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**Civilian Radioactive Waste Management System  
Management & Operating Contractor**

**License Application Design Products List**  
(Update to *Draft License Application Design and Review Plan, Appendix F*)

**B000000000-01717-3400-00002 Rev. 00**

**July 15, 1998**

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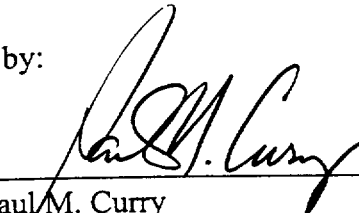
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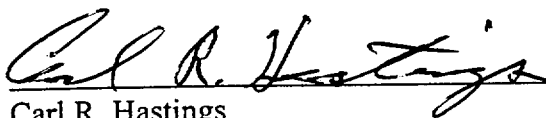
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## 1. SUMMARY

This document describes the current expectations of the necessary and sufficient set of engineering and design products required to support the license application (LA) for the Monitored Geologic Repository (MGR) at Yucca Mountain, Nevada. This description is provided in the form of a list of Engineering and Design Organization (EDO) Products for License Application (LA), hereafter referred to as the LA Design Products List.

The LA Design Products List is an updated and expanded version of the list of design products which was included as Appendix F in *the Draft License Application Design and Review Plan, Rev 00* (CRWMS M&O 1998a), submitted to DOE on February 18, 1998. The LA Design Products List addresses that information contained in Appendix F, updated appropriately to satisfy the milestone acceptance criteria given below. The results of other planned activities, such as review of the Advance Light Water Reactor SSAR and review of MGR Alternatives may result in the modification of the products required for LA. As the design and the preclosure and postclosure safety cases mature, it is expected that the contents of this list will undergo minor changes. In addition, there is an ongoing effort to review the licensing documents submitted for Advanced Light Water Reactors (ABB-CE *System 80+ Design Control Document* and General Electric *ABWR Design Control Document*). The list presented in this document will be reviewed as part of this effort and will be adjusted as appropriate.

The LA Design Products List is a subset of a larger list of design and engineering products that will be produced by the time of the LA in order to support the start of repository construction in 2005, and the start of repository operations in 2010. The list in this document contains only those engineering and design products that are required to support the LA, not the list of all of the engineering and design products expected to be available at the time of LA. Therefore, the ultimate discriminator used to determine the appropriateness of adding a product to the LA Design Products List was to identify its impact on the LA. If the safety case being presented in the LA could not be fully supported without reference to the product in question, it was included in the list.

## 2. DESCRIPTION

The LA Design Products List is arranged according to the engineering organization responsibility for the products. The four organizations are:

- Engineered Barrier Systems Operations
- Surface Facilities Operations
- Waste Package Operations
- System Engineering/Integration Office

The products associated with the first three are summarized in a matrix organized by the major systems at the System Description Document (SDD) level identified in the MGR Architecture (CRWMS M&O, 1997). There is a separate summary matrix for each of the

first three organizations which identifies that organization's major system and, where appropriate, the lower level structures, systems and components (SSCs), as well as the bin number and safety classification that has been assigned to each SSC. Each matrix also identifies the specific major system or SSC products that will be needed to support the LA. Finally, the matrix identifies the level of detail to which those products will be developed. Several of the products contained in these matrices are produced by the System Engineering/Integration Office, but are shown in the matrices because they directly support the major systems or SSCs that are the responsibility of the indicated organization. In addition to the products in the matrices, each of the three organizations will need to provide products that are not exclusively tied to any one major system or SSC. These products are identified at the beginning of each organization's section. Furthermore, the Systems Engineering/Integration Office products, which are also not unique to any one major system or SSC and are typically in the form of reports, documents, and letters, are included as a separate list.

### 3. QUALITY EVALUATION

On the basis of an evaluation in accordance with QAP-2-0, *Conduct of Activities*, this document was determined to be a non-Q product. However the quality affecting aspects of the various EDO products required to support the LA milestone will be determined in accordance with applicable procedures (CRWMS M&O. *Conduct of Activities*).

On the basis of an evaluation of PRO-TS-003, *Development of Technical Documents Not Subject to QARD Requirements*, this document was prepared, checked, and reviewed in accordance with applicable procedural requirements (CRWMS M&O. *Development of Technical Documents Not Subject to QARD Requirements*).

On the basis of an evaluation of the Applicability section of YAP-30.60, *Documenting Decisions*, the decision documenting process was determined to be not applicable to this document (YMSCO, *Documenting Decisions*).

### 4. ACCEPTANCE CRITERIA

The DOE provided acceptance criteria for this document is provided verbatim in the following two paragraphs.

"This milestone is an update to the LA Design and Review Plan that defines the design products for the License Application. Appendix F of the LA Design and Review Plan, "Engineering & Design Organization products for License Application," will be expanded to include a detailed list of the drawings, specifications, analyses, and other engineering design and integration products that defines the surface, subsurface, and waste package designs. The Appendix F will also provide a schedule for development of these products and define the level of completion (preliminary, detailed, final, etc.) for

each product for LA (YMSCO Planning and Control System [PACS] PWBS Element 1.2.1, PSS ID No. M2HR, 1998)."

"This milestone shall be accepted and considered complete when the LA Design and Review Plan update has been found to satisfy the description above and upon completion of a YMSCO acceptance review of the plan, including resolution of any comments. This acceptance constitutes the decision by DOE on the design products for LA (YMSCO Planning and Control System [PACS] PWBS Element 1.2.1, PSS ID No. M2HR, 1998)."

This document replaces Appendix F of the LA Design and Review Plan (CRWMS 1998a) in its entirety. It provides an expanded list of drawings, specifications, analyses, and other engineering design and integration products that define the surface, subsurface, and waste package designs. It defines the level of completion or detail expected to be available for each product. This document provides a schedule for development of only the products listed in the System Engineering/Integration Office section. The other products have yet to be included in the Multi-Year Planning database, which is still under development.

## 5. DISCLAIMER

This document is based on the design and planning information available at the time of delivery. All design products listed in this document reflect the results of the design process associated with the VA Reference Design. As the design evolves, and if repository design alternatives are selected, the design products may change. References to the sources of the information used to determine the LA Design Products List are provided. Changes to the information contained in the reference documents supporting this list will be addressed, as appropriate, in the subsequent revisions to those documents and will be reflected in the MGR LA design. The list presented in this document will be reviewed against the set of documents submitted in support of 10 CFR 52 licenses (e.g., Advanced Light Water Reactors). There is an ongoing effort to understand what is considered an acceptable level of detail based upon these Advanced Light Water Reactor submittals (ABB-CE *System 80+ Design Control Document* and General Electric *ABWR Design Control Document*) as these licensing efforts reflect the current expectations from the NRC. As such, the list presented in this document may be updated once this effort is completed.

Because of the potential influence and evolving design of program funding profiles; and of evolving program philosophies, the LA Design Products List does not represent a commitment by the M&O to produce the products identified in the list as listed on the schedule. The products produced by the M&O may be more or less than those represented by the List. The products contained in the list will be used to influence the activities contained in the Multi-Year Planning database, which when baselined will represent the M&O commitment.

## 6. SELECTION PHILOSOPHY FOR LA DESIGN PRODUCTS

The LA Design Products List contains the necessary and sufficient set of products required to support the LA. This set was determined in accordance with a philosophy described by the M&O senior management and the senior representatives of the four engineering organizations identified above as well as senior representatives from the Regulatory and Licensing organization. Using the experience and expertise associated with many license applications from commercial nuclear facilities, guiding philosophical tenets were established by the selected group of senior M&O managers and engineers, and are captured in the following:

Only the detail necessary to support the preclosure and postclosure safety cases is to be included in the LA. Therefore, the products that support the safety cases of the LA will need to be included. Detail and information that is not necessary to support the *safety cases* should be provided at a lesser level of detail in the LA. This is based on the Commission directive in the Statements of Consideration for 10 CFR Part 52, that certified design should "encompass roughly the same design features that Section 50.59 prohibits changing without prior approval." 54 FR 15372, 15377 (1989).

Using the GE-Advanced Boiling Water Reactor and ABB-CE System 80+ design certification applications as examples, (*ABB-CE System 80+ Design Control Document* and *General Electric ABWR Design Control Document*) based on the Commission directive in the Statements of Consideration for 10 CFR Part 52, that the "certified design description ... contain only information that is *most significant* to safety" (emphasis added) 54 FR 15372, 15377 (1989), this can be accomplished for the most part by using clearly stated commitments to safety-related designs as documented in the Inspections, Tests, Analyses, and Acceptance Criteria (ITAACs) for the safety related systems or subsystems. Accompanying functional descriptions, drawings, analysis results, and calculations are provided as products, where warranted by consideration of the allocated bin level and safety classification for each system or subsystem.

The matrices of the MGR (by major system and SSCs) and the design products resulted from the application of these guiding philosophical tenets. These matrices are included in the LA Design Products List. The bin and safety classification of each item determined the level of completion required for the minimum set for LA. The relationship between bin, safety classification, and level of completion/detail is provided below.

## 7. BINNING, CLASSIFICATION, AND LEVEL OF COMPLETION

The initial guidance for the level of completion and detail of the LA design products at the time of the submittal of the Draft LA Design and Review Plan (CRWMS M&O, 1998a) was based on the binning concept (Interoffice Correspondence, LV.EIO.RDS.10/97-037), whereas the current method of determining level of



completion, as represented in this document, is based on both the binning concept and the safety classification of the design products.

## **7.1 Binning**

To focus the design effort on those elements that are considered important to radiological safety or waste isolation, a system for prioritizing design work was developed so that the MGR major systems and SSCs would be developed consistently. Items important to radiological safety are those major systems and SSCs that provide reasonable assurance that high-level radioactive waste can be received, handled, packaged, stored, emplaced, and retrieved without exceeding the preclosure radiological safety dose (exposure) requirements of 10 CFR 60. Items important to waste isolation refer to the natural and engineered barriers that will be relied upon for achieving the postclosure performance objectives specified in 10 CFR 60 Subpart E. Prioritization also includes other considerations beyond radiological safety or waste isolation; namely whether design precedent has been established for particular major systems or SSCs in previous licensing actions.

As the design continues to mature, the definitions of the bins are also continuing to evolve. The current definitions of the different bins are presented below. The use of "SSCs" in the definitions is intended to be global, and includes the major systems as well as the lower level SSCs.

Bin 1: Indicates SSCs expected to have no significant impact on the development of the preclosure radiological safety analysis or the postclosure safety strategy. These SSCs require the lowest level of design detail to support the LA.

Bin 2: Indicates SSCs expected to have a radiological safety or waste isolation function or impact, or other items of regulatory interest, for which significant NRC regulatory precedence exists. These SSCs are developed at a lesser level of detail than the Bin 3 SSCs.

Bin 3: Indicates SSCs expected to have a radiological safety or waste isolation function or impact, or other items of regulatory interest, for which little or no NRC regulatory precedence exists. These SSCs require the highest amount of design detail to support the LA.

The above binning definitions use regulatory precedence as the predominant discriminator between bins 2 and 3 as both categories either support the preclosure radiological safety analysis or the postclosure safety strategy.

## **7.2 Evaluation of Safety Classification**

Identifying the importance of major systems or SSCs to radiological safety or waste isolation is accomplished by the use of safety classification. Safety classification is an iterative process that evolves as the design matures. On the Yucca Mountain Project,

#### **Level 4:**

Systems or subsystems completed to **Level 4** will include all design products from **Level 2**. Like **Level 3**, it will include, where appropriate, Process and/or Mechanical Flow Diagrams, Electrical One-Lines, Control Logic descriptions, and component drawings. Only qualified information will be used to support the safety case (no TBVs or TBDs) with few exceptions. For those few exceptions, ITAACs shall be developed to document how the uncertain parameter associated with the TBV or TBD items will be shown to fall within design limits. Design Analyses to support the safety case performance parameters will be produced. Unlike **Level 3**, it is not anticipated that regulatory precedence will play a significant role for these systems or subsystems. In general, Section 3 (maintenance) of the SDD, and Section 4 (operations) of the SDD will be not be developed for Waste Package designs. This level of completion is generally applied to systems or subsystems placed in Bin 3 with a Safety classification 2.

The above descriptions of completion or detail levels is summarized in the following table:

	SC 1	SC 2	SC 3	SC 4	SC 5	SC N
<b>Bin 1</b>	NA	NA	NA	NA	NA	Level 1
<b>Bin 2</b>	Level 3	NA	Level 2	Level 2	Level 2	Level 2
<b>Bin 3</b>	Level 3	Level 4	Level 2	Level 2	Level 2	Level 2

This summary of completion or detail level is used as guidance for preparation of design products for LA. The level of completion is not prescriptive and the individual design engineers and design groups maintain flexibility in determining the appropriate design products for each system and SSC, based on expert knowledge and familiarity with design of similar designs.

The concept of using the ITAACs to avoid excessive use of design detail (as discussed in Section 6 above) is particularly visible in the Waste Package Operations section. Only four of the disposal container designs will be developed to Level 4. This is considered sufficient to demonstrate the capability of our design process to accommodate a wide range of waste forms. The four disposal container designs selected are those needed to accommodate PWR-CSNF, BWR-CSNF, DHLW (five-pack), and Navy SNF. Disposal containers for PWR-CSNF and BWR-CSNF were selected because they represent the majority of the waste and a significant design challenge in that a wide range of burn-up and reactivity must be accommodated, and they will have to be loaded into the disposal containers as bare fuel assemblies. Furthermore, the highest heat load is expected to come from these waste packages. The disposal container for DHLW was selected because it represents a design challenge in terms of accommodating the co-disposal of canisters of vitrified waste and canisters of DOE SNF. The disposal container for Navy SNF was selected because it is likely to represent the largest and heaviest waste package. The products selected for the LA Design Products List in the area of disposal container/waste package are intended to describe the methodology used in developing

and evaluating the design and to provide four examples of the application of that methodology. For the other disposal container systems, the designs will be at a lesser level of detail with more reliance placed on, the design requirements and ITAACs to successfully receive a license to construct.

Levels of completion for the LA design products are shown in the LA design products matrix for each Operations Area (Sections 10.1, 10.2, 10.3, and 10.4) of the EDO.

## **8. DESCRIPTION OF DESIGN PRODUCTS**

Each of the engineering products identified in the LA Design Products List is identified and described below. A portion of some of the descriptions was based on the planning guidance from DOE (Letter, J. Russell Dyer to D. R. Wilkins, OPC:JRS-1469, May 1, 1998). These are generic descriptions that apply to all areas of engineering. These same product titles are used across the top of each of the summary matrices in Sections 10.1, 10.2, and 10.3. The level of completion/detail described below is only related to those portions of the products that are required to support the safety case expected to be made in the LA. For example, assume there are two features being captured in a product, and one is important to the safety case and the other is not important to the safety case. Then the one that is important to the safety case will be developed to the level described below, while the other within the same product will be developed to a lesser level of completion/detail. This is another example of the steps being taken to avoid excessive use of design detail in accordance with the guiding philosophical tenets given in Section 6 above.

### **General Arrangements (GA)**

Surface – Scale drawings for a structure including floor and roof plans, exterior elevations and building sections. Sub-areas are labeled and openings are shown.

Subsurface – Establishes an overall view of a structure or an area, using plan view(s), elevation(s) and section(s) as necessary. Provides a layout of openings, equipment, structures, furnishings, ground support, and other components either alone or in the combination intended for the subject of the individual drawing. Contains overall dimensions (without tolerances) and depicts the location of significant components. Provides a frame of reference for detail drawings, sections, elevations, and continuation sheets. The GA is developed to a scale that is appropriate for the intent of the drawing.

Level 1 – N/A

Level 2 – Rough dimensions.

Level 3 –Outline dimensions are based upon manufacturer catalogue data as appropriate. Preliminary layouts provided.

Level 4 – All loops identified. All functional logic identified, including interlocks, permissives, alarms, and overrides..

**Handling Drawings** – Establishes the number of operating lines, capacity of in-process staging areas, equipment areas, equipment types, and equipment arrangement for handling operations.

Level 1 – N/A

Level 2 – Overall design is illustrated at a summary level. Major handling paths depicted and quantified.

Level 3 – Major and most minor handling paths depicted and quantified. Preliminary performance specifications provided. Preliminary sequence of handling operations provided.

Level 4 – All major and minor handling paths depicted and quantified. All equipment shown and tagged with equipment numbers and performance specifications. Finalized sequence of handling operations.

**ITAACs** – Inspections, Tests, Analyses, and Acceptance Criteria. These include a design commitment, the inspections, tests, and analyses necessary to determine adherence to the commitment, and the acceptance criteria to be met to be in compliance. The ITAACs for each SSC will typically consist of two to four pages and may include a schematic. All of the ITAACs are contained in one of the volumes of the LA. There is only one level of completion/detail for an ITAAC; if it is required, then it is developed to a common level of detail.

