform PM Tasks as scheduled. Document per 5.2.2.5
5.2.2.2.4.2	Accomplish PM for the Canal Water Pumping Station 2311	Perform tasks at specified frequencies in accordance with MTS # MO2	5 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.4.3	Accomplish PM for the Navigation Lock System 2315-2317	Perform tasks at specified frequencies in accordance with MTS # MO3	5 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.4.4	Accomplish PM for the Bridge and Lock Equipment Building 2315	Perform tasks at specified frequencies in accordance with MTS # MO4	57 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.4.5	Accomplish PM for the Lox Docks (15 total)	Perform tasks at specified frequencies in accordance with MTS # MO5	5 tasks	Same as item 5.2.2.2.4.1

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5.2.2.2.4.6	Accomplish PM for the Hydrogen Docks (9 total)	Perform tasks at specified frequencies in accordance with MTS # MO6	5 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.4.7	Accomplish PM for Other Docks and Piers	Perform tasks at specified frequencies in accordance with MTS # MO7	5 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.4.8	Accomplish PM for the Bascule Bridge and Associated Installed Structures and Equipment	Perform tasks at specified frequencies in accordance with MTS # MO8	7 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.4.9	Accomplish PM for the NASA Tugboat, Clermont II	Perform tasks at specified frequencies in accordance with MTS # MO9	57 tasks	Same as item 5.2.2.2.4.1
5.2.2.2.5	Accomplish PM for Sanitary Sewage System	The contractor shall perform all tasks at the specified frequencies in accordance with the Maintenance Task Sheets (MTS) for the Sanitary Sewage System.		Perform all PM tasks on schedule and retain documentation attesting to its completion. Document in accordance with paragraphs 5.2.2.5 thru 5.2.2.5.3.
5.2.2.2.5.1	Accomplish PM for Collection System Lift Stations	Perform tasks at specified frequencies in accordance with MTS #SS-1 & #SS-2.	155 tasks	See paragraph 5.2.2.2.5 above
5.2.2.2.5.2	Accomplish PM for Treatment Lagoons	Perform tasks at specified frequencies in accordance with MTS #SS-3.	106 tasks	See paragraph 5.2.2.2.5 above

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5.2.2.2.5.3	Accomplish PM for Rock-Reed Systems	Perform tasks at specified frequencies in accordance with MTS #SS-4.	6 tasks	See paragraph 5.2.2.2.5 above
5.2.2.2.5.4	Accomplish PM for Septic Tank/Field Drain Systems	Perform tasks at specified frequencies in accordance with MTS #SS-5.	12 tasks	See paragraph 5.2.2.2.5 above
5.2.2.2.5.5	Accomplish PM for Treatment System at Building 1105	Perform tasks at specified frequencies in accordance with manufacturers recommendations		See paragraph 5.2.2.2.5 above
5.2.2.2.6	Accomplish PM, Testing, and Inspection for IAGP Equipment	The Contractor shall perform all maintenance tasks in accordance with the approved PM plan (DR 5-FA04). The contractor can utilize the appropriate Maintenance Task Sheets (MTSs) and MI's to accomplish this maintenance. Additionally the Contractor shall perform the testing and inspection required by 5.2.2.2.6.2. and 5.2.2.2.6.3. Deficiencies discovered during testing and inspections shall be corrected as part of the test inspection. However, if the Contractor determines that the work exceeds PM scope, this work shall be accomplished as CM and in accordance with Annex 5.3	See Exhibit 4 of Annex 5 &Attachment J-10, lists 1 and 2	See 5.2.2.2.6.1, 5.2.2.2.6.2, and 5.2.2.2.6.3
5.2.2.2.6.1	Accomplish PM for IAGP equipment	Perform all PM described in the appropriate MTS or MI listed in the referenced inventory. Accomplish tasks at the specified frequencies given in the MTS's or MI's. The Contractor shall perform all tasks to insure that the IAGP equipment can be operated safely. The Contractor shall refer to the appropriate MTS or MI for safety	See Exhibit 4 of Annex 5 Attachment J10, lists 1 and 2	Perform maintenance tasks on schedule and retain documentation in accordance with Paragraphs 5.2.2.5 thru 5.2.2.5.4.

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		information		
5.2.2.2.6.2	Accomplish Testing for SPME	The Contractor shall perform all tests required by the appropriate MTS or MI for IAGP equipment. Accomplish testing at the specified frequencies given in the MTS's and MI's and in accordance with the latest revision of the **NASA Safety Standard NSS/GO-1740.9**. Cumulative test records shall be kept for each IAGP equipment listed in the referenced inventory. These records shall be available to NASA and Government oversite agencies such as OSHA.	See Exhibit 4 of Annex 5 Attachment J10, lists 1 and 2	No instance of any IAGP equipment in inventory being out of certification because of failure to perform testing in accordance with this paragraph.
5.2.2.2.6.3	Accomplish Inspection for SPME	The contractor shall perform periodic safety inspections in accordance with the MTS's, MI's, and the latest revision of the **NASA Safety Standard NSS/GO-1740.9**. Cumulative inspection records shall be kept for each IAGP equpment listed in the referenced inventory. These records shall be available to NASA and Government oversite agencies such as OSHA.	See Exhibit 4 of Annex 5 Attachment J10, lists 1 and 2	No instance of any IAGP equipment in inventory being out of certification because of failure to perform inspection in accordance with this paragraph.
5.2.2.2.7	Accomplish PM for EMCS System	No tasks have been specified by the government. The contractor shall develop, schedule and perform any tasks necessary (if applicable) to achieve system reliability and the required availability.	Contractor determined	Submit tasks for government review. Schedule and perform concurred tasks.
5.2.2.2.8	Buildings & Structures		See Below	

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5.2.2.2.8.1	Accomplish PM and Periodic Certifications for Elevator and Dumbwaiters	The Contractor shall perform all tasks at the specified frequencies in accordance with the MTS listed below in 5.2.2.2.8.1.1. Additionally, the Contractor shall provide the inspection and testing services required for the periodic certification of elevators and dumbwaiters as required in 5.2.2.2.8.1.2. Deficiencies discovered during routine and periodic inspection/testing shall be corrected as part of the inspection/test. However, if the Contractor determines that work exceeds routine and periodic inspection/testing scope, this work shall be accomplished as CM and in accordance with Annex 5.3.	Elevators and Dumbwaiters are listed in Exhibit 5 of Annex 5, in the Inventory of Vertical Transportation Equipment List.	See Below 5.2.2.2.8.1.1 & 5.2.2.2.8.1.2
5.2.2.2.8.1.1	Accomplish PM for Elevators and Dumbwaiters	Perform tasks at specified frequencies in accordance with MTS #EL1, MTS #EL2, and MTS #EL3. All work shall comply with **ASME A17.1**.	21 tasks	Perform all PM tasks on schedule and retain documentation. Document in accordance with Paragraph 5.2.2.5 thru 5.2.2.5.3
5.2.2.2.8.1.2	Accomplish Periodic Certifications for Elevators and Dumbwaiters	The Contractor shall provide inspection and testing services as required for routine and periodic certification requirements of elevator and dumbwaiter systems. All inspections and tests shall be performed in the presence of a certified inspector who shall not be an employee of the Contractor, but provided by the Contractor through a separate facilities support contract. The Contractor may perform the inspection/tests but cannot provide the certified inspector.	See 5.2.2.2.8.1	The routine and periodic inspections/testing shall be performed at the time intervals required by **ASME A17.1**. The inspection/test schedule shall be based on the last inspection date and test date as given in the Inventory of Vertical Transportation

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		1. Semi-Annual: Routine inspection and testing of passenger and freight electric and hydraulic elevators shall be performed semi-annually in accordance with **ASME A17.1 rules, 1001.1, 1001.2, 1004.1, 1004.2, 1007.1 and 1007.2**. 2. Annual: Periodic inspection and testing of passenger and freight electric and hydraulic elevators shall be performed annually in accordance with **ASME A17.1, rules 1002.1, 1002.2, 1005.1, 1005.2, 1008.1 and 1008.2**. Periodic inspection and testing of dumbwaiters shall be performed annually in accordance with **ASME A17.1, rule 1010.4**. 3. Three Year: Hydrostatic tests shall be performed on hydraulic elevators at three year intervals in accordance with **ASME A17.1, rule 1005.3**. 4. Five Year: Full load and speed tests shall be performed on all electric traction elevators at five year intervals in accordance with **ASME A17.1, rules 1002.3 and 1005.4**.		Equipment List in Exhibit 5. There shall be no incidence of non-certification because of failure to perform the inspections/testing required by **ASME A17.1**.
5.2.2.2.8.2	Accomplish PM, Testing, and Inspection for Built-in Cranes, Monorails and Hoists	The Contractor shall perform all maintenance tasks described in the Maintenance Instructions listed below in 5.2.2.2.8.2.1. Additionally, the Contractor shall perform the testing and inspection required by 5.2.2.2.8.2.2. Deficiencies discovered during testing and inspections shall be corrected as part of the test/inspection. However, if the Contractor determines that the work exceeds PM scope, this work shall be accomplished as CM and in	Exhibit 4 of Annex 5, Inventory of Built-in Cranes, Monorails and Hoists.	See paragraphs 5.2.2.2.8.2.1 through 5.2.2.2.8.2.3 below.

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		accordance with Annex 5.3.		
5.2.2.2.8.2.1	Accomplish PM for Built-in Cranes, Monorails and Hoists	Perform all maintenance tasks described in appropriate MIs listed in the Inventory of built-in cranes, monorails and hoists, Exhibit 1. Accomplish tasks at the specified frequencies given in the MIs. Note: The PM, testing and inspection of this equipment shall be accomplished in accordance with the Maintenance Inspections (MIs) listed below and not by Maintenance Task Sheets (MTSs).	Exhibit 1 of Annex 5, Inventory of Built-in Cranes, Monorails, and Hoists. The MIs referenced in this Inventory are in the TRL.	Perform MI tasks on schedule and retain documentation. Document in accordance with Paragraphs 5.2.2.5 through 5.22.5.3.
5.2.2.2.8.2.2	Accomplish Testing for Built-in Cranes, Monorails and Hoists	Three types of tests are required for built-in cranes, monorails and hoists: proof load tests, rated load tests, and operational tests. The proof load tests and operational tests shall be performed prior to first use for new cranes or for existing cranes that have had modifications or alterations performed to components in the load path. The Contractor shall meet the above requirements and perform all tests required by the appropriate testing MIs listed in the Inventory of built-in cranes, monorails and hoists, Exhibit 1 Accomplish testing at the specified frequencies given in the MIs and in accordance with the latest revision of **NASA Safety Standard NSS/G0-1740.9**. Cumulative test records shall be kept for each built-in crane, monorail and hoist listed in the referenced inventory. These records shall be available to NASA and Government oversite agencies such as OSHA.	Exhibit 1 of Annex 5, Inventory of built-in cranes, monorails and hoists. The MIs referenced in this inventory are in the TRL.	No instance of any built-in cranes, monorails and hoists listed in inventory being out of certification because of failure to perform testing in accordance with this paragraph.

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5.2.2.2.8.2.3	Accomplish Inspection for Built-in Cranes, Monorails and Hoists	The Contractor shall perform daily and periodic safety inspections in accordance with **MI #TS-1787 Rev. 6, "Wire Rope, Hook, Chain and Link Inspection" and NASA Safety Standard NSS/G0-1740-9 (latest version)**. Cumulative Inspection records shall be kept for each built-in crane, monorail and hoist in the referenced inventory. These records shall be available to NASA and government oversite agencies such as OSHA.	Exhibit 1 of Annex 5, Inventory of built-in cranes, monorails and hoists **MI #TS-1787** is in the TRL	No instance of any built-in crane, monorail or hoist listed in inventory being out of certification because of failure to perform inspections in accordance with this paragraph.
5.2.2.2.8.2.4	Establish and Maintain a Certification Program for Built-in Cranes, Monorails and Hoists	The Contractor shall establish and maintain a certification program for all built-in cranes, monorails and hoists listed in the inventory, including both critical and non-critical. This program shall meet all NASA and OSHA crane safety requirements. Certification shall be based on the 5.2.2.2.8.2.2. and 5.2.2.2.8.2.3 testing and inspections.	Exhibit 1 of Annex 5, Inventory of built-in cranes, monorails and hoists	Program shall be kept current and be available to NASA for inspection.
5.2.2.2.8.3	Accomplish Roof Inspection	The Contractor shall perform an annual roof inspection of all roofs as part of the Annual Facility Inspection required by Annex 5.7.	Drawings of all roofs are available at the TRL.	Meet the requirements of Annex 5.7
5.2.2.2.8.4	Accomplish PM for Electrical Systems and Equipment	The Contractor shall perform all tasks at the specified frequencies in accordance with the Maintenance Task Sheets (MTS) for Electrical Systems and equipment as defined below.	See Below	Perform all PM tasks on schedule and retain in documentation. Document in accordance with paragraphs 5.2.2.5 thru

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				5.2.2.5.3
5.2.2.2.8.4.1	Accomplish PM for Switchboards and Distribution Panelboards	Perform tasks at specified frequencies in accordance with MTS #E-12.	1257 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.2	Accomplish PM for Motor Control Centers	Perform tasks at specified frequencies in accordance with MTS #E-13.	94 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.3	Accomplish PM for Interior, Exterior, Emergency and Exit Lighting Systems	Perform tasks at specified frequencies in accordance with MTS #E-14.	112 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.4	Accomplish PM for Dry Type Transformers, 45 Kva and Above	Perform tasks at specified frequencies in accordance with MTS #E-15.	162 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.5	Accomplish PM for Uninterruptible Power Supplies (UPS) 7 Kva and Above	Perform tasks at specified frequencies in accordance with MTS #E-16.	70 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.6	Accomplish PM for Diesel Generators	Perform tasks at specified frequencies in accordance with MTS #E-17.	167 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.7	Accomplish PM for Cathodic Protection Systems	Perform tasks at specified frequencies in accordance with MTS #E-18.	12 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.4.8	Accomplish PM for Lightning, Grounding, and Surge Protection Systems	Perform tasks at specified frequencies in accordance with MTS #E-19.	237 tasks	See paragraph 5.2.2.2.8.4 above
5.2.2.2.8.5	Accomplish PM for Backflow Preventers	The Contractor shall test all backflow preventers [referred to as cross connection control devices by the	Exhibit 6 of Annex 5, contains the inventory	Test all backflow preventers in inventory annually and

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		Mississippi State Department of Health (MSDH)] each year with an MSDH approved and licensed backflow device tester. The testing shall be performed by a Waterworks Operator certified for a Class "D" water system by the MSDH and shall be performed in accordance with MSDH requirements. Records of testing shall be maintained by the Contractor and be available for review by NASA and MSDH Division of Water Supply staff.	of backflow preventers and gives the building location. 60 Backflow Preventers	maintain records of testing. No violation of MSDH requirements for backflow preventer testing.
5.2.2.2.8.6	Accomplish PM for HVAC and Refrigeration Systems and Equipment.	The contractor shall perform all tasks at the specified frequencies in accordance with the Maintenance Task Sheets (MTS) for HVAC and Refrigeration Systems and Equipment.	See Below	Perform all PM tasks on schedule and retain documentation attesting to its completion. Document in accordance with paragraph 5.2.2.5.
5.2.2.2.8.6.1	Accomplish PM for Centrifugal and Screw Compressor type Chillers.	Perform tasks at specified frequencies in accordance with MTS # M-1.	161 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.2	Accomplish PM for Reciprocating Compressor, Water Cooled Chillers.	Perform tasks at specified frequencies in accordance with MTS # M-2.	11 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.3	Accomplish PM for Reciprocating Compressor, Air Cooled Chillers and Heat Lifts.	Perform tasks at specified frequencies in accordance with MTS # M-2.	19 Tasks	See paragraph 5.2.2.2.8.6

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5.2.2.2.8.6.4	Accomplish PM for Gear Drive, Forced Draft Cooling Towers.	Perform tasks at specified frequencies in accordance with MTS # M-3.	105 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.5	Accomplish PM for Belt Drive, Forced Draft Cooling Towers.	Perform tasks at specified frequencies in accordance with MTS # M-4.	45 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.6	Accomplish PM for Gas Fired Hot Water Heating Boilers.	Perform tasks at specified frequencies in accordance with MTS # M-5.	676 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.7	Accomplish PM for Electric Hot Water Heating Boilers.	Perform tasks at specified frequencies in accordance with MTS # M-6.	3 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.8	Accomplish PM for Condenser Water Chemical Injection Systems.	Perform tasks at specified frequencies in accordance with MTS # M-7.	52 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.9	Accomplish PM for Pumps (CHW, HW, CW, and Industrial Water Pumps).	Perform tasks at specified frequencies in accordance with MTS # M-8.	852 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.10	Accomplish PM for CHW type AHUs.	Perform tasks at specified frequencies in accordance with MTS # M-9.	1,250 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.11	Accomplish PM for HVUs.	Perform tasks at specified frequencies in accordance with MTS # M-10.	261 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.12	Accomplish PM for CHW type CRUs.	Perform tasks at specified frequencies in accordance with MTS # M-11.	343 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.13	Accomplish PM for DX type CRUs (Water Cooled and Air Cooled).	Perform tasks at specified frequencies in accordance with MTS # M-11.	322 Tasks	See paragraph 5.2.2.2.8.6

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5.2.2.2.8.6.14	Accomplish PM for DX type Air Conditioning Equipment, including Split Systems, Unitary Units, RTUs, etc. (Water Cooled and Air Cooled).	Perform tasks at specified frequencies in accordance with MTS # M-12.	1,960 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.15	Accomplish PM for Unit Gas Heaters.	Perform tasks at specified frequencies in accordance with MTS # M-13.	156 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.16	Accomplish PM for Fans; Blowers, Vents and Hoods.	Perform tasks at specified frequencies in accordance with MTS # M-14.	541 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.17	Accomplish PM for Air Compressors and Air Dryers.	Perform tasks at specified frequencies in accordance with MTS # M-15.	128 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.18	Accomplish PM for Kitchen Exhaust Hoods.	Perform tasks at specified frequencies in accordance with MTS # M-16.	7 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.19	Accomplish PM for Walk-in Coolers.	Perform tasks at specified frequencies in accordance with MTS # M-17.	3 Tasks	See paragraph 5.2.2.2.8.6
5.2.2.2.8.6.20	Accomplish PM for Refrigeration Appliances (Ice Makers, Refrigerators, Freezers, etc) and all other HVAC and Refrigeration Equipment and Systems as required to meet Availability requirements of Annex 5.5.	Perform all PM and PT&I tasks (not identified in paragraphs 5.2.2.2.8.6.1- 5.2.2.2.8.6.19) which the Contractor feels are necessary to meet Availability Requirements. The Contractor shall perform all necessary PMs to HVAC and Refrigeration Equipment and Systems (identified in the Equipment Database). These PMs shall include all peripheral and support equipment, parts and components such as pumps, motors, actuators, piping, expansion tanks, controls,	Contractor Determined	See paragraph 5.2.2.2.8.6 Contractor shall identify SFUSS & IAGP, quantities and types of PM, Tasks, and shall provide a schedule breakdown by Task.

