ORDER

SPRPMO O 410

Approved: 01/27/14

SPRPMO CONFIGURATION MANAGEMENT PROGRAM

U.S. DEPARTMENT OF ENERGY
Strategic Petroleum Reserve
Project Management Office

DISTRIBUTION: All SPRPMO Employees, Management and Operating Contractor, Architect-Engineering Contractor

INITIATED BY: Assistant Project Manager for Systems and Projects, Configuration Management Officer

SPRPMO F-1321.3
(4/82)

RESERVED
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SPRPMO CONFIGURATION MANAGEMENT PROGRAM

1. PURPOSE. This Order serves as the program policy and procedures for the Strategic Petroleum Reserve's (SPR's) Configuration Management (CM) Program.

2. CANCELLATION. The Order cancels SPR Project Management Office (PMO) M 410.1-1A Change 1, Configuration Management Program Manual, dated 08/30/06.

3. APPLICABILITY.

   a. SPRPMO Elements: This Order applies to all Department of Energy (DOE)/SPRPMO employees.

   b. DOE Contractors. Except for the exclusions in Paragraph c, the Contractor Requirements Document (CRD), Attachment 2, sets forth requirements to be applied to the Management and Operating (M&O) contractor. The CRD, Attachment 3, sets for the requirements applied to the Architect-Engineering (A-E) contractor.

   c. Exclusions: None.

4. REQUIREMENTS. This Order provides information on the SPR's CM policy and procedures. Contractors have established CM procedures applicable to their organizations and conform to the SPR's stated goals and objectives outlined in this Order.

   a. Policy.

      It is the policy of DOE to employ CM on all major system acquisitions and major projects, facilities, systems and equipment. The SPRPMO CM policy will ensure that the SPR facilities, systems, equipment, buildings, storage caverns, process control software, and information, data, and telecommunication systems meet their technical and operational requirements and that technical requirements are clearly defined and controlled throughout the life of the SPR project. All areas of the SPR shall be under Configuration Control throughout their lifecycle.

      This Order uses the Institute of Configuration Management CM II Model and requirements as the basis for development of the CM Program. Corresponding

CM Plans and requirements may be tailored to meet the specific responsibilities of the SPR.

(1) Purpose.

This Order serves as the program policy and requirement for implementing the SPR's CM Program.

(2) Scope.

This Order describes the CM System requirements and processes for the control of SPR Facilities, Systems, Equipment, Hardware and Software necessary to ensure the SPR mission goals and success. The CM system provides a proven and effective CM process and interfaces within the SPR, operational sites, contractors, and subcontractors. This Order is applicable to all SPR sites, areas, and systems under the responsibility of the SPR.

(3) CM System Overview.

CM at the SPR shall be consistent with the Institute of Configuration Management CM II principles. CM II is an established and proven business process infrastructure with CM being the upfront, driving process that directs and accommodates change, optimizes standards and best practices, manages engineering and technical requirements, maintains all technical design and process information in a concise and accurate system available to all the users, and contains verified configuration results. The CM II System process is illustrated in Figure 1.

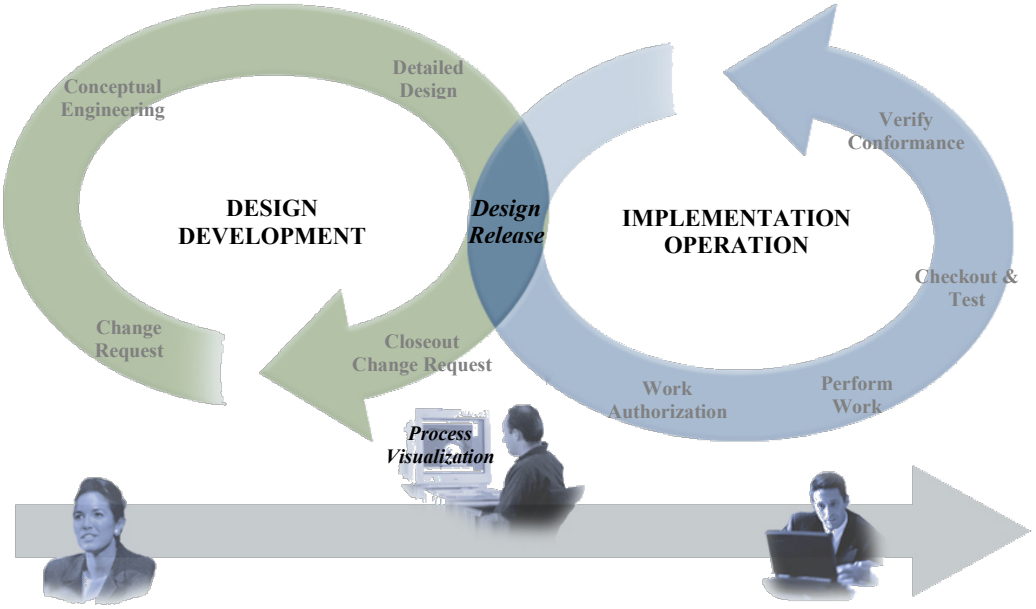

Figure 1 Configuration Management II (CM II) Process

CM II defines CM as "the process of managing products, facilities and processes by managing the information about them, including changes, and ensuring they are what they are supposed to be in every case." CM activities include requirements management, change management, release management, data management, records management, and document control. Properly applied CM practices make it possible to ensure that controlled Configuration Items (CIs) conform to their documented requirements.

This CM II standard provides a proven and measureable methodology that enables an organization to improve its core business processes and reduce the need for intervention resource expenditures. It also provides the foundation upon which projects can be successfully managed and conformance quality can be assured.

The CM II system requirements described herein provides the path to integrated process excellence. At its foundation lies a fundamental set of rules based on the sound principles and practices of configuration management. This fundamental set of rules has universal applicability across all industries and environments, and all core business processes.

(4) CM System Objectives.

Establish the SPRPMO CM Program objectives:

(a) Implement the SPR's CM policies and procedures.

(b) Select and document the project's technical baseline.

(c) Build, operate, validate, and maintain SPR facilities, systems, equipment, and cavern configuration to the technical baseline documentation.

(d) Control and manage changes to SPR facilities, systems, and equipment through changes to baselined technical requirements and documentation.

(e) Record and manage the status of changes and implementation.

(f) Maintain configuration traceability for SPR facilities, systems, and equipment throughout their life cycle.

(g) Provide for a systematic review and authorization of all changes to assure that all primary and secondary effects are identified and their costs/benefits are considered during the change process.

(h) Assist in achieving the required system performance and operational efficiency with considerations for cost and schedule implications.

(i) Assure uniformity in DOE CM policy and procedures while providing maximum flexibility in tailoring the process to the SPR.

b. Configuration Control.

Configuration control is the systematic evaluation, coordination, approval or disapproval, and implementation of all proposed changes in the configuration of a CI after formal establishment of its baseline. All SPR contractors and subcontractors shall establish CM procedures applicable to its organization and that conform to the SPR's stated goals and objectives outlined in this Order. Contractors shall develop and implement a comprehensive CM system based on the requirements of this Order.

The CM systems and supporting CM procedures must ensure that changes are accomplished in an organized manner with traceability and accountability so that project CM requirements are properly implemented. Requested changes to software, hardware, data, networks, or documentation shall be formally reviewed and approved in order to allow evaluation of the effect of the change on security, performance, interfaces, acceptability, completeness, and documentation.

The Configuration Management Officer (CMO) shall review all contractor CM Plans and CM systems on an annual basis to ensure that all requirements of this Order are in place.

Configuration Control authority exists at the SPR Program Office in Washington, D.C., the SPRPMO, contractors offices in New Orleans, Louisiana, and at each SPR site.

5. RESPONSIBILITIES.

a. Project Manager.

The SPRPMO Project Manager is the overall CM change approval authority within the SPR Project. Changes that require review and/or approval by the Program Office will be reviewed by the Project Manager prior to submittal. The Project Manager shall:

(1) Ensure, through the CMO, that all contractors implement effective CM systems.

(2) Establish SPRPMO CM policy and provide delegations of authority and responsibilities to assure compliance with applicable CM requirements.

(3) Provide contractors with technical direction on and criteria for the development of contractor goals, objectives, and performance measures.