**Design Basis Event Evaluations** – DBE analyses will be performed to support LA. These analyses include evaluation of potential external events (e.g., seismic, wind/tornado) and internal events (e.g., handling scenarios). Initial analyses will be performed to identify requirements for SDDs. Updates, however, will be required for LA to ensure the DBE analyses reflect the design that will be described in the LA. As such, the completion date for LA represents the LA DBE verification effort. The DBEs have to be consistent with the design that is described in the LA. The depth of the analysis will vary depending on the dependence of the analysis on the design; however, the DBE analyses will sufficiently bound the repository design. Where TBVs exist, project positions will be developed to support the LA. There is only one level of completion/detail for the DBE evaluation; if it is required, then it is developed to a common level of detail.

**Site Protection Performance Analyses (SPPA)** – These analyses represent the repository DIE program. For LA, general high level analyses will be developed to support the LA. These analyses will be based on the level of detail that exists for LA, analogous ESF experiences, and the TSPA that supports the LA. The detail present will

be sufficient to support a LA that describes the SPPA program and gives examples of QA controls (or tech specs) that would be used during the construction and operation phases of a repository. There is only one level of completion/detail for the SPPA; if it is required, then it is developed to a common level of detail.

**Specialty Engineering Products** – These products (human factors, system safety, RAM) will be developed commensurate with the LA level of detail that exists for a given system. These analyses need to be consistent with the design described in the LA and there is only one level of completion. The detail in these analyses will be sufficient to support the design described in the LA (including ITAACs) to demonstrate that there are no LA issues related to these areas. Initial analyses will be developed to support requirement development. There is only one level of completion/detail for the specialty engineering product; if it is required, then it is developed to a common level of detail.

## 9. REFERENCES:

ABB-CE, *System 80+ Design Control Document*, Docket # 52-002, 1994, Combustion Engineering, Inc.

CRWMS M&O, 1997. B000000000-01717-5700-00011, Rev. 01, *Mined Geologic Disposal System Architecture*, November 1997, Author.

CRWMS M&O, 1998. B000000000-01717-0200-00134, Rev. 01A, *Classification of the Preliminary MGDS Repository Design*, June 1998, Author.

CRWMS M&O, 1998a. B000000000-01717-4600-00090, Rev. 00. *Draft License Application Design and Review Plan*, February , 1998, Author.

CRWMS M&O, *Classification of Permanent Items* QAP 2-3, Rev. 8, June 16, 1997, and Rev. 9 (expected effective date of 7/20/98) P. S. Hastings, Author.

CRWMS M&O, *Conduct of Activities* QAP 2-0, Rev. 4, June 16, 1997, P. S. Hastings, Author

CRWMS M&O, *Development of Technical Documents Not Subject to QARD Requirements*, PRO-TS-003, Rev. 0. July 10, 1998, J. W. Peters, Author.

Interoffice Correspondence, LV.EIO.RDS.10/97-037, R. D. Snell to J. N. Bailey et. al., October 31, 1997, *Engineering & Integration Product Summary Table Matrix*.

Letter, J. Russell Dyer to D. R. Wilkins, OPC:JRS-1469, May 1, 1998, *Fiscal Year (FY) 1999 Guidance for Updating the Multi-Year Plan*.

General Electric, *ABWR Design Control Document, Tier 1 and Tier 2*, Docket # 52-001, 1994, General Electric, Inc.

YMSCO, *Documenting Decisions*, YAP-30-60, Rev. 0, ICN 0, June 29, 1998.

YMSCO Milestone Description and Supporting Information, Planning and Control System [PACS] PWBS Element 1.2.1, PSS ID No. M2HR, Change Request Date: February 25, 1998.

## **10. LA DESIGN PRODUCTS**

### **10.1. ENGINEERED BARRIER SYSTEMS OPERATIONS DESIGN PRODUCTS**

The design products and their level of completion for LA provided by Engineered Barrier System Operations are identified by system, followed by a detailed listing of the products.

In addition, the LA Design Products provided by EBS Operations include Topical Reports and Test Reports (Physical Chemistry of Cement -- Effects on the EBS, Physical Chemistry Effects from Steel Drift Liner, Drips Onto the Waste Package, Alternatives Design and Testing Program, EBS Test Program -- Phase 1, EBS Natural Analogue Program, THC Effects on Backfill, Investigation and Analysis of Line versus Point Loading, Modeling of Waste Contact with the Waste Form, Backfill Mechanical Properties and Testing) Engineering Files, ALAPA, Failure Modes & Effects Analysis (FMEA), RAM Analysis, and Source Term Analysis, which are not exclusively associated with any particular system or subsystem.

# ENGINEERED BARRIER SYSTEMS OPERATIONS - PRODUCTS FOR LA

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
<b>Subsurface Facility</b>						
Development Sys.- Accesses	2	2	2	1	Analysis	Site Geology & Available Emplacement Volume
				1	Analysis	Incorporate ECRB Data into Geologic Model
				1	Analysis	Ramps: Design of Emp. & Dev. Access Ramps
				1	Analysis	Hoist Systems: Design and Equipment
				1	Analysis	Shaft/Raise Design
				1	Analysis	Surface Facilities
Ramps				16	General Arrangements	Location, Layout, Elevations
				2	Structural Drawings	Structural Components: Access Doors
				2	P&ID	Access Door Controls
Shafts				9	General Arrangements	Location, Layout, Elevations
				6	Structural Drawings	Components: Liners, Collars, Utility Structures
				3	Mechanical Drawings	Mechanical Components: Guides/ Sumps
Hoist System				1	General Arrangements	Facility Layout
				6	Structural Drawings	Components: Found., Hoist House, Headframe
				3	P&ID	Hoist Controls, Emergency System
Shaft Yard Facilities	N	1	2	4	General Arrangements	Layout, Location
Development Sys.-Emplc. Areas	2	2	2	1	Analysis	SS Facilities: Subsurface Layout - Phase II
				1	Analysis	SS Facilities: Broad Based Risk Analysis Part 2
Perimeter Mains				6	General Arrangements	Layout, Inverts, Barricades, Rail Interface
				4	Structural Drawings	Components: Barricades, Shielding



System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Emplacement Drifts				2	Mechanical Drawings	Components: Rail System Interface
				8	General Arrangements	Layout, Elevations, Locations
				1	Structural Drawing	Components: Access Doors
				1	Mechanical Drawings	Components: Access Doors
Operations Sys.- Accesses	2	2	2			
Operation Ramps				16	General Arrangements	Layouts: Portals, Main Ramps, Internal Ramps
				3	Structural Drawings	Components: Portals
				2	Mechanical Drawings	Components: Portal Accesses
				1	Electrical One-Line	Portal Accesses
				2	P&ID	Portals: Piping, Instrumental
Operation Shafts				6	General Arrangements	Layout, Locations, Elevations
				3	GA: Surface	Surface Intercept Location & Layouts
				6	Structural Drawings	Components: Collar, Structures, Guides
				2	Mechanical Drawings	Components: Sumps, Guides
Operations Sys.-Empl. Areas				1	Analysis	Materials of Construction & Operations
				1	Analysis	Comp. Aided Eng. & Mod.: SS Repos. CAE
Ventilation Openings				5	General Arrangements	Layouts, Locations, Elevations
Support Openings				6	General Arrangements	Layouts, Locations, Elevations
				2	General Arrangements	Cutout Layouts: Utility, Monit., Refuge, Etc.
Ground Control	5	3	3			
Openings w/SC-1, SC-2, SSC's				1	Analysis	GC: Drift Design Guide
				1	Analysis	GC: Testing of Concrete Chemical Evolution
				1	Analysis	Testing of Concrete Mechanical Properties
				1	Analysis	GC: Precast Concrete Segmental Drift Lining

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
				1	Analysis	GC: Testing of Concrete Segment Joints
				1	Analysis	GC: Constructability of Ground Support
				1	Analysis	GC: Shaft Ground Support Design
				1	Analysis	GC: Maintenance for Emplacement Drifts
				1	Analysis	GC: Postclosure Drift Stability
				1	Analysis	GC: Materials for Drift Ground Support
				1	Analysis	GC: Performance Confirmation (Structural)
				1	Analysis	GC: Accesses - Ramps & Portals (Structural)
				1	Analysis	GC: Perimeter Mains (Structural)
Perimeter Mains				2	General Arrangements	Layout
Ventilation Openings				31	Structural Drawings	Components: Initial and Final Supports
				4	General Arrangements	Layout, Locations, Elevations
Performance Confirmation Openings				8	Structural Drawings	Components: Initial and Final Supports
				2	General Arrangements	Layouts, Elevations
Support Openings & Cutouts				2	Structural Drawings	Components: Initial and Final Supports
				4	General Arrangements	Layouts, Elevations
Accesses				4	Structural Drawings	Components: Initial and Final Supports
				4	General Arrangements	Layouts, Locations, Elevations
Emplacement Areas				23	Structural Drawings	Components: Initial and Final Supports
				4	General Arrangements	Layouts, Elevations
				14	Structural Drawings	Components: Initial and Final Supports
Openings w/o SC-1, SC-2, SSC's	N	1	2		No Products	
Subsurface Ventilation	1&4	3	3			
				1	Analysis	Emplacement Vent. Equipment Design
				1	Analysis	Ventilation Monitoring and Control
				1	Analysis	Ventilation Methods During Construction
				1	Analysis	Ventilation Equipment Structures Design

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Operations Ventilation System				1	Analysis	Vent. Empl. Vent HEPA Filter System Design
				1	Analysis	WP Ret.: Ventilation Design for Retrieval
				3	General Arrangements	Layout: Ramps and Shafts
Access Ventilation				3	Ventilation Drawings	Ramp and Shafts: Routes, Flows
Emplacement Drifts				9	Mechanical Drawings	Components: Ventilation
				6	P&ID/PFD/MFD	Ventilation System for Operations Accesses
				8	Ventilation Drawings	Components: Drift/Vent. Raises: Routes, Flows
				5	Mechanical Drawings	Components: Ventilation
				1	P&ID	For Emplacement Drifts
Ventilation Level				2	Ventilation Drawings	Components: Routes, Flows
Ventilation Commodities				5	Mechanical Drawings	Components: Heating, Cooling, Air Movers, Etc.
Misc. Support Cutouts				4	General Arrangements	Vent. Layout: Cutouts
Development Ventilation System						
Shop/Warehouse Area				2	General Arrangements	Ventilation Surface Facilities: Layouts
Access Ventilation				2	General Arrangements	Layouts: Ramps and Shafts
Emplacement Drift Development				6	Ventilation Drawings	Components: Ramp and Shaft Routes, Flows
				4	Mechanical Drawings	Components: Ventilation
				7	Ventilation Drawings	Components: Ventilation
				2	Ventilation Drawings	Components: Ventilation
				2	Ventilation Drawings	Components: Ventilation
Ventilation Level System						
<b>Waste Emplacement</b>						
Access Control, Emergency Recov.	1	3	3	1	Analysis	Comp. Aided Engr. & Mdl.: Waste Empl. Sys.
				1	Analysis	Eval. & Demo. Remote Vehicle Control System
				1	Analysis	Soft. Dev & Reliab. : Emplacement Gantry
				1	Analysis	WP Handling: Emplacement Gantry Design
				1	Analysis	WP Handling: Trade Studies-Analyze Altern.
Emplacement Rail				1	General Arrangement	Rail Layout, Elevations

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Emplacement Drift Access				1	Structural Drawing	Components: Rail/Ground Control Interface
				3	Mechanical Drawings	Components: Rolling Stock
				1	P&ID	Rail Control
				1	Mechanical Drawing	Components: Transfer Control
				1	Electrical One-Line	Electrical Supply to Waste Emplacement System
Emplacement Maintenance				2	Mechanical Drawings	Components: Repair Equipment
Doors	1	3	2	1	Analysis	WP Handling: Drift Isolation Door Design
Doors and Access Control				1	Analysis	WP Handling: WP Transfer Dock Design
				1	Structural Drawing	Structural Components: Doors
Doors/Docking System				2	Mechanical Drawings	Mechanical Components: Doors
				1	P&ID	Door Controls
				2	General Arrangements	Layout, Locations
				1	Structural Drawing	Structural Components: Emplacement Doors
Remainder of System	5	3	2	2	Mechanical Drawings	Mechanical Components: Emplacement Doors
				1	Analysis	WP Handling: Rail & Hardware Design
				1	Analysis	Soft. Dev. & Relib.: Transport Locomotives
				1	Analysis	WP Handling: Develop. Maint. & Repair Strat.
				1	General Arrangement	Access Rail Layout, Location
				2	Structural Drawings	Components: Access Rail Connections
Waste Retrieval				4	Mechanical Drawings	Mechanical Components: Rolling Stock
				1	Analysis	Retrieval Equip. Design under Abnormal Const.
				1	Analysis	Computer Aid. Eng.: Waste Retrieval System
				4	Mechanical Drawings	Components: Drift Remediation Equ.
Handling	5	3	2	1	Analysis	Refinement of Retrieval Equipment
				1	Analysis	Recovery Equip. - Abnormal Events

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
				1	Analysis	Soft. Dev.: Prelim. Design-Retrieval Equip.
				3	Mechanical Drawings	Mechanical Components: Retrieval Gantry
				2	Mechanical Drawings	Components: Off-normal Equipment
				1	Mechanical Drawing	Mechanical Components: Rolling Stock
<b>Subsurface Central Control</b>	<b>5</b>	<b>2</b>	<b>2</b>			
				1	Analysis	Repository Control Integration Plan (Dev. Plan)
				1	Analysis	Review Required Precedence Control
				1	Analysis	Repository Environmental Monitoring Design
				1	Analysis	SS Central Control : Data Commun. Sys. Design
				1	Analysis	Remote Vehicle Cont. Sys. Dsgn.-Mobile Equip.
				1	Analysis	Eval. & Demo SS Communication Technology
				1	Analysis	Develop Control Sys. Tech. Allocation Method.
				1	Analysis	Soft. Dev. & Desgn. Regulatory Approval Strat.
				1	Analysis	Refine Rail Sys. Instru. And Control Design
				1	Analysis	Subsurface Communications
Facility Structure				2	GA (Arch. Drawings)	Floor Plan, Elevations
				2	General Arrangements	Layout, Grading Plan
Utilities				2	Mechanical Drawings	Mechanical Components
				2	Electrical One-Lines	Electrical ties and distribution for Control Center
Control Systems - Development				8	P&ID	Instru. For Ventilation, Transport., Muck Remov.
Control Systems - Operations				7	P&ID	Instru. For Central Computer, Operator Stations
<b>Backfill Emplacement</b>	<b>5</b>	<b>3</b>	<b>2</b>			
				1	Analysis	Eng. Bar.: Emplacement Drift Backfill Design
				1	Analysis	SS Eng. Bar.: Segment Trade Studies
				4	General Arrangements	Backfill/Packing Layouts, Locations
				6	Mechanical Drawings	Components: Backfilling Equipment

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Subsurface Electrical Distribution	5	1	2			
				1	Analysis	SS Util. Elec. Dist. System - Ventilation Sys.
				1	Analysis	SS Uti. Elec. Dis. System - Monitoring Inst. Sys.
				1	Analysis	Elec. Dist. System - Emergency Resp. Sys.
				1	Analysis	Elec. Dist. System- Med. Voltage System
Electrical Distribution - Development				1	Electrical One-Line	1460 V Distribution
				1	Electrical One-Line	440 V Distribution
				1	Electrical One-Line	TBM System
				1	Electrical One-Line	Trackless Mining System
				1	Electrical One-Line	Support Cutouts
				1	Electrical One-Line	Muck Removal System
				1	Electrical One-Line	Hoisting Circuit
				1	Electrical One-Line	Ventilation Circuit
Electrical Systems - Operations				1	Electrical One-Line	Lighting
				1	Electrical One-Line	Waste Transportation Distribution
				1	Electrical One-Line	Waste Emplacement
				1	Electrical One-Line	Support System Distribution
				1	Electrical One-Line	Emergency Response
				1	Electrical One-Line	Pumping Distribution
				1	Electrical One-Line	Ventilation Circuit
				1	Electrical One-Line	Subsurface Lighting
Subsurface Compressed Air	N	1	2			
Compressed Air - Development				1	Analysis	Compressed Air System
				1	P&ID	Primary Distribution
				1	P&ID	Control: Compressed Air
				1	P&ID	Warehouse/Shops

