Charters

MSC-CHT-ISMS-60547

Engineering Charter

Revision 2, Change 0

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CHANGE SUMMARY

Description of Change

Updating charter to reflect incorporation of the Maintenance Management Program/Reliability Engineering group.
1.0 ORGANIZATION

The structure of the Engineering organization provides company-wide engineering oversight, program support, and engineering staff to efficiently accomplish MSA scope. The organization reports directly to the Chief Operating Officer within the Office of the President. While the organization and programs provide the framework for executing engineering work, ultimately, Engineering personnel are responsible for the technical adequacy of engineering products and decisions.

The Manager of Engineering/Chief Engineer is responsible for all MSA Engineering and is the MSA Design Authority (DA)\(^1\). The Manager of Engineering/Chief Engineer manages the Engineering Program and executes engineering work through the Engineering organization staff. Figure 1 depicts the MSA Engineering Organization.

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\(^1\) Individual Design Authorities are delegated for specific systems and facilities.

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2.0 CONTRACTUAL REQUIREMENTS FLOWDOWN

Contractually, the primary requirements of the MSA Engineering Program are derived from the following sources:

- 10 CFR 835, Occupational Radiation Protection
- DOE O 252.1A, Technical Standards Program
- DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets
- DOE O 420.1C, Facility Safety

Each requirement applicable to the MSA Engineering Program is cited in MSC-RD-ENG-1819, MSC Engineering Requirements, along with their respective implementing procedure(s).

3.0 SCOPE OF WORK

MSA Engineering is a service organization providing integral and necessary services to maintain site infrastructure and support the Hanford Cleanup Mission. Services are provided to meet customers’ needs as they are received through internal and external service requests. Additionally, multiple systems and facilities for which MSA is responsible (e.g., electrical, water, and sewer utilities and roads) are assigned primary and alternate Design Authorities to ensure that the technical baseline for the system or facility is maintained in accordance with the established configuration management program (MSC-PRO-ENG-20050, MSC Engineering Configuration Management).

4.0 ORGANIZATION ROLES AND RESPONSIBILITIES

Engineering is organized to support each of the MSA business areas that requires engineering support to execute its mission as part of the contract. Each group within the Engineering organization is outlined below with respect to their roles and responsibilities. Attachment 1 provides a table showing the roles, responsibilities, accountabilities, and authorities for each of the functional roles within engineering.

4.1 Electrical Utilities Engineering

The role of this group is to provide qualified engineering support to the Hanford Site Electrical Utilities (EU) group within the Public Works organization.

Specific scope and responsibilities of this engineering group include:
- Providing primary and alternate design authority coverage for the following systems:
  - Transmission and Distribution (INFRA-T&D)
  - Supervisory, Control and Data Acquisition (INFRA-SCADA)
  - Meter Data Management System (INFRA-MDMS)
  - Substations (INFRA-SUB).
• Providing engineering resources to perform Arc Flash analyses for low, medium, and high voltage systems
• Providing engineering resources to support audits and to maintain compliance with North American Electric Reliability Corporation and Western Electricity Coordinating Council standards and requirements that apply to the Hanford Site EU System.
• Providing engineering resources to support construction of the electrical service to new facilities.
• Providing engineering resources to interface with Bonneville Power Administration, Benton Public Utility District, and Benton Rural Electric Association for issues affecting the Hanford Site T&D System.
• Providing engineering resources to support Engineering Studies and Cost Benefit Analysis.

4.2 Water/Sewer Utilities and Hanford Site Roads Engineering

The role of this group is to provide qualified engineering support to the following organizations within the Site Infrastructure group of Public Works:

- Water & Sewer Utilities;
- B Reactor;
- Biological Controls; and
- Roads Maintenance

Specific scope and responsibilities of this engineering group include:

• Providing primary and alternate design authority coverage for the following systems:
  - Raw water (INFRA-RW)
  - Sanitary water (INFRA-SW)
  - Export water (INFRA-EW)
  - Sanitary sewer (INFRA-SNS)
  - Roads (INFRA-ROADS).
• Providing engineering resources to support construction of water and sewer connections for new facilities.
• Providing engineering resources to interface with Washington Department of Ecology regarding water and air permitting issues.
• Providing engineering resources to interface with Benton Franklin Council of Governments to coordinate efforts with Benton County Public Works, City of Richland, Washington Department of Transportation and Hanford Site Roads.
• Providing engineering resources to support Engineering Studies and Cost Benefit Analysis.
4.3 Facilities/HAMMER Engineering

The role of this group is to provide qualified engineering support for facilities and activities across the Hanford site. This support is primarily within the Facilities Management/Work Management group of Public Works (including engineering support to Projects when requested) and the HAMMER Training and Operations group within Training and Conduct of Operations.