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		instrumentation, and other components necessary to provide a complete and operational system. The contractor shall provide a complete itemized task listing of these PM activities. This listing shall provide a technical breakdown of activities similar to the Task Sheets provided by the Government.		
5.2.2.2.8.7	Accomplish PM for Fire Protection & Detection Systems	The Contractor shall perform all tasks at the specified frequencies in accordance with the Maintenance Task Sheets (MTS) for Fire Protection & Detection Systems.	See Below	Perform all tasks on schedule and retain documentation attesting to its completion. Document in accordance with paragraphs 5.2.2.5 through 5.2.2.5.3.
5.2.2.2.8.7.1	Accomplish PM for Fire Alarm Central Console	Perform tasks at specified frequencies in accordance with MTS #E-20	1 task	See paragraph 5.2.2.2.8.7
5.2.2.2.8.7.2	Accomplish PM for Radio Frequency Transceivers	Perform tasks at specified frequencies in accordance with MTS #E-21	89 tasks	See paragraph 5.2.2.2.8.7
5.2.2.2.8.7.3	Accomplish PM for Facility Fire Alarm Panels, Systems	Perform tasks at specified frequencies in accordance with MTS #E-22	91 tasks	See paragraph 5.2.2.2.8.
5.2.2.2.8.7.4	Accomplish PM for Facility Security Systems	Perform tasks at specified frequencies in accordance with MTS #E-23	2 tasks	See paragraph 5.2.2.2.8.7
5.2.2.2.8.7.5	Accomplish PM for Sprinkler &	Perform tasks at specified frequencies in accordance with	104 tasks	See paragraph 5.2.2.2.8.7

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	Suppression Systems	MTS #E-24		
5.2.2.2.8.7.6	Accomplish PM for Fire Hydrants and Post Indicator Valves	Perform tasks at specified frequencies in accordance with MTS #E-25	449 tasks	See paragraph 5.2.2.2.8.7
5.2.2.2.9	Accomplish PM for Natural Gas System	The Contractor shall perform all tasks at the specified frequencies in accordance with MTS #NG-1 for the Natural Gas System.	5 tasks	Perform all PM tasks on schedule and retain documentation attesting to its completion. Document in accordance with paragraphs 5.2.2.5 through 5.2.2.5.3.
5.2.2.3	SFUSS & IAGP Equipment Identification Maintain CMMS equipment identification on the equipment in the MAXIMO database.	Ensure SFUSS & IAGP equipment has an equipment ID tag attached. Ensure equipment has a corresponding ID in the CMMS database. Maintain equipment numbering to the same level as the existing MAXIMO equipment database.	As required	Retag equipment that has missing or illegible tags.
5.2.2.4	Update and maintain SFUSS & IAGP PM Program		Contractor determined	
5.2.2.4.1	Identify configuration changes, errors, or deficiencies to the existing SFUSS & IAGP PM program.	Includes, identification of changes found by application of maintenance actions, manufacturer's maintenance change bulletins, configuration changes, and changes recommended by updated RCM analysis.	As Required	Identify all changes to reflect current configuration.
5.2.2.4.2	Accomplish or recommend updates	Accomplish updates not requiring contract modification. Recommend all other updates to the CO. e.g. changes	As required	Updates or recommendation to be made within 10 days

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
		to MTS.		of identification.
5.2.2.5	Document Work		Contractor determined	Input information within 48 hours of action.
5.2.2.5.1	Document completed PM Provide government access to documentation. Provide reports specified in DR 5-FA02.	Accomplished PM's shall be recorded into the CMMS program. Record the actions accomplished, the date of accomplishment, the name of the individual responsible for accomplishing the action, and any other pertinent data necessary to provide a complete audit trail of accomplishment.	As required	A complete audit trail exists for each PM action.
5.2.2.5.2	Document deferred PM Document PM actions which have been deferred. Provide reports specified in DR 5-FA02.	Document reason for deferral, including data such as the date and times PM was attempted, individuals contacted for access, deferral code, rescheduled date, et. Codes and deferral logic are found in Table 5.2-1.	As required	Documentation supports efforts to accomplish the PM, and to support the reported deferral code.
5.2.2.5.3	Document PM which will not be accomplished. Provide reports specified in DR 5-FA02.	Document reason for non-performance. Table 5.2-1 gives reschedule limits beyond which PM will not be rescheduled.	As required	Documentation for PM that will not be accomplished due to contractor fault shall show corrective measures taken to prevent reoccurrence.
5.2.2.5.4	Document accomplished PM on all IAGP	Accomplish PMs shall be recorded on all IAGP. Record the actions accomplished, the date of accomplishment, and any other pertinent data necessary to provide a complete audit trail of accomplishment.	See Exhibit 4 of Annex 5, Attachment J-10, Lists 1 and 2	A complete audit trail exists for each PM action.
5.2.2.6	Perform RCM Analysis	Update the RCM analysis, critical system lists, and		The updates shall reflect the

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
	Update the Existing RCM Analysis and Criticality Assessments	criticality line drawings and all other pertinent information contained in the existing RCM analysis and criticality assessments. See 5.2.2.4.2 for updates of MTS.		current configuration and be performed annually. The CO shall concur with updates.
5.2.2.6.1	Recommend Changes to MTS Based on RCM Analysis	Recommended changes can be of the result of configuration changes, new technologies, change of mission or goals etc. The contractor shall base the recommendations on RCM analysis and provide evidence that the proposed changes to MTS improve system reliability and maintain the lifecycle of equipment. See 5.2.2.4.2 for updates of MTS.	Contractor Determined	Recommendations and RCM analysis are submitted to CO for approval.

Reference 5.2.2.5 and DR 5-FA02.

GOVERNMENT CAUSED. The following deferral explanations and related codes will be used when maintenance actions cannot be accomplished within an initial scheduled window. Use Report Code (GC) for Government caused deferrals and rescheduled maintenance as defined in this table. To be considered and approved as a Government caused deferral, maintenance must be attempted and/or access must have been requested within the first 25 percent of the allotted "windows" as defined below e.g., a quarterly action (28-day window) must be attempted within the first 7 days of the scheduled date, an annual action (56-day window) within the first 14 days, a weekly (4-day window) within the first day, etc. Additionally the CO must be notified within 75 percent of the allotted "window" when work cannot be accomplished. Notification shall be accomplished electronically and contain enough information to allow sufficient Government action/follow-up. In all cases, the maintenance actions, or portions of which can be accomplished must be accomplished. Re-performance of government caused delays shall be per this table and this shall not affect incentive fee.

Access Denied. Access to a particular building, area, or equipment is denied or prevented by the Government, preventing accomplishment of a maintenance action. Report code "GA" and reschedule maintenance as defined in this table:

Access Obstructed. The maintenance action cannot be accomplished as access to the equipment is physically obstructed (e.g., new wall constructed around equipment, the equipment is installed preventing access, etc.) and further Government action is required to obtain access. Report code "GO" and reschedule maintenance as defined in this table, unless notified by the CO to suspend maintenance actions.

Equipment Not in Place. The maintenance action cannot be accomplished as the equipment has been, or is being, removed, replaced, modified, placed in storage, or never installed in the system. Report code "GE" and reschedule maintenance as defined in this table, unless notified by the CO to suspend maintenance actions.

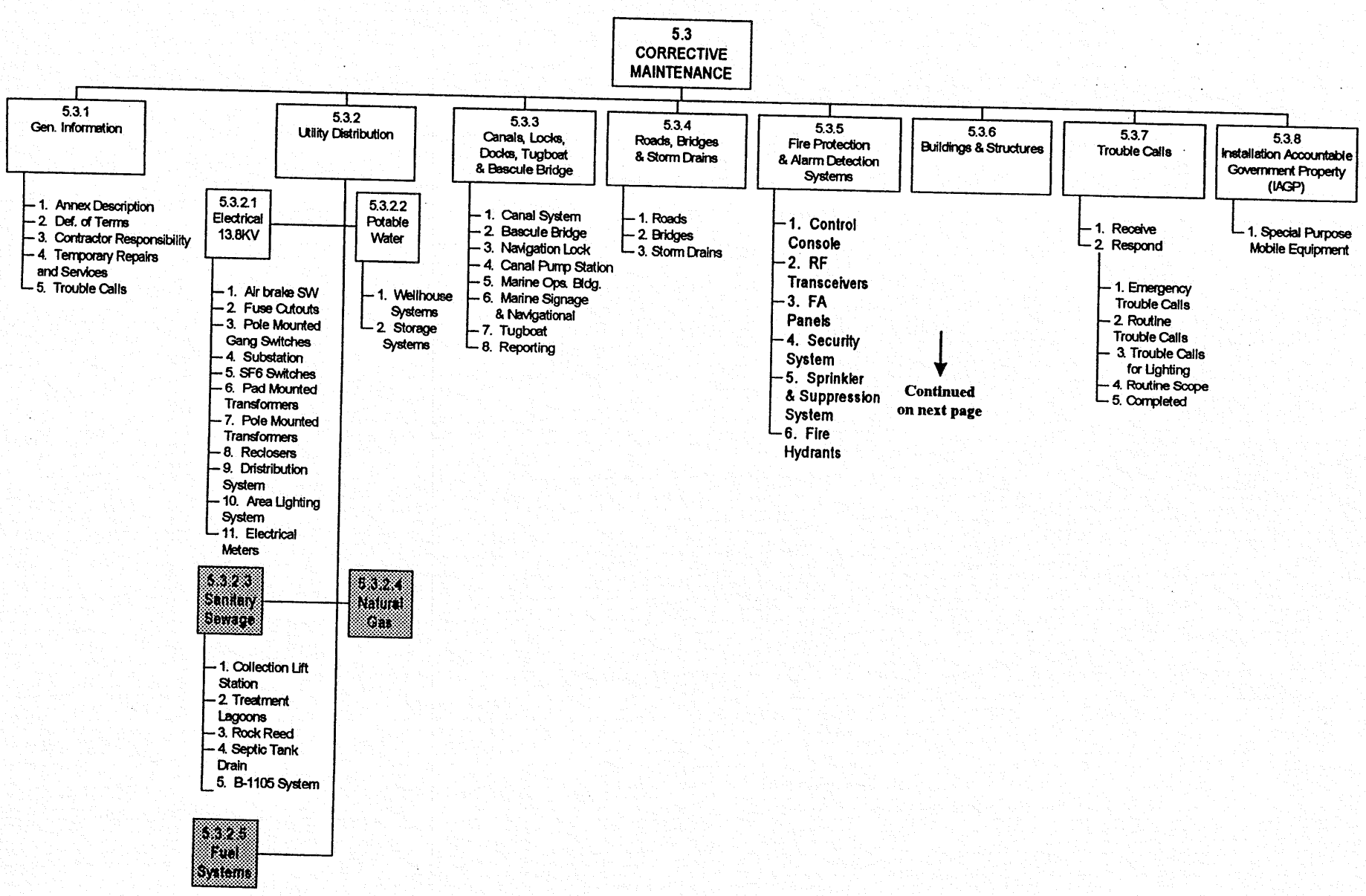
Maintenance Action Invalid. The established maintenance action is inappropriate for the equipment and the maintenance cannot be performed. Report code "GM" and reschedule maintenance as defined in this table, unless notified by the CO to suspend maintenance actions.

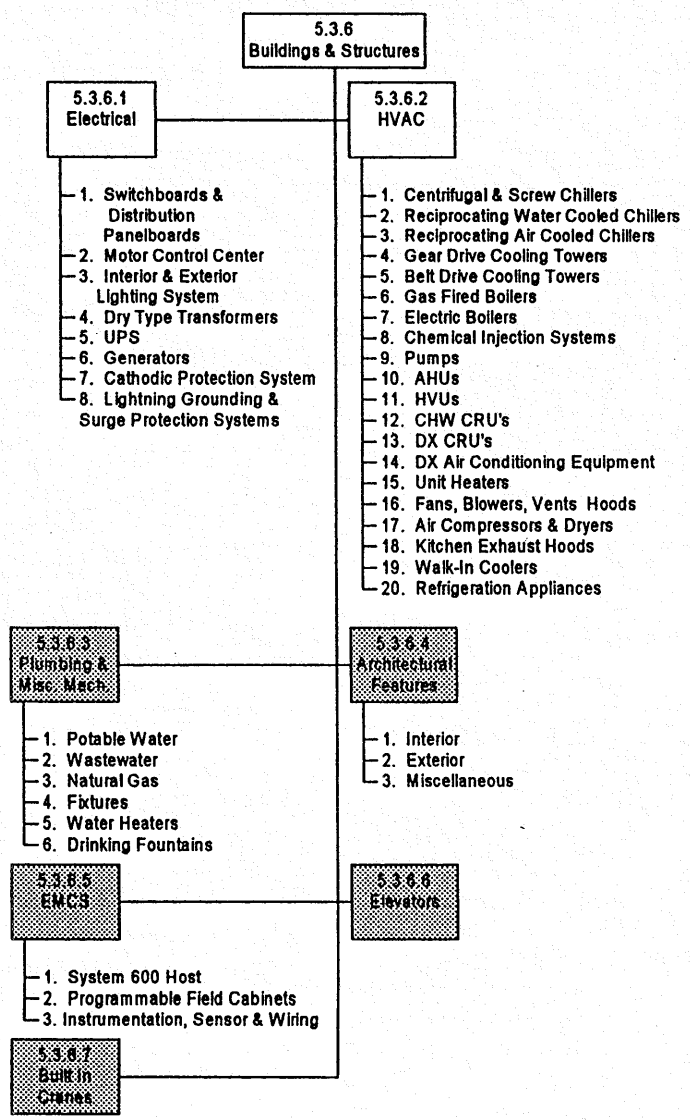
Safety Hazard. The maintenance action or the piece of equipment presents an immediate safety hazard. Report code "GS" and reschedule as defined in this table, unless notified by the CO to suspend maintenance actions.

CONTRACTOR CAUSED. Any uncompleted maintenance actions not meeting one of the deferral codes above shall be coded "CC" for Contractor Caused and rescheduled as defined in this table. This may affect incentive fee.

TABLE 5.2-1
MAINTENANCE SCHEDULING REQUIREMENTS

Maintenance Frequency	Initial Window (Days)	First Reschedule Window (Days)	Second Reschedule Window (Days)	Third Reschedule Window (Days)	Fourth Reschedule Window (Days)	Follow-on Reschedule Window (Days)	Comments
Weekly	4	N/A	N/A	N/A	N/A	N/A	Do not reschedule
Every 2 Weeks	7	N/A	N/A	N/A	N/A	N/A	Do not reschedule
Monthly	14	N/A	N/A	N/A	N/A		Do not reschedule
Semi-Quarterly	21	32	N/A	N/A	N/A		
Quarterly	28	42	N/A	N/A	N/A		
Semi-Annually	56	84	N/A	N/A	N/A		
Annually	56	84	84	N/A	N/A		
Every 18 Months	56	84	84	84	84		
Every 24 Months	56	84	84	84	84	84	Reschedule 1 more time
Every 36 Months	56	84	84	84	84	84	Reschedule 4 more times
Every 48 Months	56	84	84	84	84	84	Reschedule 7 more times
Every 60 Months	56	84	84	84	84	84	Reschedule 11 more times


5.3 CORRECTIVE MAINTENANCE
5.3.1 Gen. Information
1. Annex Description
2. Def. of Terms
3. Contractor Responsibility
4. Temporary Repairs and Services
5. Trouble Calls
5.3.2 Utility Distribution
5.3.2.1 Electrical 13.8KV
1. Air brake SW
2. Fuse Cutouts
3. Pole Mounted Gang Switches
4. Substation
5. SF6 Switches
6. Pad Mounted Transformers
7. Pole Mounted Transformers
8. Reclosers
9. Dristribution System
10. Area Lighting System
11. Electrical Meters
5.3.2.2 Potable Water
1. Wellhouse Systems
2. Storage Systems
5.3.2.3 Sanitary Sewage
1. Collection Lift Station
2. Treatment Lagoons
3. Rock Reed
4. Septic Tank Drain
5. B-1105 System
5.3.2.4 Natural Gas
5.3.2.5 Fuel Systems
5.3.3 Canals, Locks, Docks, Tugboat & Bascule Bridge
1. Canal System
2. Bascule Bridge
3. Navigation Lock
4. Canal Pump Station
5. Marine Ops. Bldg.
6. Marine Signage & Navigational
7. Tugboat
8. Reporting
5.3.4 Roads, Bridges & Storm Drains
1. Roads
2. Bridges
3. Storm Drains
5.3.5 Fire Protection & Alarm Detection Systems
1. Control Console
2. RF Transceivers
3. FA Panels
4. Security System
5. Sprinkler & Suppression System
6. Fire Hydrants
5.3.6 Buildings & Structures
Continued on next page
5.3.7 Trouble Calls
1. Receive
2. Respond
1. Emergency Trouble Calls
2. Routine Trouble Calls
3. Trouble Calls for Lighting
4. Routine Scope
5. Completed
5.3.8 Installation Accountable Government Property (IAGP)
1. Special Purpose Mobile Equipment


5.3.6
Buildings & Structures
5.3.6.1
Electrical
1. Switchboards & Distribution Panelboards
2. Motor Control Center
3. Interior & Exterior Lighting System
4. Dry Type Transformers
5. UPS
6. Generators
7. Cathodic Protection System
8. Lightning Grounding & Surge Protection Systems
5.3.6.2
HVAC
1. Centrifugal & Screw Chillers
2. Reciprocating Water Cooled Chillers
3. Reciprocating Air Cooled Chillers
4. Gear Drive Cooling Towers
5. Belt Drive Cooling Towers
6. Gas Fired Boilers
7. Electric Boilers
8. Chemical Injection Systems
9. Pumps
10. AHUs
11. HVUs
12. CHW CRU's
13. DX CRU's
14. DX Air Conditioning Equipment
15. Unit Heaters
16. Fans, Blowers, Vents Hoods
17. Air Compressors & Dryers
18. Kitchen Exhaust Hoods
19. Walk-In Coolers
20. Refrigeration Appliances
5.3.6.3
Plumbing & Misc. Mech.
1. Potable Water
2. Wastewater
3. Natural Gas
4. Fixtures
5. Water Heaters
6. Drinking Fountains
5.3.6.4
Architectural Features
1. Interior
2. Exterior
3. Miscellaneous
5.3.6.5
EMCS
1. System 600 Host
2. Programmable Field Cabinets
3. Instrumentation, Sensor & Wiring
5.3.6.6
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5.3.6.7
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ANNEX 5.3
CORRECTIVE MAINTENANCE

5.3.1 GENERAL INFORMATION

5.3.1.1 Annex Description

This annex section identifies the Corrective Maintenance (CM) requirements for SFUSS and IAGP. CM includes the scheduled or unscheduled work required to repair a piece of equipment, a system, or a real property facility to such a condition that it may be effectively utilized for its intended purpose through life cycle. Repair includes overhaul, reprocessing, or replacement of constituent parts or material that have deteriorated by action of the elements or usage, have been damaged, regardless of the cause, or have not been corrected through maintenance. CM shall repair to a condition equivalent to the original intended or design capacity, efficiency or capability, and shall comply with SSC site standards/Stennis Work Instructions (Available in the TRL). Parts and equipment used for repair shall meet all SSC standards and guidelines. The Contractor is responsible for preparation of scope definition descriptions, engineering requirements, work control, tracking and all other CM management services otherwise required under the terms of this Annex.

Specified structures and facilities are identified in Exhibit 8 of this annex, and IAGP is identified in Attachment J-10, List 1 and List 2. The defined systems in Table 5.1-1 and the numbered equipment in the MAXIMO equipment database are part of the specified SFUSS & IAGP. (See 5.1.2)

The Contractor shall use all possible inputs to identify CM work. These include CM discovered during PM, operations, PT&I, trouble calls, periodic inspections, casual observations, customer complaints, etc.

The contractor is expected to use to full advantage the equipment and facilities provided by the Government to offer the greatest extent of CM possible. Although minimum performance standards and guidelines have been established, the contractor is expected to establish and implement a CM program that is innovative and resourceful.

CM resulting from a Malfunction or Availability Loss shall comply with maximum response & repair times given in Table 5.5-2. Other identified CM work shall be accomplished within the maximum repair times given in Table 5.3-1 (unless otherwise specified within an individual line item). When a CM repair cannot be accomplished within the allowed repair time, due to circumstances beyond the control of the Contractor, the Contractor may obtain relief through a special request to the CO for a continuance. This procedure is detailed in 5.5.1.4. Failure to meet repair time or to obtain an approved continuance may affect incentive fee.

5.3.1.2 Definition of Terms

Due to the complexity of the required tasking, lack of common industry descriptions, and for the purposes of this contract, the following terms and others are defined and described in Annex 5.1:

a. Structures
b. Facilities
c. Utilities
d. Systems/Subsystems
e. Installation-Accountable Government Property (IAGP)

5.3.1.3 Contractor Responsibility

The Contractor is responsible for all CM work required for the specified SFSS & IAGP.