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Compressed Air - Operations				1	P&ID	Refuge Chambers, Cutouts
				1	P&ID	Evacuation System
				1	P&ID	Ventilation
				1	P&ID	Muck Removal
				1	P&ID	Transportation
				1	P&ID	Primary Distrib ution
				1	P&ID	Control: Compressed Air
				1	P&ID	Refuge Chambers, Cutouts
				1	P&ID	Emplacement Drifts
				1	P&ID	Waste Transportation
			1	P&ID	Ventilation	
Subsurface Water Distribution						
Fire Suppression System	4	2	2	1	Analysis	SS Util: Fire Sup. & Alarm Sys.
Fire Protection - Development				1	Analysis	SS Util: Fire Suppression - Mobile Equipment
				2	P&ID	Accesses - Fire Suppression
				2	P&ID	TBM - Fire Suppression
				2	P&ID	Mechanical Excavation
				1	P&ID	Raise Bore
				2	P&ID	Warehouse/Shop
				2	P&ID	Support Openings
				2	P&ID	Muck Removal
				1	P&ID	Mobile Equipment
				1	P&ID	Ventilation Equipment
Fire Protection - Operations				4	P&ID	Fire Detection System
				2	P&ID	Accesses - Fire Suppression
				4	P&ID	Underground Facility Fire Suppression System
				2	P&ID	Waste Package Handling Equipment
						2

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Subsurface Piping	5	2	2	3	P&ID	Fire Detection System
				1	Analysis	SS Util.: Water Supply
				6	P&ID	Primary Piping, Valving & Controls
				1	P&ID	Excavation Takeoff System
				1	P&ID	TBM Supply System
				1	P&ID	Raise Bore Supply
				1	P&ID	Misc. Excavation
				1	P&ID	Muck Removal Dust Control
				2	P&ID	Warehouse/shop Distribution
				3	P&ID	Fire Suppression
				2	P&ID	Support Area Distribution
				7	P&ID	Waste Transportation Distribution
Remainder of System	N	1	2		No Products	
<b>Subsurface Safety and Monitoring</b>						
Criticality Monitoring	1	3	3	1	Analysis	Rep. Cont. Integration: Operation Control Cent.
				1	Analysis	Robust Data Com. In Saf. Crit. Ap.
				1	Analysis	Operations Activity Monitoring
				1	Analysis	Personnel Safety & Monitoring
				1	Analysis	Criticality Monitoring
				1	Analysis	Soft. Dev. & Design: Operations Cont. Center
				1	Analysis	Soft. Dev. & Design: Safety Critical Areas
				1	Analysis	Eval. & Demo of Digital Instrumentation
				1	Analysis	Eval. & Demo Electron. for Elevated Rad Envir.
				2	P&ID	Criticality Monitoring
Fire Detection	4	2	2	1	Analysis	Fire Detection Controls



System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Ground Control Monitoring	5	2	2	1	Analysis	Fire Detection Monitoring
				2	P&ID	Fire Detection
				1	Analysis	Ground Control Monitoring - Development
				1	Analysis	Ground Control Monitoring - Operations
				1	P&ID	Ground Control Monitoring - Development
Radiological Safety & Monitoring	1	3	2	1	P&ID	Ground Control Monitoring - Operations
				1	Analysis	Internal Dosimetry Computer Code
				1	Analysis	CFD Computer Qualification
				1	Analysis	Analy. In Support of Tech. Spec./LCO's
				1	Analysis	Rad. Analysis for Tech. Rpts, and Design
				1	Analysis	Shielding: Update for Rad. Source Terms
				1	Analysis	WP Transporter Shielding Design Optimiz.
				1	Analysis	Eval. Of Abnormal Airborne & Contam. Rad.
				1	Analysis	Rad. Evaluation of Other Waste Forms
				1	Analysis	Exposures for Exhaust Main Per. (Cat. 1&2)
				1	Analysis	Effect of Axial Source Profile on Rad. Design
				1	Analysis	Rad. Consequence Code Upgrades & Qual.
				1	Analysis	Rad. Evaluation of Alternative Designs
				1	Analysis	Occupational ALARA Analysis
				1	Analysis	Eval. - Need for SS Criticality Monitoring/Alarms
				1	Analysis	Eval. Of Rad. Controls During Drift Maint.
				1	Analysis	Design Guide on Repos. Materials Rad. Limits
				1	Analysis	Emergency Response
				1	Analysis	WP Rad. Leakage (Performance) Detectors
				1	P&ID	Transportation Safety Monitoring
				2	P&ID	Personnel Safety Monitoring
				2	P&ID	Radiological Safety & Monitoring
				1	P&ID	Transportation Safety Monitoring - Development

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
All other monitoring	N	1	2	1	P&ID	Rail System - Development
				1	P&ID	Trackless Equipment
				1	Analysis	RAM Analysis of Comm. System
				1	Analysis	Utility Systems Monitoring
				1	Analysis	Development Activity Monitoring
				1	Analysis	Soft. Dev. & Design.: SS Data Comm. Systems
				1	Analysis	Soft. Dev. & Dsgn: MGDS Functional Req.
				1	Analysis	Soft. Dev. & Dsgn: Integrated Management Pl.
				1	Analysis	Excavation Monitoring System
				1	P&ID	Ventilation Monitoring - Development
				1	P&ID	Excavation Monitoring System
				1	P&ID	Fuel Handling - Development
				1	P&ID	Ventilation Monitoring - Operations
				1	P&ID	Fuel Handling - Operations
Subsurface Water Collect./Removal	5	2	2			
Water Collection/Removal - Devel.				1	Analysis	SS Util.: Water Collection/Removal
				1	Structural Drawing	Components: Primary Sump/Pump Station
				1	Electrical One--Line	Primary Sump/Pump Station Distribution
				1	P&ID	Primary Sump/Pump Station
				1	Structural Drawing	Components: Secondary Sump/Pump Station
				1	Electrical One--Line	Secondary Sump/Pump Station Distribution
Water Collection/Removal - Operat.				1	P&ID	Secondary Sump/Pump Station Distribution
				4	P&ID	Primary Pipe System
				4	P&ID	Secondary Pipe System
				4	Structural Drawing	Components: Primary Sump/Pump Stations
				2	P&ID	Primary Sump/Pump Station
				5	P&ID	Primary Pipe System

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
<b>Subsurface Excavation</b>	<b>N</b>	<b>2</b>	<b>2</b>			
				1	Analysis	Construction Sequence & Schedule
				1	Analysis	Design Interface Shaft/Ramp Vent Struc.
Shafts				4	General Arrangements	Layout, Methods, Schedules
				2	Mechanical Drawings	Equipment Components
Ramps				5	General Arrangements	Layout, Methods, Schedules
				3	Mechanical Drawings	Equipment Components
Emplacement Areas				4	General Arrangements	Layout, Methods, Schedules
				2	Mechanical Drawings	Equipment Components
Ventilation Raises				4	General Arrangements	Layout, Methods, Schedules
				2	Mechanical Drawings	Equipment Components
Misc. Cutouts				3	General Arrangements	Layout, Methods, Schedules
				2	Mechanical Drawings	Equipment Components
Support Openings				3	General Arrangements	Layout, Methods, Schedules
Shop/Warehouse				2	General Arrangements	Layout, Elevations, Locations
				2	Structural Drawings	Components: Foundations, Elevations
<b>Subsurface Develop. Transportation</b>	<b>N</b>	<b>1</b>	<b>2</b>			
				1	Analysis	Elec. Dist. Sys.-Waste Transportation System
				1	Analysis	Elec. Dist. Sys. - Waste Emplacement System
				1	Analysis	Transportation Safety System
				1	Analysis	SS Monit. Trans. of Personnel & Materials
				2	Electrical One-Line	Trackless Equipment
				2	Electrical One-Line	Service Equipment
				2	Electrical One-Line	Specialty Equipment

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
<b>Subsurface Emplacement Transportation</b>						
Runaway Mitigation System	1	3	3	1	Analysis	Runaway Mitigation
				2	Mechanical Drawings	Components: Runaway Control
				2	P&ID	Controls: Runaway Controls
Shielding	1	3	3	1	Analysis	Eval. Of Rad. Shielding Speci. Source Term
				1	Analysis	Shielding-Specific Source Term Evaluation
				1	Analysis	Shadow Shield & Isolation Door Dsgn. Optim.
				1	Analysis	External Rad. Shielding Design for Ab. Ops.
				1	Analysis	Rad. Shielding Analy. For Mntrs/Cntrls/Sys.
				1	Analysis	Shielding Related Code Upgrades and Qual.
				1	Analysis	Shielding Design Guide Upgrade
				2	Structural Drawings	Structural Components - Shields
				3	Mechanical Drawings	Mechanical Components - Shields
Remainder of System	N	1	2		No Products	
<b>Subsurface Closure &amp; Sealing</b>						
Emplacement Systems	5	3	2	1	Analysis	Seal Construction Design
				1	Analysis	Seal & Closure: Main Seal Structural Design
				1	Analysis	Seal & Closure: Closure Methods
Backfill: Material Emplacement				1	General Arrangement	Layout
Shaft Seal System				2	Mechanical Drawings	Components: Material Emplacement Equip.
				3	Mechanical Drawings	Mechanical Flow Diagram
				2	P&ID	Sealing System Controls
Ramp Sealing System				1	P&ID	Piping
				1	Mechanical Drawing	Material Emplacement Components
				1	P&ID	Controls
				2	Mechanical Drawings	Material Handling Components

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
Drift Sealing System				1	Mechanical Drawing	Material Handling Components
				1	P&ID	Drift Sealing System: Controls
Borehole Sealing System				2	Mechanical Drawings	Material Emplacement Components
				1	Mechanical Flow Dia.	Material Handling
				1	Mechanical Drawing	Components: Material Emplacement
Material Transport System	N	1	2	1	Analysis	Seal & Closure: Seal Materials
				1	Analysis	Seal & Closure: Seal Material Testing
				2	Mechanical Drawings	Components: Material Transport
				1	Mechanical Flow Dia.	Material Transport
Seals, Backfill	2	3	4	1	Analysis	Backfill Emplacement Design
				1	Analysis	Comp. Aid. Engr.: Backfill System
Backfill: Material Emplacement				2	General Arrangement	Layout
				1	Mechanical Flow Dia.	Material Emplacement
Shaft Seal System				1	Structural Drawing	Components: Structural Shaft Seal System
				1	Mechanical Drawing	Components: Mechanical
Ramp Seal System				1	Structural Drawing	Components: Structural Ramp Seal System
				1	Mechanical Drawing	Components: Mechanical
Drift Sealing System				1	Structural Drawing	Components: Structural Drift Seal System
				1	Mechanical Drawing	Components: Mechanical
Muck Handling	N	1	2	1	Analysis	Excavated Material Surface Storage
				1	Analysis	Muck Handling System Design & Equip.
				9	General Arrangements	Layout, Location, Elevation
				2	Mechanical Drawings	Components: Mechanical

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
<b>Performance Confirmation System</b>	<b>2</b>	<b>3</b>	<b>4</b>			
PC Waste Iso. Verification/Validation				1	Analysis	Somp. Aid. Engr. Per. Confirmation Sys.
Performance Testing				4	General Arrangements	Layout, Location
Water Control				1	P&ID	Instrumentation: Confirmation
Personnel Access				1	P&ID	Instrumentation: Confirmation
Boreholes				2	P&ID	Instrumentation: Confirmation
Radiation Shielding				3	P&ID	Instrumentation: Confirmation
PC Emplacement Drift Monitoring				1	Analysis	Inverts: Sampling/Testing Instru. Calibration
Gantry Structure				1	Mechanical Drawing	Components: Mechanical
				1	P&ID	Controls
Power System				2	Electrical One-Line	Drift Monitoring: Electrical Distribution
Instrumentation & Control				6	P&ID	PC: Controls for Drift Monitoring
Remote Control System				5	P&ID	Performance Control: Controls
PC Data Acquisition/Monitoring				1	Analysis	PC: PC Data Acquisition Equipment Design
In-Situ Monitoring				4	P&ID	Distribution System
				4	P&ID	Sensors
				5	P&ID	Data Acquisition
				3	P&ID	Data Analysis System
Ventilation System				2	General Arrangements	Layout, Location
				2	P&ID	Performance Conformation: Ventilation
Sample Collection and Storage				1	Mechanical Drawing	Mechanical Components: Sample Collection
Sample, Testing & Analysis				3	P&ID	Instrumentation
Instrum. Calibration & Maint.				2	P&ID	Instrumentation
General Subsur. Per. Confir.				2	P&ID	Hydrolic Monitoring
				4	P&ID	Thermomechanical Monitoring
				4	P&ID	Emplaced Materials Monitoring
				2	P&ID	Geochemical/Geomechanical Monitoring

System	Safety Classif.	Bin #	Level of Detail*	# of Products	Product Type	Description
				2	P&ID	Backfill Testing
				4	P&ID	Seal Testing
Ex-Container (waste package support	2	3	4			
				1	Analysis	Waste Package Support Design
				1	Analysis	Drip Shield Design
				1	Analysis	EBS Ex-Container: Supports & Shields
				4	Structural Drawings	Components: Waste Package Supports
				2	Structural Drawings	Components: Rock Bolts/Embeds





## **10.2. SURFACE FACILITIES OPERATIONS DESIGN PRODUCTS**

The design products and their level of completion for LA provided by Surface Facilities Operations are identified by system, followed by a detailed listing of the products.

In addition, the LA Design Products provided by Surface Facilities Operations include Topical Reports and Engineering Files, which are not exclusively associated with any particular system or subsystem.

Surface Facility Design Products supporting LA, SSCs vs. Design Products, including Levels of Completion.

\* The SDDs are the responsibility of the Systems Engineering/Integration Office, with input from the individual engineering areas. See Section 10.4 for completion schedules.

System Designation	System / Product / SSC		Bin	Safety Classification	General Arrangements Site Layout	Requirements Analyses	Criteria Basis Statement	SDD Section 1*	SDD Section 2*	SDD Section 3*	SDD Section 4*	Equipment Outlines/Component Drawings	Compliance Package	Quality Classif. Of SSCs	Design Analyses /Calcs Technical Reports	P&IDs / PFD, Mech Flow Diag.	Electrical One-Line Diagrams	Control Logic	Handling Drawings Plan Drawings	ITACS
					LEVEL OF COMPLETION (A "level of completion" number in a matrix position indicates the product is produced in support of LA, at the indicated level of completion. An "X" indicates that the product is produced, but that the level of completion is N/A. See following tables for specific quantities of each product.)															
	<b>SURFACE FACILITY OPERATIONS</b>																			
SU00	MGDS Facility Layout (General)		2	3	2	X	X	X	X				X	X	X				2	X
SU05	Carrier Prep. Bldg. System (General)		2	3 4 5		X	X	X	X				X	X						X
	Carrier Preparation Building		2	5	2										X				2	
	Non-Nuclear HVAC System		1	N				X							X	2				
	Electrical Systems		1	N	3			X							X		3			
	Lightning Protection Systems		1	N				X											3	
	Lighting Systems		1	N				X											3	
	Fire Barrier System		2	4				X	X										2	
	Nuclear Safety		2	3				X	X						X				2	
SU08	CPB Matl. Handling Syst. (General)		2	5		X	X	X	X				X	X						X
	Material Handling/Inspection Systems		2	5	2			X	X			2			X	2		2		
SU16	Carrier/Cask Trans. Syst. (General)		1	3		X	X	X	X				X	X	X					X
	Transporter Maintenance Building		1	N				X												
	Transporter Maintenance Systems		1	N				X												
	Carrier/Cask Transportation System		2	3				X	X			2			X	2		2		
SU02	WHB System (General)		2	1 3 5		X	X	X	X	X	X		X	X						X
	Waste Handling Building		2	1 5	3			X	X	X	X				X				1	
	Shield Doors, Windows and Hatches		2	1 5				X	X	X	X				X			1		
	Maintenance Support Equipment		2	3 5	2			X	X			2			X	2				
	Nuclear Safety		2	3				X	X						X				2	
	Liquid LLW Collection/Transfer Sys.		2	3	2			X	X			2			X	2		2		
	Cask Decon. Support System		2	3	2			X	X			2			X	2		2		
	Structures and Foundations		2	1 5	3			X	X	X	X				X				3	
SU09	Carrier/Cask Handling Syst. (General)		2	5		X	X	X	X				X	X						X
	Material Handling System		2	5	2			X	X			2			X	2		2		
SU10	Assy. Transfer System (General)		2	1 2 3 5		X	X	X	X	X	X		X	X				3		3
	Cask Preparation System		3	1 3	3			X	X	X	X	3			X	3				
	Cask/DPC Unloading/Staging		2	1 3 5	3			X	X	X	X	3			X	3				
	Dry Assembly Transfer System		3	1 3 5	3			X	X	X	X	3			X	3				
	DC Loading System		3	1 3 5	3			X	X	X	X	3			X	3				
	DC Inerting/Decon System		2	3	4			X	X			4			X	4				
	Pool Water Treat/Cooling System		2	3	2			X	X			2			X	2		2		
	Cask Prep/Cooldown Support System		2	3	2			X	X			2			X	2		2		