(4) Hold SPRPMO personnel accountable for providing technical direction to contractors that is consistent with the requirements contained in this Order.

b. Configuration Management Officer (CMO).

The CMO is responsible for all SPRPMO CM activity, policies, and procedures and ensures compliance with all Acts, Orders, and other Federal and State regulations. The CMO:

(1) Serves as SPRPMO CM Representative within the PMO and with DOE Headquarters.

(2) Develops CM policies, plans, and procedures for the SPRPMO.

(3) Provides SPR compliance oversight and technical guidance and direction on implementation of all CM related matters to ensure that the application of the CM process is consistent with DOE Headquarters direction requirements.

(4) Approves contractors' CM control and engineering procedures within the SPRPMO, and ensures contractors' configuration control and engineering procedures comply with their individual requirements.

(5) Provides information and advice to SPRPMO and Headquarters officials on CM matters.

(6) Conducts CM self-assessments, initiates directives to contractors with findings and corrective actions, and determines the adequacy of corrective actions taken by SPRPMO and contractor officials.

c. Assistant Project Manager (APM) for Maintenance and Operations.

The SPRPMO APM for Maintenance and Operations ensures that CM policy is conducted and CM documentation is tracked and implemented for all SPR facilities, maintenance, and operations activities. The APM for Maintenance and Operations concurs with CM documents.

d. APM for Systems and Projects.

The SPRPMO APM for Systems and Projects ensures that CM policy is conducted and CM documentation is applied to design and construction activities and tracked through implementation and turnover. The APM for Systems and Projects maintains the Technical Baseline requirements and ensures that as-built drawings are completed as required, and concurs with CM documents.

e. APM for Technical Assurance.

The SPRPMO APM for Technical Assurance ensures that CM policy is implemented and CM documentation requirements are applied to security and emergency management and environmental, safety and health ensuring plans and procedures are in place and that all related Federal and State regulations are addressed and implemented by SPRPMO line elements and contractors for appropriate SPR facilities, operations activities, and lands. The APM for Technical Assurance is required to review and approve CM documents.

f. APM for Management and Administration.

The SPRPMO APM for Management and Administration ensures that CM policy is implemented and CM compliance is included in appropriate SPRPMO contracts. The APM for Management and Administration reviews and approves CM documents.

g. CM Authority.

(1) The DOE Project Configuration Control Board (PCCB) has the authority to authorize and implement changes to the technical baseline documentation through the CM Change Management process.

(2) The SPR will use the Enterprise Change Proposal (ECP) to authorize and implement individual changes to the SPR Technical Baseline.

(3) The CMO has the authority to determine the Change Classification and direct and coordinate any ECP or ECP appeal to the proper approving authority.

(4) The M&O Contractor has the authority to establish Change Control Board(s) to disposition Class II Change Requests in accordance with this Order.

(5) All other contractors, including the A-E and lease contractors, shall adhere to the requirements defined in this CM Order and to the CM processes defined by the M&O Contractor procedures detailing the development, release, and implementation of design changes to the SPR's Technical Baseline. As required, interface agreements between

the M&O Contractor and other contractors shall be prepared and authorized by the APM for Systems and Projects.

6. DEFINITIONS.

a. Audit. A planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with established procedures, instructions, drawings, and other applicable documents, and the effectiveness of implementation.

b. Baseline. A set of documents that constitutes an established reference position for control of subsequent changes.

c. Baseline Documentation. The body of approved documents that constitute the functional requirements, criteria, and configuration, such as specifications, piping and instrumentation drawings, and design drawings.

d. Change Order. A written order, signed by the Contracting Officer or the Contracting Officer's Representative (COR) in the field, directing the contractor to make a change that the "Changes" clause authorizes the Contracting Officer to order without the contractor's consent. Design changes are documented by an Enterprise Change Notice (ECN) detailing the change as approved by a Responsible Engineer.

e. Computer Software. A collection of associated computer programs and computer data required to enable the computer equipment to perform control or computational functions.

f. Conceptual Design. Conceptual design encompasses those efforts to:

(1) Develop a project scope that will satisfy program needs.

(2) Assure project feasibility and attainable performance levels.

(3) Develop reliable cost estimates and realistic schedules in order to provide a complete description of the project for management consideration.

(4) Develop project criteria and design parameters for all engineering disciplines, identification of applicable codes and standards; quality assurance requirements; environmental studies; materials of construction; space allowances; energy conservation features; safety and

health; safeguards and security, and fire protection requirements; and any other features or requirements necessary to describe the project.

g. Configuration Change. An approved change to configuration identification documentation.

h. Conceptual Phase (Technical Baseline). The Conceptual phase of the SPR Project Technical Baseline consists of functional requirements defined by Levels I, II, and III Criteria, Project Management Directives, and approved ECPs which include functional requirements.

i. Configuration. Functional and/or physical characteristics of systems, components, equipment, structures, and process control software as defined by approved Technical Baseline documentation

j. Configuration Accounting. The reporting and recording of configuration baselines and changes thereto, together with associated change implementation and impact status.

k. Configuration Control. The systematic evaluation, coordination, approval or disapproval, and implementation of all proposed configuration changes that depart from established baselines, and verification that approved changes have been incorporated into the baseline documentation.

l. Configuration Control Board. A board that approves or disapproves proposed change requests within their authority and is composed of representatives from the functional areas affected by the changes.

m. Configuration Identification. The current technical description of an item and its configuration elements, if any, as set forth in approved specifications, drawings, associated lists, and related data.

n. Configuration Identification Index. A listing of all configuration elements and items depicted in a family tree structure, compatible with the complex and SPR system specification tree and Work Breakdown Structure. The Configuration Identification Index includes the equipment/element indices and similar types of top-down breakout listings.

o. Configuration Item. An aggregation of equipment and/or process control software or any of its discrete portions which satisfies an end-use function and is designated for CM. CIs may vary widely in complexity, size, and type.

p. Configuration Management. CM is the disciplined system which controls changes to the functional and physical configuration through corresponding technical documents for the SPR.

q. Contract. A mutually binding legal relationship obligating the seller to furnish the supplies or services and the buyer to pay for them. It includes all types of commitments that obligate the Government to an expenditure of appropriated funds and that, except as otherwise authorized, are in writing. In addition to bilateral instruments, contracts include, but are not limited to: awards or notices of award; job orders or task letters issued under basic ordering agreements; letter contracts; orders; such as purchase orders, under which the contract becomes effective by written acceptance or performance; and bilateral contract modifications. Contracts do not include grants and cooperative agreements covered by 41 U.S.C. 501 et seq.

s. Contracting Officer. A person designated to enter into and/or review, modify, or terminate any contracts, financial assistance awards, and sales contracts and make related determinations and findings.

t. Contracting Officer's Representatives. A person designated in writing by the Contracting Officer to issue unilateral changes and take other delegated contract administration actions on a specific contract(s).

u. Contractor. The term "contractor" is intended to mean and include all persons, organizations, departments, divisions, and companies having contracts, agreements, or memorandums of understanding with the Government.

v. Cost Estimate. A documented statement of costs estimated to be incurred to complete the project. Cost estimates provide baselines against which cost comparisons are made during the life of a project. Cost estimates will include design labor, construction management labor, and implementation labor, material costs of construction, contingency cost, and administrative cost.

w. Critical Systems/Subsystems. Facilities, systems, equipment, and computer hardware/software/firmware which is essential for SPR mission capability, i.e., fill and drawdown at required rates. Critical systems/subsystems are directly involved with and essential to transferring oil, and include the piping, pumps, motors, wellheads, switchgear, crude oil lines, process water lines, brine lines, raw water intake structures, brine disposal systems, metering systems, distributed control systems, motor control centers, high voltage (480 volts or higher) power supply, and other oil process-related facilities, systems, and

equipment associated with the storage caverns. Critical systems/subsystems also include the environmental, safety and health, fire protection and security facilities, systems, and equipment that must be in place for oil movement.

x. Design/Development Phase (Technical Baseline). The Design/Development phase of the SPR Project Technical Baseline consists of all the requirements of the conceptual phase of the baseline plus the scope of the Title II design and the functional requirements, critical systems, and critical subsystems identified during Title II design.