5.3.1.4 Temporary Repairs and Services

When permanent repairs require an extended outage, the Contractor shall perform temporary repairs, and/or provide temporary services when these

repairs/services are possible and will result in substantially earlier restoration of service. Temporary repairs shall meet all safety standards. Temporary services shall be provided using portable or rental equipment and other means, where feasible, to maintain the availability of facilities and systems.

When the permanent repair can be scheduled and work resumes, the CM shall be accomplished per this Annex. See 5.3.7.2.1 for emergency and mitigation work.

5.3.1.5 Trouble Calls

Trouble calls are a subset of CM, and are reactive maintenance generally called in by telephone by occupants of a facility, or maintenance workers. Trouble calls are divided into two categories: Emergency calls (Priority 1) and Routine calls (Priority 2, 3, 4). Historical data on trouble calls received can be found in the TRL.

Emergency trouble calls (Priority 1) require immediate action to either prevent loss of or damage to SSC property; restore services that have been disrupted; eliminate hazards to personnel or equipment; affect the operations of equipment or systems identified as critical.

Routine trouble calls (Priority 2 3, 4) are minor facility problems that are too small to be estimated (usually less than about $2,000 labor and material) and are generally responded to by grouping according to craft and location, and do not reasonably require detailed job planning.

The contractor shall be responsible for mitigating situations requiring emergency work. This includes any work, which consists of correcting a failure, or an anticipated/pending failure, which constitutes an immediate danger to personnel, property, or mission. Additionally, this includes clean-up actions resulting from an emergency situation, such as moving equipment, covering sensitive systems, etc., to preclude further damage to property, and follow up checks to ensure reliability of services. Regardless of the type of trouble call, the Contractor is responsible for sustaining feed back and direct contacts with all customers. To promote good customer relations, the Contractor will strive to ensure that for each trouble call there is a complete mutual understanding of the description of work, scheduling, and access requirements. Sustained feed back means keeping the customers advised of any problems or necessary changes in the work or schedule and sustaining this effort until work completion. A joint contractor/customer walk-thru final inspection of the work is desirable for highly visible or critical areas.

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ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
5.3.2	Utility Distribution		Nothing Additional	
5.3.2.1	Accomplish CM on Electrical 13.8 Kv System	As defined below in paragraphs 5.3.2.1.1 thru 5.3.2.1.11	Nothing Additional	Respond and perform all activities within required time constraints established in Table 5.3-1. Systems shall meet output as defined in System Definition, Table 5.1-1 and in this Annex. If there is a system malfunction or availability loss see Table 5.5-2. Repair damage, deterioration and worn equipment to protect reliability and preserve equipment though life cycle.
5.3.2.1.1	Accomplish CM on Air Brake Switches	The Contractor shall adjust linkage arms, repair or replace components resulting from discrepancies noted during PM's, during switching operations, or of trouble calls.	49 Air Brake Switches	See Paragraph 5.3.2.1
5.3.2.1.2	Accomplish CM on Fuse Cutouts	The Contractor shall repair or replace components so as to restore cutouts to original intended use.	150 Fuse Cutouts	See Paragraph 5.3.2.1
5.3.2.1.3	Accomplish CM on Pole Mounted Gang Operated Switches	The Contractor shall adjust mechanical linkage, repair or replace components so as to restore the switch to original operating condition.	38 Pole Mounted Gang Operated Switches	See Paragraph 5.3.2.1

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ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
5.3.2.1.4	Accomplish CM on B-4400 Substation	The Contractor shall adjust, repair, or replace equipment or components to restore the substation to its original operating condition.	1 B-4400 Substation	See Paragraph 5.3.2.1
5.3.2.1.5	Accomplish CM on SF6 Switches	The Contractor shall adjust, repair or replace equipment or components to restore the switch to its original operating condition.	30 SF6 Switches	See Paragraph 5.3.2.1
5.3.2.1.6	Accomplish CM on Pad Mounted Transformers	The Contractor shall repair or replace bushings and/or gaskets, leaking valves or gauges to restore transformer to original operating condition.	90 Pad Mounted Transformers	See Paragraph 5.3.2.1
5.3.2.1.7	Accomplish CM on Pole Mounted Transformers	The Contractor shall replace defective transformer(s) that have failed due to damage, rupture or leakage.	133 Pole Mounted Transformers	See Paragraph 5.3.2.1
5.3.2.1.8	Accomplish CM on Reclosers	The Contractor shall troubleshoot recloser and controller to determine malfunction, then remove and send offsite for repairs.	3 Reclosers	See Paragraph 5.3.2.1
5.3.2.1.9	Accomplish CM on Distribution System	The Contractor shall repair/replace poles, cross arms, guy wires, anchors, insulators, jumpers, clamps, overhead or underground cables, connectors, straps, ground rods, lightning arrestors, potheads to restore electrical service.	Distribution System 750 Poles 8 ckts. 48 miles OH Wire 11 miles UG Wire	See Paragraph 5.3.2.1
5.3.2.1.10	Accomplish CM on Area Lighting Systems	The Contractor shall repair/replace area lighting luminaries or poles as a result of damage by vehicular traffic or acts of nature.	621 in Lighting System	See Paragraph 5.3.2.1
5.3.2.1.11	Accomplish CM on Electric Meters	The Contractor shall replace defective electric	146 Electric Meters	See Paragraph 5.3.2.1

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
		meters.		
5.3.2.2	Accomplish CM for Potable Water Distribution System	Potable water systems are described in Table 5.1-1 System Definitions. See Below in 5.3.2.2.1 thru 5.3.2.2.2	See Below	See Paragraph 5.3.2.1
5.3.2.2.1	Accomplish CM for Wellhouse Systems	Include wells, pumps, and treatment systems	3 Well House Systems	See Paragraph 5.3.2.1
5.3.2.2.2	Accomplish CM for Water Storage Systems	Includes all elevated and ground level water storage tanks and their ancillary systems such as cathotic protection.	3 Water Storage Systems	See Paragraph 5.3.2.1
5.3.2.3	Accomplish CM for Sanitary Sewage System	The Contractor shall repair and replace all damaged and worn component parts of the system. Replacement parts shall be equal to or better in quality and capacity to that being replaced. All plumbing components shall be free of leaks and operate in accordance with the manufacturer's design specifications.	Systems consist of approximately 76,800 linear feet of forced main, and approximately 29850 linear feet of gravity main.	See Paragraph 5.3.2.1
5.3.2.3.1	Accomplish CM for Collection System Lift Stations	See paragraph 5.3.2.3 above.	47 Lift Stations	See Paragraph 5.3.2.1
5.3.2.3.2	Accomplish CM for Treatment Lagoons	See paragraph 5.3.2.3 above.	Effluent for Lagoon #1 is approximately 170,000 GPD, Lagoon #2 is approximately 70,000 GPD.	See Paragraph 5.3.2.1
5.3.2.3.3	Accomplish CM for Rock-Reed	See paragraph 5.3.2.3 above.	Two Rock-Reed	See Paragraph 5.3.2.1

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
			systems treat less than 3,000 Gallons Per Day (GPD).	
5.3.2.3.4	Accomplish CM for Septic Tank/Field Drain Systems	See paragraph 5.3.2.3 above.	Three septic tank/field drain systems treat less than 3,000 GPD.	See Paragraph 5.3.2.1
5.3.2.3.5	Accomplish CM for Treatment System in B-1105	See paragraph 5.3.2.3 above.		See Paragraph 5.3.2.1
5.3.2.4	Accomplish CM for Natural Gas Distribution System	The contractor shall make repairs, to the natural gas system (See Table 5.1-1 for description). After completing repairs to an area which affects the integrity of the gas system, pressurize the system and check for leaks. If the repair is made to a buried section of the system, a pressure test shall be accomplished prior to covering the repaired area.	Nothing Additional	See Paragraph 5.3.2.1
5.3.2.5	Accomplish CM for Fuel Systems	The diesel fuel system supplies fuel for use in engines. This includes stationary and portable generators, pumps, and the tug boat. The diesel fuel system includes, but is not limited to, monitoring system (Veeder Root System), storage tanks, fill pumps, recirculating pumps, supply pumps, valves, environmental controls, level measurement devices, flow indicators, flow elements, pressure regulators, gauges, fittings, and pipe. The propane fuel system provides fuel for heating in areas not serviced with natural gas. The system may	31300 Gallons of Fuel Stocked	See Paragraph 5.3.2.1

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		include, but is not limited to, fill pumps, storage tanks, valves, pressure gauges, level measurement devices, fittings and pipe.		
5.3.3	Accomplish CM on Marine Structures, Installed Equipment, Marine Equipment and Marine Material	Historical costs for this line item are $20,000/yr under a cost reimbursement type contract.	(See Annex 5.4 for detailed descriptions.) The canal system consists of approximately six miles of canals, banked with rip-rap, with most of the test area drainage directed into the canal through a system of ditches and culverts. The navigation lock allows marine traffic to drop from the canal level to the varying river level, a distance of approximately 18 ft. The bascule bridge is a double span, counter-balanced structure controlled by variable speed electric motors. The canal pumping station consists of 4	Performed to Availability defined in Annex 5.5. Housekeeping, and general appearance must be at a high level due to the public visibility of marine operations.

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
			vertical, electrical driven centrifugal pumps which are used to pump water from the river into the canal to maintain water level. Docks and piers: 15 oxygen docks, 9 hydrogen docks, 1 construction dock, 1/3 mile of piers, 75v dolphins, ¼ mile of dock timbers, 100 roller mooring devices, navigation markers, navigation lights, warehouse building, the tugboat Clermont II, skiff with outboard motor, and marine supplies and support equipment.	
5.3.3.1	Accomplish CM on the Canal System	The Canal System is defined as: surface water, structures and devices adjacent to the canal system which are installed as part of the canal waterway system, spillway, canal banks, riprap, navigation aids, piling, dolphins, mooring devices, sheet piling and timbers and other devices which are used or maintained by marine operations.	6 miles of canal system and surrounding. (Historical work load, 20 tasks/year)	See paragraph 5.3.3

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5.3.3.2	Accomplish CM on the Bascule Bridge	The Bascule Bridge is defined as: The bridge, bridge control building, all machinery and controls located within and exterior to the bridge structures, navigation lighting, approaches, traffic barriers and electrical power which supplies the bridge.	1 control building, and surrounding (Historical work load, 30 tasks/year)	See paragraph 5.3.3
5.3.3.3	Accomplish CM on the Navigation Lock	The Navigation Lock is defined as: The lock, lock control buildings, hydraulic equipment building, and all machinery and controls located within and exterior to the lock structure.	1 lock, 2 lock control buildings, 1 hydraulic and power supply building and equipment, and surrounding (Historical work load, 20 tasks/year)	See paragraph 5.3.3
5.3.3.4	Accomplish CM on the Canal Pump Station	The Canal Pump Station is defined as the building structure, water inlet and discharge sumps and gratings, equipment located within and exterior to the building and associated piping systems.	4 vertical centrifugal pumping units, piping, valves, inlet grating, outlet grating, and surrounding (Historical work load, 2 tasks/year)	See paragraph 5.3.3
5.3.3.5	Accomplish CM on the Marine Operations Building (B 3201)	Building 3201 is used exclusively for storage of marine supplies and equipment and as an office facility. The building itself should be costed under Annex 5.3.6. CM to equipment within this facility should be costed under this Annex	1 air compressor, warehouse fencing, marine supplies and equipment. (Historical work load, 4 tasks/year)	See paragraph 5.3.3
5.3.3.6	Accomplish CM on Marine Signage,	Unless maintained under other Annexes or in other	3 work barges, dock	See paragraph 5.3.3

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
	Navigation Aids, Safety Equipment and Other Special Marine Equipment Including the Skiff.	areas of this Annex, cost any items that are not covered above. These include the marine skiff with outboard motor, work barges, dock ramp, fenders and other marine equipment.	ramp, marine skiff, and various marine equipment. (Historical work load, 10 tasks/year)	
5.3.3.7	Accomplish CM on the NASA Tugboat Clermont II	The tug is critical item of equipment and shall be maintained to strict Coastguard Standards and as determined by the tug captain. This line item includes the tugboat interior and exterior and all equipment mounted on the tug, or mobile equipment used on the tug. This includes mooring lines, winches, fenders, communication equipment , electronic equipment, electrical equipment, engines, compressors, lifting devices and all other equipment which is part of the tugboat operations.	1 tugboat (Historical work load, 5 tasks/year)	See paragraph 5.3.3 Support mission requirements within 2 hours notice.
5.3.3.8	Reporting CM (DR 5-GA24)	The Contractor shall document all CM actions in accordance with Annex 5.4 (CMMS). The Contractor will submit to the CO and designated NASA personnel an equipment failure report. For critical systems in the Test Complexes, these reports shall be submitted within 2 hours of the equipment outage during normal work hours, and within 2 hours of the start of the next normal working day for outages that occur after hours or on holidays.	Nothing Additional	Reports shall be documented in 5 working days from time of completion of repairs.
5.3.4	Accomplish CM for Roads, Bridges & Storm Drain Systems	The Contractor shall repair or replace components and/or devices found to be defective during scheduled PM's (See Annex 5.2) or in response to	Nothing Additional	See Paragraph 5.3.2.1

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
		trouble calls.		
5.3.4.1	Accomplish CM for Road System	The Contractor shall perform CM in response to trouble calls, or as a result of discrepancies not corrected during scheduled PM's (See Annex 5.2).	There are approximately 31 miles of primary and 15 miles of secondary roads.	See Paragraph 5.3.2.1
5.3.4.2	Accomplish CM for Bridges (excluding the Bascule Bridge).	The Contractor shall perform CM in response to trouble calls, or as a result of discrepancies not corrected during scheduled PM's (See Annex 5.2).		See Paragraph 5.3.2.1
5.3.4.3	Accomplish CM for Storm Drain System	The Contractor shall perform CM in response to trouble calls, or as a result of discrepancies not corrected during scheduled PM's (See Annex 5.2).	Nothing Additional	See Paragraph 5.3.2.1
5.3.5	Accomplish CM for Fire Protection & Alarm Detection Systems	The Contractor shall repair or replace components and/or devices found to be defective during scheduled PM's (See Annex 5.2) or in response to trouble calls.	Nothing Additional	See Paragraph 5.3.2.1
5.3.5.1	Accomplish CM for the Security Radio Frequency (RF) Control Console	The Contractor shall perform CM in response to trouble calls, or as a result of discrepancies not corrected during scheduled PM's (See Annex 5.2).	1 Console	See Paragraph 5.3.2.1
5.3.5.2	Accomplish CM for RF Transceivers	The Contractor shall perform CM on any Fire Alarm (FA) RF & transceiver failing a "self test". Repairs must be completed within 24 hours of detection.	89 RF Transceivers	Repair within 24 hours of detection.
5.3.5.3	Accomplish CM for Fire Alarm (FA) Panels	The Contractor shall perform CM on all fire alarm panels in response to trouble calls, alarms, via the	91 Fire Alarm Panels	See Paragraph 5.3.2.1

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		RF System or as a result of discrepancies not corrected during PM's.		
5.3.5.4	Accomplish CM for Security Systems	The Contractor shall perform CM discovered as a result of trouble calls or false alarms, on all security systems connected to the sitewide RF alarm system.	2 Security Systems	See Paragraph 5.3.2.1
5.3.5.5	Accomplish CM for Sprinkler & Suppression Systems	The Contractor shall inspect, repair, and maintain all fire suppression systems including sprinklers, foam, dry chemical and gas (CO_2 and Halon) in accordance with applicable ****National Fire Protection Association (NFPA) 13 & 72**.** This includes all piping, valves, tanks, pumps, gauges, and associated equipment.	100 Sprinkler and 4 Suppression Systems	See Paragraph 5.3.2.1
5.3.5.6	Accomplish CM for Fire Hydrants	The Contractor shall inspect, repair and maintain all fire hydrants at SSC as a result of trouble calls, and/or as a result of discrepancies not corrected during scheduled PM's.	139 Fire Hydrants and 16 Post Indicator Valves	See Paragraph 5.3.2.1
5.3.6	Accomplish CM for Buildings and Structures		Nothing Additional	See Paragraph 5.3.2.1
5.3.6.1	Accomplish CM for Interior Electrical Systems	Electrical work shall include repair of electrical equipment and systems up to 600 volts for each building beginning at and including the main distribution panel. All electrical equipment, connections, feeders, branch circuits and end use devices shall be repaired or replaced so as to operate as originally intended and designed, and in a safe manner. All workmanship and materials shall conform to the ****National Fire Protection**	Nothing Additional	See Paragraph 5.3.2.1

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		Association (NFPA) 70, National Electrical Code.** Maintenance/Repair of lamps, appliances, and cords owned by individuals is not the responsibility of the Contractor.		
5.3.6.1.1	Accomplish CM for Switchboards and Distribution Panelboards	The Contractor shall ensure that Switchboards and Panelboards are securely fastened IAW ****NFPA 70**.** Defective molded case circuit breakers shall be replaced with circuit breakers of equal rating. Defective adjustable trip circuit breakers shall be repaired, adjusted or replaced . All loose connections shall be tightened.	1257 Switchboard and Distribution Panelboards	See Paragraph 5.3.2.1
5.3.6.1.2	Accomplish CM for Motor Control Centers	The Contractor shall repair or replace components found to be defective during scheduled PM activities (See Annex 5.2), such as starter module circuit breakers, control transformers, wiring, relays or other devices. CM as a result of trouble calls shall also be included.	94 Motor Control Centers	See Paragraph 5.3.2.1
5.3.6.1.3	Accomplish CM for Interior and Exterior Lighting Systems, Emergency and Exit Lighting Systems.	Cracked, broken or missing receptacle and switch faceplates shall be replaced with new plates, of the same color and size. Light fixture lenses and globes which are damaged or missing shall be replaced with same size and color. Burnt out bulbs and lamps reported by customers are trouble calls, and shall include cleaning of lenses, reflectors and luminaries to obtain maximum light output.	112 Systems	See Paragraph 5.3.2.1
5.3.6.1.4	Accomplish CM for Dry Type Transformers	The Contractor shall perform CM in response to trouble calls, or as a result of discrepancies not corrected during scheduled PM's. See Annex 5.2	162 Dry Type Transformers	See Paragraph 5.3.2.1

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		for PM requirements.		
5.3.6.1.5	Accomplish CM for Uninterruptible Power Supply (UPS) Systems	The Contractor shall troubleshoot and repair or replace components, battery cells, and assemblies to restore equipment to original operating condition.	70 UPS (45 Kva and Above)	See Paragraph 5.3.2.1
5.3.6.1.6	Accomplish CM for Generators	The Contractor shall troubleshoot, repair components or replace with like items so as to operate as originally intended and designed, and in a safe manner.	11 Generators	See Paragraph 5.3.2.1
5.3.6.1.7	Accomplish CM for Cathodic Protection System	The Contractor shall correct all discrepancies documented during performance of scheduled PM. See Annex 5.2 for PM requirements.	1 Cathodic Protection System and 11 rectifiers	See Paragraph 5.3.2.1
5.3.6.1.8	Accomplish CM for Lightning Protection, Grounding and Surge Protection Systems	The Contractor shall repair or replace ground conductors, air terminals and ground rods as a result of damage from excavation or construction to restore the system to its original intended use.	237 Systems	See Paragraph 5.3.2.1
5.3.6.2	Accomplish CM for HVAC and Refrigeration Equipment and Systems	The Contractor shall perform all necessary repairs to HVAC and Refrigeration Equipment and Systems (identified in the MAXIMO Equipment Database). This includes CM for all peripheral and support equipment, parts and components such as pumps, motors, actuators, piping, expansion tanks, controls, instrumentation, Variable Air Volume (VAV) boxes, ducts, insulation and other components necessary to provide a complete and operational system.	Nothing Additional	See Paragraph 5.3.2.1
5.3.6.2.1	Accomplish CM for Centrifugal and	Perform CM to meet defined output, reliability and	21 Units	See Paragraph 5.3.2.1