System Designation	System SSC	Product	Bin	Safety Classification	General Arrangements Site Layout	Requirements Analyses	Criteria Basis Statement	SDD Section 1*	SDD Section 2*	SDD Section 3*	SDD Section 4*	Equipment Outlines/Component Drawings	Compliance Package	Quality Classif. Of SSCs	Design Analyses /Calcs Technical Reports	P&IDs / PFD, Mech. Flow Diag.	Electrical One-Line Diagrams	Control Logic	Handling Drawings Plan Drawings	ITAACS
					LEVEL OF COMPLETION (A "level of completion" number in a matrix position indicates the product is produced in support of LA, at the indicated level of completion. An "X" indicates that the product is produced, but that the level of completion is N/A. See following tables for specific quantities of each product.)															
		Assembly Drying System	3	2 3	4			X	X			4			X	4		4		
SU11		Canister Transfer System (General)	2	1 3 5		X	X	X	X	X	X		X	X				3		X
		Cask Preparation System	3	3	2			X	X			2			X	2				
		Canister Transfer/Staging System	3	1 3 5	3			X	X	X	X	3			X	3				
		Cask Prep/Purge Support System	2	3	2			X	X			2			X	2		2		
SU13		DC Handling System (General)	2	1 2 3 5		X	X	X	X	X	X		X	X				3		X
		DC Handling/Staging System	3	1 5	2			X	X	X	X	3			X	2				
		DC Welding/Inspection System	3	1 2 5	2			X	X	X	X	3			X	2				
		DC Welding Maint./Service Syst.	1	N				X							X					
		DC Transporter Loading System	3	3	2			X	X			2			X	2				
		Empty DC Preparation System	2	1	3			X	X	X	X	3			X	3				
		DC Inerting Support System	2	5	2			X	X			2			X	2		2		
		DC Decon. Support System	2	3				X	X			2			X	2		2		
SU12		WP Remediation System (General)	2	1 2 3 5		X	X	X	X	X	X		X	X				3		X
		DC Handling/Transfer System	2	1 3 5	3			X	X	X	X	3			X	3				
		DC Operating System	3	3 5	2			X	X			2			X	2				
		DC Inspection/Sampling System	2	3	2			X	X			2			X	2				
		DC Decontamination System	2	3	2			X	X			2			X	2				
SU18		WHB Electrical System (General)	2	1		X	X	X	X	X	X		X	X						X
		Electrical Power Systems	2	1	3			X	X	X	X				X		3			
		Lightning Protection System	1	N				X												
		Lighting Systems	1	N				X												
SU22		WHB HVAC Systems (General)	2	1		X	X	X	X	X	X		X	X						X
		Nuclear HVAC Systems	2	1	3			X	X	X	X	3			X	3		3	3	
		Non-Nuclear HVAC Systems	1	N				X												
		HVAC Support Systems	1	N				X												
SU29		WHB Rad Monitor. Syst. (General)	2	3		X	X	X	X				X	X						X
		Operations Area Monitor Sys.	2	3				X	X						X				2	
		Exhaust Stack Monitor Sys.	2	3				X	X						X	2				
SU33		WHB Fire Protection System (General)	2	4 5		X	X	X	X				X	X						X
		Fire Detection & Alarm System	2	4				X	X						X			2		
		Fire Suppression System	2	4 5				X	X						X			2		
		Fire Barrier System	2	4				X	X						X				2	
		Fire Hose System	2	4				X	X						X	2				
SU04		WTB System (General)	2	3 4		X	X	X	X				X	X						X

System Designation	System / Product		Bin	Safety Classification	General Arrangements Site Layout	Requirements Analyses	Criteria Basis Statement	SDD Section 1*	SDD Section 2*	SDD Section 3*	SDD Section 4*	Equipment Outlines/Component Drawings	Compliance Package	Quality Classif. Of SSCs	Design Analyses /Calcs Technical Reports	P&IDs / PFD, Mech. Flow Diag.	Electrical One-Line Diagrams	Control Logic	Handling Drawings Plan Drawings	IT/AACS	
	System	Product																			
					LEVEL OF COMPLETION (A "level of completion" number in a matrix position indicates the product is produced in support of LA, at the indicated level of completion. An "X" indicates that the product is produced, but that the level of completion is N/A. See following tables for specific quantities of each product.)																
	Waste Treatment Building		2	3	2			X	X						X					2	
	Electrical Systems		2	3	2			X	X						X		2				
	Lightning Protection Systems		1	N				X													
	Lighting Systems		1	N				X													
	Fire Detection System		2	3,4				X	X						X						
	Fire Suppression System		2	3,4				X	X						X						
	Fire Barrier System		2	3,4				X	X						X					2	
	Nuclear Safety		2	3				X	X						X					2	
SU37	Waste Treatment Systems (General)		2	3		X	X	X	X				X	X							X
	Solid LLW Processing System		2	3	2			X	X			2			X	2					
	Aqueous LLW Processing Sys.		2	3	2			X	X			2			X	2		2			
	Chemical LLW Processing Sys.		2	3	2			X	X			2			X	2		2			
SU24	WTB HVAC System (General)		2	3		X	X	X	X				X	X							X
	Nuclear HVAC Systems		2	3	2			X	X			2			X	2		2	2		
	Non-Nuclear HVAC Systems		1	N				X													
	HVAC Support Systems		1	N				X													
SU44	Site Electrical Power System (General)		2	1		X	X	X	X	X	X		X	X							X
	Switchgear Building		1	N				X													
	Substation		1	N				X													
	Utility Power Distribution System		1	N				X													
	Standby power Systems		2	1				X	X	X	X				X		3				
	Site Lighting Systems		1	N				X													
SU43	Site Water System (General)		2	4,5		X	X	X	X				X	X							X
	Utility Building System		2	5	2			X	X								2				
	Site Water Systems		2	5	2			X	X						X	2					
	Fire Water Pumping System		2	4				X	X						X	2					
	Site Potable Water & Distr. System		2	5				X	X												
	Site Raw Water & Distr. System		2	5				X	X												
	Site Deionized Water & Distr. Sys.		2	5				X	X												
	Site Softened Water & Distr. Sys.		2	5				X	X												
SU42	Site Comm. System (General)		1	N				X													
SU45	Site Compressed Air System (General)		1	N				X													
	Utility Air & Distribution System		1	N				X													
	Instrument Air & Distribution Sys.		1	N				X													
	Breathing Air & Distribution Sys.		1	N				X													
SUCG	Site Gas Systems (General)		2	3		X	X	X	X			2	X	X	X	2					X

System Designation	System SSC	Product	Bin	Safety Classification	LEVEL OF COMPLETION (A "level of completion" number in a matrix position indicates the product is produced in support of LA, at the indicated level of completion. An "X" indicates that the product is produced, but that the level of completion is N/A. See following tables for specific quantities of each product.)															
					General Arrangements Site Layout	Requirements Analyses	Criteria Basis Statement	SDD Section 1*	SDD Section 2*	SDD Section 3*	SDD Section 4*	Equipment Outlines/Component Drawings	Compliance Package	Quality Classif. Of SSCs	Design Analyses /Calcs Technical Reports	P&IDs / PFD, Mech. Flow Diag.	Electrical One-Line Diagrams	Control Logic	Handing Drawings Plan Drawings	ITAACS
		Compressed Helium System	2	3				X	X											
		Compressed Argon System	2	3				X	X											
		Compressed Nitrogen System	2	3				X	X											
SUFO		Site Fuel Oil Systems (General)	1	N				X												
SU48		S&S System (General)	1	N				X												
		Security Stations	1	N				X												
		Security/Badging Records System	1	N				X												
		Security Barrier System	1	N				X												
		Security Surveillance System	1	N				X												
SU40		Emergency Response Sys. (General)	2	4		X	X	X	X				X	X						X
		Fire Station	2	4	2			X	X						X					
		Medical Facility	1	N				X												
		Emergency Response System	2	4				X	X						X				2	
SU41		Health Safety System (General)	2	3		X	X	X	X				X	2	X					X
SU52		Central C&C Ops. System (General)	2	13		X	X	X	X	X	X		X	1						X
		Command Center	2	13	3			X	X	X	X						3			
		Central Control System	2	13				X	X	X	X									
SU51		Maint. & Supply System (General)	1	N				X												
		Central Shops	1	N				X												
		Central Warehouse	1	N				X												
SU50		Administration System (General)	1	N				X												
		Administration System Facilities	1	N				X												
SU54		General Site Transp. System (General)	1	N				X												
SU47		Non-Rad Waste Disp. (General)	1	N				X												
		Sanitary Solid Waste System	1	N				X												
		Sanitary Wastewater System	1	N				X												
		Hazardous Waste Collection System	1	N				X												
		Surface Design (General)																		
		Architectural			1										X					
		Instrumentation & Controls (I&C)			1										X	1				
		Communications																		
		Civil			2															
		Electrical															2			



Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
<b>MGDS Facility Layout</b>					
MGDS Facility Layout (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
MGDS Facility Layout (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
MGDS Facility Layout (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
MGDS Facility Layout (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
MGDS Facility Layout (General)	Site	11	Site Plans	Civil	Site Dwgs
MGDS Facility Layout (General)	Site	12	Site Utility Routing Plans	Civil	Plan Dwgs.
MGDS Facility Layout (General)	Site	5	Civil Analysis	Civil	Select Anal.
MGDS Facility Layout (General)	Site	1	Site Layout Analysis	Civil	Select Anal.
<b>Waste Handling Building System</b>					
WHB System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
WHB System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
WHB System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
WHB System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Waste Handling Building	WHB	36	GA Building Floor Plans	Arch	GAs
Waste Handling Building	WHB	1	Space Program Analysis	Arch	Custom Anal.
Waste Handling Building	WHB	3	Architectural Analysis	Arch	Select Anal.
Waste Handling Building	WHB	7	Schematic Bldng. Floor Plans	Arch	GAs
Waste Handling Building	WHB	2	Schematic Bldng. Sections	Arch	GAs
Waste Handling Building	WHB	2	Schematic Bldng. Elevations	Arch	GAs
Waste Handling Building	WHB	1	Schematic Bldng. Roof Plans	Arch	GAs
Waste Handling Building	WHB	1	Support Systems Design Doc.	Arch	Tech. Rpts.
Waste Handling Building	WHB	7	Alarm System Layout	S&S	Plan Dwgs.
Waste Handling Building	WHB	36	Control Station Arrangement	I&C	Equip. GAs
Waste Handling Building	WHB	1	S&S Analysis	S&S	Select Anal.
Structures and Foundations	WHB	1	Safety Analysis Reports	Structural	Custom Anal.

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
Structures and Foundations	WHB	1	Earthquake Analysis	Structural	Custom Anal.
Structures and Foundations	WHB	1	Structural Analysis	Structural	Select Anal.
Structures and Foundations	WHB	1	Foundation Analysis	Structural	Custom Anal.
Structures and Foundations	WHB	1	Structural Report	Structural	Custom Anal.
Structures and Foundations	WHB	1	Foundation Plan	Structural	Plan Dwgs.
Structures and Foundations	WHB	1	Roof and Floor Framing	Structural	Plan Dwgs.
Structures and Foundations	WHB	1	Typical Cross Sections	Structural	GAs
Shield Doors, Windows and Hatches	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
Shield Doors, Windows and Hatches	WHB	1	Logic/Interlock Description	I&C	Anal. Input
Shield Doors, Windows and Hatches	WHB	32	Equipment Drawings	Mech	Comp. Dwgs.
Shield Doors, Windows and Hatches	WHB	4	Instrument Data Sheets	Mech	Inst. Data
Shield Doors, Windows and Hatches	WHB	32	Equipment Data Sheets	Mech	Equip. Data
Maintenance Support Equipment	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
Maintenance Support Equipment	WHB	3	Mechanical System Analysis	Mech	Select Anal.
Maintenance Support Equipment	WHB	4	Material Handling Flow Diagrams	Mech	MFDs
Maintenance Support Equipment	WHB	6	Equipment Drawings	Mech	Comp. Dwgs.
Maintenance Support Equipment	WHB	6	Instrument Data Sheets	Mech	Inst. Data
Maintenance Support Equipment	WHB	6	Equipment Data Sheets	Mech	Equip. Data
Maintenance Support Equipment	WHB	6	Equipment Arrangements	Mech	Equip. GAs
Nuclear Safety	WHB	5	Radiation Shielding Analysis	Nuclear	Select Anal.
Nuclear Safety	WHB	2	Criticality Safety Analysis	Nuclear	Custom Anal.
Nuclear Safety	WHB	6	ALARA Studies	Nuclear	Custom Anal.
Nuclear Safety	WHB	6	Radiation Dose Assessment	Nuclear	Custom Anal.
Nuclear Safety	WHB	6	Radiological Zone Plan	Nuclear	Plan Dwgs.
Liquid LLW Collection/Transfer Sys.	WHB	8	Logic/Interlock Description	I&C	Anal. Input
Liquid LLW Collection/Transfer Sys.	WHB	20	Maximum Equipment Envelopes	Mech	MEEs
Liquid LLW Collection/Transfer Sys.	WHB	1	Equipment Arrangements	Piping	Equip. GAs



Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Liquid LLW Collection/Transfer Sys.	WHB	2	Process Equip. Selection Analysis	Process	Select Anal.
Liquid LLW Collection/Transfer Sys.	WHB	1	Utility/ Waste Summaries	Process	Anal. Input
Liquid LLW Collection/Transfer Sys.	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
Liquid LLW Collection/Transfer Sys.	WHB	4	Process Flow Diagrams (PFDs)	Process	PFDs
Liquid LLW Collection/Transfer Sys.	WHB	7	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
Liquid LLW Collection/Transfer Sys.	WHB	8	Equipment Data Sheets	Process	Equip. Data
Liquid LLW Collection/Transfer Sys.	WHB	20	Instrument Data Sheets	Process	Inst. Data
Cask Decon. Support System	WHB	6	Logic/Interlock Description	I&C	Anal. Input
Cask Decon. Support System	WHB	1	Equipment Arrangements	Piping	Equip. GAs
Cask Decon. Support System	WHB	2	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
Cask Decon. Support System	WHB	1	Process Equip. Selection Analysis	Process	Select Anal.
Cask Decon. Support System	WHB	6	Utility/ Waste Summaries	Process	Anal. Input
Cask Decon. Support System	WHB	1	Process System Analysis	Process	Select Anal.
Cask Decon. Support System	WHB	2	Process Flow Diagrams (PFDs)	Process	PFDs
Cask Decon. Support System	WHB	1	Equipment Data Sheets	Process	Equip. Data
Cask Decon. Support System	WHB	6	Instrument Data Sheets	Process	Inst. Data
Cask Decon. Support System	WHB	6	Maximum Equipment Envelopes	Mech	MEEs
<b>Waste Treatment Building System</b>					
WTB System (General)	WTB	1	SDD Input to Section 2	Systems	SDD Input
WTB System (General)	WTB	1	SDD Input to Section 3	Systems	SDD Input
WTB System (General)	WTB	1	SDD Input to Section 4	Systems	SDD Input
WTB System (General)	WTB	2	SDD Input - CBSs	Systems	SDD Input
Waste Treatment Building	WTB	4	GA Building Floor Plans	Arch	GAs
Waste Treatment Building	WTB	1	Space Program Analysis	Arch	Custom Anal.
Waste Treatment Building	WTB	2	Schematic Bldng. Floor Plans	Arch	GAs
Waste Treatment Building	WTB	1	Schematic Bldng. Sections	Arch	GAs
Waste Treatment Building	WTB	2	Schematic Bldng. Elevations	Arch	GAs
Waste Treatment Building	WTB	1	Schematic Bldng. Roof Plans	Arch	GAs

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Description	Discipline	Description
Waste Treatment Building	WTB	7	Alarm System Layout	S&S	Plan Dwgs.
Electrical Systems	WTB	1	Elect. Load Analysis	Electrical	Select Anal.
Electrical Systems	WTB	1	Electrical Design Analysis	Electrical	Select Anal.
Electrical Systems	WTB	1	One line Drawings	Electrical	1-Lines
Electrical Systems	WTB	3	Equipment Arrangements	Electrical	Equip. GAs
Electrical Systems	WTB	1	Equipment Data Sheets	Electrical	Equip. Data
Lightning Protection Systems	WTB	2	Grounding and Lightning Prot. Dwg.	Electrical	Plan Dwgs.
Lighting Systems	WTB	2	Lighting Plan Drawing	Electrical	Plan Dwgs.
Fire Detection System	WTB	1	Fire Hazards Analysis	Fire Prot	Custom Anal.
Fire Detection System	WTB	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Fire Suppression System	WTB	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Fire Barrier System	WTB	1	Life Safety Code Analysis	Fire Prot	Custom Anal.
Fire Barrier System	WTB	6	Fire Barrier Drawings	Fire Prot	Plan Dwgs.
Fire Barrier System	WTB	3	Fire Protection Zone Plans	Fire Prot	Plan Dwgs.
Nuclear Safety	WTB	1	ALARA Studies	Nuclear	Custom Anal.
Nuclear Safety	WTB	1	Radiation Dose Assessment	Nuclear	Custom Anal.
Nuclear Safety	WTB	1	Radiological Zone Plan	Nuclear	Plan Dwgs.
Nuclear Safety	WTB	1	Radiation Monitoring Location Plan	Nuclear	Plan Dwgs.
<b>Carrier Preparation Building System</b>					
Carrier Prep. Bldng. System (General)	CPB	1	SDD Input to Section 2	Systems	SDD Input
Carrier Prep. Bldng. System (General)	CPB	1	SDD Input to Section 3	Systems	SDD Input
Carrier Prep. Bldng. System (General)	CPB	1	SDD Input to Section 4	Systems	SDD Input
Carrier Prep. Bldng. System (General)	CPB	2	SDD Input - CBSs	Systems	SDD Input
Carrier Preparation Building	CPB	1	GA Building Floor Plans	Arch	GAs
Carrier Preparation Building	CPB	1	Space Program Analysis	Arch	Custom Anal.
Carrier Preparation Building	CPB	0	Architectural Analysis	Arch	Select Anal.