y. Deviation. A specific, before-the-fact written authorization to depart from a particular performance or design requirement of a contract, specification, or referenced document. A deviation differs from an engineering change in that an approved engineering change requires corresponding revision of the documentation defining the affected product; a deviation does not contemplate revision of the applicable specification or drawing and has a specified time period and expiration date.

z. Engineering Change Proposal. The formal vehicle by which a change in the baseline document is proposed. It describes the nature and magnitude of a proposed change and the impact of the change on all elements of the system.

aa. Firmware. Computer program instructions incorporated in a hardware device that cannot be changed under program control.

bb. Interface. The specifically defined physical, parametric, and/or functional juncture between two or more systems or items of equipment, or between an item of equipment and a structure.

cc. Minor Change. Changes that do not impact the site capability to receive and store oil, maintain standby, drawdown and deliver oil; affect the functional characteristics of the above systems; negatively affect the reliability of critical systems/components; adversely impact the security of an oil storage site; or negatively impact the environment, safety and health, security, or fire protection of the site and personnel, or the general public.

dd. Nontechnical Documentation. Nontechnical documents are defined as documents which support the SPR effort but do not define the physical performance or operating configuration of the SPR sites and equipment. Examples of nontechnical documents are cost data, Project Management Plan, Work Breakdown Structure Dictionary, etc.

ee. Operational Phase (Technical Baseline). The Operational Phase of the SPR Project Technical Baseline consists of the as-built configuration identified during the Design/Development Phase of the baseline, with all approved changes, as it exists at the completion, acceptance, and turnover of construction.

ff. Responsible Engineer. The entity responsible for the design and engineering details.

gg. Specification. A document that clearly and accurately states in quantitative terms the essential technical requirements for items, materials, systems, structures, or services, including the criteria by which it will be determined that the requirements have been met. This document also defines the interfaces between the functional areas.

hh. Software. A collection of associated computer programs and computer data required to enable the computer equipment to perform, control, or make computational functions.

ii. Technical Baseline. The SPR Project Technical Baseline is the set of documentation that defines the configuration and functional requirements of the SPR systems, subsystems, equipment, computer hardware/software/ firmware, storage caverns, and facilities. Formal configuration control and required technical documentation for this baseline applies to only baselined functional requirements, critical systems, and critical subsystems.

jj. Waiver. A written authorization to accept a CI or other designated items that during construction or after having been submitted for inspection, is found to depart from specified requirements, but is considered suitable for use “as is” after rework by an approved method.

kk. Wellhead. A wellhead is defined as the bradenhead, Christmas tree, valves, fittings, and hangers. Instruments that do not have a shutoff valve(s) between the instrument and the wellhead are also considered part of the wellhead.

8. CONTACT. Questions regarding this Order can be addressed to the CMO, telephone [redacted].

[redacted]
Project Manager
Strategic Petroleum Reserve

3 Attachments:
Attachment 1 – Change Control Process
Attachment 2 – Contractor Requirements Document for Management and Operating Contractor
Attachment 3 - Contractor Requirements Document for Architect-Engineering Contractor

Appendix A – SPR Technical Baseline Categories
Appendix B – ECP Class I Checklist
Appendix C – ECP Data Requirements

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CHANGE CONTROL PROCESS

The Change Control Process outlines the formal administrative procedures that require reviews and approvals of proposed changes on the Strategic Petroleum Reserve (SPR). The emphasis for the SPR is on systematic reviews of proposed changes so that they do not violate the design basis of carefully engineered systems or degrade process safety requirements. Inappropriate changes can affect employee or public safety, damage the environment, and diminish mission success. It is the goal of the SPR to reduce the opportunity for change-induced accidents. Experience has demonstrated that inadvertent, unintended, erroneous, or poorly performed changes have resulted in accidents, fires, explosions, and toxic releases. These types of incidents usually involve a failure to adequately manage change.

1. CONFIGURATION MANAGEMENT SYSTEM.

   The Management and Operating (M&O) Contractor shall develop and implement a comprehensive Configuration Management (CM) System and manage the Technical Baseline documentation as defined in this attachment.

   The systems shall have the capability to effectively process Enterprise Change Proposals (ECPs) and document the results of the approval process.

   Drawing numbers, specification numbers, and change notice numbers shall be issued and controlled by the M&O Contractor. All SPR contractors shall interface and comply with the M&O Contractor's change notice system procedures.

   The intent of the CM System is to effectively implement SPRPMO O 420.1C, Conduct of Operations (COPS) Requirements for Strategic Petroleum Reserve Facilities. COPS promotes a "build/conform to the documentation" philosophy that requires the following: change to the Technical Baseline documentation, build to the documentation, and then operate to the documentation.

2. CHANGE CONTROL ELEMENTS.

   a. Configuration Items.

      SPR Configuration Items (CI) are the items that are to be placed under configuration control. These items include the technical baselines,

documentation, drawings, hardware, software, software components, data bases, data and all other items determined to be under CM control.

The M&O Contractor CM Plan shall define the items that are under configuration control, how they will be controlled and the responsibility for control.

b. Technical Baseline Identification.

A baseline is a collection of information describing the technical characteristics of each CI. Baselines serve as technical control points in the life cycle for the evaluation of proposed changes to these technical characteristics. The baseline and the approved changes or modifications provide a current description of the system.

(1) Technical Baseline.

The SPR Technical Baseline is the set of documentation that defines the functional and actual physical configuration of the SPR facilities, systems, subsystems, equipment, hardware, software, and storage caverns.

The minimum Technical Baseline documentation for the SPR is defined in Appendix A. The M&O Contractor may identify additional Technical Baseline documentation in the M&O Contractor CM Plan.

Changes, additions, or deletions to Technical Baseline documentation are formally controlled by CM procedures. Changes to the Technical Baseline can only be authorized by an approved ECP prior to implementation. Changes, additions, or deletions to supporting Technical Baseline documentation shall be documented and controlled by less formal contractor configuration control and/or engineering procedures. These procedures will be documented in the M&O Contractor CM Plan.

(2) Technical Baseline Phases.

The SPR Technical Baseline evolves through several phases of the life cycle of a configuration item. The phase of documentation as it evolves through the life cycle is defined below. The history of a maturing baseline is recorded through systematic CM that provides a reference for managing and evaluating the SPR project. The process of change control is distinct from the process of developing the baseline itself.

The Baseline Change Control Process is used to manage and maintain the following baselines during each of these phases.

(3) Conceptual Phase.

The Conceptual Phase (sometimes called the Functional or Requirements Baseline) of the SPR Technical Baseline consists of the functional requirements defined by Levels I, II, and III Criteria and Project Management Directives and are captured and documented during the change request development phase. During the conceptual phase, few details appear in the project baselines and may include only the performance directly related to the SPR's program mission, some base specifications, and an outline of the technical approach. As additional information is available, details are added, including end-product and critical subsystem specifications and drawings. The Conceptual Phase ends with the disposition of the change request.

(4) Design/Development Phase.

The design baseline reflects activities performed during the Design/ Development Phase and begins with the initiation of the design. This phase incorporates all of the requirements of the conceptual phase as well as the documentation defining the scope of the existing designs, that when released results in the as-designed Product Configuration Baseline.

Critical systems and critical subsystems are identified as a part of the Design/Development process. The responsible engineer/designer will identify critical systems and subsystems which were not identified as a part of previous design. Future critical systems and subsystems shall be identified as a part of the design.

During this phase, formal configuration control starts with the official design release, termed as "Approved for Construction (AFC)" package.

This phase concludes with the completion of the change, acceptance and turnover of a modified system, facility, or equipment, the "As-Built" Configuration documentation and all updated supporting documentation required to operate and maintain the system.

(5) Operational Phase.

The Operational Phase (sometime called the Product Baseline) of the SPR Project consists of the "As-Built" Configuration identified at the end of the Design/Development Phase and the supporting documentation as it exists at the completion, acceptance, and facilities/equipment turnover. This configuration incorporates the baselines developed by the preceding two phases. The Operational Phase continues throughout the operational life of the project.

3. CONFIGURATION MANAGEMENT PROCESS.

The SPR Technical Baseline shall be established and managed by the M&O Contractor. All changes to the SPR Technical Baseline shall be approved and implemented in accordance with the requirements in this Order.