Specific scope and responsibilities of this engineering group include:

- Providing subject matter experts and expertise in key engineering disciplines such as:
  - Civil/structural
  - Electrical
  - HVAC
  - Mechanical
- Providing engineering resources to perform Arc Flash analyses and maintenance of the Arc Flash program.
- Providing direct engineering support when requested to other MSA and other Hanford engineering organizations (e.g., Hanford Fire Department).

4.4 Technical Security Engineering

The role of this group is to provide qualified engineering support to the Security Operations group within Safeguards and Security.

Specific scope and responsibilities of this engineering group include:

- Providing primary and alternate design authority coverage for the following systems:
  - INFRA-SAS - Safeguards and Security
  - CSB-17 - Interim Storage Area Security
- Providing technical authority coverage for intrusion detection and access control systems securing DOE assets throughout the Hanford Site.
- Providing technical authority coverage for design, installation, testing, and maintenance of security systems throughout the Hanford Site.
- Supporting DOE and other Hanford contractors with upgraded access control services via proximity card systems.

4.5 Information Technology Engineering

The role of this group is to provide qualified engineering support to the Network and Telecommunications Infrastructure group within Information Management.

Specific scope and responsibilities of this engineering group include:

- Providing primary and alternate design authority coverage for the Telecommunications infrastructure system (INFRA-TELECOM).
Engineering Charter

Providing engineering support for the (OSP) outdoor telecommunications cable plant including copper/fiber cable, conduits, hand holes, and manholes.

Providing engineering support for the (ISP) indoor telecommunications cable plant including copper/fiber cable, racks, cabinets, and electronics.

Providing engineering support for the wireless transport system, which includes point-to-point, point multipoint, two-way radio, and emergency alerting sirens.

Provide engineering technical support for engineering studies, alternative analysis, and reliability and sustainability projects.

Provide IT engineering technical support to MSA, DOE and other Hanford contractors, including design, installation, testing, maintenance and technical issues resolution for various IT infrastructure systems throughout the Hanford site.
4.6 **Hanford Fire Department Fire Systems Maintenance Engineering**

The role of this group is to provide qualified engineering support to the Fire Protection Program group within the Emergency Services organization.

Specific scope and responsibilities of this engineering group include:
- Providing primary and alternate design authority coverage for the breathing air (INFRA-FIRE_AIR), Radio Fire Alarm Reporter (INFRA-RFAR), fire suppression (INFRA-FIRE_SUPPRESSION), and fire alarm (INFRA-FIRE_ALARMS) systems.
- Providing technical authority coverage for fire alarm and fire suppression inspection, testing and maintenance procedures.
- Providing the Hanford Fire Marshal’s office technical reviews for fire alarm and fire suppression design documents.

4.7 **Central Engineering**

The role of this group is to provide support for all of the other groups that comprise the engineering organization. Specific scope and responsibilities of this group include:
- Developing and maintain engineering procedures and processes
- Providing oversight and management of the Design Authority program
- Conducting management assessments of engineering processes and work products
- Providing access to engineering resources and management for new projects, activities, and work-complete as-building
- Management of and buyers technical representative(s) for design agent subcontracts
- Engineering support for Sitewide procurements
- Designer/drafting support and maintenance of drawing standards
- Direct or subcontracted NFPA 70 Electrical Authority Having Jurisdiction

4.8 **Maintenance Management Program/Reliability Engineering**

The role of this group is to provide resources for implementation of maintenance management improvement activities for the work groups within MSA that are responsible for maintaining real property. Additionally, this group is responsible for providing reliability engineering resources (for use by all engineering functions) and institutionalizing reliability engineering concepts (e.g., equipment reliability, availability, maintainability, and inspectability) into MSA’s engineering procedures and processes.

Specific scope and responsibilities of this group include:
- Applying reliability/maintainability principles to real property during all phases of engineering which include study, design, construction and installation support, start-up, and turnover to operations.
• Increasing the effectiveness of Operations and Maintenance (O&M) manuals for real property.

• Assisting with the application of reliability-focused maintenance program during active real property operation and use.

• Monitor, gather, and analyze operational data associated with real property to maintain or improve property (e.g., system, structure and component [SSC]) availability and to reduce the number, duration, and impacts of vulnerabilities by participating in vulnerabilities evaluation, mitigation, and reporting through the risk assessment process.

• Improving maintenance execution utilizing an Enterprise Asset Management (EAM) approach and implement a strategic shift from preventive to predictive maintenance techniques and reduce deferred maintenance.

• Applying a graded prioritization methodology to the SSC maintenance and costing process including related unit cost analyses to all MSA maintenance and optimize the use of labor, financial, and material resources.

• Implementing comprehensive utilization of the Phoenix Computerized Maintenance Management System (CMMS) (MAXIMO®) for maintenance information collection, organization, interpretation, management, reporting, and feedback and aggressive program- and component-level, metric-driven feedback process to gauge program performance and drive improvement.