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Carrier Preparation Building	CPB	1	Schematic Bldg. Floor Plans	Arch	GAs
Carrier Preparation Building	CPB	1	Schematic Bldg. Sections	Arch	GAs
Carrier Preparation Building	CPB	1	Schematic Bldg. Elevations	Arch	GAs
Carrier Preparation Building	CPB	1	Schematic Bldg. Roof Plans	Arch	GAs
Carrier Preparation Building	CPB	2	Alarm System Layout	S&S	Plan Dwgs.
Electrical Systems	CPB	1	Elect. Load Analysis	Electrical	Select Anal.
Electrical Systems	CPB	1	Electrical Design Analysis	Electrical	Select Anal.
Electrical Systems	CPB	1	One line Drawings	Electrical	1-Lines
Electrical Systems	CPB	2	Equipment Arrangements	Electrical	Equip. GAs
Electrical Systems	CPB	1	Equipment Data Sheets	Electrical	Equip. Data
Lightning Protection Systems	CPB	1	Grounding and Lightning Prot. Dwg.	Electrical	Plan Dwgs.
Lighting Systems	CPB	1	Lighting Plan Drawing	Electrical	Plan Dwgs.
Fire Barrier System	CPB	3	Fire Barrier Drawings	Fire Prot	Plan Dwgs.
Fire Barrier System	CPB	1	Fire Protection Zone Plans	Fire Prot	Plan Dwgs.
Non-Nuclear HVAC System	CPB	1	HVAC System Analysis	HVAC	Select Anal.
Non-Nuclear HVAC System	CPB	1	HVAC Flow and Control Diagrams	HVAC	P&IDs
Nuclear Safety	CPB	1	ALARA Studies	Nuclear	Custom Anal.
Nuclear Safety	CPB	1	Radiological Zone Plan	Nuclear	Plan Dwgs.
Nuclear Safety	CPB	1	Radiation Monitoring Location Plan	Nuclear	Plan Dwgs.
<b>CPB Material Handling System</b>					
CPB Matl. Handling Syst. (General)	CPB	1	SDD Input to Section 2	Systems	SDD Input
CPB Matl. Handling Syst. (General)	CPB	1	SDD Input to Section 3	Systems	SDD Input
CPB Matl. Handling Syst. (General)	CPB	1	SDD Input to Section 4	Systems	SDD Input
CPB Matl. Handling Syst. (General)	CPB	2	SDD Input - CBSs	Systems	SDD Input
Material Handling/Inspection Systems	CPB	5	Instrument Data Sheets	I&C	Inst. Data

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Description	Discipline	Description
Material Handling/Inspection Systems	CPB	4	Logic/Interlock Description	I&C	Anal. Input
Material Handling/Inspection Systems	CPB	1	Equipment Selection Analysis	Mech	Select Anal.
Material Handling/Inspection Systems	CPB	1	Mechanical System Analysis	Mech	Select Anal.
Material Handling/Inspection Systems	CPB	10	Material Handling Flow Diagrams	Mech	MFDs
Material Handling/Inspection Systems	CPB	4	Equipment Drawings	Mech	Comp. Dwgs.
Material Handling/Inspection Systems	CPB	40	Instrument Data Sheets	Mech	Inst. Data
Material Handling/Inspection Systems	CPB	4	Equipment Data Sheets	Mech	Equip. Data
Material Handling/Inspection Systems	CPB	1	Equipment Arrangements	Mech	Equip. GAS
<b>Carrier/Cask Handling System</b>					
Carrier/Cask Handling Syst. (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
Carrier/Cask Handling Syst. (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
Carrier/Cask Handling Syst. (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
Carrier/Cask Handling Syst. (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Material Handling System	WHB	4	Logic/Interlock Description	I&C	Anal. Input
Material Handling System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
Material Handling System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
Material Handling System	WHB	10	Material Handling Flow Diagrams	Mech	MFDs
Material Handling System	WHB	4	Equipment Drawings	Mech	Comp. Dwgs.
Material Handling System	WHB	40	Instrument Data Sheets	Mech	Inst. Data
Material Handling System	WHB	4	Equipment Data Sheets	Mech	Equip. Data
Material Handling System	WHB	1	Equipment Arrangements	Mech	Equip. GAS
<b>Assembly Transfer System</b>					
Assy. Transfer System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
Assy. Transfer System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
Assy. Transfer System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
Assy. Transfer System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Assy. Transfer System (General)	WHB	21	Logic/Interlock Description	I&C	Anal. Input
Cask Preparation System	WHB	2	Equipment Selection Analysis	Mech	Select Anal.
Cask Preparation System	WHB	1	Maximum Equipment Envelopes	Mech	MEEs
Cask Preparation System	WHB	2	Mechanical System Analysis	Mech	Select Anal.
Cask Preparation System	WHB	10	Material Handling Flow Diagrams	Mech	MFDs
Cask Preparation System	WHB	7	Equipment Drawings	Mech	Comp. Dwgs.
Cask Preparation System	WHB	70	Instrument Data Sheets	Mech	Inst. Data
Cask Preparation System	WHB	7	Equipment Data Sheets	Mech	Equip. Data
Cask Preparation System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
Cask/DPC Unloading/Staging	WHB	4	Equipment Selection Analysis	Mech	Select Anal.
Cask/DPC Unloading/Staging	WHB	4	Mechanical System Analysis	Mech	Select Anal.
Cask/DPC Unloading/Staging	WHB	10	Material Handling Flow Diagrams	Mech	MFDs
Cask/DPC Unloading/Staging	WHB	1	Equipment Drawings	Mech	Comp. Dwgs.
Cask/DPC Unloading/Staging	WHB	10	Instrument Data Sheets	Mech	Inst. Data
Cask/DPC Unloading/Staging	WHB	1	Equipment Data Sheets	Mech	Equip. Data
Cask/DPC Unloading/Staging	WHB	1	Equipment Arrangements	Mech	Equip. GAs
Dry Assembly Transfer System	WHB	3	Equipment Selection Analysis	Mech	Select Anal.
Dry Assembly Transfer System	WHB	1	Prototype Specifications	Mech	Detail Specs.
Dry Assembly Transfer System	WHB	3	Mechanical System Analysis	Mech	Select Anal.
Dry Assembly Transfer System	WHB	4	Material Handling Flow Diagrams	Mech	MFDs
Dry Assembly Transfer System	WHB	8	Equipment Drawings	Mech	Comp. Dwgs.
Dry Assembly Transfer System	WHB	80	Instrument Data Sheets	Mech	Inst. Data
Dry Assembly Transfer System	WHB	8	Equipment Data Sheets	Mech	Equip. Data
Dry Assembly Transfer System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
DC Loading System	WHB	2	Equipment Selection Analysis	Mech	Select Anal.
DC Loading System	WHB	1	Prototype Specifications	Mech	Detail Specs.
DC Loading System	WHP	1	Mechanical System Analysis	Mech	Select Anal.

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Description	Discipline	Description
DC Loading System	WHB	1	Material Handling Flow Diagrams	Mech	MFDs
DC Loading System	WHB	3	Equipment Drawings	Mech	Comp. Dwgs.
DC Loading System	WHB	30	Instrument Data Sheets	Mech	Inst. Data
DC Loading System	WHB	3	Equipment Data Sheets	Mech	Equip. Data
DC Loading System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
DC Inerting/Decon System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
DC Inerting/Decon System	WHB	1	Prototype Specifications	Mech	Detail Specs.
DC Inerting/Decon System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Inerting/Decon System	WHB	2	Material Handling Flow Diagrams	Mech	MFDs
DC Inerting/Decon System	WHB	2	Equipment Drawings	Mech	Comp. Dwgs.
DC Inerting/Decon System	WHB	20	Instrument Data Sheets	Mech	Inst. Data
DC Inerting/Decon System	WHB	2	Equipment Data Sheets	Mech	Equip. Data
DC Inerting/Decon System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
Pool Water Treat/Cooling System	WHB	20	Logic/Interlock Description	I&C	Anal. Input
Pool Water Treat/Cooling System	WHB	20	Maximum Equipment Envelopes	Mech	MEEs
Pool Water Treat/Cooling System	WHB	1	Equipment Arrangements	Piping	Equip. GAs
Pool Water Treat/Cooling System	WHB	2	Process Equip. Selection Analysis	Process	Select Anal.
Pool Water Treat/Cooling System	WHB	1	Utility/Waste Summaries	Process	Anal. Input
Pool Water Treat/Cooling System	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
Pool Water Treat/Cooling System	WHB	3	Process System Analysis	Process	Select Anal.
Pool Water Treat/Cooling System	WHB	6	Process Flow Diagrams (PFDs)	Process	PFDs
Pool Water Treat/Cooling System	WHB	9	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
Pool Water Treat/Cooling System	WHB	20	Equipment Data Sheets	Process	Equip. Data
Pool Water Treat/Cooling System	WHB	30	Instrument Data Sheets	Process	Inst. Data
Cask Prep/Cooldown Support System	WHB	8	Logic/Interlock Description	I&C	Anal. Input
Cask Prep/Cooldown Support System	WHB	1	Maximum Equipment Envelopes	Mech	MEEs
Cask Prep/Cooldown Support System	WHB	1	Equipment Arrangements	Piping	Equip. GAs
Cask Prep/Cooldown Support System	WHB	2	Process Equip. Selection Analysis	Process	Select Anal.

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Cask Prep/Cooldown Support System	WHB	1	Utility/ Waste Summaries	Process	Anal. Input
Cask Prep/Cooldown Support System	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
Cask Prep/Cooldown Support System	WHB	3	Process System Analysis	Process	Select Anal.
Cask Prep/Cooldown Support System	WHB	5	Process Flow Diagrams (PFDs)	Process	PFDs
Cask Prep/Cooldown Support System	WHB	10	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
Cask Prep/Cooldown Support System	WHB	8	Equipment Data Sheets	Process	Equip. Data
Cask Prep/Cooldown Support System	WHB	24	Instrument Data Sheets	Process	Inst. Data
Assembly Drying System	WHB	6	Logic/Interlock Description	I&C	Anal. Input
Assembly Drying System	WHB	1	Maximum Equipment Envelopes	Mech	MEEs
Assembly Drying System	WHB	1	Equipment Arrangements	Piping	Equip. GAS
Assembly Drying System	WHB	2	Process Equip. Selection Analysis	Process	Select Anal.
Assembly Drying System	WHB	1	Utility/ Waste Summaries	Process	Anal. Input
Assembly Drying System	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
Assembly Drying System	WHB	3	Process System Analysis	Process	Select Anal.
Assembly Drying System	WHB	3	Process Flow Diagrams (PFDs)	Process	PFDs
Assembly Drying System	WHB	6	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
Assembly Drying System	WHB	6	Equipment Data Sheets	Process	Equip. Data
Assembly Drying System	WHB	24	Instrument Data Sheets	Process	Inst. Data
<b>Canister Transfer System</b>					
Canister Transfer System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
Canister Transfer System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
Canister Transfer System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
Canister Transfer System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Canister Transfer System (General)	WHB	10	Logic/Interlock Description	I&C	Anal. Input
Cask Preparation System	WHB	2	Equipment Selection Analysis	Mech	Select Anal.
Cask Preparation System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
Cask Preparation System	WHB	5	Material Handling Flow Diagrams	Mech	MFDs

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
Cask Preparation System	WHB	4	Equipment Drawings	Mech	Comp. Dwgs.
Cask Preparation System	WHB	40	Instrument Data Sheets	Mech	Inst. Data
Cask Preparation System	WHB	4	Equipment Data Sheets	Mech	Equip. Data
Cask Preparation System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
Canister Transfer/Staging System	WHB	2	Equipment Selection Analysis	Mech	Select Anal.
Canister Transfer/Staging System	WHB	2	Mechanical System Analysis	Mech	Select Anal.
Canister Transfer/Staging System	WHB	5	Material Handling Flow Diagrams	Mech	MFDs
Canister Transfer/Staging System	WHB	6	Equipment Drawings	Mech	Comp. Dwgs.
Canister Transfer/Staging System	WHB	60	Instrument Data Sheets	Mech	Inst. Data
Canister Transfer/Staging System	WHB	6	Equipment Data Sheets	Mech	Equip. Data
Canister Transfer/Staging System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
Cask Prep/Purge Support System	WHB	4	Logic/Interlock Description	I&C	Anal. Input
Cask Prep/Purge Support System	WHB	4	Maximum Equipment Envelopes	Mech	MEEs
Cask Prep/Purge Support System	WHB	1	Equipment Arrangements	Piping	Equip. GAs
Cask Prep/Purge Support System	WHB	1	Process Equip. Selection Analysis	Process	Select Anal.
Cask Prep/Purge Support System	WHB	1	Utility/Waste Summaries	Process	Anal. Input
Cask Prep/Purge Support System	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
Cask Prep/Purge Support System	WHB	2	Process System Analysis	Process	Select Anal.
Cask Prep/Purge Support System	WHB	2	Process Flow Diagrams (PFDs)	Process	PFDs
Cask Prep/Purge Support System	WHB	3	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
Cask Prep/Purge Support System	WHB	4	Equipment Data Sheets	Process	Equip. Data
Cask Prep/Purge Support System	WHB	6	Instrument Data Sheets	Process	Inst. Data
<b>Waste Package Remediation System</b>					
WP Remediation System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
WP Remediation System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
WP Remediation System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
WP Remediation System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input



Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
WP Remediation System (General)	WHB	8	Logic/Interlock Description	I&C	Anal. Input
DC Handling/Transfer System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
DC Handling/Transfer System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Handling/Transfer System	WHB	2	Material Handling Flow Diagrams	Mech	MFDs
DC Handling/Transfer System	WHB	2	Equipment Drawings	Mech	Comp. Dwgs.
DC Handling/Transfer System	WHB	20	Instrument Data Sheets	Mech	Inst. Data
DC Handling/Transfer System	WHB	2	Equipment Data Sheets	Mech	Equip. Data
DC Handling/Transfer System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
DC Opening System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
DC Opening System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Opening System	WHB	2	Material Handling Flow Diagrams	Mech	MFDs
DC Opening System	WHB	2	Equipment Drawings	Mech	Comp. Dwgs.
DC Opening System	WHB	20	Instrument Data Sheets	Mech	Inst. Data
DC Opening System	WHB	2	Equipment Data Sheets	Mech	Equip. Data
DC Opening System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
DC Inspection/Sampling System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
DC Inspection/Sampling System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Inspection/Sampling System	WHB	2	Material Handling Flow Diagrams	Mech	MFDs
DC Inspection/Sampling System	WHB	2	Equipment Drawings	Mech	Comp. Dwgs.
DC Inspection/Sampling System	WHB	20	Instrument Data Sheets	Mech	Inst. Data
DC Inspection/Sampling System	WHB	2	Equipment Data Sheets	Mech	Equip. Data
DC Inspection/Sampling System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
DC Decontamination System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
DC Decontamination System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Decontamination System	WHB	2	Material Handling Flow Diagrams	Mech	MFDs
DC Decontamination System	WHB	2	Equipment Drawings	Mech	Comp. Dwgs.
DC Decontamination System	WHB	20	Instrument Data Sheets	Mech	Inst. Data