An Enterprise Change Proposal (ECP) is a request for authorization to implement a change to the SPR Technical Baseline documentation that defines the SPR operational configuration. ECPs shall be used for all requests to change the SPR Project baselines. All ECPs shall be managed in the SPR Technical Baseline Management System by the M&O Contractor.

ECPs shall not be used for:

- Repair and replacement of systems, facilities, equipment, and/or components that replicates the current design requirements and that does not upgrade or change the system or components capabilities. These changes are known as Replacement-in-Kind.

- Maintenance to systems, facilities, and/or equipment provided the systems, facilities, and/or equipment restored to the original configuration prior to being in or returned to operation.

- Contract changes.

- Contractor shop drawings and other detail submissions which vary from contract requirements but do not meet the criteria for SPR Technical Baseline documentation.

a. Change Types.

The following Change Types constitute all of the SPR ECPs. Change Type and Change Classification will determine the final change approval authority.

(1) Engineering Changes (Facilities/Hardware/Software).

An Engineering Change is an ECP written to authorize and implement a new configuration item or a change to the current configuration item or baseline.

Engineering Changes will be submitted via the electronic ECP process.

Engineering Changes may be Class I, Class II or Fast-Track Change Requests based on the Class Change Classification Criteria.

Approval Authority will be determined by the Change Classification.

ECPs that meet the Class II Classification Criteria and have an estimate cost of $10,000 or less and can be implemented in 180 calendar days or less may be submitted as a Fast-Track Change Request.

The initiator may appeal an ECP that has been disapproved to the next higher approval authority. The appeal must be submitted within 15 working days, of the decision date, to the proper authority.

(2) Deviations

A Deviation is a temporary request to "deviate" from a specific requirement or configuration prior to implementation and operation of a Configuration Item, System, or Subsystem. A Deviation is a "before-the-fact" written authorization to temporarily depart from a particular performance or design requirement of a contract, specification, or referenced document.

A Deviation differs from an ECP in that an approved engineering change is a permanent change and corresponding revision of the documentation defining the affected CI, System, or Subsystem.

A Deviation has a specified time period and expiration date.

Deviations and Deviation Extensions will be submitted via the ECP process.

Deviations may be Class I or Class II based on the Class I/II Change Classification Criteria.

Approval Authority will be determined by the Change Classification.

A Deviation that is nearing its expiration date may be extended with formal approval by the original Approval Authority. A Deviation that has expired cannot be extended and must be submitted as a new Deviation.

The initiator may appeal a Deviation that has been disapproved or has not been extended to the next higher approval authority. The appeal must be submitted within 15 working days of the decision date to the proper authority.

(3) Waivers.

A Waiver is written authorization to accept a CI or other designated item that during construction or after having been submitted for inspection does not meet the specified design requirements.

A Waiver is considered to be permanent and does not have a specified time period or an expiration date.

Waivers will be submitted via the ECP process.

Waivers may be Class I or Class II based on the Class I/II Change Classification Criteria.

Approval Authority will be determined by the Change Classification.

The initiator may appeal a Waiver that has been disapproved to the next higher approval authority. The appeal must be submitted within 15 working days of the decision date to the proper authority.

After Acceptance of Construction, configuration changes required for testing systems, equipment, facilities, and other configuration items shall be the responsibility of the M&O Contractor. These changes shall be controlled in accordance with approved M&O Contractor engineering procedures.

Temporary configurations for operations and maintenance shall be controlled in accordance with approved M&O Contractor maintenance procedures.

An ECP is not required for changes that meet this criterion.

(4) Data Systems Changes.

Data Systems Changes are changes to the SPR Information, Data, and Telecommunications Systems.

Data Systems Changes may be Class I, Class II, or Fast-Track based on the Class Change Classification Criteria.

Data Systems Changes will be submitted via the ECP process.

Approval Authority will be determined by the Change Classification.

The initiator may appeal a Disapproved Change Request to the next higher approval authority. The appeal must be submitted within 15 working days of the decision date to the proper authority.

b. Change Classifications.

ECPs are classified according to the change effects and impacts. Approval Authority will be determined by the Change Classification.

(1) Class I Change Request.

An ECP shall be considered Class I when one or more of the following is affected: (Appendix B, Class I ECP Determination, contains a checklist that will be used to determine Class I Change Requests.)

(a) Functional or performance characteristics of the SPR Technical Baseline, which includes:

1) Performance outside of the stated tolerance.

2) Reliability/maintainability out of the stated tolerance.

3) Interface characteristics.

4) Pre-set adjustments affecting operating limits or performance.

5) Level I Technical and Performance Criteria, Level II Performance Criteria, or Level III Design Criteria.

(b) Significant changes to safety, environmental and health, fire protection, process, security, or systems guarantees and/or warranties.

(c) Configuration of a wellhead, including configuration control of caverns below the bradenhead.

(d) Distributed Control System software, firmware, or hardware that affects a piping and instrument diagram, set point, or event sequencing.

(e) Critical Drawdown and Sales Models.

(f) Engineered systems that are a composite of equipment, certified personnel skills, and techniques capable of performing and/or supporting the operational role of the SPR Functional Criteria (Levels I, II, and III), critical systems and subsystems.

(g) Either new construction or modifications to an existing building, structure, laboratory, or shelter of any type where the changes meet any of the following conditions:

1) Total estimated costs exceed $10,000.

2) Increases current square footage.

3) Rearranges existing interior walls/door wells.

4) Change in function.

5) Change in location.

6) Change in any newly constructed and/or modified system, structure, or building of any type within one year of turnover to the M&O Contractor for operational use.

(2) Class II Change Request.

A change request may be considered a Class II when it does not meet any of the Class I Criteria and complies with the following Class II Criteria:

Class II Change Request Criteria include:

(a) Changes that do not meet Class I Criteria and whose total cost is less than $50,000.

(b) Changes that do not meet Class I Criteria and that affect site day-to-day operations whose estimated cost is less than $50,000.

(3) Fast-Track Change Request.

A Fast-Track Change Request is a minor Change Request that has minimal impact and has a condensed approval authority.

ECPs may be considered a Fast-Track Change Request when it complies with the Class II Criteria and meets the following conditions:

(a) Changes for ongoing construction projects up to $10,000 that can be implemented within 180 calendar days. These changes must be within the Major Maintenance Task scope of work.

(b) Changes for day-to-day operations up to $10,000 that can be implemented within 180 calendar days.

4. CHANGE AUTHORITY ROLES AND RESPONSIBILITIES.

This section defines the approval authority and the roles and responsibilities for the different levels of authority in the SPR.

a. SPR Program Office (SPRPO).

The SPRPO has authority to authorize and implement Change Requests that meet the following guidelines.

Change Authority	Change Type/Criteria/Impact
SPR Program Office The Deputy Assistant Secretary for Petroleum Reserves has dispositioning authority to approve the following baseline changes, mission criteria, and milestones changes.	Class I Change Requests that: (a) Change affects Level I Technical and Performance Criteria. (b) Change does not exceed an estimated cost of $100,000,000. (c) Change does not impact Level 0 Milestones. (Prior authorization may be provided in accordance with DOE O 413.3.)

b. SPRPMO Project Manager.

The SPRPMO Project Manager has authority to authorize and implement Change Requests that meet the following guidelines. The SPRPMO Project Manager has the authority to review and disposition Class I ECPs and appeals from lower level approval authorities, as directed by the DOE SPR Configuration Management Officer (CMO).

Change Authority	Change Type/Criteria/Impact
SPRPMO Project Manager	Class I Change Requests that: (a) Change does not exceed estimated cost of $20,000,000. (b) Change affects Level 2 Control Milestones.

c. Project Configuration Control Board (PCCB).

The PCCB is a SPRPMO Board that has the authority to authorize and implement Class I changes to the technical baseline through the CM change management process. The PCCB shall act on Class I changes that would cause material or substantive changes to the system, including design specifications, budget (including life cycle cost projections), the project schedule, and interface characteristics with other systems.

The PCCB has the authority to review and disposition Class II ECPs and appeals from lower level approval authorities, as indicated by the CMO.