• Integrating Contractor Assurance System (CAS)/Corrective Action Management System (CAMS) and Facility Information Management System (FIMS) reporting with SSC maintenance data.

• Developing recapitalization strategies based on corrective actions and MMP metric data.

Attachment 2 provides a graphical depiction of the Matrix of Engineering Functions and ISMS Core Functions and Guiding Principles that shows how ISMS is implemented in this organization.
## ATTACHMENT 1 – FUNCTIONAL ROLES, RESPONSIBILITIES, AUTHORITIES, ACCOUNTABILITIES

<table>
<thead>
<tr>
<th>Functional Roles</th>
<th>Roles</th>
<th>Responsibilities</th>
<th>Authorities</th>
<th>Accountabilities</th>
</tr>
</thead>
</table>
| Chief Engineer   | Establishes and maintains the engineering program for MSA. | • Develops and maintains all engineering policies, programs, procedures, and standards  
• Identifies required engineering training and qualification programs  
• Provides technical expertise for projects with qualified engineers  
• Ensures that Engineering supports operating and maintaining the facilities in a safe, reliable, and efficient manner  
• Determines technical readiness prior to startup or restart of a facility or activity  
• Deploys engineering resources to line organization  
• Provides leadership in the area of safety and quality for the Engineering Program  
• Ensures career development activities for all engineers | Is given the authority by the Chief Operating Officer of MSA to approve and make decisions on both programmatic and technical engineering documents and issues within engineering responsibility. | Is accountable to the Chief Operating Officer of MSA. Is accountable for all engineering products and decisions including quality and compliance with the MSA contract and its requirements documents. |
| Engineering Manager | Manages engineering staff and engineering processes within assigned scope | • Makes engineering staff assignments within area of scope  
• Ensures career development for assigned engineering staff  
• Makes recommendations to Chief Engineer for DA Assignment within area of scope  
• Oversees Engineering tasks and execution of engineering processes within area of scope  
• Monitors quality of engineering work products developed by assigned staff  
• Identifies future need and future availability of engineering staff within area of scope  
• Develops project roles, responsibilities, and qualifications | Is given the authority by the Chief Engineer to approve, as DA, the Configuration Baseline documents and information within assigned scope and changes thereto. (NQA-1) | Is accountable to the Chief Engineer. Is accountable for the performance of the Engineering Manager within assigned scope, and the quality and compliance of the products developed within area of scope. |
| Design Authority (DA) | Establishes and maintains the Configuration Baseline for assigned scope | • Establishes and maintains design requirements for assigned scope  
• Establishes and maintains list of Configuration Baseline documents for assigned scope, and changes thereto  
• Ensures design output documents accurately reflect design bases for assigned scope  
• Is responsible for design control and ultimate technical adequacy of the engineering design process  
• These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations (DOE-STD-1073) | Is given the authority by the Chief Engineer to approve and make decisions on technical engineering documents and issues within assigned area of scope. | Is accountable to the Chief Engineer and the Engineering Manager in the direct chain of command. Is accountable for the completeness and control of the Configuration Baseline within assigned scope. |
| Engineer | Evaluates facilities, systems or equipment and addresses issues in support of Operations, Projects or Planning | • Evaluates/trends assigned scope or systems against functions and requirements  
• Addresses performance issues on assigned scope or systems  
• Provides Engineering support to Operations and Maintenance  
• Develops technical studies and evaluations in support of operations, projects and planning  
• Evaluates design and project scope options  
• Develops engineering information in support of cost/schedule estimates | Is given the authority by the Engineering Manager to approve and make technical decisions within discipline/qualifications and within assigned scope that do not affect the Configuration Baseline. | Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for providing Engineering support to Operations or Projects within assigned scope. |
| Reliability Engineer | Works with relevant system Design Authority to evaluate facilities, systems or equipment and address issues in support of Operations, Projects or Planning | • Maintains Master Equipment List and Asset Hierarchy  
• Performs continual optimization of preventive and predictive maintenance in conjunction with the relevant system Design Authority  
• Tracks and trends predictive maintenance and makes recommendations to the relevant system Design Authority for corrective maintenance based on trending analysis of oil analysis data, vibration analysis data, acoustic analysis data, and infrared thermography analysis imaging and data and other predictive technologies  
• Develops and ensures preventive and predictive maintenance activities are routed for efficiency | Is given the authority by the Engineering Manager to approve and make technical decisions within discipline/qualifications and within assigned scope that do not affect the Configuration Baseline. | Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for providing Engineering support to Operations or Projects within assigned scope. |

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**Hanford Mission Support Contract**