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Description	Discipline	Description
DC Decontamination System	WHB	2	Equipment Data Sheets	Mech	Equip. Data
DC Decontamination System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
<b>Disposal Container Handling System</b>					
DC Handling System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
DC Handling System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
DC Handling System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
DC Handling System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
DC Handling System (General)	WHB	42	Logic/Interlock Description	I&C	Anal. Input
DC Handling/Staging System	WHB	3	Equipment Selection Analysis	Mech	Select Anal.
DC Handling/Staging System	WHB	2	Mechanical System Analysis	Mech	Select Anal.
DC Handling/Staging System	WHB	4	Material Handling Flow Diagrams	Mech	MFDs
DC Handling/Staging System	WHB	10	Equipment Drawings	Mech	Comp. Dwgs.
DC Handling/Staging System	WHB	100	Instrument Data Sheets	Mech	Inst. Data
DC Handling/Staging System	WHB	10	Equipment Data Sheets	Mech	Equip. Data
DC Handling/Staging System	WHB	4	Equipment Arrangements	Mech	Equip. GAs
DC Welding/Inspection System	WHB	4	Equipment Selection Analysis	Mech	Select Anal.
DC Welding/Inspection System	WHB	1	Prototype Specifications	Mech	Detail Specs.
DC Welding/Inspection System	WHB	4	Mechanical System Analysis	Mech	Select Anal.
DC Welding/Inspection System	WHB	4	Material Handling Flow Diagrams	Mech	MFDs
DC Welding/Inspection System	WHB	7	Equipment Drawings	Mech	Comp. Dwgs.
DC Welding/Inspection System	WHB	100	Instrument Data Sheets	Mech	Inst. Data
DC Welding/Inspection System	WHB	10	Equipment Data Sheets	Mech	Equip. Data
DC Welding/Inspection System	WHB	1	Equipment Arrangements	Mech	Equip. GAs
DC Welding Maint./Service Syst.	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
DC Welding Maint./Service Syst.	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Welding Maint./Service Syst.	WHB	4	Material Handling Flow Diagrams	Mech	MFDs

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
DC Welding Maint./Service Syst.	WHB	5	Equipment Drawings	Mech	Comp. Dwgs.
DC Welding Maint./Service Syst.	WHB	50	Instrument Data Sheets	Mech	Inst. Data
DC Welding Maint./Service Syst.	WHB	5	Equipment Data Sheets	Mech	Equip. Data
DC Welding Maint./Service Syst.	WHB	2	Equipment Arrangements	Mech	Equip. GAS
DC Transporter Loading System	WHB	2	Equipment Selection Analysis	Mech	Select Anal.
DC Transporter Loading System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
DC Transporter Loading System	WHB	2	Material Handling Flow Diagrams	Mech	MFDs
DC Transporter Loading System	WHB	8	Equipment Drawings	Mech	Comp. Dwgs.
DC Transporter Loading System	WHB	80	Instrument Data Sheets	Mech	Inst. Data
DC Transporter Loading System	WHB	8	Equipment Data Sheets	Mech	Equip. Data
DC Transporter Loading System	WHB	2	Equipment Arrangements	Mech	Equip. GAS
Empty DC Preparation System	WHB	1	Equipment Selection Analysis	Mech	Select Anal.
Empty DC Preparation System	WHB	1	Mechanical System Analysis	Mech	Select Anal.
Empty DC Preparation System	WHB	5	Material Handling Flow Diagrams	Mech	MFDs
Empty DC Preparation System	WHB	8	Equipment Drawings	Mech	Comp. Dwgs.
Empty DC Preparation System	WHB	90	Instrument Data Sheets	Mech	Inst. Data
Empty DC Preparation System	WHB	9	Equipment Data Sheets	Mech	Equip. Data
Empty DC Preparation System	WHB	4	Equipment Arrangements	Mech	Equip. GAS
DC Inerting Support System	WHB	3	Logic/Interlock Description	I&C	Anal. Input
DC Inerting Support System	WHB	3	Maximum Equipment Envelopes	Mech	MEEs
DC Inerting Support System	WHB	1	Equipment Arrangements	Piping	Equip. GAS
DC Inerting Support System	WHB	1	Process Equip. Selection Analysis	Process	Select Anal.
DC Inerting Support System	WHB	1	Utility/ Waste Summaries	Process	Anal. Input
DC Inerting Support System	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
DC Inerting Support System	WHB	3	Process System Analysis	Process	Select Anal.
DC Inerting Support System	WHB	2	Process Flow Diagrams (PFDs)	Process	PFDs
DC Inerting Support System	WHB	4	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
DC Inerting Support System	WHB	3	Equipment Data Sheets	Process	Equip. Data

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Description	Discipline	Description
DC Inerting Support System	WHB	9	Instrument Data Sheets	Process	Inst. Data
DC Decon. Support System	WHB	6	Logic/Interlock Description	I&C	Anal. Input
DC Decon. Support System	WHB	6	Maximum Equipment Envelopes	Mech	MEEs
DC Decon. Support System	WHB	1	Process Equip. Selection Analysis	Process	Select Anal.
DC Decon. Support System	WHB	1	Utility/Waste Summaries	Process	Anal. Input
DC Decon. Support System	WHB	1	Hydraulic Analysis (Line & Flow)	Process	Custom Anal.
DC Decon. Support System	WHB	1	Process System Analysis	Process	Select Anal.
DC Decon. Support System	WHB	2	Process Flow Diagrams (PFDs)	Process	PFDs
DC Decon. Support System	WHB	3	Piping & Inst. Diagrams (P&IDs)	Process	P&IDs
DC Decon. Support System	WHB	6	Equipment Data Sheets	Process	Equip. Data
DC Decon. Support System	WHB	6	Instrument Data Sheets	Process	Inst. Data
<b>Carrier/Cask Transport System</b>					
Carrier/Cask Trans. Syst. (General)	TMB	1	SDD Input to Section 2	Systems	SDD Input
Carrier/Cask Trans. Syst. (General)	TMB	1	SDD Input to Section 3	Systems	SDD Input
Carrier/Cask Trans. Syst. (General)	TMB	1	SDD Input to Section 4	Systems	SDD Input
Carrier/Cask Trans. Syst. (General)	TMB	2	SDD Input - CBSs	Systems	SDD Input
Transporter Maintenance Building	TMB	1	Space Program Analysis	Arch	Custom Anal.
Transporter Maintenance Building	TMB	1	Schematic Bldg. Floor Plans	Arch	GAs
Transporter Maintenance Building	TMB	1	Schematic Bldg. Sections	Arch	GAs
Transporter Maintenance Building	TMB	1	Schematic Bldg. Elevations	Arch	GAs
Transporter Maintenance Building	TMB	1	Schematic Bldg. Roof Plans	Arch	GAs
Transporter Maintenance Systems	TMB	2	Equipment Selection Analysis	Mech	Select Anal.
Transporter Maintenance Systems	TMB	2	Mechanical System Analysis	Mech	Select Anal.
Transporter Maintenance Systems	TMB	4	Equipment Data Sheets	Mech	Equip. Data
Transporter Maintenance Systems	TMB	4	Equipment Arrangements	Mech	Equip. GAs
Carrier/Cask Transportation System	RCA	3	Logic/Interlock Description	I&C	Anal. Input

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Carrier/Cask Transportation System	RCA	1	Equipment Selection Analysis	Mech	Select Anal.
Carrier/Cask Transportation System	RCA	1	Mechanical System Analysis	Mech	Select Anal.
Carrier/Cask Transportation System	RCA	6	Material Handling Flow Diagrams	Mech	MFDs
Carrier/Cask Transportation System	RCA	3	Equipment Drawings	Mech	Comp. Dwgs.
Carrier/Cask Transportation System	RCA	30	Instrument Data Sheets	Mech	Inst. Data
Carrier/Cask Transportation System	RCA	3	Equipment Data Sheets	Mech	Equip. Data
<b>WHB Electrical System</b>					
WHB Electrical System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
WHB Electrical System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
WHB Electrical System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
WHB Electrical System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Electrical Power Systems	WHB	1	Elect. Load Analysis	Electrical	Select Anal.
Electrical Power Systems	WHB	1	Electrical Design Analysis	Electrical	Select Anal.
Electrical Power Systems	WHB	1	One line Drawings	Electrical	1-Lines
Electrical Power Systems	WHB	8	Equipment Arrangements	Electrical	Equip. GAs
Electrical Power Systems	WHB	1	Equipment Data Sheets	Electrical	Equip. Data
Lightning Protection System	WHB	6	Grounding and Lightning Prot. Dwg.	Electrical	Plan Dwgs.
Lighting Systems	WHB	6	Lighting Plan Drawing	Electrical	Plan Dwgs.
<b>WHB Ventilation System</b>					
WHB HVAC Systems (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
WHB HVAC Systems (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
WHB HVAC Systems (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
WHB HVAC Systems (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Nuclear HVAC Systems	WHB	48	Logic/Interlock Description	I&C	Anal. Input
Nuclear HVAC Systems	WHB	1	HVAC System Analysis	HVAC	Select Anal.

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
Nuclear HVAC Systems	WHB	10	HVAC Duct Sizing/ Layout Analysis	HVAC	Select Anal.
Nuclear HVAC Systems	WHB	17	HVAC Flow and Control Diagrams	HVAC	P&IDs
Nuclear HVAC Systems	WHB	9	HVAC Confinement Zone Plans	HVAC	Plan Dwgs.
Nuclear HVAC Systems	WHB	3	HVAC Equipment Drawings	HVAC	Comp. Dwgs.
Nuclear HVAC Systems	WHB	92	Instrument Data Sheets	HVAC	Inst. Data
Nuclear HVAC Systems	WHB	50	Equipment Data Sheets	HVAC	Equip. Data
Nuclear HVAC Systems	WHB	17	Equipment Arrangements	HVAC	Equip. GAs
Non-Nuclear HVAC Systems	WHB	2	HVAC System Analysis	HVAC	Select Anal.
HVAC Support Systems	WHB	1	Support Systems Design Doc.	HVAC	Tech. Rpts.
HVAC Support Systems	WHB	6	HVAC Flow and Control Diagrams	HVAC	P&IDs
<b>WTB Ventilation System</b>					
WTB HVAC System (General)	WTB	1	SDD Input to Section 2	Systems	SDD Input
WTB HVAC System (General)	WTB	1	SDD Input to Section 3	Systems	SDD Input
WTB HVAC System (General)	WTB	1	SDD Input to Section 4	Systems	SDD Input
WTB HVAC System (General)	WTB	2	SDD Input - CBSs	Systems	SDD Input
Nuclear HVAC Systems	WTB	3	Logic/Interlock Description	I&C	Anal. Input
Nuclear HVAC Systems	WTB	1	HVAC System Analysis	HVAC	Select Anal.
Nuclear HVAC Systems	WTB	10	HVAC Flow and Control Diagrams	HVAC	P&IDs
Nuclear HVAC Systems	WTB	2	HVAC Confinement Zone Plans	HVAC	Plan Dwgs.
Nuclear HVAC Systems	WTB	3	HVAC Equipment Drawings	HVAC	Comp. Dwgs.
Nuclear HVAC Systems	WTB	50	Instrument Data Sheets	HVAC	Inst. Data
Nuclear HVAC Systems	WTB	25	Equipment Data Sheets	HVAC	Equip. Data
Nuclear HVAC Systems	WTB	2	Equipment Arrangements	HVAC	Equip. GAs
Non-Nuclear HVAC Systems	WTB	2	HVAC System Analysis	HVAC	Select Anal.
HVAC Support Systems	WTB	1	Support Systems Design Doc.	HVAC	Tech. Rpts.

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
HVAC Support Systems	WTB	1	HVAC Flow and Control Diagrams	HVAC	P&IDs
<b>WHB Radiological Monitoring System</b>					
WHB Rad Monitor. Syst. (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
WHB Rad Monitor. Syst. (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
WHB Rad Monitor. Syst. (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
WHB Rad Monitor. Syst. (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Operations Area Monitor Sys.	WHB	1	Radiological Prot. System Analysis	Nuclear	Select Anal.
Operations Area Monitor Sys.	WHB	6	Radiation Monitoring Location Plan	Nuclear	Plan Dwgs.
Operations Area Monitor Sys.	WHB	6	Instrument Data Sheets	I&C	Inst. Data
Exhaust Stack Monitor Sys.	WHB	1	HVAC System Analysis	HVAC	Select Anal.
Exhaust Stack Monitor Sys.	WHB	2	HVAC Flow and Control Diagrams	HVAC	P&IDs
Exhaust Stack Monitor Sys.	WHB	10	Instrument Data Sheets	HVAC	Inst. Data
<b>WHB Fire Protection System</b>					
WHB Fire Protection System (General)	WHB	1	SDD Input to Section 2	Systems	SDD Input
WHB Fire Protection System (General)	WHB	1	SDD Input to Section 3	Systems	SDD Input
WHB Fire Protection System (General)	WHB	1	SDD Input to Section 4	Systems	SDD Input
WHB Fire Protection System (General)	WHB	2	SDD Input - CBSs	Systems	SDD Input
Fire Detection & Alarm System	WHB	1	Logic/Interlock Description	I&C	Anal. Input
Fire Detection & Alarm System	WHB	1	Fire Hazards Analysis	Fire Prot	Custom Anal.
Fire Detection & Alarm System	WHB	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Fire Detection & Alarm System	WHB	1	Instrument Data Sheets	Fire Prot	Inst. Data
Fire Suppression System	WHB	1	Logic/Interlock Description	I&C	Anal. Input
Fire Suppression System	WHB	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Fire Suppression System	WHB	1	Equipment Data Sheets	Fire Prot	Equip. Data
Fire Suppression System	WHB	1	Instrument Data Sheets	Fire Prot	Inst. Data

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
Emergency Response System	Fire Station	12	Site Fire Alarm Drawings	Fire Prot	Plan Dwgs.
Emergency Response System	Fire Station	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Emergency Response System	Fire Station	18	Instrument Data Sheets	Fire Prot	Inst. Data
Emergency Response System	Fire Station	1	S&S System Interface Analysis	S&S	Custom Anal.
<b>Health Safety System</b>					
Health Safety System (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
Health Safety System (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
Health Safety System (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Health Safety System (General)	Site	1	Radiological Prot. System Analysis	Nuclear	Select Anal.
<b>Site Communications System</b>					
Site Comm. System (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
Site Comm. System (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
Site Comm. System (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
Site Comm. System (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Site Comm. System (General)	Site	1	Communications Design Analysis	Comm	Select Anal.
Site Comm. System (General)	Site	1	Data Flow Diagram	Comm	PFDs
Site Comm. System (General)	Site	1	Network Architecture	Comm	Custom Anal.
Site Comm. System (General)	Site	1	Equipment Data Sheets	Comm	Lists
Site Comm. System (General)	Site	1	Interface Control Document	Comm	Custom Anal.
<b>Site Water System</b>					
Site Water System (General)	Utility	1	SDD Input to Section 2	Systems	SDD Input
Site Water System (General)	Utility	1	SDD Input to Section 3	Systems	SDD Input
Site Water System (General)	Utility	2	SDD Input - CBSs	Systems	SDD Input
Utility Building System	Utility	1	Schematic Bldg. Floor Plans	Arch	GAs
Utility Building System	Utility	1	Schematic Bldg. Sections	Arch	GAs
Utility Building System	Utility	1	Schematic Bldg. Elevations	Arch	GAs



Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Utility Building System	Utility	1	One line Drawings	Electrical	1-Lines
Site Water Systems	Site	1	Technical and Economics Study	I&C	Tech. Rpts.
Site Water Systems	Site	4	Site Plans	Civil	Site Dwgs
Site Water Systems	Site	2	Process Equip. Selection Analysis	Process	Select Anal.
Site Water Systems	Site	1	Process System Analysis	Process	Select Anal.
Site Water Systems	Site	6	Process Flow Diagrams (PFDs)	Process	PFDs
Fire Water Pumping System	Site	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Fire Water Pumping System	Site	3	Fire Prot. Flow and Control Diagrams	Fire Prot	P&IDs
Fire Water Pumping System	Site	1	Equipment Data Sheets	Fire Prot	Equip. Data
Fire Water Pumping System	Site	12	Instrument Data Sheets	Fire Prot	Inst. Data
Site Potable Water & Distr. System	Site	2	Equipment Data Sheets	Process	Equip. Data
Site Raw Water & Distr. System	Site	2	Equipment Data Sheets	Process	Equip. Data
Site Deionized Water & Distr. Sys.	Site	6	Equipment Data Sheets	Process	Equip. Data
Site Softened Water & Distr. Sys.	Site	6	Equipment Data Sheets	Process	Equip. Data
<b>Site Electrical Power System</b>					
Site Electrical Power System (General)	Switchgear	1	SDD Input to Section 2	Systems	SDD Input
Site Electrical Power System (General)	Switchgear	1	SDD Input to Section 3	Systems	SDD Input
Site Electrical Power System (General)	Switchgear	1	SDD Input to Section 4	Systems	SDD Input
Site Electrical Power System (General)	Switchgear	2	SDD Input - CBSs	Systems	SDD Input
Switchgear Building	Switchgear	1	Schematic Bldng. Floor Plans	Arch	GAs
Switchgear Building	Switchgear	1	Schematic Bldng. Sections	Arch	GAs
Switchgear Building	Switchgear	1	Schematic Bldng. Elevations	Arch	GAs
Switchgear Building	Switchgear	1	Schematic Bldng. Roof Plans	Arch	GAs
Switchgear Building	Switchgear	2	Grounding and Lightning Prot. Dwg.	Electrical	Plan Dwgs.
Switchgear Building	Switchgear	1	Lighting Plan Drawing	Electrical	Plan Dwgs.
Switchgear Building	Switchgear	2	Fire Barrier Drawings	Fire Prot	Plan Dwgs.