Change Authority	Change Type/Criteria/Impact
PCCB The PCCB has change authority for Class I Changes.	Class I Change Requests that: (a) Change affects Level II Performance Criteria. (b) Change affects Level III Design Criteria. (c) Change does not exceed an estimated cost of $20,000,000. (d) Change does not impact Level 1 or 2 Control Milestones, (Prior authorization may be provided in accordance with SPRPMO O 210.1A. (e) Change impacts Baseline Definitive Engineering Scope (DES) and Conceptual Design Report (CDR) documents.

The CMO and the PCCB have the authority to delegate lower level change requests to the M&O Contractor.

The PCCB shall disposition change requests based on the technical, cost, and schedule merits of the proposed change.

The PCCB shall be comprised of the following members. Each PCCB member shall have full approval/disapproval rights to authorize Class I Change Requests.

- Member – APM for Maintenance and Operations
- Member – APM for Systems and Projects
- Member – APM for Technical Assurance
- Member – APM for Management and Administration
- Advisory Member – CMO

Change requests presented to the PCCB shall be dispositioned by unanimous agreement of all members of the PCCB. If all PCCB members do not unanimously agree on a disposition, the change request may be appealed by an APM to the SPRPMO Project Manager.

The PCCB will provide a recommendation for Class I changes that exceed PCCB authority to the Deputy Assistant Secretary for Petroleum Reserves.

The PCCB may defer their authority to the SPRPMO Project Manager on an exception basis. The PCCB will provide a recommendation for Class I change requests that are deferred to the SPRPMO Project Manager.

The PCCB has dispositioning authority over appeals submitted by lower level boards and ongoing construction projects.

The PCCB will annually review the approved Class I Change Requests that have not been planned (scheduled or budgeted) for implementation within a 24-month period from their disposition date. These Class II ECPs will be canceled unless the PCCB authorizes the ECP for implementation within the following 24-month period.

Change Requests disapproved by the PCCB may be appealed within fifteen (15) working days of the PCCB's decision date. The responsible APM may appeal the decision to the SPRPMO Project Manager. After 15 days, the PCCB's disposition is final.

d. SPRPMO Information Technology Planning Committee (ITPC).

The SPRPMO ITPC will have approval authority for Data Systems Class I and Class II ECPs that meet the following criteria:

Change Authority	Change Type/Criteria/Impact
SPRPMO ITPC	Class I and Class II Change Requests that: (a) Change does not impact the Enterprise System Control Documentation (ESCD). (b) Change has an estimate cost of more than $10,000 and less than $200,000.

e. DOE Director of Information Systems (SPRPMO Chief Information Officer (CIO)).

The SPRPMO CIO will have approval authority for Data Systems Class II changes that meet the following criteria:

Change Authority	Change Type/Criteria/Impact
SPRPMO CIO	Data Systems Class II Change Requests that: (a) Change does not impact the ESCD. (b) Have an estimate cost of $10,000 or less.

f. DOE APM, Systems and Projects

The DOE APM, S&P, will have approval authority for Class I and Class II changes that meet the following criteria:

Change Authority	Change Type/Criteria/Impact
DOE APM, Systems and Projects	Class I and Class II Change Requests that: (a) Are identified during ongoing Major Maintenance and Construction Projects under direct control of the SPR. (b) Have an estimate cost of $50,000 or less.

g. Senior Site Representative (SSR).

DOE SSR will review and approve all ECPs that affect their respective site.

The DOE SSR for Data Systems will review and approve all ECPs affecting Data Systems.

h. Management and Operating (M&O) Contractor.

The M&O Contractor shall establish Change Board(s) to review all Class I, Class II and Fast-Track Change Requests.

The M&O Contractor has the authority to disposition and Implement all Class II and Fast-Track Change Requests.

The M&O Contractor Technical Review Board(s) (TRB) may delegate approval authority for Fast-Track ECPs to the appropriate responsible technical authority. The appropriate technical authority will be the functional owner (with the responsibility for operations and maintenance of the affected site, area, system, subsystem or process) and the DOE SSR.

Change Authority	Change Type/Criteria/Impact
M&O Contractor The M&O Contractor has authority for Class II changes.	(a) Any change request that does not meet the requirements for Class I will be considered a Class II change request.
The M&O Contractor has authority for Fast-Track Changes.	(a) Class II Change Requests that: • Estimated cost of $10,000 or less. • Implemented in 180 calendar days

The M&O Contractor shall review and provide a recommendation to the PCCB for all Class I ECPs.

The M&O Contractor may defer disposition on an ECP for any reason. These ECPs will be submitted to the CMO for appropriate action.

Any ECP that is disapproved by the M&O Contractor Change Board(s) may be appealed to the next higher change authority by the responsible engineer or the site representative. The CMO will determine the final approval authority.

The M&O Contractor will review the approved Class II ECPs that have not been implemented, scheduled, or budgeted for implementation within a 12-month period after their approval date. These Class II ECPs will be cancelled unless the TRB authorizes the ECP for implementation within the following 12-month period.

The M&O Contractor will review the approved Fast-Track ECPs that have not been implemented within the 180 day period after their approval date. These ECPs will be canceled unless the TRB authorizes the ECP for implementation within the following 180-day period.

The M&O or Architect-Engineering (A-E) contractor will serve in the capacity of Responsible Engineer. The Responsible Engineer will be identified on all ECPs. The M&O or A-E contractor will serve as consultants on ECPs as requested by the PCCB.

5. CHANGE CONTROL PROCESS.

This section defines the requirements for the Change Control Process to be used at the SPR.

a. Enterprise Change Proposal (ECP).

The SPR ECP process shall be used for all Class I, Class II and Fast-Track changes. All ECPs will be prepared, processed, and controlled through the M&O Contractor Configuration Control and supporting Engineering Procedures for disposition by the appropriate authority. Changes affecting configurations shall not be approved unless they are deemed necessary, offer significant benefits, or are required to correct deficiencies or affect substantial life cycle cost benefits.

The project's technical baseline is characterized and managed in terms of Cost, Schedule, and Technical elements. As a minimum, all ECPs are required to address these three elements to be considered for review:

(1) Cost: The estimated cost of an item of work is a fundamental requirement for an ECP. The initial cost estimate is required to make a

proper business decision and is the basis of future funding requests. A cost estimate is required for all ECPs. A complete Life Cycle Cost Estimate is required for Class I ECPs where the cost exceeds $500,000.

(2) Schedule: A schedule depicting a reasonable timeline of events from initial concept to completion of the change, and a Statement of Change Impact shall be included in every ECP package. The effects of including this change in the existing project/schedule shall be considered by the approving authority.

(3) Technical: All technical aspects of the change including both supportive and negative impacts must be defined in the ECP.

Any deficiencies in these areas will be subject to Return for Information (RFI) or disapproval.

b. Change Request Requirements.

The M&O Contractor along with the CMO will develop a standard ECP process to facilitate and streamline the change approval process. The process will encompass all ECP types and classifications defined in this document. The process will be documented in the M&O Contractor's CM Plan and corresponding procedures.

The M&O or Architect-Engineering (A-E) contractor will serve in the capacity of responsible engineer. The responsible engineer will be identified on all ECPs. The M&O or A-E may serve as advisors on ECPs as requested by the PCCB.

The M&O Contractor will ensure that all ECPs include a total estimated cost of the change, including cost associated with schedule impact; a life cycle cost analysis impact on the Project Budget; impact on Project Control Milestones; impact on Integrated Logistics Support; and impact on contract completion date(s).

Appendix C defines the detailed data requirements for an ECP.

6.0 CHANGE REQUEST PROCESSING.

The CMO shall assure that adequate cost, schedule, and technical description data are included in each ECP prior to submitting the ECP for the review and approval process.

The CMO shall establish a standard PCCB meeting schedule and a preferred agenda for review of the Class I ECPs.

The CMO shall ensure that the results of the PCCB meeting are documented and that minutes containing the PCCB results and actions are issued.

a. ECP Processing.

ECPs shall be processed through the required review boards as defined in this Attachment, the M&O Contractor's CM Plan, and engineering procedures.

The ECPs forwarded to the CMO shall have the concurrence of the M&O Contractor Directors of Environmental, Safety and Quality Assurance; Operations and Maintenance; and Engineering and Construction.

b. ECP Process Exceptions.

This section defines the requirements for ran ECP to be processed as a "Walk-Thru" ECP or an "Emergency" ECP.

(1) "Walk-Thru" ECPs.