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	Screw Compressor type Chillers and Associated Chilled Water Distribution Systems.	availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits. Chillers shall be maintained below alarm levels of vibration analysis (See Exhibit 3 of this Annex).		
5.3.6.2.2	Accomplish CM for Reciprocating Compressor, Water Cooled Chillers and Heat Lifts, and Associated Water Distribution Systems.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	9 Units	See Paragraph 5.3.2.1
5.3.6.2.3	Accomplish CM for Reciprocating Compressor, Air Cooled Chillers and Associated Chilled Water Distribution Systems.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	16 Units	See Paragraph 5.3.2.1
5.3.6.2.4	Accomplish CM for Gear Drive, Forced Draft Cooling Towers and Associated Condenser Water Distribution Systems.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	21 Units	See Paragraph 5.3.2.1
5.3.6.2.5	Accomplish CM for Belt Drive, Forced Draft Cooling Towers and Associated Condenser Water Distribution Systems.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	9 Units	See Paragraph 5.3.2.1
5.3.6.2.6	Accomplish CM for Gas Fired Hot Water Heating Boilers and Associated Hot Water Distribution Systems.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	52 Units	See Paragraph 5.3.2.1.
5.3.6.2.7	Accomplish CM for Electric Hot Water Heating Boilers and Associated Hot Water Distribution Systems.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	3 Units	See Paragraph 5.3.2.1

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5.3.6.2.8	Accomplish CM for Condenser Water Chemical Injection Systems	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	13 Units	See Paragraph 5.3.2.1
5.3.6.2.9	Accomplish CM for Pumps (CHW, HW, CW, and Industrial Water Pumps).	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	213 Units	See Paragraph 5.3.2.1
5.3.6.2.10	Accomplish CM for CHW type AHUs.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	250 Units	See Paragraph 5.3.2.1
5.3.6.2.11	Accomplish CM for HVUs.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	87 Units	See Paragraph 5.3.2.1
5.3.6.2.12	Accomplish CM for CHW type CRUs.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	49 Units	See Paragraph 5.3.2.1
5.3.6.2.13	Accomplish CM for DX type CRUs (Water Cooled and Air Cooled).	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	46 Units	See Paragraph 5.3.2.1
5.3.6.2.14	Accomplish CM for DX type Air Conditioning Equipment, including Split Systems, Unitary Units, RTUs, Window Units, etc. (Water Cooled and Air Cooled).	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	392 Units	See Paragraph 5.3.2.1

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5.3.6.2.15	Accomplish CM for Unit Heaters.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	156 Units	See Paragraph 5.3.2.1
5.3.6.2.16	Accomplish CM for Fans; Blowers, Vents and Hoods.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	541 Units	See Paragraph 5.3.2.1
5.3.6.2.17	Accomplish CM for Air Compressors and Air Dryers.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	32 Compressor Units, 23 Dryers	See Paragraph 5.3.2.1
5.3.6.2.18	Accomplish CM for Kitchen Exhaust Hoods.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	7 Units	See Paragraph 5.3.2.1
5.3.6.2.19	Accomplish CM for Walk-in Coolers.	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	3 Units	See Paragraph 5.3.2.1
5.3.6.2.20	Accomplish CM for Refrigeration Appliances (Ice Makers, Refrigerators, Freezers, etc).	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle. Maintain refrigerant leaks below EPA established limits.	33 Units	See Paragraph 5.3.2.1
5.3.6.3	Accomplish CM for Plumbing & Miscellaneous Mechanical	The Contractor shall perform all necessary repairs to the Plumbing and Miscellaneous Mechanical System.	Nothing Additional	See Paragraph 5.3.2.1
5.3.6.3.1	Accomplish CM for Potable Water	Perform CM to meet defined output, reliability and	See Annex 5.2	See Paragraph 5.3.2.1

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	System	availability, and to preserve and protect equipment through life cycle.		
5.3.6.3.2	Accomplish CM for Wastewater System	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	See Annex 5.2	See Paragraph 5.3.2.1
5.3.6.3.3	Accomplish CM for Natural Gas System	Perform CM to meet defined output, reliability and availability, and to preserve and protect equipment through life cycle.	See Annex 5.2	See Paragraph 5.3.2.1
5.3.6.3.4	Accomplish CM for Plumbing and fixtures	All sinks, tubs, urinals, basins, and faucets, lavatories, showers, drain lines, etc. shall be free of leaks and drips, operate properly, drain freely, and be free of excessive dripping, cracks, and coloration. All fixtures and components thereof that cannot be repaired shall be replaced with fixture that are in strict compliance with ****BOCA Basic Plumbing Code 978-4th Edition**.**	Approximately 500	See Paragraph 5.3.2.1
5.3.6.3.5	Accomplish CM for Water Heaters	Water heaters shall be repaired or replaced to provide hot water at least 140° F without leaks. Controls, control devices, and safety devices shall operate safely and properly. Water heater insulation jackets (3 inch minimum thickness) shall be installed on all replacement water heaters and/or existing units when excessively worn, damaged, or missing.	135 Water Heaters	See Paragraph 5.3.2.1
5.3.6.3.6	Accomplish CM for Drinking Fountains	The Contractor shall repair, and replace all water fountains and their component parts. Fountains shall be free of leaks and shall operate in accordance	225 Drinking Fountains	See Paragraph 5.3.2.1

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		with the manufacturer's design specifications. All damaged and worn component parts shall be replaced. Replacement fountains or component parts shall be equal to or better in quality, size, and capacity to that being replaced. Fountains shall be firmly secured to support structures, and free of movement and vibration.		
5.3.6.4	Accomplish CM for Carpentry Architectural Features	Carpentry and masonry repair, and minor construction services shall be provided in accordance with the definitions, procedures, and standards specified in this subsection and in **NHB 7320.1 Facilities Engineering Handbook, and in SPECSINTACT** (the automated specification processing system used by NASA).	Nothing Additional	See Paragraph 5.3.2.1
5.3.6.4.1	Accomplish CM for the Building Interior features listed below:	This section is for repair of damaged building interiors, as defined below; however, worn or deteriorated building interiors will be repaired or replaced under a service request.	Building Drawings in C.E.F. for Sections 5.3.6.4.1 -5.3.6.4.3	See Paragraph 5.3.2.1
	(1) Floors & Floor Coverings	Damaged flooring, subflooring, and structural members shall be repaired or replaced to provide a structurally sound, uniform, and aesthetic surface that is free of cracks, breaks, chips, tears, gouges, stains, and buckling.		See Paragraph 5.3.2.1
	(a) Resilient Tiles	Damaged tiles shall be replaced with matching tiles of original thickness and shall be removed without affecting adjacent tiles. If tile is replaced adjacent to a wall, vinyl baseboards shall be replaced. Installation shall be in accordance with the tile		See Paragraph 5.3.2.1

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		manufacturer's instructions.		
	(b) Linoleum and Vinyl Sheet Flooring	Areas of flooring having gashes or other defects shall be replaced with matching sheet flooring of the same thickness as the original. Damaged flooring shall be removed without affecting adjacent areas. The patch shall be installed using adhesive as recommended by the flooring manufacturer. If flooring is replaced adjacent to a wall, vinyl baseboard shall be replaced.		See Paragraph 5.3.2.1
	(c) Finished Wood Flooring	Loose or slightly warped flooring shall be renailed or reglued to subflooring and/or concrete slabs with appropriate adhesive. Scarred flooring that has holes and gashes less than ½ inch wide shall be filled and sealed. Damaged flooring shall be removed and replaced without damage to adjacent walls or flooring.		See Paragraph 5.3.2.1
	(d) Carpet	Damaged carpeting shall be stretched and repaired to match existing carpeting.		See Paragraph 5.3.2.1
	(e) Concrete Floors	Cracked, broken or spalled areas shall be patched with a non-shrinking cement mortar. The patch shall be finished even with the adjacent surfaces and finished to match existing texture.		See Paragraph 5.3.2.1
	(f) Vinyl Baseboards	Damaged sections of vinyl baseboard shall be removed and replaced with matching baseboard.		See Paragraph 5.3.2.1
	(g) Ceramic Tile	Ceramic tiles that are broken, missing, cracked or discolored shall be replaced. Floor tiles shall be		See Paragraph 5.3.2.1

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		regrouted, to provide a waterproof seal. In those cases where re placement tiles of an exact match cannot be found, the Contractor shall be required to remove and replace non-defective tiles to create a pattern and minimize the visual effect of the mis-match.		
(2)	Interior Walls, Ceilings, and Trim	Damaged walls, ceilings, and related trim shall be replaced to provide an attractive surface free of noticeable cracks, spalls, raised areas, holes and dents, and marks and stains. Wood trim items and ceiling fixtures shall be removed as necessary to provide access to the damaged area. On completion of the repair activity, fixtures and trim shall be reinstalled, nails set and filled and items repainted or refinished to restore them to their original condition.		See Paragraph 5.3.2.1
	(a) Drywall	Small dents and holes shall be repaired with spackle over a backing plate when necessary. Spackle shall be feathered on the adjacent surfaces. Holes and other defects in wallboard between two studs or beams shall be repaired by removing a rectangle of gypsum board to the center of the adjoining studs or beams. Replacement gypsum board shall be of the same thickness and texture as the adjacent sheets.		See Paragraph 5.3.2.1
	(b) Vinyl Wall Covering	Wall covering that has been ripped, scarred, stained, or otherwise damaged shall be replaced as necessary. Wall covering shall be repaired if the damaged area can be patched and is not noticeable. Wall covering that is extensively damaged or for		See Paragraph 5.3.2.1

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		which a matching wall covering is not available shall be repaired by replacing the wall covering on the entire wall. If matching wall covering is not available, the Contractor shall find a comparable substitute. The Contracting Officer will approve all replacement wall coverings that do not match the existing wall covering. Replacement wall covering shall be hung according to the manufacturer's recommendations.		
	(c) Ceramic Tile	Ceramic tiles and window stools and marble saddles that are broken, missing, cracked or discolored shall be replaced, and required. Tiles shall be regrouted to provide a waterproof seal. In those cases where replacement tiles of an exact match cannot be found, the Contractor may be required to remove and replace non defective tiles to create a pattern and minimize the visual effect of the mismatch.		See Paragraph 5.3.2.1
	(d) Suspended Ceilings	Broken and badly stained ceiling tiles shall be replaced with tiles of the same material, style, size, and color. Damaged and broken suspended grid system shall be repaired/replaced as necessary to provide a suspended ceiling system as designed.		See Paragraph 5.3.2.1
(3)	Doors	Interior doors shall be maintained/repaired to operate smoothly without binding or sticking. Damaged, deteriorated, or missing doors and associated hardware shall be repaired or replaced. The replaced doors shall be the same type and have the same finish as the original doors. All replacement doors shall be installed with the		See Paragraph 5.3.2.1

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		hardware from the damaged door unless the hardware is unrepairable. Small holes in door faces shall be filled and finished to match the surrounding door surface.		
	(a) Overhead or Rolling Doors and Vault Doors	Rails shall be checked for alignment. Rusted or corroded areas shall be repaired or replaced. All bearings, rollers, gears, and pulleys shall be properly lubricated. All hangers, bolts, springs, and pins shall be free of rust and corrosion and shall be tightly mounted and secured. Motors and controls shall operate properly and be properly lubricated. Cables and fusible links shall be correctly installed and free from corrosion and rust.		See Paragraph 5.3.2.1
(4)	Stairs & Stairwells	The Contractor shall secure loose treads, risers, stringers, handrails, brackets and other components. Badly damaged stair and handrail components shall be refinished to match original components. Damaged stair finish shall be repaired. Trim items susceptible to damage during the repair activity shall be removed and reinstalled upon completion of the repair activity.		See Paragraph 5.3.2.1
(5)	Traverse/Curtain Rods	Sagging and/or non-functioning rods shall be repaired to an operating condition, if possible. If beyond economical repair, as determined by the Contracting Officer, rods shall be replaced. Loose brackets shall be secured. Broken cords shall be replaced. Broken or missing drapery slides shall be replaced. Rods shall be level and parallel with the ceiling. Additional support brackets shall be		See Paragraph 5.3.2.1

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		installed to support sagging rods.		
(6)	Venetian Blinds and Shades	Venetian blinds and window shades shall be restored to a smooth operating condition. Cracked or damaged slats shall be replaced. Broken or worn cords shall be replaced. Soiled or worn tapes shall be replaced. Loose or missing brackets and supports shall be secured or replaced. Damaged or deteriorated hardware shall be replaced or reworked to operating condition. Damaged rails and torn fabric shall be repaired. If beyond economical repair, as determined by the Contracting Officer, or missing, venetian blinds and shades shall be replaced.		See Paragraph 5.3.2.1
(7)	Cabinets and Countertops	Damaged or deteriorated cabinets, shelving, and countertops shall be repaired or replaced. Missing or inoperative hardware shall be replaced. Countertops shall be free of warped, chipped, burned, cut, or otherwise marred areas.		See Paragraph 5.3.2.1
(8)	Interior Accessories	The Contractor shall repair or replace damaged, inoperative, or missing interior accessories including, but not limited to, towel bars, shower curtain rods, medicine cabinets, mirrors, and door stops. Loose accessories shall be resecured. Damaged or missing items shall be replaced with items matching the original. Replacement hardware shall conform to the **Building Hardware Manufacturer's Association (BHMA) Product Standard.** Hardware items requiring lubrication shall be lubricated and restored to an operable		See Paragraph 5.3.2.1

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		condition. Repairable rusted metal components shall be cleaned of all rust, coated with a rust inhibitor and restored to an operational condition.		
5.3.6.4.2	Accomplish CM for Building & Structure Exterior features listed below	This Section is for repair of damaged building exteriors, as defined below. Worn or deteriorated building exteriors will be repaired or replaced under Annexes 5.6 or 5.7.	Building Drawing in CEF	See Paragraph 5.3.2.1
(1)	Exterior Walls	Damaged wall areas shall be repaired or replaced to restore them to a serviceable, structurally sound, and watertight condition. This includes, but is not limited to, replacing damaged masonry units, tuckpointing loose or eroded mortar joints, sealing penetrations in wall openings, replacing damaged or deteriorated structural members, siding, underlayment, and exterior trim, replacing miscellaneous hardware items, and removal of graffiti, or other defects that would render an unsightly appearance to exterior walls.		See Paragraph 5.3.2.1
	Masonry	Damaged masonry units (brick or concrete block) shall be replaced with a unit of the same size, color and texture. The mortar shall be completely removed and the cavity cleaned and all debris removed. The masonry unit shall then be reseated in mortar and the remaining cavity packed with mortar. All joints between masonry units shall be pointed to match existing. Damaged mortar joints shall be chipped out, cleaned and dampened before being repainted. Repainted joints shall match undamaged joints.		See Paragraph 5.3.2.1

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	Hardboard Siding	Damaged hardboard siding shall be removed without damaging adjacent siding or underlayment. Replacement siding shall match the existing siding in color, texture, and material. Nails shall be of the type and size specified by the manufacturer and shall be driven flush. All joints shall be caulked.		See Paragraph 5.3.2.1
	Concrete	Badly damaged concrete walls shall be repaired with a nonshrinking cement mortar and painted to match.		See Paragraph 5.3.2.1
	Artificial Stucco	Damaged stucco walls shall be repaired and painted to match.		See Paragraph 5.3.2.1
	Metal Siding	Small areas of damaged wall may be spliced with like metal panels, larger damaged areas are to be replaced with like panels.		See Paragraph 5.3.2.1
	Seams	Seams between window or door frames and exterior walls shall be caulked. Old joints shall be scraped and cleaned with a solvent recommended by the caulking manufacturer. The caulking shall be applied according to the manufacturer's directions.		See Paragraph 5.3.2.1
	Metal Flashing and Trim	Damaged metal flashing and trim shall be repaired or replaced to match the existing trim.		See Paragraph 5.3.2.1
(2)	Exterior Trim	Exterior trim, including all exterior moldings, millwork, shutters, and cornice shall be repaired or replaced .		See Paragraph 5.3.2.1
(3)	Exterior Concrete and Masonry	Exterior concrete (portland cement and asphaltic)		See Paragraph 5.3.2.1

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	Structures	surfaced areas within five feet of the building or structure, such as patios, equipment access pits, sidewalks, and steps, shall be repaired so that they are structurally sound, at original alignment and grade, and are free of damage and major cracks. Roots that cause or contribute to concrete damage shall be removed and the area backfilled. Masonry fences, planters, and steps shall be repaired to replace missing or broken masonry units and repair deteriorated mortar parts, gaps, breaks, and loose components.		
(4)	Exterior Accessories	Damaged, or missing building numbers, exhaust fan vent caps, chimney caps, and other miscellaneous components and hardware shall be installed, repaired, or replaced .		See Paragraph 5.3.2.1
(5)	Stairs	Damaged stairs, stairways, and fire escape stairs, including treads, risers, nosings, stringers, brackets, balustrades, handrails, and other components shall be repaired or replaced .		See Paragraph 5.3.2.1
(6)	Doors, Windows, and Screens	Doors (including storm doors), windows (including storm windows), and screens shall operate smoothly without binding or sticking in accordance with the manufacturer's design. Damaged, or missing doors, windows, and screens, and associated components shall be repaired or replaced . Caulking, glazing, and weather-stripping shall be fully intact to maintain a fully weather tight seal. Replacement glass shall be of the same size, type, and quality as the existing glass.		See Paragraph 5.3.2.1

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	General Doors	Damaged, warped, swollen, and sagged doors shall be repaired/replaced with doors the same type and size. Exterior doors shall be removed and replaced the same work day. All replaced doors shall be installed with hardware from existing doors, if practicable. Cracked and broken glass in doors shall be replaced with the same quality, type, and size.		See Paragraph 5.3.2.1
	Sliding Doors	Damaged metal and wooden sliding doors and related hardware shall be repaired/replaced with doors and related hardware of the same type, size, and color.		See Paragraph 5.3.2.1
	Screens	Replacement screening shall be of the same material as the existing metallic screening. Small holes (less than four square inches) in screens may be repaired with a patch matching the existing screening.		See Paragraph 5.3.2.1
	Hardware	Damaged, inoperable, or missing hardware such as hinges, locks, striker plates, latches, keepers, window operating mechanisms, door closures, springs, etc. shall be adjusted, repaired, or replaced . Replacement hardware shall match existing hardware in type, size, quality and finish and meet the ****Building Hardware Manufacturer's Association (BHMA) Product Standards**.** Hardware shall be installed in accordance with the manufacturer's recommendations.		See Paragraph 5.3.2.1
	Overhead or Rolling Doors and Blast Doors	Rails shall be checked for alignment. Rusted or corroded areas shall be repaired or replaced. All		

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		bearings, rollers, gears, and pulleys shall be properly lubricated. All hangers, bolts, springs, and pins shall be free of rust and corrosion and shall be tightly mounted and secured. Motors and controls shall operate properly and be properly lubricated. Cables and fusible links shall be correctly installed and free from corrosion and rust.		
5.3.6.4.3	Accomplish CM for the Miscellaneous Structures	Repair or replace damages to flagpoles, monuments, bleachers, and towers.	Building Drawing in CEF	See Paragraph 5.3.2.1
		Repair or replace damaged fences & gates including, but are not limited to, the following: repairing holes in the chain link fence and wire cages; stringing barbed wire on top of the fence; replacing or resetting fence support stanchions; replacing or repairing hinges and locking devices; and removing rust and painting fences.		See Paragraph 5.3.2.1
		Repair sidewalks (5 feet beyond building) that have buckled more than 1 inch out of alignment. Repair so that they are structurally sound, in alignment, at original grade, and free of damage and cracks. Where roots have caused buckling, remove roots and backfill.		See Paragraph 5.3.2.1
				See Paragraph 5.3.2.1
5.3.6.5	Accomplish CM for EMCS	Contractor shall perform all necessary CM for the EMCS System. This shall include CM for the Landis & Staefa System 600 Host as well as all associated field panels, wiring, and instrumentation.	See System Definition, Annex 5.1, Table 5.1-1.	Time constraints given in Table 5.3-1 or 10 days (whichever is less). Output as defined in System