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<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information Technology Engineering Technical Staff</strong></td>
<td>Evaluates facilities, systems or equipment and addresses issues in support of Operations, Projects or Planning</td>
</tr>
<tr>
<td></td>
<td>Determines critical spare parts and adequacy of stocking levels and provides input to relevant system Design Authority.</td>
</tr>
<tr>
<td>Lead Designer</td>
<td>Manages Designer/Drafter staff and drafting processes within assigned scope</td>
</tr>
<tr>
<td></td>
<td>Is given the authority by the Engineering Manager to approve and make technical decisions within discipline/qualifications and within assigned scope that do not affect the Configuration Baseline.</td>
</tr>
<tr>
<td></td>
<td>Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for providing technical support to Operations or Projects within assigned scope.</td>
</tr>
<tr>
<td>Designer/Drafter</td>
<td>Performs designs and drawings</td>
</tr>
<tr>
<td></td>
<td>Is given the authority by the Engineering Manager to approve and make technical decisions within discipline/qualifications and within assigned scope that do not affect the Configuration Baseline.</td>
</tr>
<tr>
<td></td>
<td>Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for providing technical support to Operations or Projects within assigned scope.</td>
</tr>
<tr>
<td>Design Agent</td>
<td>Performs design tasks and produces engineering products</td>
</tr>
<tr>
<td></td>
<td>Is given the authority by the Engineering Manager to make technical decisions and originate Engineering documents within discipline/qualifications and within assigned scope.</td>
</tr>
<tr>
<td></td>
<td>Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for following approved processes and procedures and producing Engineering products that are ready for checking and approval.</td>
</tr>
</tbody>
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### ATTACHMENT 1 – FUNCTIONAL ROLES, RESPONSIBILITIES, AUTHORITIES, ACCOUNTABILITIES (cont.)

<table>
<thead>
<tr>
<th>Functional Roles</th>
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<th>Responsibilities</th>
<th>Authorities</th>
<th>Accountabilities</th>
</tr>
</thead>
</table>
| **Checker (qualified as Engineer)** | Checks that engineering products are correct, and compliant | • Performs an independent check of technical and administrative content of engineering products  
• Resolves issues with engineering products with the originator  
• Makes evidence of checking process used available to approvers | Is given the authority by the Engineering Manager to sign as Checker on technically accurate, requirement and procedurally compliant engineering products within discipline and qualifications that were not developed by the checker. | Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for ensuring checked Engineering products are technically accurate and are requirement and procedurally compliant. |
| **Subcontracted Engineer/Engineering Intern** | Provides engineering documentation services to MSA under the direction of a qualified engineer or an engineering technical manager. Can provide engineering expertise (e.g., structural analysis, mechanical analysis, material properties, software engineering, reliability engineering) in support of all engineering functions, as defined as part of the specific contract requirements. | • Establishes engineering/design requirements  
• Approves the design bases, the configuration, and the changes thereto  
• Ensures design output documents appropriately and accurately reflect the design basis  
• Prepares technical evaluations and reports  
• Maintains records of evaluations  
• Establishes and maintains required qualification(s) in accordance with MSC-PRO-20051. | Is given the authority by the Engineering Manager to approve and make technical decisions within discipline/qualifications and within assigned scope that do not affect the Configuration Baseline. | Is accountable to the Chief Engineer and the Engineering Management in the direct chain of command. Is accountable for following approved processes and procedures and producing Engineering products that are ready for checking and approval. |

*Includes subcontracted Reliability Engineer.*

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## Attachment 2

Matrix of Engineering Functions and ISMS Core Functions and Guiding Principles

<table>
<thead>
<tr>
<th>ISMS Core Functions</th>
<th>ISMS Guiding Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF1 Define the Scope of Work</td>
<td>GP1 Line Management Responsibility for Safety and Environmental Requirements</td>
</tr>
<tr>
<td>CF2 Identify Hazards and Requirements</td>
<td>GP2 Clear Roles and Responsibilities</td>
</tr>
<tr>
<td>CF3 Analyze Hazards and Implement Controls</td>
<td>GP3 Competence Commensurate with Responsibility</td>
</tr>
<tr>
<td>CF4 Perform Work within Controls</td>
<td>GP4 Balanced Priorities</td>
</tr>
<tr>
<td>CF5 Provide Feedback and Continuous Improvement</td>
<td>GP5 Identification of Safety and Environmental Standards and Requirements</td>
</tr>
<tr>
<td></td>
<td>GP6 Hazard Controls Tailored to Work Being Performed</td>
</tr>
<tr>
<td></td>
<td>GP7 Operations Authorization</td>
</tr>
<tr>
<td></td>
<td>GP8 Worker Involvement</td>
</tr>
<tr>
<td></td>
<td>GP9 Senior Management Involvement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Core Functions</th>
<th>Guiding Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSA Engineering</td>
<td>CF1, CF2, CF3, CF4, CF5, GP1, GP2, GP3, GP4, GP5, GP6, GP7, GP8, GP9</td>
<td></td>
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