An ECP that has not completed the required preliminary review(s) and/or final approval may be expedited through the ECP process with the sponsorship of a SPRPMO APM and the approval of the CMO.

This priority is assigned to an ECP indicating the need for immediate disposition that meets any of the following conditions:

(a) A change that, if delayed, would negatively impact an approved Control Milestone or that would significantly increase cost.

(b) A cost reduction or cost avoidance ECP that, if not processed in an expeditious manner, may not allow the realization of the lower costs.

These "Walk-Thru" ECPs require an expedited review and disposition by the M&O Contractor Technical Review Board and the PCCB. The expedited DOE and M&O Contractor reviews may be directed by the CMO.

The CMO will be the final authority for determining "Walk-Thru" ECPs.

"Walk-Thru" ECPs may be added to the PCCB meeting agenda with the sponsorship of a SPRPMO APM and the approval of the CMO.

(2) "Emergency" ECPs.

An ECP that has been not been submitted in the SPR electronic system and/or has not started the required preliminary review(s) but must be reviewed and disposition in a maximum three (3) working days may be expedited through the ECP process with the sponsorship of a SPRPMO APM and the approval of the CMO.

This priority is assigned to an ECP indicating the need for immediate disposition. This priority is also assigned to "after-the-fact" ratifications of configuration changes necessary to prevent fatal or serious injury to personnel or extensive damage to, or destruction of, Government equipment and property. This includes changes for the correction of potentially hazardous environmental, safety and health conditions that may result in serious injury to personnel or damage to Government equipment and property.

These "Emergency" ECPs and will require an expedited review and disposition by the M&O Contractor Review Board and the PCCB.

The ECP will be manually processed by the initiator, with sponsorship by the SPRPMO Project Engineer, through the ECP processing cycle and coordinated with the M&O Contractor's CM Group.

The M&O Contractor will update the SPR Technical Baseline System to document the results of the manual ECP Processing.

The CMO will be the final authority for determining "Emergency" ECPs.

"Emergency" ECPs may be added to the PCCB meeting agenda (if scheduled) with the sponsorship of a DOE APM and the approval of the CMO.

(3) ECP Cancellation.

An ECP that has been submitted by the initiator may be cancelled/ withdrawn at any time prior to its disposition by the initiator and/or the approving Manager.

An ECP that has been submitted by the initiator and approved by the responsible Manager may be cancelled/withdrawn at any time prior to its disposition by the approving Manager.

An ECP that has been submitted and approved by the Approval Authority (PCCB/M&O Contractor) but has not been implemented may be cancelled/ withdrawn at any time prior to its implementation by the approving Authority and/or the CMO.

An ECP that has been submitted, approved by the Approval Authority (PCCB/M&O Contractor), and has been implemented, cannot be cancelled. A new ECP will be required to restore the System/CIs to its previous configuration.

CONTRACTOR REQUIREMENTS DOCUMENT FOR MANAGEMENT AND OPERATING CONTRACTOR SPRPMO O XXX, CONFIGURATION MANAGEMENT PROGRAM, Dated 01/27/14

Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this Contractor Requirements Document (CRD). The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements. Contractors must monitor and evaluate all work performed under their contracts, including the work of subcontractors, to ensure work performance meets the applicable Department of Energy (DOE) Configuration Management (CM) requirements.

1. MANAGEMENT AND OPERATING (M&O) CONTRACTOR REQUIREMENTS.

   The M&O Contractor shall:

   a. Ensure that all activities at the Strategic Petroleum Reserve (SPR) sites, including activities of all other contractors, subcontractors, and site tenants, comply with applicable configuration management policies and procedures of the SPR.

   b. Implement a CM System to manage the SPR Technical Baseline (Technical Baseline).

   c. Control the configuration of the SPR equipment (including facilities).

   d. Control operating procedures and operational process control systems.

   e. Control the configuration of SPR Project Management Office (PMO) Information, Data, and Telecommunication Systems.

   f. Comply with:

      (1) DOE Standard 1073, Guide for Operational Configuration Management Program.

      (2) SPRPMO O 410, SPRPMO Configuration Management Program.

      (3) SPRPMO O 210.1A, Milestone Control.

(4) SPRPMO O 420.1C, Conduct of Operations Requirements for Strategic Petroleum Reserve Facilities.

(5) SPRPMO O 432.1B, SPR Facilities/Equipment and Turnover and Start-up Procedure.

g. Implement review board(s) comprised of the appropriate technical and management personnel to review and provide a technical recommendation for all Class I Change Requests.

h. Implement review board(s) comprised of the appropriate technical and management personnel to review and disposition all Class II Change Requests.

i. Make available funds to the M&O Site Managers to provide the sites with the capability to execute and implement Class II and Fast-Track Changes, to support day-to-day operations.

j. Implement a CM function with the training and capabilities to effective operate and manage the SPR Technical Baseline System.

k. Ensure that the operational sites and personnel are effectively trained to operate the SPR Technical Baseline System.

2. CONFIGURATION STATUS ACCOUNTING.

The SPR Technical Baseline System will have the capability to provide real-time status of all Technical Baseline drawings, documents, specifications and configuration items throughout their respective life-cycle.

The SPR Technical Baseline System will have the capability to provide real-time data update of all Technical Baseline drawings, documents, specifications and configuration items throughout their respective life cycle.

The SPR Technical Baseline System will have the capability to provide real-time status of all Enterprise Change Proposals (ECPs) throughout their respective life cycle.

The SPR Technical Baseline System will have the capability to establish a system, subsystem, component physical hierarchy which relates all Technical Baseline documentation for each configuration item.

The SPR Technical Baseline System will have the capability for standardized reporting of the Technical Baseline drawings, documents and configuration items status.

The SPR Technical Baseline System will have the capability for exception reporting of the Technical Baseline drawings, documents, and CI status, as required.

The CMO will have final authority to direct the functionality and viability of the SPR Technical Baseline System.

3. SURVEILLANCE.

SPR sites performing CM activities shall be reviewed periodically by the appropriate SPRPMO organization to verify that activities are performed in accordance with the requirements of this Order. CM reviews shall be accomplished in accordance with industry established procedures. The CMO, or delegate, shall participate in all scheduled on-site management appraisals.

The CMO shall review the CM files to assure conformance with the requirements stated in this Order and M&O contractor's configuration control and engineering procedures.

4. RELEASE MANAGEMENT.

The M&O Contractor shall develop and implement a formal Release Management process for the SPR Technical Baseline System. The Systems shall have the capability to formally manage the review and release processes for the Technical Baseline drawings, documents. and CIs.

The SPR Technical Baseline System shall have the capability to notify the affected sites and responsible engineers/personnel of changes in status of the Technical Baseline drawings, documents, and CIs through their life cycle.

The SPR Technical Baseline System shall have the capability to notify the affected sites and responsible engineers/personnel of tasks and required actions to update the Technical Baseline drawings, documents, and CIs through their life cycle.

The SPR Technical Baseline System shall have the capability to verify the implementation of approved ECPs following and manage the closeout of affected Technical Baseline drawings, documents, and CIs.

5. PROBLEM RESOLUTION TRACKING.

The M&O Contractor shall develop the capability for problem reporting, tracking, and resolution. The results of problem reporting and resolution shall be reported on a monthly basis to the CMO.

6. METRICS.

The M&O Contractor shall define a series of measurements used to determine the status of CM activities, the effectiveness of CM processes, and the stability of controlled baseline deliverables. These metrics will be documented in the M&O Contractor CM Plan and be reported on a monthly basis.

7. CONFIGURATION AUDITS.

Configuration audits validate compliance of development requirements by comparing the functioning system to its technical documentation. Formal configuration audits will be conducted at predetermined points as specified in the M&O Contractor CM Plan. The purpose of the audit is to certify that the design, development, and integration meet the system's technical requirement; that they are accurately documented; and do not include unauthorized changes.

Informal configuration audits should be performed to minimize the impact on project schedules and to identify deficiencies as soon as possible. Deficiencies noted during the informal audits, as well as recommendations for any corrective actions, will be reviewed prior to and during the formal configuration audit.

The CMO, or delegate, will review the results of the formal audits with the M&O Contractor.