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		CM activities shall not modify the general configuration or the functionality of the EMCS without Government Approval. IMPORTANT: Note that most field cabinets and instrumentation are directly associated with and required for the operation of equipment or systems identified as part of this contract. Where failure of EMCS field cabinets or instrumentation results in malfunctions or loss of availability for equipment or systems, Availability Losses or Malfunctions will be accrued against the affected equipment/systems until the equipment/systems are restored to normal operation. The allowed repair time for EMCS cabinets, instrumentation and wiring does not relieve/reduce contractor responsibility and liability for maintaining Availability of the controlled equipment/systems. Where monitoring capability is lost, the Contractor shall be responsible for monitoring equipment to maintain reliability and protect against damage. Where equipment is operated in hand mode, the Contractor shall also start/stop equipment to maintain energy efficient operation.		Definition Table 5.1-1 and in this annex. Repair damage, deterioration and components to protect reliability. Provide documentation per 5.3.3.8.
5.3.6.5.1	Accomplish CM for System 600 Host.	Perform CM for the System 600 Central Host to restore the system to fully functional and reliable condition, including the Central Processor, PC terminals, keyboards, monitors, printers, tape/disk drives, power protection devices, hardware,	One Central Processor, 2 PC Terminals. See System Definition, Annex 5.1	Restore complete, functional and reliable operation. Time constraints in Table 5.3-1 or 10 days

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		firmware, software, interconnecting wiring and other appurtenances required to have a completely functional and maintainable host.		(whichever is less).
5.3.6.5.2	Accomplish CM for Programmable Field Cabinets.	Perform CM for the field cabinets to restore fully functional and reliable condition, including MBCs, SCUs, UCs, wiring, uninterruptable power sources, and other appurtenances required to provide a complete, functional and reliable microprocessor based field control cabinet.	63 ea MBCs. 87 ea SCUs. 34 ea UCs.	Restore complete, functional and reliable operation. Time constraints in Table 5.3-1 or 10 days (whichever is less).
5.3.6.5.3	Accomplish CM for instrumentation, sensors and wiring.	Perform CM for instrumentation, sensors and wiring. It is important to note that most of these points are directly related to the operation and/or monitoring of systems and equipment. The 45 day requirement is the maximum allowed time for repair where points do not result in malfunctions or availability losses to an equipment item or system (e.g. points which only monitor Criticality Level III & lower equipment/conditions and do not actually perform a control function). Where loss of an EMCS point results in malfunction or loss of availability of an equipment item or system, the repair time will be established by the equipment/system as defined in Annex 5.5.	Approximately 14,000 field points.	Restore complete functional and reliable operation. Respond and repair within time constraints established in Table 5.3-1 or 45 days (whichever is less).
5.3.6.6	Accomplish CM for Elevators	Provide CM for the passenger and freight, cable and hydraulic elevators and dumbwaiters listed in the Inventory of Vertical Transportation Equipment List	Elevators and Dumbwaiters are listed in Exhibit 5, in	See Paragraph 5.3.2.1

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		in Exhibit 5. Perform work necessary to determine the cause of system and equipment malfunctions, eliminate the cause(s) and restore the system or equipment to satisfactory working condition. All repair work and replacement parts shall satisfy the recommendations and requirements of **ASME A17.1**. Major repairs or modifications as defined by **ASME A12.1** require recertification. PM including routine and periodic inspections/tests and recertification shall be accomplished under Annex 5.2.	the Inventory of Vertical Transportation Equipment List.	
5.3.6.7	Accomplish CM for Built in Cranes	All repair work and replacement parts shall satisfy the recommendations and requirements of **ASME B30.10 through B30.13, B30.15 through B30.17 "Safety Standards for Cableways, Cranes, Derricks, Hoists, Jacks and Slings**." Repairs or alterations to non-lifting, secondary lifting, or holding components such as suspension assemblies, electrical systems, crane cab, do not necessitate the need for a load test; although a functional check shall be performed to determine if the repairs or alterations are acceptable.	Exhibit 1, Inventory of Build-in Cranes, Monorails and Hoists	See Paragraph 5.3.2.1
5.3.7	Accomplish Trouble Call Work	See description of trouble calls in General Information 5.3.1.5		
5.3.7.1	Receive Trouble Calls	The Contractor's work control center will receive all	Historical: 6585	No instance of phone not

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		trouble calls 24 hours per day, seven days a week, including weekends and holidays and classify each call. All telephone calls shall be answered within 30 seconds by an individual fully familiar with the Contractor's work control procedures and the terms and conditions of this contract. A description of the problem or requested work, date and time received, location, requestor's name organization and telephone number and other appropriate information will be placed on a Work Order and processed by the Contractor. The data will be entered into the CMMS by the Contractor daily.	Trouble Calls for FY 97	being answered. No instance of work not being entered into MAXIMO.
5.3.7.2	Respond to & Work Trouble Calls	The Contractor shall have procedures for picking up trouble call work authorizations from the Contractor's work control center during regular working hours, responding to emergency and routine trouble calls 24 hours per day, seven days a week, including weekends and holidays. A single local telephone number shall be provided by the Contractor for receipt of all trouble calls.	See Paragraph 5.3.7.1	See Paragraph 5.3.2.1
5.3.7.2.1	Emergency Trouble Calls (Priority 1)	Emergency trouble calls shall be responded to immediately and the Contractor must be on the job site and working within 30 minutes after receipt of an emergency trouble call during regular working hours. After regular working hours, and when workers must be called in, response time is 2 hours. The Contractor shall work continuously without interruption and shall arrest the emergency condition before departing the job site (e.g., shut off		No instance of non-response.

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		water, close a gas valve, temporarily patch a roof leak, etc.). If further labor and material (follow up work) are required to complete the repair, the emergency repair will be stabilized and accomplished in accordance with normal CM.		
5.3.7.2.2	Routine Trouble Calls (Priority 2,3, 4)	Routine trouble calls are minor facility problems that are too small to be estimated (usually less than about $2000) and are generally responded to by grouping according to craft and location, and do not reasonably require detailed job planning. All routine trouble calls shall be completed as specified in Table 5.3-1. Routine calls shall normally be accomplished during regular working hours, Monday through Friday.		Respond to all routine trouble calls.
5.3.7.2.3	Trouble Calls for Lighting	The Contractor shall respond to trouble calls for replacing burned out or blinking light bulbs and tubes between scheduled relamping services and is a special class and is an exception to Table 5.3-1 response times. Relamping will be accomplished under Annex 5.7 Programmed Maintenance. Trouble calls for lighting in work areas shall be responded to within 2 days during regular working hours. Lighting outages in common use areas such as halls, restrooms, and lobbies that are not a safety problem may be scheduled with work area trouble calls. Lighting trouble call work includes cleaning of lens or lenses reflectors and luminaries to obtain maximum light output.		Respond to all lighting trouble calls.

ANNEX 5.3
CORRECTIVE MAINTENANCE

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5.3.7.2.4	Trouble Calls Beyond Scope of Routine Call	When the Contractor receives/responds to a routine trouble call and believes that the work is beyond the scope of a trouble call, as defined above, the work shall be performed as normal CM.		Perform work either as trouble call or CM.
5.3.7.2.5	Completed Trouble Calls	Within one working day after completion of each trouble, call the Contractor shall notify the requestor of completion and add the following information to the CMMS and to the work authorization form: (See 5.4.7.11) (1) Description of work actually completed. (2) Brief description of material and parts used, including quantities. (3) Date and time work began. (4) Date and time work was completed. (5) Validation of the Contractor's craftsman performing the work (or supervisor), indicating that the work has been completed.	Historical: 6585 Trouble Calls in FY97	No instance of undocumented trouble call work.
5.3.8	Accomplish CM for Installation-Accountable Government Property (IAGP)	The Contractor shall plan, provide, and accomplish the repair of all IAGP as listed in J-10 List 1 and 2.	Nothing Additional	See Paragraph 5.3.2.1
5.3.8.1	Accomplish CM for Special Purpose Mobile Equipment (SPME)	All essential Special Purpose Mobile Equipment shall be repaired in accordance with industry standards. The SPME is listed in Exhibit 4.	See Exhibit 4.	See Paragraph 5.3.2.1

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Table 5.3-1

"Corrective Repair Times"

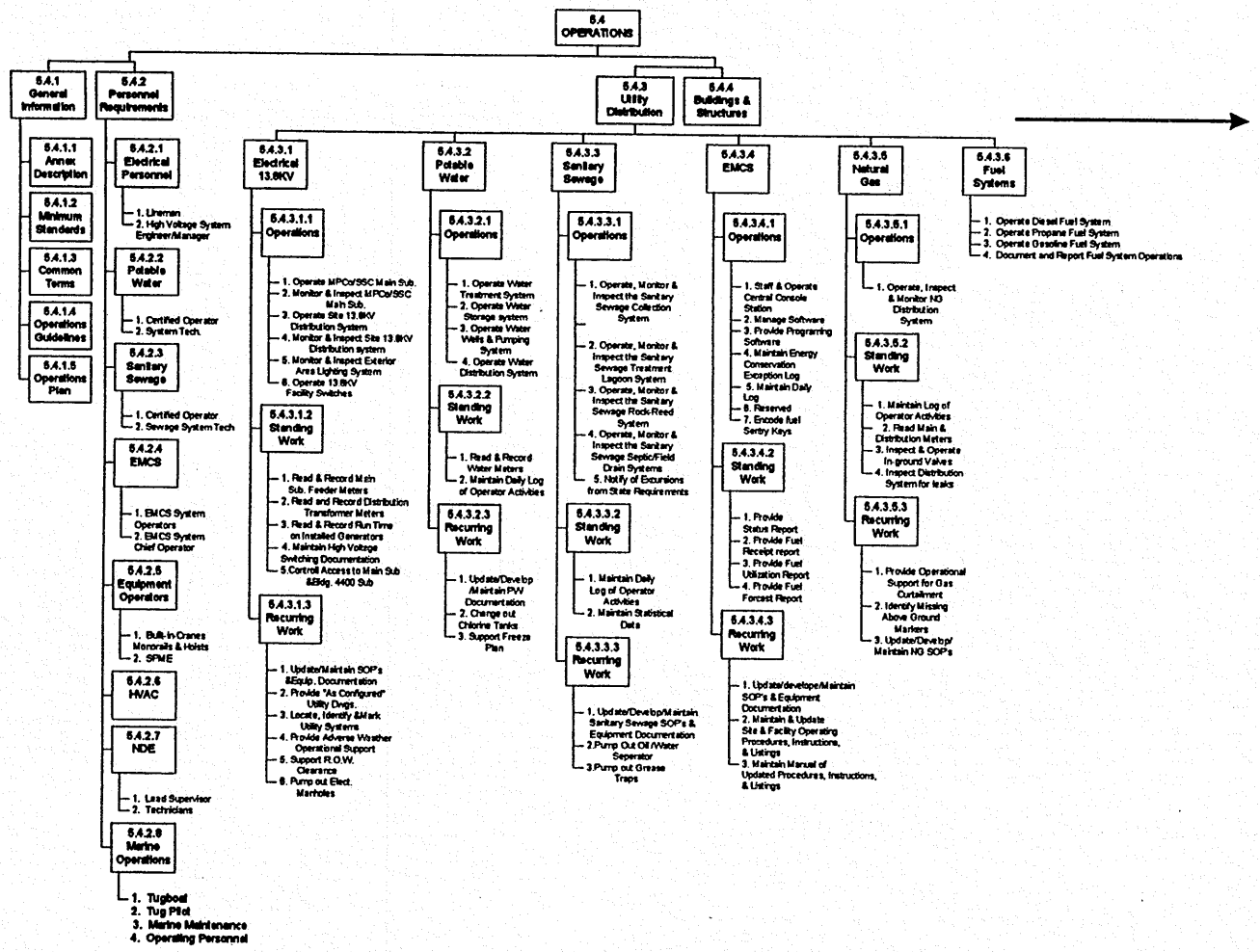
Priority ①	Maximum Repair Time
1 Emergency	Work Immediately ②
2 Urgent	1 Day
3 Priority	7 Days
4 Routine	90 Days ③

Notes:

1. See Annex 5.1 for priority definitions.

2. Priority 1 work will begin immediately and continue without interruption and shall arrest the emergency condition before the Contractor departs the job site.

3. The Contractor may submit routine (Priority 4) work to the CO for inclusion in the Backlog of Maintenance and Repair (BMAR). With CO concurrence, this work will be removed from CM and added to the BMAR.



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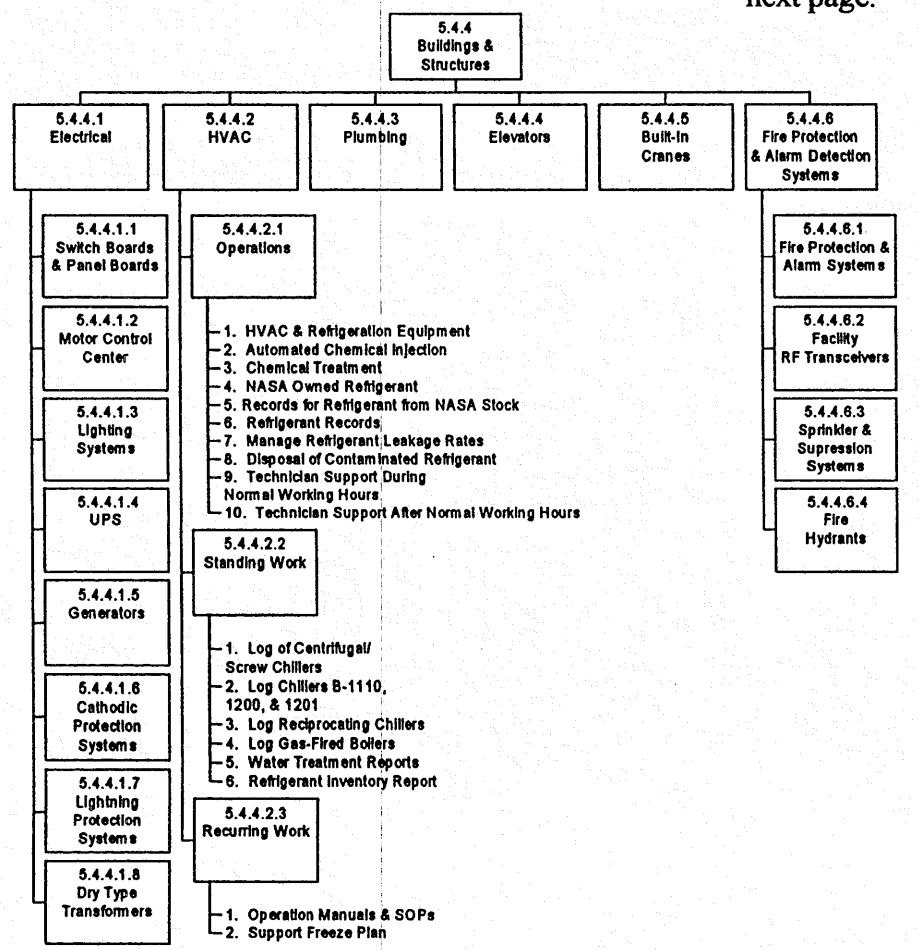

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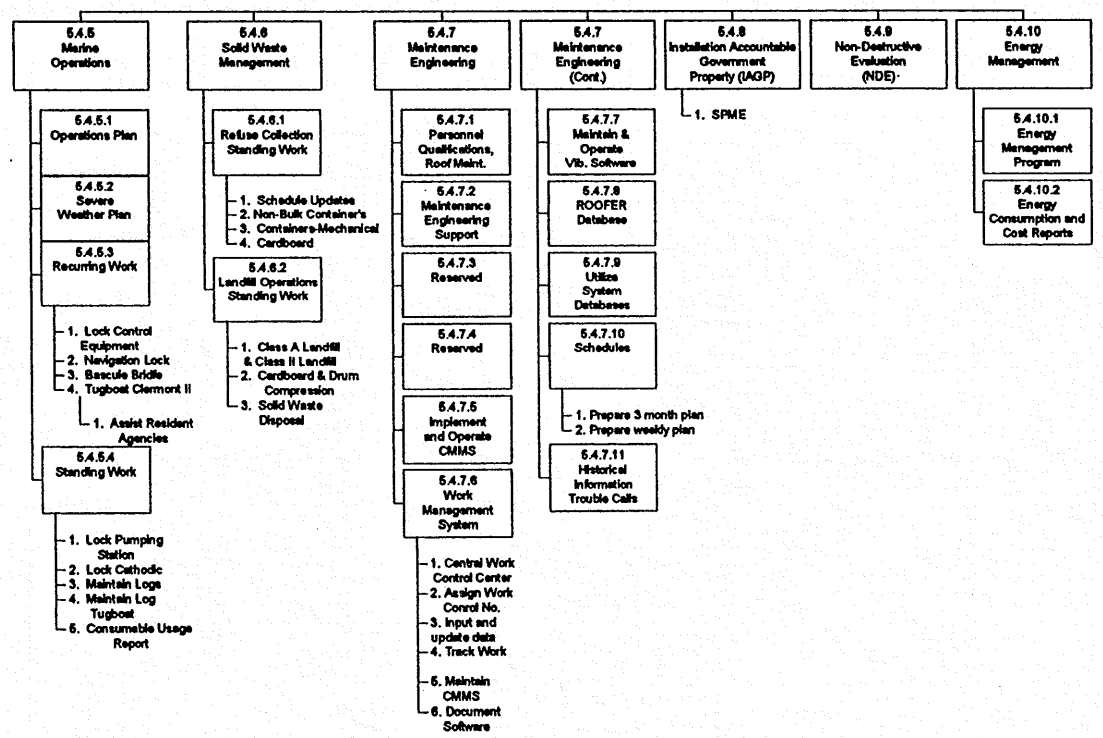

5.4 OPERATIONS

5.4.1 General Information

5.4.1.1 Annex Description

This Annex identifies the day-to-day operation, standing, recurring, and miscellaneous services required for the Structures, Facilities, Utilities, Systems/Subsystems and Installation-Accountable Government Property (SFUSS & IAGP). Even though specific guidelines/requirements and minimum standards have been established, the services to be performed will rely heavily on knowledgeable, experienced individuals capable of safely and efficiently operating the SFUSS & IAGP. The Contractor is required to operate the SFUSS & IAGP, providing cost effective and energy efficient usage. Services addressed in this Annex include operator maintenance but do not include Corrective Maintenance (CM) or Preventive Maintenance (PM) services (See Annex 5.2 for PM and Annex 5.3 for CM).

5.4.1.2 Minimum Standards

Operation of systems, included in this Annex, shall include necessary skills and procedures, tools & equipment to facilitate SFUSS & IAGP operations, to provide intended functions, outputs, redundancy, and availability as defined in Annex 5.5.

5.4.1.3 Common Terms Used in this Annex

For additional terms and definitions, not listed here, See Annex 5.1.

Monitor and Inspect: These terms are used in conjunction with "operate" to delineate system activities other than actual operations which require periodic staffing. The Government requires that these activities would be accomplished by trained personnel with ability to recognize abnormal conditions and evidence of potential problems.

Recurring Work – Work which is performed under the contract which is not a part of the Scheduled Maintenance and Repair Program and is required an undetermined number of times during the year, but is required at least once. This work will be accomplished as required. An example is implementation of the Hurricane Plan which will be performed (partially) once per year at the start of hurricane season with the resumption and completion of the plan carried out dependent on the number of storms which threaten the Gulf Coast.

Staff and Operate: This term is used for systems that require continuous staffing during the operational period. Personnel may also operate other systems within the immediate vicinity.

Standard Operating Procedure (SOP): This is a standing procedure that provides step-by-step instructions to operate systems. It is used for activities that commonly occur. The SOP requires Contracting Officer (CO) review and shall be maintained in electronic format easily accessible to the Government. Documents shall become Government property and shall be stored at CEF. (See DR 5-GA09)

Standing Work – Work which is performed under the contract which is not a part of the Scheduled Maintenance and Repair Program and is required a pre-determined number of times during the year. The schedule can be specifically called out as in, once per hour or may be left to the Contractor, as in, once annually. An example is meter reading which always occurs once per month.