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Description	Discipline	Description
Switchgear Building	Switchgear	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Substation	Site	1	Grounding and Lightning Prot. Dwg.	Electrical	Plan Dwgs.
Utility Power Distribution System	Site	4	Site Access Routing Plans	Civil	Plan Dwgs.
Utility Power Distribution System	Site	1	Elect. Load Analysis	Electrical	Select Anal.
Utility Power Distribution System	Site	1	Electrical Design Analysis	Electrical	Select Anal.
Utility Power Distribution System	Site	2	One line Drawings	Electrical	1-Lines
Standby power Systems	Site	1	Elect. Load Analysis	Electrical	Select Anal.
Standby power Systems	Site	1	One line Drawings	Electrical	1-Lines
Site Lighting Systems	Site	2	Lighting Plan Drawing	Electrical	Plan Dwgs.
<b>Site Compressed Air System</b>					
Site Compressed Air System (General)	Utility	1	SDD Input to Section 2	Systems	SDD Input
Site Compressed Air System (General)	Utility	1	SDD Input to Section 3	Systems	SDD Input
Site Compressed Air System (General)	Utility	1	SDD Input to Section 4	Systems	SDD Input
Site Compressed Air System (General)	Utility	2	SDD Input - CBSs	Systems	SDD Input
Site Compressed Air System (General)	Utility	1	Technical and Economics Study	I&C	Tech. Rpts
Site Compressed Air System (General)	Utility	16	Maximum Equipment Envelopes	Mech	MEEs
Site Compressed Air System (General)	Utility	2	Process Equip. Selection Analysis	Process	Select Anal.
Site Compressed Air System (General)	Utility	1	Process System Analysis	Process	Select Anal.
Site Compressed Air System (General)	Utility	16	Process Flow Diagrams (PFDs)	Process	PFDs
Utility Air & Distribution System	Utility	4	Equipment Data Sheets	Process	Equip. Data
Instrument Air & Distribution Sys.	Utility	8	Equipment Data Sheets	Process	Equip. Data
Breathing Air & Distribution Sys.	Utility	4	Equipment Data Sheets	Process	Equip. Data
<b>Site Compressed Gas Systems</b>					

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Site Gas Systems (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
Site Gas Systems (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
Site Gas Systems (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
Site Gas Systems (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Site Gas Systems (General)	Site	1	Technical and Economics Study	I&C	Tech. Rpts.
Site Gas Systems (General)	Site	26	Maximum Equipment Envelopes	Mech	MEEs
Site Gas Systems (General)	Site	1	Process Equip. Selection Analysis	Process	Select Anal.
Site Gas Systems (General)	Site	2	Process System Analysis	Process	Select Anal.
Site Gas Systems (General)	Site	14	Process Flow Diagrams (PFDs)	Process	PFDs
Compressed Helium System	Site	8	Equipment Data Sheets	Process	Equip. Data
Compressed Argon System	Site	8	Equipment Data Sheets	Process	Equip. Data
Compressed Nitrogen System	Site	10	Equipment Data Sheets	Process	Equip. Data
<b>Site Fuel Oil Systems</b>					
Site Fuel Oil Systems (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
Site Fuel Oil Systems (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
Site Fuel Oil Systems (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
Site Fuel Oil Systems (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Site Fuel Oil Systems (General)	Site	1	Technical and Economics Study	I&C	Tech. Rpts.
Site Fuel Oil Systems (General)	Site	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Site Fuel Oil Systems (General)	Site	10	Maximum Equipment Envelopes	Mech	MEEs
Site Fuel Oil Systems (General)	Site	1	Process Equip. Selection Analysis	Process	Select Anal.
Site Fuel Oil Systems (General)	Site	2	Process System Analysis	Process	Select Anal.
Site Fuel Oil Systems (General)	Site	6	Process Flow Diagrams (PFDs)	Process	PFDs
Site Fuel Oil Systems (General)	Site	10	Equipment Data Sheets	Process	Equip. Data
<b>Site-Gen. Haz. &amp; Nonhaz. Waste Disp.</b>					
Non-Rad Waste Disp. (General)	Site	1	SDD Input to Section 2	Systems	SDD Input

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
Non-Rad Waste Disp. (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
Non-Rad Waste Disp. (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Sanitary Solid Waste System	Site	1	Site Plans	Civil	Site Dwgs
Sanitary Wastewater System	Site	2	Site Plans	Civil	Site Dwgs
Sanitary Wastewater System	Site	1	Civil Analysis	Civil	Select Anal.
Hazardous Waste Collection System	Site	1	Process System Analysis	Process	Select Anal.
<b>Security and Safeguards System</b>					
S&S System (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
S&S System (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
S&S System (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
S&S System (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
S&S System (General)	Site	1	Vulnerability Analysis	S&S	Custom Anal.
S&S System (General)	Site	4	Equipment Data Sheets	S&S	Equip. Data
S&S System (General)	Site	5	Computer/Alarm System Analysis	S&S	Select Anal.
S&S System (General)	Site	3	Instrument Data Sheets	S&S	Inst. Data
Security Stations	Security	3	Schematic Bldng. Floor Plans	Arch	GAs
Security Stations	Security	3	Schematic Bldng. Sections	Arch	GAs
Security Stations	Security	3	Schematic Bldng. Elevations	Arch	GAs
Security Stations	Security	1	Electrical Design Analysis	Electrical	Select Anal.
Security Stations	Security	3	One line Drawings	Electrical	1-Lines
Security Stations	Security	1	Equipment Arrangements	S&S	Equip. GAs
Security/Badging Records System	Security	1	S&S Analysis	S&S	Select Anal.
Security Barrier System	Site	1	Site Plans	Civil	Site Dwgs
Security Barrier System	Site	1	S&S Analysis	S&S	Select Anal.
Security Surveillance System	Security	1	S&S Analysis	S&S	Select Anal.

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
<b>Administration System</b>					
Administration System (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
Administration System (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Administration System Facilities	Admin.	3	Schematic Bldng. Floor Plans	Arch	GAs
Administration System Facilities	Admin.	1	Schematic Bldng. Sections	Arch	GAs
Administration System Facilities	Admin.	1	Schematic Bldng. Elevations	Arch	GAs
Administration System Facilities	Admin.	1	One line Drawings	Electrical	1-Lines
<b>Maintenance &amp; Supply System</b>					
Maint. & Supply System (General)	Shops	1	SDD Input to Section 2	Systems	SDD Input
Maint. & Supply System (General)	Shops	2	SDD Input - CBSs	Systems	SDD Input
Maint. & Supply System (General)	Shops	2	Architectural Analysis	Arch	Select Anal.
Maint. & Supply System (General)	Shops	2	Instrument Data Sheets	I&C	Inst. Data
Maint. & Supply System (General)	Shops	2	Logic/Interlock Description	I&C	Anal. Input
Maint. & Supply System (General)	Shops	10	Equipment Data Sheets	Mech	Equip. Data
Maint. & Supply System (General)	Shops	2	Equipment Arrangements	Mech	Equip. GAs
Maint. & Supply System (General)	Shops	10	Maximum Equipment Envelopes	Mech	MEEs
<b>Central Comd. &amp; Control Ops. System</b>					
Central C&C Ops. System (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
Central C&C Ops. System (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
Central C&C Ops. System (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
Central C&C Ops. System (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
Command Center	Admin	1	Equipment Arrangements	I&C	Equip. GAs
Command Center	Admin	1	One line Drawings	Electrical	1-Lines
<b>General Site Transportation System</b>					

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
General Site Transp. System (General)	Site	1	SDD Input to Section 2	Systems	SDD Input
General Site Transp. System (General)	Site	1	SDD Input to Section 3	Systems	SDD Input
General Site Transp. System (General)	Site	1	SDD Input to Section 4	Systems	SDD Input
General Site Transp. System (General)	Site	2	SDD Input - CBSs	Systems	SDD Input
General Site Transp. System (General)	Site	1	Architectural Analysis	Arch	Select Anal.
<b>Surface Design (General)</b>					
Architectural	Site	1	Design Guide	Arch	Des. Guides
Architectural	Site	2	BOP Space Program Analysis	Arch	Custom Anal.
Architectural	Site	5	Outline Specifications	Arch	Outline Specs.
Architectural	Site	2	Drawing Legend	Arch	GAs
Architectural	Site	1	Preliminary Facilities List	Arch	Lists
Communications	Site	1	Design Guide	Comm	Des. Guides
Communications	Site	8	Outline Specifications	Comm	Outline Specs.
Instrumentation & Controls (I&C)	Site	1	I & C System Analysis	I&C	Select Anal.
Instrumentation & Controls (I&C)	Site	3	I&C Systems Architecture	I&C	PFDs
Instrumentation & Controls (I&C)	Site	3	Equipment Arrangements	I&C	Equip. GAs
Instrumentation & Controls (I&C)	Site	1	Design Guide	I&C	Des. Guides
Instrumentation & Controls (I&C)	Site	1	Preliminary Instrument List	I&C	Lists
Instrumentation & Controls (I&C)	Site	36	Outline Specifications	I&C	Outline Specs.
Instrumentation & Controls (I&C)	Site	1	Software QA Plan	I&C	Lists
Instrumentation & Controls (I&C)	Site	2	Drawing Legends	I&C	P&IDs
Civil	Site	1	Design Guide	Civil	Des. Guides
Civil	Site	2	Outline Specifications	Civil	Outline Specs.
Civil	Site	2	Drawing Legend	Civil	Site Dwgs
Electrical	Site	1	Design Guide	Electrical	Des. Guides

Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Electrical	Site	2	Drawing Legend	Electrical	1-Lines
Electrical	Site	3	Outline Specifications	Electrical	Outline Specs.
Fire Protection	Site	1	Fire Hazards Analysis	Fire Prot	Custom Anal.
Fire Protection	Site	1	Fire Protection System Analysis	Fire Prot	Select Anal.
Fire Protection	Site	20	Instrument Data Sheets	Fire Prot	Inst. Data
Fire Protection	Site	2	Drawing Legend	Fire Prot	P&IDs
Fire Protection	Site	1	Design Guide	Fire Prot	Des. Guides
Fire Protection	Site	2	Life Safety Code Analysis	Fire Prot	Custom Anal.
Fire Protection	Site	5	Outline Specifications	Fire Prot	Outline Specs.
HVAC	Site	1	HVAC System Analysis	HVAC	Select Anal.
HVAC	Site	2	Drawing Legend	HVAC	P&IDs
HVAC	Site	1	Design Guide	HVAC	Des. Guides
HVAC	Site	1	Energy Conservation Report	HVAC	Tech. Rpts.
HVAC	Site	8	Outline Specifications	HVAC	Outline Specs.
Mechanical	Site	1	Preliminary Equipment List	Mech	Lists
Mechanical	Site	40	Outline Specifications	Mech	Outline Specs.
Mechanical	Site	4	Mechanical System Analysis	Mech	Select Anal.
Mechanical	Site	2	Design Guide	Mech	Des. Guides
Nuclear	Site	1	Radiation Dose Assessment	Nuclear	Custom Anal.
Nuclear	Site	1	Design Guide	Nuclear	Des. Guides
Piping	Site	1	Design Guide	Piping	Des. Guides
Piping	Site	2	Piping Analysis	Piping	Select Anal.
Piping	Site	1	Line List	Piping	Lists
Piping	Site	2	Outline Specifications	Piping	Outline Specs.

Surface Facilities Operations Products for LA					
System	Building	# of Prod.	Product Description	Discipline	Description
Process	Site	2	Utility/Waste Summaries	Process	Anal. Input
Process	Site	1	Design Guide	Process	Des. Guides
Safeguards & security	Site	1	Design Guide	S&S	Des. Guides
Safeguards & security	Site	2	Outline Specifications	S&S	Outline Specs.
Structural	Site	1	Building Load Requirements/Codes	Structural	Custom Anal.
Structural	Site	2	Structural Analysis	Structural	Select Anal.
Structural	Site	1	Design Guide	Structural	Des. Guides
Management and Integration	Project	1	EIS Support	Mgmt.	Monmonths
Planning and Project Controls	Project	2	Planning for FY00 and beyond.	Mgmt.	Monmonths
Planning and Project Controls	Project	2	Re-evaluating Estimate to Complete	Mgmt.	Monmonths
Planning and Project Controls	Project	5	System Study Reports	Mgmt.	Tech. Rpts.
Planning and Project Controls	Project	2	Preparing input to Summary Docs.	Mgmt.	Doc. Input
Planning and Project Controls	Project	1	Supporting Oversight Activities	Mgmt.	Monmonths
Planning and Project Controls	Project	1	Supporting Systems Analyses	Mgmt.	Monmonths
Planning and Project Controls	Project	5	Preparing Input to other Syst. Docs.	Mgmt.	Doc. Input
Planning and Project Controls	Project	1	Interface activities	Mgmt.	Monmonths
Planning and Project Controls	Project	5	Review of external documents	Mgmt.	Monmonths
Regulatory Support	Project	1	Preparing Input to WDLA	Mgmt.	Doc. Input
Regulatory Support	Project	1	Supporting Review of WDLA	Mgmt.	Monmonths
Regulatory Support	Project	1	Preparing input to LA	Mgmt.	Doc. Input
EIS Support	Project	1	EIS Support	Mgmt.	Monmonths
Cost Estimating	Project	1	Completing 1999 PCE	Mgmt.	Monmonths
Cost Estimating	Project	1	Preparing input to TSLCC	Mgmt.	Monmonths



Surface Facilities Operations Products for LA					
	Building	# of	Product		
System		Prod.	Description	Discipline	Description
Internal Support	Project	1	Design Reviews	Mgmt.	Monmonths
Internal Support	Project	1	Training	Mgmt.	Monmonths
Internal Support	Project	1	Procedures review	Mgmt.	Monmonths
Internal Support	Project	1	Procedures writing	Mgmt.	Monmonths
Internal Support	Project	1	Support to State of Nevada permits	Mgmt.	Monmonths
Internal Support	Project	1	Generate Priced Equip. List for LCC Est.	Mgmt.	Monmonths
Internal Support	Project	1	Eval. of Heavy Haul Transp. Options	Mgmt.	Monmonths



### **10.3. WASTE PACKAGE OPERATIONS DESIGN PRODUCTS**

The design products and their level of completion for LA provided by Waste Package Operations are identified by system, followed by a detailed listing of the products.

In addition, the LA Design Products provided by Waste Package Operations include Engineered Materials Characteristics Reports, Waste Form Characteristics Reports, Topical Reports, and Process Models, which are not exclusively associated with any particular system or subsystem.