The M&O Contractor will schedule a series of both formal and informal audits and document the audit plan in the M&O Contractor CM Plan.

a. Functional Configuration Audit.

A functional configuration audit is a formal examination of test records to verify that functional characteristics of the system comply with its requirements.

The M&O Contractor will schedule a series of functional configuration audits and document the audit plan in the M&O Contractor CM Plan.

b. Physical Configuration Audit.

A physical configuration audit is a formal examination of each version of a configuration. It assesses the system's technical documentation for completeness and accuracy in describing the tested system and compares the tested system configuration with the operational (As-Built) system delivered to ensure the appropriate components were tested and to verify that the system complies with all applicable standards.

The M&O Contractor will schedule a series of functional configuration audits and document the audit plan in the M&O Contractor CM Plan.

8. CM TRAINING.

The M&O Contractor is responsible for the content and scheduling of CM training to be conducted for all personnel supporting the project. The M&O Contractor will ensure that the CM personnel are fully trained and will function as the project trainers.

CM personnel will be trained in the objectives, procedures, and methods for performing their CM related duties. Training will include the following:

a. Role, responsibility, and authority of the CM personnel.

b. CM standards, procedures, and methods.

c. CM tools and their capabilities.

d. Data measurement, analysis, and reporting.

RESERVED

CONTRACTOR REQUIREMENTS DOCUMENT FOR ARCHITECT-ENGINEERING CONTRACTOR SPRPMO O 410, CONFIGURATION MANAGEMENT PROGRAM, Dated 01/27/14

Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this Contractor Requirements Document (CRD). The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements. Contractors must monitor and evaluate all work performed under their contracts, including the work of subcontractors, to ensure work performance meets the applicable Department of Energy (DOE) Configuration Management (CM) requirements.

1. ARCHITECT-ENGINEERING CONTRACTOR REQUIREMENTS.

   The Architect-Engineering contractor shall:

   a. Implement a CM system to process SPR Technical Baseline documentation.

   b. Serve in the capacity of Responsible Engineer.

   c. Comply with:

      (1) DOE Standard 1073, Guide for Operational Configuration Management Program.

      (2) SPRPMO O 410, SPRPMO Configuration Management Program.

      (3) SPRPMO O 210.1A, Milestone Control.

2. CONFIGURATION STATUS ACCOUNTING.

   Access the SPR Technical Baseline System to update status of Technical Baseline drawings, documents, specifications, and Configuration Items (CIs).

   Access the SPR Technical Baseline System for standardized reporting of the Technical Baseline drawings, documents, and CIs status.

3. SURVEILLANCE.

The A-E activities shall be reviewed periodically by the appropriate SPRPMO organization to verify that activities are performed in accordance with the requirements of this Order and industry established procedures. The CMO shall review the A-E CM files to assure conformance with the requirements stated in this Order and the A-E Contractor's configuration control and engineering procedures.

4. RELEASE MANAGEMENT.

The A-E Contractor shall use the formal Release Management process for the SPR Technical Baseline System.

5. PROBLEM RESOLUTION TRACKING.

The A-E Contractor shall develop the capability for problem reporting, tracking, and resolution. The results of problem reporting and resolution shall be reported on a monthly basis to the CMO.

6. METRICS.

The A-E Contractor shall define a series of measurements used to determine the status of drawing activities, the effectiveness of CM processes, and the stability of controlled baseline deliverables. These metrics will be documented in the A-E Contractor CM Plan and be reported on a monthly basis.

7. CONFIGURATION AUDITS.

Configuration audits validate compliance of development requirements by comparing the functioning system to its technical documentation. Formal configuration audits will be conducted at predetermined points as specified in the A-E Contractor CM Plan. The purpose of the audit is to certify that the design, development, and integration meet the system's technical requirement; that they are accurately documented; and do not include unauthorized changes.

Informal configuration audits should be performed to minimize the impact on project schedules and to identify deficiencies as soon as possible. Deficiencies noted during the informal audits, as well as recommendations for any corrective actions, will be reviewed prior to and during the formal configuration audit.

The CMO, or delegate, will review the results of the formal audits with the A-E Contractor.

The A-E Contractor will schedule a series of both formal and informal audits and document the audit plan in the A-E Contractor CM Plan.

a. Functional Configuration Audit.

A functional configuration audit is a formal examination of records to verify that functional characteristics of the system comply with its requirements.

The A-E Contractor will schedule a series of functional configuration audits and document the audit plan in the A-E Contractor CM Plan.

b. Physical Configuration Audit.

The A-E Contractor will schedule a series of physical configuration audits and document the audit plan in the A-E Contractor CM Plan.

8. CM TRAINING.

The A-E Contractor is responsible for the content and scheduling of CM training to be conducted for all A-E personnel supporting the project. The A-E Contractor will ensure that the A-E personnel are fully trained.

A-E personnel will be trained in the objectives, procedures, and methods for performing their CM related duties. Training will include the following:

a. Role, responsibility, and authority of the A-E personnel.

b. CM standards, procedures, and methods.

c. CM tools and their capabilities.

d. Data measurement, analysis, and reporting.

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SPR TECHNICAL BASELINE CATEGORIES

PIPING

100	DRAWING INDEX SHEET / COVER SHEETS
101	PROCESS FLOW DIAGRAMS (IN SITE DESIGN DESCRIPTION MANUALS)
102	MECHANICAL FLOW DIAGRAMS (IN SITE DESIGN DESCRIPTION MANUALS)
103	PIPING AND INSTRUMENTATION DIAGRAMS (P&ID'S) (IN SITE DESIGN DESCRIPTION MANUALS)
104	UTILITY FLOW DIAGRAMS
105	GENERAL PIPING PLANS
106	AREA PLANS (MECHANICAL EQUIPMENT LOCATION)
107	SECTIONS AND DETAILS
122	WELLHEAD DRAWINGS
123	WELL COMPLETION CONFIGURATION DRAWINGS
150	STANDARDS

CIVIL/STRUCTURAL

201	PLOT PLANS
202	SITE WORK: GRADING (ROUGH & FINISH) DRAINAGE, FENCING, ETC.
210	FOUNDATIONS: LOCATION PLANS
250	STANDARDS

ELECTRICAL

301	AREA CLASSIFICATION
302	ONE LINE DIAGRAMS (IN SYSTEM DESCRIPTION MANUALS)
303	SCHEMATIC DIAGRAMS
304	POWER PLANS AND DETAILS
305	LIGHTING PLANS AND DETAILS
307	SUBSTATION PLANS AND DETAILS
308	WIRING DIAGRAMS
310	GROUNDING
311	CONDUIT AND CABLE SCHEDULES (INCLUDING INSTRUMENTS)
312	PANELBOARD SCHEDULES
313	MCC/SWITCHGEAR ELEVATION AND SCHEDULE
315	CATHODIC PROTECTION
350	STANDARDS

INSTRUMENTATION

401	BLOCK DIAGRAM (IN SITE DESIGN DESCRIPTION MANUALS)
402	LOOP DIAGRAMS
403	INSTRUMENT PLANS AND DETAILS
404	INSTRUMENT WIRING DIAGRAM
409	INSTRUMENT INDEX LISTS / ALARM POINT LISTS (IN SITE DESIGN DESCRIPTION MANUALS)
450	STANDARDS

MAPPING

501	ALIGNMENT SHEETS
509	PIPELINE DRAWINGS (MAINLINE VALVES, DRIPS, SCRAPER TRAPS, ETC.)
550	STANDARDS

ARCHITECTURAL

720	ELEVATIONS AND FLOOR PLANS
750	STANDARDS

INFORMATION, DATA, AND TELECOMMUNICATIONS SYSTEMS

801	SYSTEMS SCHEMATICS AND BLOCK DIAGRAMS
810	SYSTEM/DEVICE CONFIGURAION SETTINGS
850	STANDARDS
870	SPECIFICATIONS

DOCUMENTATION

900	RESERVED
901	TECHNICAL/PERFORMANCE/DESIGN CRITERIA (LEVEL I, II, III)
910	SYSTEM DESCRIPTION MANUALS
911	PROCESS SET POINT DOCUMENTS
912	EQUIPMENT DATA SHEETS
915	ELECTRICAL SAFETY
920	I/O DOCUMENT
930	OPERATION AND MAINTENANCE MANUALS (MECHANICAL, ELECTRICAL, DCS)
950	STANDARD SPECIFICATIONS
970	TASK SPECIFICATIONS
990	CONFIGURATION MANAGEMENT REPORTS/I.B.O.M.