Operate: This term is used for systems that require periodic operational activities but not continuous staffing. Personnel may be available for other contract activities. Operations include the first hour of trouble-shooting/investigation of a malfunction or availability loss (See Table 5.5-4 for response time), and also includes operational support for planned outages required for Utility PM's.

Utility Process Plan (UPP): This is a one time per operation. Contractor generated, document that provides step-by-step instructions that establish responsibility and control system configuration changes. It provides details such as lockout/tagout, switch operation, valve operation, coordination, etc. Documents shall become Government property. (See DR 5-FA05)

5.4.1.4 Operations Guidelines for this Annex

The Contractor shall provide personnel with qualifications, technical knowledge, and skills required to manage, supervise, operate, and maintain the SSC SFUSS & IAGP. Major configuration changes or changes which place the SFUSS & IAGP in an abnormal configuration shall be accomplished with a UPP. If the change is accomplished with a SOP, then the UPP is not required. Operational inspections/logging require a check sheet to document time/date, items inspected, conditions found, actions takes, and identification of inspector. All operations shall be performed by trained/certified personnel. The SFUSS & IAGP located in test areas and secure resident agency areas require special access requirements. These requirements limit access to individuals who have a need to be in these areas, and are aware of restrictions and notification requirements for activities within these areas (See ****NASA PTD-01-T29 & PTD-01-T18****).

5.4.1.5 Operations Plan

The Contractor shall prepare an Operations Plan for all SFUSS IAGP covered under this Annex. The Plan shall provide details as to how the Contractor intends to perform work necessary to meet all requirements for Operations under this Annex, including operations required to meet Availability as defined in Annex 5.5. This plan shall also address how the contractor intends to meet personnel requirements, including certifications, training, etc. Where operations require specific skills and/or certification, the contractor shall submit planned methods for addressing attrition or other necessary contingency planning. DR 5-GA10 Plan shall be submitted for CO approval within 60 days from contract start, and be updated annually.

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5.4.2	Personnel Requirements	See Annex 1 and information below.	Nothing Additional	Current certifications or evidence of experience is on hand for individuals performing services.
5.4.2.1	Electrical Personnel			
5.4.2.1.1	Provide Lineman/Linemen to perform operations and services on the 13.8 kV High Voltage System	Each lineman shall have completed an initial apprenticeship-training program with annual re-certification as per **29 CFR (OSHA) ANSI C2** and Mississippi Power Company (MPCo) requirements for overhead and underground systems.	Contractor Determined	Be able to show compliance with training and knowledge requirements. Required for individuals working on high voltage power systems.
5.4.2.1.2	Provide High Voltage System Engineer/Manager with the Qualifications, Technical Knowledge, Demonstrated Experience and Skills Required to Efficiently Manage, Supervise, Operate and Maintain the SSC 13.8 kV Electrical System	The electrical engineer/manager shall have successfully completed a four year electrical Engineering Bachelor's degree and have at least three years experience in high voltage system operations in plants similar in size and type as those at SSC. Engineers must have an interim operation certification at the end of the phase in period and full certification within 6 month after award. Specific experience shall include design and cost estimating; knowledge and ability to generate and modify electrical and geographical system utility maps, on-line drawings, and shop drawings; perform trouble shooting and repair; system load and fault current analysis; relay coordination; tests and measurement; system operation and switching including operation of Supervisory Control and Data Acquisition (SCADA) system and centrally located back-up generators.	Contractor Determined to support Performance Requirement	Current degrees, certification, licenses, and experience history shall be on file for Government review.
5.4.2.2	Potable Water			
5.4.2.2.1	Provide Potable Water System	Operator shall be certified by the State of Mississippi	Contractor	Show compliance with

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	Certified Operator	(Mississippi State Department of Health) for drinking water system operation. Operator shall be trained and experience in operations of potable water system.	Determined minimum of one on staff at all times.	certification and operating knowledge required to maintain potable water system within requirements of this contract.
5.4.2.2.2	Provide Potable Water System Technician	Technician shall be trained and experience in operations of potable water system.	Contractor Determined minimum of one on staff at all times.	Show operating knowledge required to maintain potable water system within requirements of this contract.
5.4.2.3	Sanitary Sewage			
5.4.2.3.1	Provide Sewage Treatment System Certified Operator	Operator shall be certified by the State of Mississippi (Mississippi Department of Environmental Quality) to operate Sewage Treatment Systems. Operator shall be trained and experienced in operations of the wetland type lagoons and rock-reed systems.	Contractor Determined. Minimum of one on staff at all times.	Show compliance with certification and operating knowledge required to maintain effluent water quality within requirements of this contract.
5.4.2.3.2	Provide Sewage Treatment System Technician	Technician shall be trained and experienced in operations of the wetland type lagoons and rock-reed systems.	Contractor Determined. Minimum of one on staff at all times.	Show operating knowledge required to maintain effluent water quality within requirements of this contract.
5.4.2.4	EMCS			
5.4.2.4.1	Provide EMCS System Operators	Shall demonstrate practical working knowledge of industrial HVAC systems and other related industrial utility systems. Operators shall also demonstrate site-specific knowledge and training required prioritizing EMCS activities, notifications, and callouts, and performing other real-time management decisions. Operators shall possess an	Contractor Determined. Minimum of one operator continuously.	Provide staff per plan (DR 5-GA10).

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		understanding of the facility service organization structure and system failure response procedures and implementation practices for both working and non-working hours. Operators shall demonstrate the ability to utilize information collected through site resident agencies/customers, control system feedback, and field technicians to make sound decisions. Utilities Operations Plan costed under Annex 5.4.1.5 (DR 5-GA10) shall address specific procedures/methods used to achieve EMCS operator qualifications as well as ensure that EMCS related SSC site specific operational requirements are continuously met.		
5.4.2.4.2	Provide EMCS System Chief Operator	Chief Operator shall possess same technical qualifications as Operators; additional requirements shall be as follows. Three years (minimum) as an EMCS operator; Supervisory experience, training or equivalent; Five years (minimum) in engineering technology field or equivalent practical working knowledge of industrial HVAC, automation, or remote utility control systems.	Contractor Determined. Minimum of one.	Demonstrate knowledge of EMCS and SSC site specific operational requirements.
5.4.2.5	Establish, Maintain and Document a Licensing Program for Equipment Operators	The Contractor shall establish, maintain, and document a licensing program for operators of built-in cranes, monorails, hoists, and Special Purpose Mobile Equipment (SPME). The licensing shall be based on successfully completed classroom instruction and testing, and hands on training and demonstrated proficiency. The licensing program shall meet **NASA Safety Standard NSS/60-1740.9** (latest edition), OSHA requirements and receive CO approval.	One operator license program. See Exhibit 1, Inventory of Built-in Cranes, Monorails, and Hoists, and See Exhibit 4.	The program shall meet **NASA Safety Standard NSS/60-1740-9** (latest edition) and OSHA requirements. All documentation concerning licensing, including evidence of operator license, shall be maintained by the Contractor and be available for NASA review.

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
5.4.2.5.1	Provide License Operators for Built-in Cranes, Monorails, and Hoists	A license from the above licensing program (5.4.2.5) is required for operating both critical and non-critical lifting equipment. The inventory referenced in the work load data column gives the responsible operator for each lifting device. The Contractor shall provide licensed operators for the equipment where he is listed as the responsible operator.	See Exhibit 1, Inventory of built-in cranes, monorails, and hoists. In the FOS contract licensing of non-contractor personnel will be provided upon request.	Only licensed operators will operate the lifting equipment for which the Contractor is shown as the responsible operator. No instance of non-licensed operators operating the lifting equipment for which the Contractor is shown as the responsible operator.
5.4.2.5.2	Provided Licensed Operators for Special Purpose Mobile Equipment (SPME)	A license from the above licensing program (5.4.2.5) is required for operating both critical and non-critical SPME.	See Exhibit 4	No instance of SPME being operated by non-licensed operators.
5.4.2.6	HVAC			
	Provide Air-Conditioning & Refrigeration Technicians	All Personnel performing installation, maintenance or repairs that might reasonably have the opportunity to release refrigerant into the atmosphere shall be certified per EPA regulations.	Contractor Determined.	Contractor shall maintain records & evidence of certification; available for Government review upon request.
5.4.2.7	Nondestructive Evaluation Personnel (NDE)			
5.4.2.7.1	Lead Technician/Supervisor	Must have current Level 1 NDE Certification in accordance with Recommended Practice No. SNT-TC-1A (latest edition) as recommended by The American Society for Nondestructive Testing, Inc. At least two years experience in reading film including interpretation of	Minimum of one on staff at all times.	Current Certificate and evidence of experience on file.

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		results from high energy cobalt used in NDE of wall thichness in excess of 4 inches.		
5.4.2.7.2	Technicians	Must have one year or greater experience in setting up and taking radiographs of thick walled pressure vessels and piping. Level III Certification required.	Contractor Determined	Current Certificate and evidence of experience on file.
5.4.2.8	Marine Operations			
5.4.2.8.1	Tugboat Captain	Must have current U.S. Coast Guard approved license for inland Waterways of the United States for Uninspected Towing Vessels (Minimum Requirement) with Radar Endorsement.	Contractor Determined	Current license
5.4.2.8.2	Tug Pilot	Must have current U.S. Coast Guard approved license for inland Waterways of the United States for Uninspected Towing Vessels (Minimum Requirement) with Radar Endorsement.	Contractor Determined	Current license
5.4.2.8.3	Marine Maintenance	At least 2 years experience in the maintenance of marine vessels and equipment.	Contractor Determined	Certification
5.4.2.8.4	All Operating Personnel	Able to pass annual physical examination for confined space entry. CPR certification training. Captain and Pilots require 5 year physical to renew license. Marine personnel are governed by the JONES ACT.	Contractor Determined	Certification
5.4.3	Utility Distribution			
5.4.3.1	Electrical 13.8 kV System			
5.4.3.1.1	Operations	The current system configurations and operations have been established by the Government based on Mississippi	Operator maintenance by	Linemen shall be attentive to potential problems and

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		Power Company (MPCo) requirements, customer needs and the availability of equipment. System definitions and descriptions are provided in Table 5.1-1. Complete drawings of the systems are available in the SSC Central Engineering Files CEF. The Contractor shall be responsible for ensuring proper operation of the systems. All operations on the 13.8 kV Electrical System requires 2 qualified linemen during normal duty hours, IAW OSHA Standard Work Practices as stated in **29 CFR 1910** series. Operational performance is required in addition to any operator maintenance in an effort to preserve the integrity of the equipment.	linemen is limited to replacement of fuses or resetting of switches and/or circuit breakers.	initiate any required corrective action in a timely manner.
5.4.3.1.1.1	Operate the MPCo/SSC 13.8 kV Main Substation	Operations within the 13.8 kV main substation are limited to switch operation for maintenance, NASA/SSC construction support, and as requested by MPCo for service access or isolation. All operations require coordination with the MPCo control center as well as the SSC EMCS control center, per the **MPCo/NASA Operating Procedure** all operations shall be executed via radio-phone with MPCo's control center. Within 30 minutes after any switching activity, mark-up the Electrical Utility one line drawing to indicate present configuration.	The primary workload is determined by the amount of maintenance/construction activity. Unit: Daily workdays	Linemen available at SSC for scheduled switching operations. Linemen available within 1 hour for non-scheduled switching or problem investigation. Operation the system to achieve the availability requirements and operational hours as designated in Annex 5.2.
5.4.3.1.1.2	Monitor and Inspect the MPCo/SSC 13.8 kV Main Substation	Inspect all 13.8 kV buswork to the high side of each transformer including all components listed in Table 5.1-1, "Site Electrical 13.8 kV Main Substation", for visual damage and abnormal conditions. Inspection shall be ground level and energized. Notify MPCo via radio-phone immediately of any abnormal condition.	1 Substation Unit: Daily workday	Inspect entire system no less than once each work day by personnel qualified to operate the system.
5.4.3.1.1.3	Operate the SSC 13.8 Kv Distribution	Operations on the 13.8 Kv Distribution System entail	Primary workload is	Linemen available at SSC

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	System	switch and circuit breaker operation for maintenance support, construction support, isolation of faults, and redistribution of loads. All switch and breaker shall be executed via 2-way radio communications and recorded in the EMCS Control Center. Operate the Site 13.8 Kv Distribution System in accordance with SOP's for maintenance support and UPP's for construction support. Prior to operating switches, check for evidence of tampering or damage. During operations of switches, observe for signs of arcing.	determined by the amount of maintenance or construction activity. Unit: Daily workdays	for scheduled switching. Linemen available within 1 hour for non-scheduled switching or problem investigation. Operate the system to achieve the availability requirements and operational hours as designated in Annex 5.2.
5.4.3.1.1.4	Monitor and Inspect the SSC 13.8 Kv Distribution System	Beginning at the load side of each 13.8 Kv 2000A vacuum Breaker in the MPCo/NASA Main Substation to each facility main disconnecting means as listed in Table 5.1-1: "Site 13.8 Kv Electrical Distribution System.": Inspect all switches and overhead line components for visual damage or abnormal conditions.	Inspection shall be ground level with system energized. Unit: Daily workdays	Inspections shall be conducted by personnel qualified to operate the system. Initiate corrective action for all abnormal conditions in a timely manner.
5.4.3.1.1.5	Operate the Area Lighting Systems	These systems are operated by a combination of photo cells and timers, and have up to 10 different types of luminaries.	621 lights	Monitor the systems, and initiate corrective action for all abnormal conditions in a timely manner to obtain availability.
5.4.3.1.1.6	Operate 13.8 Kv Facility Switches	Operations on the 13.8 Kv facility switches entail switch operation for maintenance/construction support, isolation of faults, and redistribution of loads. All switch operations are executed via 2 way radio communications and recorded in the EMCS Control Center. Within 30 minutes after any switching activity update the one line diagram to indicate present configuration. Operate the 13.8 Kv Facility switches in accordance with SOPs, and UPP's. Prior to operation of facility switches, inspect	Primary workload is for maintenance and construction support. Minimum redistribution of loads once annually. Refer to Table 5.1-1 for description and components of "13.8	Linemen available at SSC for scheduled switching. Linemen available within 1 hour for non-scheduled switching or problem investigation. Operate the system to achieve the availability requirements and operational hours as

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		enclosures for evidence of tampering or damage. During operations observe switch contacts for arcing.	Kv Switching Facilities." Unit: Daily workdays	designated in Annex 5.2
5.4.3.1.2	Standing Work			
5.4.3.1.2.1	Read and Record main Substation	Document the kilowatt-hour (kWh), voltage and current readings at the main substation. All readings must be taken and date recorded on the last workday of each month.	Unit: 8 meters Monthly	Accurately read meters and record data on the last workday of each month.
5.4.3.1.2.2	Read and Record Kilowatt-Hour (kWh) Meters at all Locations on the Site 13.8 Kv Electrical Distribution System DR 5-FA07	Document the electrical loads on all metered facility electrical systems at SSC. All readings must be taken and data recorded on the last workday of each month. This data shall provide input for DR 5-GA18.	Unit: 156 meters Monthly	Accurately read kWh meters and record data on the last workday of each month.
5.4.3.1.2.3	Read and Record Run Time on Installed Generators	Document run time and provide input for DR 7-GA41 under Annex 7.0	5 generators at Buildings: 1100, 1201, 2201, 2204, and 3203. Unit: Monthly	Initiate reporting of corrective action for all abnormal conditions, in a timely manner.
5.4.3.1.2.4	Maintain High Voltage Switching Documentation Map	Maintain **Site HV System Configuration** which is the Reference Document for High Voltage Switching that identifies response to power losses in buildings switches, feeders, and transformers. To be used in the planning of outages or restoration procedures.	Unit: Daily workday	Provide marked-up map to CEF quarterly
5.4.3.1.2.5	Control Access to main Substation, Building 4400 Substation, and Cryogenic Transfer Deluge Substation	Fenced area is controlled access. Operations personnel are responsible for controlling access and securing area when they are not present.	3 Substations Unit: Continuous	Verify personnel are logged into fenced area and that gates are kept locked.

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5.4.3.1.3	Recurring Work			
5.4.3.1.3.1	Update/Maintain Electrical Power System & SOPs (DR 5-GA09)	All activities, which can impact the reliability of the electrical power supply, shall have a SOP developed or upgraded. The CO approved SOPs shall be electronically maintained with Government access. System documentation shall be maintained as required by configuration changes. (See DR 5-GA09)	Update annually or as equipment or operational changes are made. Unit: Yearly	Maintain system SOPs and equipment documentation to be available for review by CO.
5.4.3.1.3.2	Provide Marked-Up Utility Drawings for Mission Support	Provide marked-up master utility drawings showing system and switch configuration. A set of drawings shall be delivered to CEF.	Unit: Quarterly 4 Drawings per Year	Provide marked-up drawings quarterly, to CEF.
5.4.3.1.3.3	Locate, Identify, and Mark Electrical Utility Systems Upon Request	This work is required through ****SSC 99-015 Site Wide Digging Permit****. The contractor shall mark electrical utilities within 3 workdays of the request. Utilities shall be marked using colored flags and paint as specified by the Government.	Unit: 6 per Year	Physically mark the affected utility within 3 days of request.
5.4.3.1.3.4	Provide Operational Support During Adverse Weather Conditions	Monitor ambient temperatures and provide operations support as required in the ****SSC Freeze Conditions Plan**** to implement the plan, and to monitor and inspect equipment as needed to preclude damage. Operational performance is requires in addition to any operator maintenance in an effort to preserve the integrity of the equipment.	Unit: 2 occurrences per year	Linemen shall be attentive to potential problems and initiate corrective action for all abnormal conditions, in a timely manner.
5.4.3.1.3.5	Provide Support to Maintain Right-of-Way (R.O.W.) Clearance for Overhead Powerlines	Provide operational support to cutback tree branches that encroach into R.O.W. of overhead powerlines.	Unit: a) 2150 LF b) 110,050 LF c) 26,800 LF	a) 13.8 Kv: 10 ft. either side of centerline b) 13.8 Kv Single circuit: 15 ft. either side of centerline c) 13.8 Kv Dual Circuit: 30 ft. either side of

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
				centerline
5.4.3.1.3.6	Pump Out Electrical Manholes	Provide operational support for maintenance and operation requirements.	Unit: 10 occurrences per year	Maintain water level no higher than top of sump in base of manhole.
5.4.3.2	Potable Water System			
5.4.3.2.1	Operations	The potable water system shall be operated to ensure a continuous supply of water is provided at all times. The system is used to operate drinking, sanitation, and fire protection systems. See Table 5.1-1 for a description of the system. Further detailed information is given in the ****SSC Utility RCM Analysis manual for Potable water**.** The Contractor shall be responsible for ensuring proper and efficient operation of the system while continually monitoring and evaluating the system configuration and operations, making recommendations for improvements to the CO. System performance shall comply with requirements of the Mississippi Department of Environmental Quality. The system shall be kept under the direct supervision of qualified personnel who are kept knowledgeable and capable of performing all operations and associated work. Operators shall have and maintain the certification required by the State of Mississippi.	Typical daily water usage during regular workdays is approximately 250,000 gallons. System output requirements are given in Table 5.1-1.	Potable Water System operations do not require continuous coverage but do require operator support to meet availability requirements (See Annex 5.5).
5.4.3.2.1.1	Operate SSC Water Treatment System to Maintain Water Quality	Operate the water treatment system in accordance with ****SSC OI 42-54-001**** (Operating Instruction for Potable Water System Well House). Operate the system to achieve the availability requirements as designated in Annex 5.5, Table 5.5-2, and the operational hours as designated in the ****Building Operating Hours Summary**.** Operate the water	24-hour a day controlled treatment of chlorine. Provide chemicals on a continual basis to treat all flow conditions. Field test chlorine content daily	Monitor system as needed for continuous control. Water quality shall meet Mississippi Department of Health standards.