Waste Package Operations Design Products supporting LA, SSCs vs. Design Products, including Level of Completion.																				
* The SDDs are the responsibility of the Systems Engineering/Integration Office, with input from the individual engineering areas. See Section 10.4 for completion schedules.																				
System Designation	System SSC	Product	Bin	Safety Classification	General Arrangements	Requirement analysis	Criteria basis statement	SDD section 1 *	SDD section 2 *	SDD section 3 *	SDD section 4 *	Equip. Outlines Component Dwgs	Compliance Package	Quality Classif. of SSCs	Design Analysis/Calcs	P&ID / PFD	Electrical one lines	Control logic	Handling drawings	ITACS
WASTE PACKAGE OPERATIONS					LEVEL OF COMPLETION (A "level of completion" number in a matrix position indicates the product is produced in support of LA, at the indicated level of completion. An "X" indicates that the product is produced, but that the level of completion is N/A. See following tables for specific quantities of each product.)															
WP01		Uncanistered SNF Disposal Container	3	1,2		X	X	X	X			4	X	X	X					X
WP02		Canistered SNF Disposal Container	3	1,2		X	X	X	X			2	X	X	X					X
WP03		Defense HLW Disposal Container	3	1,2		X	X	X	X			4	X	X	X					X
WP06		Surplus Pu Disposal Container	3	1,2		X	X	X	X			2	X	X	X					X
WP09		Navy Fuel Disposal Container	3	1,2		X	X	X	X			4	X	X	X					X
WPxx		Ex-Container (waste package supports)	3	1,2		X	X	X	X			2	X	X	X					X
WPxx		DC Closure & Inspection	3	1,2		X	X	X	X			2	X	X	X					X

**Waste Package Operations  
License Application Design Products List**

	Apply to all Designs	Uncanistered SNF DC		Canistered SNF DC	Defense HLW DC	Navy Fuel DC	Surplus PU DC	Ex-Container (WP Supports)	DC Closure & Inspection
		PWR	BWR	Commercial Canistered Fuel (WESFLEX 44 BWR)	5-HLW/DOE SNF	Naval Fuel-Canistered-Long	Plutonium	Ex-Container Systems	DC Closure & Inspection
<b>Drawings</b>									
WP Basic View Drawing		4	4	1	2	1	2		
Barriers Assembly Drawing		2	2	1	1	1	1		
Fuel Basket Assembly Drawing		2	2	N/A	N/A	N/A	N/A		
Corrosion Allowance Barrier Subassembly Drawing		2	2	1	1	1	1		
Corrosion Resistant Barrier Subassembly Drawing		2	2	1	1	1	1		
Fuel Basket Subassembly Drawing		2	2	N/A	N/A	N/A	N/A		
Internal Structural Support Drawing		2	2	N/A	1	N/A	1		
Fuel Basket Plates Drawing		2	2	N/A	N/A	N/A	N/A		
Fuel Basket Tube Part Drawing		2	2	N/A	N/A	N/A	N/A		
Weld Drawing		4	4	2	2	2	2		
Welding Equipment Drawing									2
Nondestructive Examination Equipment Drawing									2
Inerting Equipment Drawing									2
Pier and Support Assembly Drawing								3	
<b>TOTAL</b>		<b>24</b>	<b>24</b>	<b>6</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>3</b>	<b>6</b>
<b>TOTAL DRAWINGS:</b>		<b>48</b>		<b>6</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>3</b>	<b>6</b>

**Waste Package Operations  
License Application Design Products List**

	Apply to all Designs	Uncanistered SNF DC	Canistered SNF DC	Defense HLW DC	Navy Fuel DC	Surplus PU DC	Ex- Container (WP Supports)	DC Closure & Inspection
	PWR	BWR	Commercial Canistered Fuel (WESFLEX 44 BWR)	5-HLW/DOE SNF	Naval Fuel- Canistered-Long	Plutonium	Ex-Container Systems	DC Closure & Inspection
ITAACs	2	2	1	1	1	1	1	1
Materials Selection Report	1							
Waste Package Degradation Process Models	1							
EBS Transport Process Models	1							
Waste Form Degradation Process Models	1							
Cladding Degradation Process Models	1							
Waste Form Characteristics Report Update	1							
Engineering Materials Characteristics Report Update	1							
Near Field Environmental Impacts Report	1							
MGR Waste Acceptance Criteria	1							
WP Design Data for EIS Documents	1							
Fabrication Methods Report	1							
Closure Weld Report	1							
<b>TOTAL</b>	<b>12</b>							
CRC & LCE Data Evaluation	1							
Neutronics Model Revision	1							
Chemical Assay Data Evaluation	1							
Burnup Credit Principal Isotope Report	1							

**Waste Package Operations  
License Application Design Products List**

		Uncanistered SNF DC		Canistered SNF DC	Defense HLW DC	Navy Fuel DC	Surplus PU DC	Ex- Container (WP Supports)	DC Closure & Inspection
	Apply to all Designs	PWR	BWR	Commercial Canistered Fuel (WESFLEX 44 BWR)	5-HLW/DOE SNF	Naval Fuel- Canistered-Long	Plutonium	Ex-Container Systems	DC Closure & Inspection
Cross Section Set Selection Report	1								
CRC Evaluation Results Report	1								
Isotopic Model Description Report	1								
Upper Safety Limit Report		2	2	1	1	1	1		
CRC Analysis Results Summary Report	1								
Isotopic Analysis Results Summary Report	1								
Degraded WP Criticality Evaluation Summary Report	1								
Criticality Consequence Model Report	1								
Criticality Methodology Topical Report (Post-Closure)	1								
Effective Cladding Thermal Conductivity Process Evaluation	1								
Yielding Surface, Structural Compliance of Slabs Evaluation	1								
3-Dimensional Thermal Performance Evaluation	1								
Waste Package Design Basis Events Evaluation	1								
Waste Form and Waste Package Internal Dryness Evaluation	1								
Pre-Closure Criticality Technical Report	1								
<b>TOTAL</b>	<b>18</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>			
<b>Analyses</b>									
Waste Package 2.4m Horizontal Drop Structural Analyses (with 45° and 90° Fuel Basket Assembly Orientations)		2	2	1	1	1	1		
Waste Package 2m Vertical Drop Structural Analyses		2	2	1	1	1	1		

**Waste Package Operations  
License Application Design Products List**

	Apply to all Designs	Uncanistered SNF DC		Canistered SNF DC	Defense HLW DC	Navy Fuel DC	Surplus PU DC	Ex-Container (WP Supports)	DC Closure & Inspection
		PWR	BWR	Commercial Canistered Fuel (WESFLEX 44 BWR)	5-HLW/DOE SNF	Naval Fuel-Canistered-Long	Plutonium	Ex-Container Systems	DC Closure & Inspection
Waste Package 30° and 60° Oblique Drop Structural Analyses		2	2	1	1	1	1		
Waste Package Tipover Structural Analyses		2	2	1	1	1	1		
Waste Package Drop onto Support or Pier Analyses		2	2	1	1	1	1		
Pressurized System Missile Hazards Analyses		2	2	1	1	1	1		
Thermal Stress Analyses (Fire in Disposal Container Cell)		2	2	1	1	1	1		
Transporter Runaway Analyses		2	2	1	1	1	1		
Waste Package Center of Gravity over Corner Drop Structural Analyses		2	2	1	1	1	1		
<b>TOTAL</b>		<b>18</b>	<b>18</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>		
Handling Equipment Drop onto Waste Package Analyses		2	2	1	1	1	1		
Seismic Analyses (before and after Emplacement)		2	2	1	1	1	1		
Welding Stress Analyses		2	2	1	1	1	1		
Waste Package Lifting Analyses		2	2	1	1	1	1		
Basket Assembly Buckling Analyses		2	2	1	1	1	1		
Rock Fall Analyses (through Time)		2	2	1	1	1	1		
Static Analyses (through Time, with and without Backfill)		2	2	1	1	1	1		
Thermal Expansion and Internal Pressure Analyses (through Time with and without Backfill)		2	2	1	1	1	1		
<b>TOTAL</b>		<b>16</b>	<b>16</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>		



Waste Package Operations License Application Design Products List									
	Apply to all Designs	Uncanistered SNF DC		Canistered SNF DC	Defense HLW DC	Navy Fuel DC	Surplus PU DC	Ex-Container (WP Supports)	DC Closure & Inspection
		PWR	BWR	Commercial Canistered Fuel (WESFLEX 44 BWR)	5-HLW/DOE SNF	Naval Fuel-Canistered-Long	Plutonium	Ex-Container Systems	DC Closure & Inspection
Waste Handling Analyses		2	2	1	1	1	1		
Packaging Analyses		2	2	1	1	1	1		
Transporting Analyses		2	2	1	1	1	1		
In Drift Analyses		2	2	1	1	1	1		
<b>TOTAL</b>		<b>8</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>		
Axial/Radial Profile Selection		30	12	6	N/A	N/A	N/A		
Intact Loading Curve		30	12	6	3	1	2		
Degraded Loading Curve		30	12	6	3	1	2		
<b>TOTAL</b>		<b>90</b>	<b>36</b>	<b>18</b>	<b>6</b>	<b>2</b>	<b>4</b>		
Source Term		2	2	1	1	N/A	1		
Dose		8	8	4	4	4	4		
<b>TOTAL</b>		<b>10</b>	<b>10</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>5</b>		
Welding Equipment Design Analyses									1
Inerting Equipment Design Analyses									1
Nondestructive Examination Equipment Design Analyses									1
Pier and Support Assembly Design Analyses								1	
<b>TOTAL ANALYSES</b>		<b>230</b>		<b>44</b>	<b>32</b>	<b>27</b>	<b>30</b>		

**Waste Package Operations  
License Application Design Products List**

	Apply to all Designs	Uncanistered SNF DC		Canistered SNF DC	Defense HLW DC	Navy Fuel DC	Surplus PU DC	Ex- Container (WP Supports)	DC Closure & Inspection
		PWR	BWR	Commercial Canistered Fuel (WESFLEX 44 BWR)	5-HLW/DOE SNF	Naval Fuel- Canistered-Long	Plutonium	Ex-Container Systems	DC Closure & Inspection
Requirements Analyses		3		3	3	3	3	3	3
Section 1		1		1	1	1	1	1	1
Section 2		1		1	1	1	1	1	1
Section 3		1		1	1	1	1	1	1
Section 4		1		1	1	1	1	1	1

#### **10.4. SYSTEMS ENGINEERING/INTEGRATION OFFICE DESIGN PRODUCTS**

The LA Design Products provided by the Systems Engineering and Integration Office include the SDD sections referred to in the previous lists; as well as MGR Concept of Operations, Facility Description Document, MGDS-RD, Controlled Project Assumptions, Physical and Functional ICDs, Topical Reports, Alternatives Evaluations and Supporting Documentation, DBEs, and Test and Evaluation Plans, which are not exclusively associated with any particular system or subsystem.

<b>Systems Engineering &amp; Integration Office Design Products</b> Completion dates are for scheduled initial release. Many products will be updated/revised in time to support the LA.	
<b>Design Product</b>	<b>Scheduled Completion</b>
<b>12122310M2 MGDS Functional Analysis Document</b>	
MGDS FAD Facility Design Description Document	04/06/00
<b>12122310M3 MGDS Concept of Operations Document</b>	
Complete MGDS Con Ops Doc. Update Final Phase II	05/19/99
<b>12122310M4 Design Requirements Development</b>	
MGDS RD Document Update for Final Phase II	05/28/99
Command and Control System Analysis Document	Completed
<b>12122310M5 CDA Development and Resolution</b>	
CDA Status Letter / Update #8 (CPA for LA)	12/14/99
<b>12132325M1 Test &amp; Evaluation Planning for LA</b>	
Draft LA T&EP	06/02/99
<b>12132310M6 Guidance Packages</b>	
Compliance Program Guidance Packages	03/31/98
<b>12132325Z2 Performance Confirmation Implementation</b>	
PC Process Evaluation Letter Report	01/14/00
<b>12152310M2 Rad Control Restricted Area Resolution Study</b>	
Restricted Area Requirements & Concepts	09/29/99
<b>12152310M4 Design Assumption Resolution</b>	
Evaluate Invert and Invert Additives Rpt	07/24/98
Emp Drift Wall Temp Criteria Report	Completed
HLW Disp. Container Lifetime & Release Rate Rpt	11/17/98
Eval Surface Temp Limits Report	Completed
Eval Cladding Performance	07/31/98
<b>12152310M7 LA Design Issue Resolution</b>	
LA Issue Report	09/30/99
<b>12152310M9 System Analysis Support to ICD Development</b>	
Issue Cask Envelope Evaluation Report	Completed
Shipping Cask Turnaround Thruput Evaluation Rpt	Completed
<b>12152315Z3 Final Thermal Management Decision Technical Report</b>	
Thermal Management Decision Tech Report	01/15/01
<b>12152395M4 Thermal Goals Evaluation</b>	
Evaluate Zeolite Criteria	11/02/99
WP Limits Report	03/29/00
Evaluate & Establish Limits on Uplift from Therm	03/29/00
<b>12162310M1 Interface Control Documentation Preparation</b>	
Complete DC to Surface Repository ICD	09/30/98
Complete Disposal to Sub. Repository ICD	Completed
Comp Trans. System to MGDS ICD	Completed
Complete Surface Repository to Subsurface ICD	09/30/98
<b>12162310Z2 Waste Acceptance Criteria Update/Maintenance</b>	
DIS Rev 2	07/30/99
<b>121A2310M1 DOE SNF to MGDS ICD</b>	
DOE SNF to MGDS Interface Control Document	Completed

<b>Systems Engineering &amp; Integration Office Design Products</b>		
Completion dates are for scheduled initial release. Many products will be updated/revised in time to support the LA.		
<b>Design Product</b>		<b>Scheduled Completion</b>
<b>121A2310M4 Phase II Criticality Analysis for AI-Cladding</b>		
Final Report		Completed
<b>Preclosure Radiological Safety</b>		
Design Basis Event Evaluations		
Preliminary Hazard Assessment (2 analyses)		06/01/01
External Design Basis Event Evaluations (20 analyses)		06/01/01
Internal Design Basis Event Evaluations (16 analyses)		06/01/01
SDD Interaction Evaluations (17 analyses)		06/01/01
Source Term and Release Basis for DBEs		06/01/01
DBE Frequency Data Base		06/01/01
Safety Classification of SDDs/SSCs		06/01/01
<b>Site Performance Protection (Repository DDE Program)</b>		
Subsurface Site Performance Protection Analysis		06/01/01
Surface Site Performance Protection Analysis		06/01/01
<b>Specialty Engineering</b>		
Human Factors Design Guide		06/01/99
Repository System Safety Analysis		06/01/01
Availability Analysis		06/01/01
Human Factors Tradeoff Studies		06/01/01
<b>SDDs</b>		
SS02	Ex-Container Systems	7/29/98
SS03	Ground Control System	Completed
SS05	Subsurface Ventilation System	Completed
SS17	Waste Emplacement System	Completed
SU10	Assembly Transfer System	7/29/98
SU11	Canister Transfer System	Completed
WP01	Uncanistered SNF Disposal Container	Completed
WP03	DHLW Disposal Container	Completed
SS14	Performance Confirmation Emplacement Drift Monitoring System	7/24/98
SS19	Subsurface Closure & Seal System	7/15/98
SU12	Waste Package Remediation System	7/27/98
WP02	Canistered SNF Disposal Container	Completed
WP04	DOE SNF Disposal Container	Completed
SS18	Backfill Emplacement System	9/18/98
SS21	Waste Retrieval System	8/12/98
SU13	Disposal Container Handling System	9/23/98
SS01	Subsurface Facility System	7/27/98
SS12	Subsurface Central Control System	8/25/98
WP07	Non-Fuel Components Disposal Container	8/31/98
WP09	Navy Fuel Disposal Container	8/31/98
SU02	Waste Handling Building System	9/15/98
SU05	Carrier Preparation Building System	9/29/98

### Systems Engineering & Integration Office Design Products

Completion dates are for scheduled initial release. Many products will be updated/revised in time to support the LA.

Design Product		Scheduled Completion
SU08	Carrier Preparation Building Materials Handling System	9/7/98
SU22	Waste Handling Building Ventilation System	9/23/98
SU37	Site-Generated Radiological Waste Handling System	9/18/98
SU04	Waste Treatment Building Facility	9/22/98
SU09	Carrier/Cask Handling System	8/31/98
SU24	Waste Treatment Building Ventilation System	9/23/98
SU52	Central Command & Control Operations System	9/29/98
SS10	Subsurface Safety and Monitoring System	9/28/98
SU40	Emergency Response System	9/25/98
SS06	Subsurface Electrical Distribution System	1/30/99
SS20	Subsurface Water Collection/Removal System	1/30/99
SS25	Subsurface Excavation System	1/30/99
SU18	Waste Handling Building Electrical System	1/30/99
SU29	Waste Handling Building Radiological Monitoring System	1/30/99
SU33	Waste Handling Building Fire Protection System	1/30/99
SU42	Site Communications System	1/30/99
SU43	Site Water System	1/30/99
SU55	Performance Confirmation Data Acquisition/Monitoring System	1/30/99
PA01	Performance Confirmation Waste Isolation Verification/Validation System	3/30/99
SS08	Subsurface Compressed Air System	3/30/99
SS09	Subsurface Water Distribution System	3/30/99
SS26	Subsurface Fire Suppression System	3/30/99
SU01	MGDS Site Layout	3/30/99
SU44	Site Electrical Power System	3/30/99
SU45	Site Compressed Air System	3/30/99
SU48	Security and Safeguards System	3/30/99
SU49	Surface Environmental Monitoring System	3/30/99
SU56	Pool System	3/30/99



## Department of Energy

Washington, DC 20585

QA: L

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#### CLARIFICATION OF ADDRESS AND TITLE FOR INCOMING CORRESPONDENCE AND MEETING NOTICES FOR OFFICE OF QUALITY ASSURANCE

Reference: Ltr, Horton to Distribution, dtd 7/10/98

Effective July 13, 1998, all correspondence and meeting notices that previously went to Donald G. Horton, Director, Office of Quality Assurance, should now be addressed to:

Robert W. Clark, Acting Director  
Office of Quality Assurance

Please make all the necessary corrections to ensure correct distribution. Also, when notifying me of a meeting by e-mail, please copy Chris Payne.

If you have any questions, contact Chris Payne at (702) 794-1306.

A handwritten signature in black ink, appearing to read "R.W. Clark", is positioned above the typed name.

Robert W. Clark, Acting Director  
Office of Quality Assurance

OQA:CLP-2453

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