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ECP CLASS I CHECKLIST	YES	NO
1. Change in performance outside of stated tolerance: a. Change in Level I Technical and Performance Criteria. b. Change in Level II Performance Criteria. c. Change in Level III Design Criteria. (Level I, II, or III Criteria are affected if the proposed change will result in a failure to comply with Level I Technical and Performance Criteria, Level II Performance Criteria, or Level III Design Criteria; or if the proposed change will result in revisions to the Criteria.)		
2. Change in Reliability out of the stated tolerance: a. Change in Failure Rate. b. Change in Mean Time Between Failures (MTBF).		
3. Change in Maintainability out of the stated tolerance: a. Change in time to Repair. b. Change in what is repaired or where (maintenance concept). c. Change in maintenance hours required versus hours of operation. d. Change in skill level of maintenance personnel. e. Change in accessibility of part to be repaired. f. Change in scheduled maintenance added or deleted.		
4. Change in Availability out of the stated tolerance: a. Change in percentage of time the system/subsystem is installed and ready for operation.		
5. Change in Interface characteristics.		
6. Change in Input/Output (I/O) Points when the OPCS I/Os are added, spared and/or reassigned.		
7. Change in pre-set adjustments affecting operating limits or performance.		
8. Change in Safety, Environmental and Health: a. Change In Safety and/or Health Systems/Subsystems. b. Change in Safety and/or Health operational environment that would change the potential safety and/or health risk. c. Change requiring revisions to safety and/or health, protection, plans, training and/or equipment. d. Change in Design requirements/configuration alters System Safety. e. Change in hazards to personnel and/or equipment. Environmental is affected by any change to environmental permitting requirements or increase in risk to the natural environment and by any change requiring revision of environmental programs, manuals, or procedures. Safety and Health may be affected by any changes modifying design requirements/ configuration that may alter system safety or increase the hazards to personnel or equipment. Safety is affected by any change requiring additional personal protective equipment or protective procedures.		
9. Change in Process: a. Change I Process Flow diagram (PFD). b. Change in Process and Instrumentation Diagram (P&ID) c. Change in electrical One Line Diagram.		
10. Change in guarantees or warranties which would void the existing guarantee or warranty.		

ECP CLASS I CHECKLIST	YES	NO
11. Change in Caverns: a. Change in Wellhead. b. Change in Well below the Bradenhead.		
12. Change in DCS Software, Firmware or Hardware that affects the P&ID, Set Point, or Event Sequencing.		
13. Change in Critical Drawdown and Sales Models.		
14. Change in Engineered Systems: a. Change in systems that are a composite of equipment. b. Change in personal certified skills. c. Change in specified tolerances of system or subsystem performance characteristics. d. Change in fit, form or function of the components that affect the interaction between systems or subsystems.		
15. Change in either new construction or modifications to an existing building, structure, laboratory, or shelter of any type that meets the following conditions: a. Total estimated costs exceed $10,000. b. Increases current square footage. c. Rearranges existing exterior walls/door wells. d. Change in function. e. Change in location.		
16. Change in any newly constructed and/or modified system, structure or building of any type within one year of turnover to the M&O Contractor for operational use.		
17. Total estimated cost to the extent that it exceeds $50,000. Total estimated cost includes the cost of all engineering, material and labor including in-house costs.		
18. Change that will result in failure to meet DOE Level I, II or II Milestones.		
19. Change in Environmental: a. Change in permitting requirements. b. Change in increased risk to the natural environment. c. Change in environmental programs, manual or procedures.		
20. Change in additional personal protective equipment or personal protective safety procedures.		
21. Change in Fire Protection: a. Change in Fire Protection systems/subsystems. b. Change in Fire Protection operational environment that would change the potential fire risk. c. Change requiring revisions to the Fire Protection, plans, procedures, training or equipment.		
22. Change in Security: a. Change in the operation of Security Systems/Subsystems. b. Change in Security Systems physical configuration.		

ECP CLASS I CHECKLIST	YES	NO
23. Change in the Operational Process Control System (OPCS): a. Change in any hardware that necessitates related computer hardware, firmware change. b. Change in software to operations process controlling systems. c. Change in pre-established settings of any printed circuit (PC) board assembly DIP switches and/or PC board jumpers. d. Change in pre-established Set Points/Ranges. e. Change in the interaction between systems, subsystems, and/or end user. f. Change in any of the numbers and/or revisions base-lined components recorded in the Bill of Materials for the OPCS Master Critical Items List.		
24. Change in Spares/Provisioning requirements, ordered/delivered spare parts and/or spares contracts.		
25. Change in Government Furnished Equipment (GFE): a. Change in GFE will be required to implement the change. b. Change in GFE provided to an on-going construction project.		
26. Change in the interaction between systems, subsystems, and/or end user.		
27. Change in any of the numbers and/or revisions base-lined components recorded in the Bill of Materials for the OPCS Master Critical Items List.		
28. Energy usage will require the use of significantly more or less energy to operate the system/subsystem.		

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ECP DATA REQUIREMENTS

The following provides, as a minimum, the data requirements for preparing ECPs.

The ECP workbench provides the basis for the level of data required to succinctly and completely describe the proposed change. Supporting documentation may be required for Class I ECPs and attached to the ECP in the SAP Technical Baseline System.

(TBD BASED ON Technical Baseline ECP WORKBENCH FINAL DEVELOPMENT)

Attribute	Class I Req'd	Class II Req'd	Fast-Track	Data Source
ECP #	*	*	*	System Generated
PAN #	Yes			Initiator - Enter # Assigned by TIPS
TITLE	Yes	Yes	Yes	Initiator - Enter Descriptive Title
WORK STATUS	*	*	*	Workflow Generated
IN PROCESS STATUS	Yes	Yes	Yes	Promoted by Initiator
OVERALL DISPOSITION	*	*	*	Workflow Generated
ADDITIONAL ECP DOCUMENTATION	TBD	TBD	TBD	Initiator - Attach additional data, analyses, sketch, etc. (Class I Greater than $500K or multi-site/year requires a Detailed Schedule)
INITIATOR				Workflow Generated
DATE				Workflow Generated
MANAGER/APPROVER				Workflow Generated
DATE				Workflow Generated
SITE(S)	Yes	Yes	Yes	Initiator – Selection
CLASS OF CHANGE	Yes	Yes	Yes	Initiator – Selection
CHANGE TYPE	Yes	Yes	Yes	Initiator – Selection (Deviation Expiration Date)
PRIORITY	Yes	Yes	Yes	Initiator – Selection
ROM ESTIMATE	Yes	Yes	Yes	Initiator - Enter Data (Class I Greater than $500K requires a Life cycle Cost Analysis)
CHANGE RANKING	Yes	Yes	Yes	Initiator – Selection
DESCRIPTION	Yes	Yes	Yes	Initiator - Enter Description (Attach Additional Information, as required)
PROPOSED SOLUTION	Yes	Yes	Yes	Initiator - Enter Proposed Solution (Attach Additional Information, as required)
DRIVING REQUIREMENTS & JUSTIFICATION	Yes	Yes	Yes	Initiator - Enter Requirements (Attach Additional Information, as required)
KEY IMPLEMENTATION TIMING FACTORS	Yes	Yes	Yes	Initiator – Selection
BASIS FOR CHANGE	Yes	Yes	Yes	Initiator – Selection
RISK	Yes	Yes	Yes	Initiator – Selection Enter Risk statement (Attach Additional Information, as required)
SAP TASK PACKAGE	If Req'd	If Req'd	If Req'd	Initiator – Selection Create and attach required Task Packages
AFFECTED CONFIGURATION ITEMS	Yes	Yes	Yes	Initiator – Selection Create and attach affected CIs (hardware/software/components)
Technical Baseline DOCUMENTS	If Req'd	If Req'd	If Req'd	Initiator – Selection Create and attach affected Documents
REFERENCE DOCUMENTS	If Req'd	If Req'd	If Req'd	Initiator – Selection Create and attach affected Documents
CCAR	Yes	Yes	Yes	TBD