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		treatment system to maintain the output as stated in Table 5.1-1. The contractor shall operate, inspect and monitor the chemical treatment equipment. The contractor shall purchase all chemicals associated with water treatment and field test for chlorine content. Chemicals used shall be equivalent in salient characteristics to those for which the facility was designed.	at the active pump houses and weekly at a remote point approximately ¼ to ½ mile from the pump house.	
5.4.3.2.1.2	Operate SSC Water Storage System to Maintain Water Quantity	Operate the system to achieve the availability requirements as designated in Annex 5.5, Table 5.5-2, and the Operational Hours as designated in the ****Building Operating Hours Summary****. Operate the water treatment system to maintain the output as stated in Table 5.1-1. Maintain levels in elevated tanks to achieve the pressures required in Table 5.1-1.	Continuous Operation. The storage system consists of three elevated tanks. Tanks 1 & 2 each have a capacity of 300,000 gallons. Tank 3 has a capacity of 250,000. There is a 10,000-gallon ground level pressure tank at Well No. 3 in down mode.	Monitor system as needed for continuous control. Elevated storage tanks shall be monitored for high/low alarm. Respond to alarms within 30 minutes during core hours, and within 2 hours during non-core hours.
5.4.3.2.1.3	Operate SSC Water Wells and Pumping System to Maintain Water Generation and Water Pressure	Operate the system to achieve the availability requirements as designated in Annex 5.5, Table 5.5-2, and the operational hours as designated in the ****Building Operating Hours Summary****. Operate the water treatment system to maintain the output as stated in 5.1-1. Maintain the operability of the three water wells and their associated pumps.	Monitor system as needed for continuous control. Wells 1 & 2 are active and each has a 500 gpm, 30 hp electric driven pump. Well 3 is stand-by and has two 750 gpm, 40 hp electric driven pumps. The	Monitor system as needed for continuous control. Operate each pump monthly.

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			No. 3 elevated tank pump house has two 15 hp electric driven pumps.	
5.4.3.2.1.4	Operate SSC Water Distribution System	The Potable Water Distribution System begins at the point of pump discharge and ends at a point 5 feet outside the facility, which it serves. See Table 5.1-1 for system definition. It shall be operated to ensure a continuous supply of water is provided at all times to all facilities and use points. The Distribution Piping Systems provides water to facilities and Fire Protection Systems. The Distribution System is designed with a series of loops and valves to minimize outages in the event of line failures or repairs. The contractor is expected to take advantage of this design to maintain availability. Fire hydrants are located on lines throughout the system for flushing and fire protection. Flushing of the lines is necessary to maintain site water quality and to maintain the chlorine residual required by the Mississippi Department of Health. Operate the system to achieve the availability requirements as designated in Annex 5.5, Table 5.5-2, and the operational hours as designated in the **Building Operating Hours Summary**. Operate the water treatment system to maintain the output as stated in Table 5.1-1. The contractor shall monitor, inspect and operate the water distribution system to maintain the quality of the water, to maintain the functionality of the distribution system and to initiate corrective actions to maintain the output as stated in Table 5.1-1. Water distribution outages shall be	Approximately 12 miles of piping distribution system. Piping material is either cast iron, plastic, or Transite and ranges in size from 14" to 2".	Water Distribution System Operation does not require continuous coverage but does require operator support to meet availability requirements (See Annex 5.5). Operators shall maintain the certification required by the State of Mississippi. The system shall be kept under the supervision of a certified operator per the regulations. Maintain Mississippi Department of Health required chlorine residual as a minimum.

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		supported. Flushing shall be required in areas, which experience deterioration of water quality noted through bacteriological sampling or physical discoloration due to outages or to correct customer complaints. All flushing shall be done per an SOP in a controlled manner to minimize impacts of pressure fluctuation in the system.		
5.4.3.2.2	Standing Work			
5.4.3.2.2.1	Read and Record Water Meters	A flow meter is installed in each pump house. Read and record water meters at active pumps daily to monitor total gallons pumped.	2 meters each workday.	Records available continuously.
5.4.3.2.2.2	Maintain a Daily Log of Operator Activities	The Log shall include the kinds and quantities of chemicals used, feed rates, dosages, and water quality field tests conducted. The log shall include the status and length of outages and all other pertinent information.	One log, update daily.	Log available continuously.
5.4.3.2.3	Recurring Work			
5.4.3.2.3.1	Update/Develop/Maintain Potable Water System Operation Manuals and SOP's (See DR 5-GA09)	Potable water system documentation shall be maintained and updated as required. (See DR 5-GA09)	One annual revision.	Develop or revise and obtain CO concurrence on documentation within 90 days of contract start date.
5.4.3.2.3.2	Change Out Chlorine Tanks	Check chlorine tanks and replace as necessary. When changing cylinders verify product in cylinder prior to connecting to service.	2 active wells, 1 inactive well.	No instance of empty chlorine cylinders.
5.4.3.2.3.3	Support Freeze Plan	Monitor ambient temperatures and provide operations support as required in the **SSC Freeze Plan (Annex L of the SSC Disaster Preparedness Plan)** to implement the plan, and to monitor and inspect equipment as needed to preclude freeze damage.	2 occurrences per year.	No instances of non-support.
5.4.3.3	Sanitary Sewage Systems			

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5.4.3.3.1	Operations	The Sewage Collection Systems shall be operated to ensure continuous collection, pumping and removal of wastewater is provided at all times. Treatment Systems shall be operated to ensure that effluent water quality meets all applicable state regulations and permit requirements, without disruption of wastewater flow from any facility during occupied periods. The Sanitary Sewage Systems consists of Primary Collection Systems, Lagoon/Treatment Systems, Rock-Reed Systems, and Septic Tank/Field Drain Systems. See ****SSC Utility RCM Manuals**** and Table 5.1-1 for sketches and technical descriptions.		
5.4.3.3.1.1	Operate, Monitor, and Inspect the Sanitary Sewage Collection Systems	Operate the Sanitary Sewage Collection Systems to achieve the availability requirements and operational hours as designated in Annex 5.5, and to achieve output as stated in Table 5.1-1. Operate the Collection Systems in accordance with applicable O&M Manuals, SOP's and UPP's. Operations for Slide Mounted Pump Type Lift Stations shall include the following (These requirements are daily (D) for criticality levels I, II, and III, and weekly for criticality IV &V): 1. Check and insure that "WATER IN LUBRICANT" light is off. 2. Trip primary effluent limit switch and verify system operation. 3. Trip backup effluent limit switch and verify system operation. 4. Check alternator circuitry by tripping primary limit switch twice and verifying alternate pump operation. 5. Trip alarm limit switch and observe alarm light is on. Daily (D) operations for Secure Mounted pump Type Lift	Two collection systems consist of 47 Lift Stations, approximately 76,800 linear feet of forced main, and approximately 29,850 linear feet of gravity main. Separate collection system in B-1105.	Maintain continuous availability for sewage pumping and transport from any facility (during occupied periods) to the treatment system.

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		Stations shall include the following: 1. Check operation of Lift Station ventilator and lights by opening access cover and verifying operation. 2. Verify air is flowing in air bubbler systems, check flow meter, regulator and level gauge.		
5.4.3.3.1.2	Operate, Monitor, and Inspect the Sanitary Sewage Treatment Lagoon Systems	Operate the Sanitary Sewage Treatment Systems to achieve the availability requirements as designated in Annex 5.5, and to achieve output as stated in Table 5.1-1. Operate system equipment in accordance with applicable O&M Manuals, SOP's and UPP's. Operations shall include activities such as: 1. Clean debris and other materials from scupper. 2. Clean UV light bulbs of contaminant buildup, verify proper operation, and replacement of bulbs as required.* 3. Verifying proper lagoon and marsh levels. 4. Verifying proper instrumentation operation. 5. Maintain/Replenish vegetation life within the lagoon and marsh. 6. Addition and mixing of environmentally approved chemicals and compounds as required. 7. Inspect and initiate any necessary corrective actions on berms and levies to prevent erosion or leaks. 8. Initiate any necessary activities to control wildlife or rodents.	Effluent for Lagoon #1 is approximately 170,000 GPD, Lagoon #2 is approximately 70,000 GPD.	Maintain treatment capability for all sanitary sewage, without interruption to facility sanitary sewage discharge. All effluent shall comply with state regulations and permit requirements.
5.4.3.3.1.3	Operate, Monitor, and Inspect the Sanitary Sewage Rock-Reed Systems	Operate the Sanitary Sewage Treatment Systems to achieve the availability output as stated in Table 5.1-1. Operate system equipment in accordance with applicable O&M Manuals, SOP's, and UPP's. Operations shall include: 1. Clean debris and other materials from rock/reed and	1 ea. Systems. Rock-Reed systems treat less than 3,000 GPD.	Maintain treatment capability for all sanitary sewage, without interruption to facility sanitary sewage discharge. All effluent shall comply

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		discharge area. 2. Clean UV light bulbs of contaminant buildup, verify proper operation, and replacement of bulbs as required. 3. Maintain/Replenish vegetation life. 4. Addition and mixing of environmentally approved chemicals and compounds as required. 5. Inspect and initiate any necessary corrective actions on berms and levies to prevent erosion or leaks.		with state regulations and requirements.
5.4.3.3.1.4	Operate, Monitor, and Inspect the Sanitary Sewage Septic Tank/Field Drain Systems	Operate the Sanitary Sewage Treatment Systems to achieve the availability requirements as designated in Annex 5.5, and to achieve output as stated in Table 5.1-1. Add environmentally approved chemicals and compounds as required.	Three septic tank/field drain systems shall be operated: less than 3,000 GPD treatment.	Maintain treatment capability for all sanitary sewage, without interruption to facility sanitary sewage discharge.
5.4.3.3.1.5	Notify Government of any Excursions from State permits, Regulations and Requirements (DR 7-GA09)	Contractor shall provide notifications to the Government in accordance with Annex 7.0.	Report per occurrence.	Reports shall be maintained on record and available for Government review upon request.
5.4.3.3.2	Standing Work			
5.4.3.3.2.1	Maintain a Daily Log of Operator Activities	The log shall include the following information: 1. Listing of any abnormal conditions, concerns, systems malfunctions or failures, or other pertinent data related to systems operations and inspections. 2. Any corrective actions initiated or completed on systems. 3. Status of systems configurations. 4. Scheduled outages.	Log updated daily.	Log shall be accurate and current, and shall be available for Government review upon request.
5.4.3.3.2.2	Maintain Statistical Data	Trend and maintain accurate records of the following	Update monthly.	Records shall be accurate

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		influent and effluent flow rates for lagoon systems: 1. Peak Flow Rate during month, Gallons Per Hour (GPH). 2. Peak Daily Average during month, Gallons Per Day (GPD). 3. Monthly daily average (GPD). 4. Annualized daily average (GPD).		and current, and shall be available for Government review upon request.
5.4.3.3.3	Recurring Work			
5.4.3.3.3.1	Update/Develop/Maintain Sanitary Sewage System Operation Manuals and SOP's (See DR 5-GA09)	Documentation shall be updated and maintained as required for the operation and maintenance of the treatment systems: Lagoon Systems, Rock-Reed Systems, and Septic Tank/Field Drain Systems (See DR 5-GA09)	One annual revision.	Develop or revise and obtain CO review within 90 days of contract start date.
5.4.3.3.3.2	Pump Out Oil/Water Separator	Pump out and dispose of waste.	One oil/water separator located outside Building 2105. (Historically 2 times annually)	Pump out as necessary to ensure tanks do not exceed 80% capacity; however, no less than annually.
5.4.3.3.3.3	Pump Out Grease Traps	Pump out and dispose of waste.	One oil/water separator located outside Building 2105. (Historically 2 times annually) Check B-1100 cafeteria.	Pump out as necessary to ensure traps are clean and functional.
5.4.3.4	Energy Management and Control System			
5.4.3.4.1	Operations	The EMCS Operations Control Center consists of the EMCS, the Fuel Management Monitoring System and the		

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		Main Substation Monitoring System as defined in Table 5.1-1. These systems are consolidated into a single operations room, which shall be staffed and operated continuously. The Control Center is established to monitor and control parameters of various utilities, systems and equipment. By this function, the center acts as an effective method for controlling energy consumption, operations and maintenance. Because of the broad visibility of site systems at the center, operators act as a central focal point for the real-time operation and management of utilities, systems and equipment. The EMCS System Control Center Hosts have historically been maintained under service contracts, which are procured annually by the Government (available at the TRL). The System 600 contract includes hourly rates for service and repair; basic services for system performance benchmarking and review are also provided under this service contract. The Government will not renew these contracts. The EMCS is also defined to include microprocessor field cabinets, wiring and instrumentation required to provide control and central console visibility of equipment and processes. Often these field controls are directly associated with the operation of a specific equipment item or system.		
5.4.3.4.1.1	Staff and Operate the EMCS Central Console Station	Staff and operate the EMCS Central Console Station, consisting of the EMCS, the Fuel Management Monitoring System and the Main Substation Monitoring System. Operation shall be in accordance with applicable SOP's, O&M Manuals, and as listed below: a. Operate all systems to achieve the availability requirements and operational hours as designated in	EMCS Systems with a total of 2 Work Stations (System 600 monitors approximately 14,000 points), 1 Fuel Monitoring System	The system shall be staffed continuously be personnel who are knowledgeable of site specific operations and missions, and are trained to operate EMCS hardware and software (including

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		Annex 5.5. b. Operate all systems to maintain the output as stated in Table 5.1-1. c. Monitor ambient temperatures and weather conditions and provide operational support and notifications as required to support site operations. d. Coordinate and track site outages (Planned and Unplanned) for maintenance and construction and provide notification to site users and Facility Managers. e. Receive and log user complaints for utilities and facility systems malfunctions, interruptions or failures. Initiate investigation and work orders for problems, as required, and log significant site activities and problems. f. Answer phone inquiries. g. Implement EMCS control system setpoint and algorithm adjustments as required to maintain site operations and maintain energy conservation. h. Monitor and respond to alarm conditions. Initiate work orders as required to initiate investigation or repairs. i. Report significant breakdowns, malfunctions and reliability concerns to the CO. j. Maintain audible system alarm records. k. Analyze and adjust operating parameters to resolve field problems. l. Provide operational data, analyze and adjust operating parameters in response to Site Energy Management requests. m. Input data to EMCS reports, operating instructions, support programs and databases. n. Input after-hours notifications and callouts in response to site problems or systems failures (e.g., fire	with Work Station (monitors 6 fuel storage systems and 2 fuel sentry locations), and 1 Main Substation Monitoring System with Work Station.	other systems at the EMCS Central Console Station). Obtain approval from CO prior to any hardware, software or firmware changes. Acknowledge non-critical alarm within 10 minutes and start remedial action within 15 minutes. Acknowledge critical alarms within 1 minute and start remedial action within 3 minutes. Adjust algorithms to correct operational problems and/or optimize efficiency within 3 work days. Apply consistent methods of control and logic site wide.

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		alarm, natural gas, high voltage, electrical, bascule bridge, sewer systems, phone system, high pressure industrial water, high pressure gas, HVAC). o. Monitor and initiate fueling operations to maintain fuel storage tanks properly supplied. p. Program fueling keys and maintain records on Fuel Sentry system. q. Monitor Main Substation and initiate callout to Mississippi Power for Monitoring System or Substation problems. r. Provide operator support for condition assessment and plans as required to maintain EMCS (including hardware, firmware and software). s. Perform benchmarking for the EMCS as required to ensure system speed, availability and reliability are maintained (existing benchmark is available in the TRL). t. Initiate and manage data trending for EMCS monitored systems and equipment. Provide system-generated reports and trend data as requested. u. Assist in defining EMCS site equipment/system requirements in support of equipment/system designs and operational inquiries. Provide system generated reports upon request v. Provide host operational support for Functional Checkout and Point-to-Point Checks in support of PM, trouble shooting, corrective maintenance and construction. w. Monitor critical Field Device parameters through back-up communication links during System 600 Central Host outages. x. Initiate corrective actions as required on all EMCS System equipment, Fuel Management Monitoring System equipment and Main Substation System		

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		equipment (Host and field devices). y. Provide Security for all central console equipment and software.		
5.4.3.4.1.2	Manage EMCS Software	Manage software for the EMCS Central Console Systems and accessories, EMCS programmable field panels and the Fuel Management Monitoring System (Does not include the Main Substation Monitoring System). Management of software includes quality assurance, reliability, verification/validation, document and data control, configuration/change control, license agreements, maintenance, records, training, servicing, audits, back up, handling, storage, packaging, testing, acceptance, nonconformance reporting, coordinating corrective actions, and security. Includes all software developed, supplied, maintained or operated for, or in support of, EMCS Systems and the Fuel Monitoring System. Protect systems and data. Return all items in a usable and documented format at end of contract. Provide Software Management Support for completion of vendor benchmarking, upgrades or troubleshooting. This includes system backup/protection, and transmitting of system data to the vendor. Provide test plan for all software development or changes. Functionally check operation after any system modifications.	See Table 5.1-1. Includes: 1) EMCS Central host systems. 2) EMCS Field Cabinet software: System 600 – 150 MFDs (SCU's & MBC's), and 35 UC's. 3) Three laptop PC's used for EMCS troubleshooting, operations and database management. 4) Fuel Monitoring System Host.	Maintain daily, weekly, monthly and quarterly taped backup of system software for EMCS Central host. Quarterly backup shall be registered and stored in CEF. System Software shall also be backed up prior to any system configuration changes or modifications. Maintain current software taped backup of EMCS for each Field Cabinet software. Maintain current software taped backup of software for Fuel Monitoring Host. Taped backup shall be capable of system restoration in event of system corruption or destruction. System operating, programming and maintenance manuals shall be maintained current.
5.4.3.4.1.3	Provide EMCS Programming Support	Provide EMCS programming support, including the following: a. Accomplish graphics modifications or additions to	See Table 5.1-1. Includes:	All EMCS databases, programs and reports shall be made available

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		operator-machine interfaces (e.g., floor plans, information screens, system schematics and point description). b. Accomplish algorithm modifications or additions to support operational requirements and maintain energy efficient operation. c. Modify point parameters for alarm management and energy conservation (e.g., setpoints, alarm limits, start/stop times). d. Modify parameter settings in response to natural gas curtailment exercises and activities.	1) EMCS Central Host systems. 2) EMCS Field Cabinet software (FID, MBC, SCU and UC). 3) Fuel Monitoring System Host.	electronically for Government access. All software development and modifications shall comply with the system standards, or shall receive prior approval from the CO.
5.4.3.4.1.4	Maintain Energy Conservation Exception Log	Log shall provide information for tracking and calculating energy consumption due to individual requests to activate facility utilities or HVAC for after-hours operations. Log shall include date of request, requester and phone number, building no., room no., equipment required to run, time on and time off, no. of personnel working, authorizing official, and any pertinent comments.	Log updated daily.	Log shall be maintained continuously, current and accurate. Data shall be submitted to Energy Analyst for calculation of Energy Consumption Allocation, monthly. Data shall be available for Government review upon request.
5.4.3.4.1.5	Maintain Daily Log	Maintain daily log of trouble calls, outages and significant site events. Log shall record dates and times of events.	Maintain updated and available for review continuously. Log update daily.	Continuously update and maintain accurate. Records shall be sufficient to allow for time-sequenced review of site events. Data shall be available for Government review upon request.
5.4.3.4.1.6	Reserved			

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5.4.3.4.1.7	Encode Fuel Sentry Keys	Support for fueling activities shall include encoding keys as required for site vehicle fueling. This shall include encoding keys as required for site vehicle fueling. This shall include encoding, record keeping and reporting of keys generated, reported losses of keys, etc.	Contractor Determined	Sufficient to meet operational needs.
5.4.3.4.2	Standing Work			
5.4.3.4.2.1	Provide EMCS Status Report (DR 5-GA02)	Provide Monthly EMCS Report (See DR 5-GA02)).	Monthly Report	Conformance with DR
5.4.3.4.2.2	Provide Fuel Receipt Report (DR 5-GA03)	Provide Monthly Fuel Receipt Report (DR 5-GA03).	Monthly Report	Conformance with DR
5.4.3.4.2.3	Provide Fuel Utilization Report (DR 5-GA04)	Provide Monthly Fuel Utilization Report (See DR 5-GA04).	Monthly Report	Conformance with DR
5.4.3.4.2.4	Provide Fuel Forecast Report (DR 5-GA01)	Provide Fuel Forecast Report (See DR 5-GA01).	Semi-annual Report	Conformance with DR
5.4.3.4.3	Recurring Work			
5.4.3.4.3.1	Develop Operating Manuals and SOP's. (DR 5-GA09)	Documentation shall be developed as required for proper instruction and procedures for the EMCS (See DR 5-GA09).	Contractor Determined	Conformance with DR
5.4.3.4.3.2	Update and maintain Operating Manuals and SOPs (DR 5-GA09)	Documentation shall be bound in manual(s) and maintained available for EMCS operator instructions at the EMCS Central Console. Requests for updates shall be initiated by the EMCS as required to maintain current data. Initial documents shall be presented for Government review within 30 days of start of contract, and upon review shall become Government property. Documents shall be available at CEF and at the EMCS. Documents	39 Ea Documents	Conformance with DR Documents maintained current and accurate.

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		shall provide all pertinent phone, pager, and radio numbers for operational or emergency notification, EMCS procedures and instruction to support all facility specific and mission specific requirements, and any operation plans and instructions required to perform EMCS operations, recurring and standing work. (See DR 5-GA09) ****These documents shall include**:** **1. Radio and Pager Number Listing** **2. Responsible Person Listing (By System-NASA and Contractor Personnel)** **3. Building 1103 Room 113 ITD/SRSC (Space Remote Sensing Center) Procedures and Notification** **4. NAVO Facility Equipment Room Procedures** **5. High Pressure Industrial Water Alarm and Callout Procedure** **6. Test Area After Hours EMCS Support Procedures** **7. Building 1003 Air Conditioning Failure Procedure** **8. Building 1105, EPA After Hours Contact List** **9. After Hours Contact Listing for Graphics Personnel** **10. After Hours Contact Listing for CEF (Central Engineering Files)** **11. Hazardous Spill Requirements/Instruction** **12. Building 4110 After Hours Helium Alarm Response procedure** **13. Building 3305 HPG (High Pressure Gas) Alarm Procedures and Contact Listing** **14. Building 1110 Computer Room Monitoring and Response Procedures** **15. Telephone IM Equipment Requirements and Locations Listing**		

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		16. Building 1000 Super Computer Room Control Requirements and Contact List		
		17. Building 1000 Boiler Restoration Plan		
		18. Emergency After-Hours Callout for Communications Systems		
		19. Sewage Treatment Systems' Out of Tolerance Procedures		
		20. Gas Leak Notification Procedures		
		21. Notification and Recall Procedure for After Hours Incidents Involving Construction Subcontractors or Utilities Systems		
		22. After Hours Warehouse and Salvage Yard Access Procedure		
		23. FOSS Safety Personnel Recall List		
		24. FOSS After Hours Call Listings and Procedures		
		25. Procedures for Generator Support to Mississippi Power Co.		
		26. SSC Essex Back-Up Phone Listing		
		27. Building Operating Hours Summary		
		28. Disaster Preparedness Plan		
		29. Critical Facility Custodian Listing		
		30. FOSS Emergency Recall List		
		31. SSME Test Complex Security Access Concurrence Contact List		
		32. SSC Building Custodian List		
		33. Emergency Operations Center Telephone List		
		34. Operation Control Center, 24 Hour Operations		
		35. NASA PSC Video Teleconference System Support		
		36. Natural Gas Outage Notification List		
		37. Building Operating Hours Summary		
		38. Mississippi Power Emergency Contact Phone Listing and Instructions		
		39. Fuel Cell Operating Instructions and Call Out Listing		

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
5.4.3.4.3.2	Maintain Manual of Updated Procedures, Instructions & Listings	Refer to the TRL	Contractor Determined	Kept Current
5.4.3.5	Natural Gas System			
5.4.3.5.1	Operations Information	Natural gas for SSC is supplied by the Koch Gateway Pipeline Co. metering facility. An odorizing station is located adjacent to the metering facility. The odorized gas flows into a 10" main pipeline at a pressure of 40-43 psig to the main distribution No. 1 meter. The gas system piping continues to the user facilities where pressure is reduced to the pressure required by the equipment it serves. See Table 5.1-1 for system definition. Additional detailed system information is given in the **SSC Utility RCM Analysis Manual for Natural Gas**.	Nothing Additional	
5.4.3.5.1.1	Operate, Inspect, and Monitor the Natural Gas Distribution System	Operate the Natural Gas System in accordance with applicable SOP. Operate the system to achieve the availability requirements and operational hours as designated in Annex 5.5, Table 5.5-2 and the Operating Hours Summary (**EMCS Operating Procedure**). Operate the natural gas distribution system to maintain the output as stated in Table 5.1-1.	SSC has approximately 78,000 linear feet of pipe and associated valves, regulators, meters and cathodic protection.	The natural Gas System Operation does not required continuous coverage, but does require operator support to be available 24 hours a day to accomplish routine activities and respond to emergencies.
5.4.3.5.2	Standing Work			
5.4.3.5.2.1	Maintain Log of Operator Activities	The Natural Gas Distribution System log shall include status of valve configuration if other than normal, outages, (scheduled & non-scheduled) and other pertinent information.	Update log daily.	Log available continuously.

ITEM NO.	PERFORMANCE REQUIREMENT	RELATED REQUIREMENTS OR INFORMATION	WORKLOAD DATA	MINIMUM STANDARDS
5.4.3.5.2.2	Read main and Distribution Meters to Monitor and Report Consumption	Record and report meter reading for input into energy allocation program (DR 5-FA07). Meter locations and number are given in **SSC Utility RCM Analysis Manual for Natural Gas**.	Read 32 meters.	Read meters on the first work day of the month. Record date, time, location, and reading.
5.4.3.5.2.3	Inspect and Operate In-Ground Valves	Inspect and operate in-ground valves to ensure valves operate properly. Develop and implement a schedule that provides for the location and manual operation of each underground natural gas valve to ensure it operates properly. Lubricate valves as needed to ensure proper operation. Log any discrepancies found during the inspections in the natural gas distribution system log. Identify any valves requiring new identification markers.	See **SSC Utility RCM Analysis Manual for Natural Gas for location of valves**. (Approximately 66 valves)	Accomplish valve inspection annually. Note discrepancies in log daily.
5.4.3.5.2.4	Inspect Distribution System for Leaks	Develop and Implement a schedule that provides for the Inspection of the Natural Gas Distribution System for leaks. Log any leaks found during the inspections in the daily operations log and initiate work orders for repairs. Immediately safeguard and mitigate conditions posing imminent danger to life, health, or property.	78,000 linear feet of pipe. See **SSC Utility RCM Manual for Natural Gas System**.	Accomplish valve inspection annually. Note discrepancies in log daily.
5.4.3.5.3	Recurring Work			
5.4.3.5.3.1	Provide Operational Support for Gas Curtailment	Provide operations support necessary to implement the **SSC Natural Gas Curtailment Plan** when notified by the government of a natural gas curtailment.	Historically, 2 curtailments since 1990.	Follow Plan and take actions necessary to ensure the safety of personnel and protection of government owned facilities and equipment, while keeping gas consumption below the Maximum Daily Quantity specified in the Plan.

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5.4.3.5.3.2	Identify Above Ground Markers	The Natural Gas underground piping required above ground markers per ****SSC standard 80-005****. During routine operations, identify missing and/or badly damaged/deteriorated markers.	Approximately 350 markers & 78,000 linear feet of pipe. See ****SSC Utility RCM Manual for Natural Gas****.	Initiate work order for repair within 7 days of discovery.
5.4.3.5.3.3	Update/Develop/Maintain Natural Gas System SOP's (DR 5-GA09)	SOP's shall be maintained and updated as required (See DR 5-GA09)	Annual revision or whenever configuration changes. Quantity is contractor determined	Develop or revise and obtain CO review within 90 days of contract start.
5.4.3.6	Operate Fuel Systems	Operate the fuel storage tanks, fuel tanks, pumps, and ancillary components to provide for adequate fuel supplies and safe loading and unloading, of fuel. Receive vendor delivery vehicles within 30 minutes of arrival and remain with delivery vehicle at all times while unloading. Measure tank levels before and after loading. Monitor for leaks and spills, and report any to the CO. Fuel shall be procured in accordance with Annex 9.3.	Described below	Described below
5.4.3.6.1	Manage and Operate Diesel Fuel System	The diesel fuel storage tanks (two 25,000 gal. Tanks) are located at Building 2105. Diesel fuel is received here and dispersed to the equipment and fuel tanks described by the Workload Data. Additionally, the Contractor shall provide diesel fuel to resident agencies on an SWR. Sample the diesel fuel in the two 25,000 gallon storage tanks semi-annually, and treat as required with MIL-S-5302/A approved conditioners to meet the fuel quality standards of Federal Specification VV-F-8000.		Storage Tanks Building 2105: Maintain 90% or above level during hurricane season June 2 thru December 1, maintain 75% or above level the rest of the year. Fuel Tanks: Provide fuel to generator

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				tanks to achieve availability at all times. No instance of generator unavailability because of fuel supply. Tugboat Tank: Provide fuel as required by mission. No instance of unavailability because of lack of fuel. Equipment: Provide fuel for all IAGP (including portable generators) equipment used by the Contractor. Operate all diesel fuel systems to provide the availability requirements of Annex 5.5.
5.4.3.6.2	Operate Propane Fuel System	The propane fuel system provides fuel for heating in areas not serviced with natural gas. Propane shall be procured in accordance with Annex 9.3. The Contractor shall operate the system to provide adequate supplies to the tanks given in the Workload Data. Normally these tanks are filled by vendor delivery vehicles at the tank location. There is one supply propane tank located at Building 2105. It is used to fill the propane tank on the food service truck. The Contractor shall provide propane to resident agencies on an SWR.	Supply Propane Tank: 1-1,000 gal. Tank at Building 2105 Food Service Truck:1-500 gal. Tank Propane Tanks:	Supply Propane Tank Building 2105: Maintain 50% or above level. Food Service Truck: Fill as required to maintain availability. Propane Tanks:

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			1-500 gal. Tank and 1-1,000 gal. Tank at Building 2423 1-500 gal. Tank and 1-1,000 gal. Tank at Building 2421 2-150 gal. Tank at Building 2110 1-1,000 gal. Tank at Building 2402	Fill as required to maintain availability.
5.4.3.6.3	Operate Gasoline Fuel System	The gasoline fuel storage tanks, 24,000 gal. Capacity, are located at Building 2201. Gasoline is received here and dispersed to resident agencies and for Contractor use. Gasoline for resident agencies is provided on an SWR	24,000 gal capacity underground storage tanks at Building 2201	Fill as required to maintain availability. Maintain at or above 20% capacity.
5.4.3.6.4	Document and Report Fuel System Operations	See Line Items 5.4.3.4.2 Thru 5.4.3.4.2.	Nothing Additional	See 5.4.3.4.2
5.4.4	Building Structures			
5.4.4.1	Operate Electrical Systems			Operate to maintain availability
5.4.4.1.1	Switch Boards & Panel Boards	Ensure the Switchboards and Panelboards are securely fastened during operation.	1257 Switchboards and Panelboards	See 5.4.4.1
5.4.4.1.2	Motor Control Center	Motor Control Center consists of starter module circuit breakers, control transformers, wiring, relays and other devices.	94 Motor Control Centers	See 5.4.4.1
5.4.4.1.3	Lighting Systems	Lighting Systems consists of receptacles, switchplates, bulbs, lamps, lenses, reflectors and luminaries.	112 Systems	See 5.4.4.1

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5.4.4.1.4	UPS	Uninterruptible Power Supply (UPS) are 45 Kva and above.	70 UPS Systems	See 5.4.4.1
5.4.4.1.5	Generators	Generators shall operate as originally intended if components are replaced with like components.	11 Generators	See 5.4.4.1
5.4.4.1.6	Cathodic Protection Systems	Cathodic Protection System consists of active & passive systems with rectifiers.	1 Cathodic Protection System and 11 recifiers	See 5.4.4.1
5.4.4.1.7	Lightning Protection Systems	Lightning Protection System consists of ground conductors, air terminals, and ground rods.	237 Systems	See 5.4.4.1
5.4.4.1.8	Dry Type Transformers	Dry Type Transformers are 45 Kva and above	162 Dry Type Transformers	See 5.4.4.1
5.4.4.2	HVAC and Refrigeration Equipment and Systems			
5.4.4.2.1	Operations			
	Information, Equipment/Systems	HVAC and Refrigeration Equipment and Systems consist of equipment identified in the Equipment Database (available in the TRL). These equipment items and systems include all peripheral and support equipment, parts, and components such as pumps, motors, actuators, valves, piping, expansion tanks, controls, instrumentation and other components necessary to provide a complete and operational system. See Table 5.1-1 for a description of the system, components and output.		
	Information, NASA Refrigerant Stock	NASA currently owns a stock of refrigerants (Inventory Listing is available at TRL). The Government will **not** replenish this stock of refrigerant. The Contractor may use NASA owned refrigerant to replace refrigerant loss due to leakage, subject to the following restrictions. This		

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		refrigerant shall: 1.) Only be used to charge equipment which has been numbered and entered into the MAXIMO Database. The refrigerant capacity for the equipment item must also be in the MAXIMO Database. 2.) Only be used to replace refrigerant up to 15% of an equipment's total refrigerant capacity (lbs of refrigerant) within a 12 month period of time. 3.) Not be used to charge newly installed, retrofitted or refurbished equipment. 4.) Only be used to replace refrigerant in equipment which has been repaired and leak checked.		
	Information, Quality Control of Refrigerant.	The Contractor may reuse refrigerants recovered at SSC, by the Contractor. The Contractor shall be responsible for insuring that reused refrigerants are free of contaminants prior to reuse. As a minimum, where recovered refrigerant is to be used in equipment from which it was not recovered, the Contractor shall filter the refrigerant and test for proper temperature/pressure relationships, moisture content and acid.		
5.4.4.2.1.1	Operate HVAC and Refrigeration Equipment and Systems.	The Contractor shall operate HVAC and Refrigeration Equipment and Systems. The Contractor shall operate, inspect and monitor equipment/systems as required to optimize equipment life cycle costs, to meet output requirements (seeTables5.1-1), or to achieve the Availability requirements (See Annex 5.5) during operational hours (See the Building Operating Hours Summary. Equipment shall be operated as intended/designed, and in	2037 Units	Monitor/Operate equipment as needed to meet availability requirements and to optimize equipment life cycle costs.

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		the most energy efficient manner, while meeting availability requirements (e.g., EMCS controlled equipment shall normally be cycled off during unoccupied and non-operational periods, heating boilers shall be shut-down during the cooling season, economizer cycles shall be used, optimum start/stop programs shall be used, etc.). During periods in which the EMCS controls fail, equipment shall be manually started and stopped at times normally started/stopped by the EMCS.		
5.4.4.2.1.2	Operate Automated Chemical Injection/Treatment Systems for open loop cooling tower systems.	The Contractor shall operate Chemical Injection/Treatment Systems to prevent excessive water usage, corrosion, algae buildup, biological growth, mineral deposits/scale, fouling or deterioration of equipment. Contractor shall provide all treatment chemicals. All chemicals used shall be compatible with the sewage treatment systems in use at Stennis Space Center, shall not violate existing National Pollution Discharge Elimination System (NPDES) discharge permits. (See Annex 7 for site chemical usage and submittal requirements.) Contractor shall provide all materials, chemicals and supplies to perform all testing and sampling as required to properly treat and verify proper treatment. Contractor shall meet the following minimum sampling and testing requirements: 1.) Quarterly - Coupon tests for mild steel and copper corrosion rates. 2.) Monthly - Biological Count of heterotrophic bacteria. 3.) Weekly – Visual inspection for algae growth. 4.) Weekly – Tacktle inspection for bacteria. 5.) Weekly – Record Conductivity.	12 Units	Conductivity shall be maintained between 1,500 and 2,400 mhos. Quarterly average corrosion rates shall be maintained at or below 4.0 mils/yr. for mild steel and 0.2 mils/yr. for copper (Coupon tests examined quarterly, minimum). Biological Count of heterotrophic bacteria shall be maintained below 10,000 organisms per ml (Test 1 time each 30 days, minimum). No visible signs of Algae growth shall exist (Treatment within 24 hours of appearance of visible signs).

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5.4.4.2.1.3	Provide chemical treatment of closed loop chilled water and hot water heating systems.	The Contractor shall chemically treat closed loop systems to prevent excessive corrosion, build-up of deposits, or deterioration of piping/equipment. Contractor shall provide all treatment chemicals. All chemicals shall be compatible with the sewage treatment systems in use at Stennis Space Center, shall not violate existing NPDES discharge permits. (See Annex 7 for site chemical usage and submittal requirements). Contractor shall provide all materials, chemicals and supplies to perform all testing and sampling as required to properly treat and verify proper treatment. Contractor shall perform sampling of nitrite (as NO2) concentrations quarterly (minimum).	Contractor Determined	Treatment level shall be maintained between 360 (minimum) and 1500 (maximum) ppm of nitrite as NO2, continuously. Quarterly average corrosion rates shall be maintained below 3.0 mils/yr. for mild steel, and 0.2 mils/yr. for copper.
5.4.4.2.1.4	Manage and record NASA owned refrigerant stock/inventory.	Manage the refrigerant stock to prevent pilferage, loss, or contamination of refrigerant. Maintain an inventory of the stock. The Contractor shall be responsible for replacement of contaminated or lost refrigerant, or refrigerant which can not be accounted for through refrigerant use records (Refrigerant use records are covered under Annex 5.4.4.2.1.5 and 5.4.4.2.1.6).	1 ea record	Maintain refrigerant in proper containers and in a secure area(s). Maintain current and accurate records of refrigerant inventory, including locations and bottle numbers. Records shall be maintained for 3 years and shall be available for Government review upon request.
5.4.4.2.1.5	Maintain use Records for Refrigerant from NASA Stock.	The Contractor shall maintain records for all refrigerant used from the NASA stock. These records shall provide an audit trail down to the date, type and weight of refrigerant added, and the MAXIMO Database equipment item number. Records shall clearly differentiate between NASA stock refrigerant and other refrigerant sources (Also see Annex 5.4.4.2.1.6 for additional records	1 ea record	Maintain records current and accurate and available for Government review upon request.

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		requirements).		
5.4.4.2.1.6	Maintain Refrigerant Records for Refrigerant Use and Equipment Leakage Rates.	The Contractor shall maintain records of SSC refrigerant use and equipment leakage rates in accordance with EPA regulations and requirements. Note, some record requirements for NASA owned refrigerants (see Annex 5.4.4.2.1.5) may not match EPA regulations; where this is the case, the more stringent requirement shall apply	1 ea record file or database	Maintain records current and accurate and available for Government review upon request.
5.4.4.2.1.7	Manage Refrigerant Leakage Rates and Develop Repair Plans	Develop Repair Plans and maintain records in accordance with EPA regulations. The contractor shall act on behalf of and in accordance with both "Service Organization" and "Owner" requirements established in the EPA regulations, for ensuring that leaks are repaired within EPA time constraints. (Repair costs and requirements are covered under Annex 5.3)	1 Plan	Maintain records current and accurate, and available for Government review upon request. Notify the Government of potential conflicts/problems (e.g., non-funded repairs). Notification shall be provided within 10 work days of discovery.
5.4.4.2.1.8	Disposal of Contaminated Refrigerant.	The Contractor shall be responsible for disposal of contaminated refrigerants generated by PM, CM or Operations (Annexes 5.2, 5.3 and 5.4). This includes handling, storage and disposal. Note: This annex is **not** intended to cover the costs for the recovery of refrigerant. The recovery of refrigerant will be evaluated by the Government as part of a PM, CM, or other activity (e.g., Removal of refrigerant from a demolished air conditioner, prior to a repair/replacement, shall be part of the CM).	Contractor Determined	Compliance with EPA regulations.
5.4.4.2.1.9	Provide HVAC/Refrigeration	Technician shall be located within the area of assignment	180 hours annually.	No instances of failure to