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Revision 0

Sludge Treatment Project Phase 1 Sludge Storage Options

Assessment of T Plant Versus Alternate Storage Facility

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788


CH2MHILL
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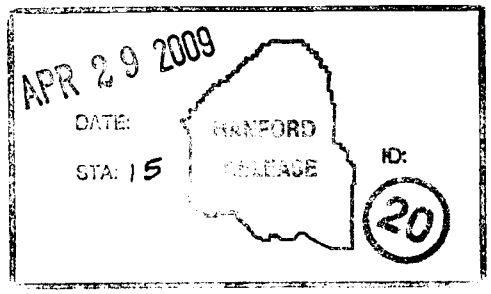

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Executive Summary

The CH2M HILL Plateau Remediation Company (CHPRC) has recommended to the U.S. Department of Energy (DOE) a two phase approach for removal and storage (Phase 1) and treatment and packaging for offsite shipment (Phase 2) of the sludge currently stored within the 105-K West Basin.[1] This two phased strategy enables early removal of sludge from the 105-K West Basin by 2015, allowing remediation of historical unplanned releases of waste and closure of the 100-K Area. In Phase 1, the sludge currently stored in the Engineered Containers and Settler Tanks within the 105-K West Basin will be transferred into sludge transport and storage containers (STSCs). The STSCs will be transported to an interim storage facility. In Phase 2, sludge will be processed (treated) to meet shipping and disposal requirements and the sludge will be packaged for final disposal at a geologic repository.

The purpose of this study is to evaluate two alternatives for interim Phase 1 storage of K Basin sludge. The cost, schedule, and risks for sludge storage at a newly-constructed Alternate Storage Facility (ASF) are compared to those at T Plant, which has been used previously for sludge storage.

Based on the results of the assessment, T Plant is recommended for Phase 1 interim storage of sludge. Key elements that support this recommendation are the following:

- T Plant has a proven process for storing sludge.
- T Plant storage can be implemented at a lower incremental cost than the ASF.
- T Plant storage has a more favorable schedule profile, which provides more float, than the ASF.

- **T Plant and a new Alternate Storage Facility (ASF) are evaluated for interim storage of K Basin sludge on the 200 Area Central Plateau**
- **Sludge storage at T Plant is recommended**
  - **T Plant sludge storage meets the 2015 Vision**
  - **T Plant sludge storage can be implemented sooner and at a lower incremental cost than ASF**
  - **K Basin sludge storage at T Plant is technically mature**
- **Recommendation assumes that T Plant has a durable, extended mission through 2025.**

Underpinning the recommendation of T Plant for sludge storage is the assumption that T Plant has a durable, extended mission independent of the K Basin sludge interim storage mission.

If this assumption cannot be validated and the operating costs of T Plant are borne by the Sludge Treatment Project, the conclusions and recommendations of this study would change. The

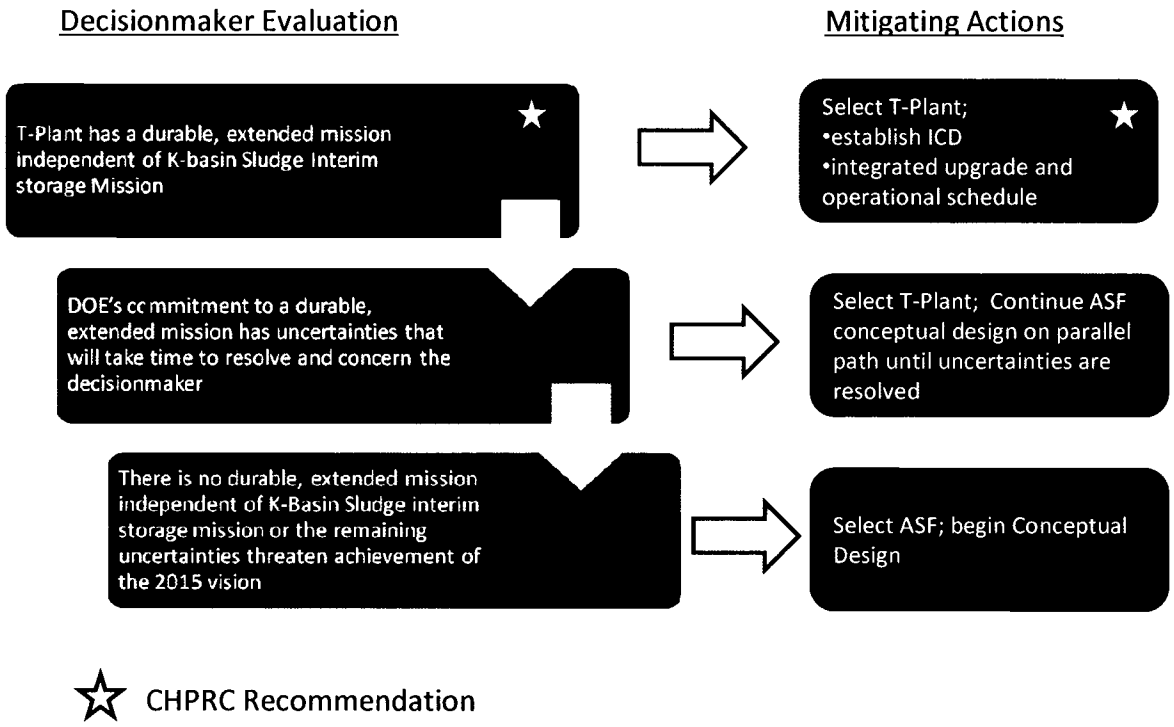
[1] HNF-39744 - Volume 1 and Volume 2, Revision 0, 2009, *Sludge Treatment Project Alternatives Analysis Summary Report*, CH2MHILL Plateau Remediation Company, Richland Washington.

following decision-making strategy, which is dependent on the confidence that DOE has in the long term mission for T Plant, is proposed:

- If the confidence level in a durable, extended T Plant mission independent of sludge storage is high, then the Sludge Treatment Project (STP) would continue to implement the path forward previously described in the Alternatives Report (HNF-39744). Risks to the sludge project can be minimized through the establishment of an Interface Control Document (ICD) defining agreed upon responsibilities for both the STP and T Plant Operations regarding the transfer and storage of sludge and ensuring that the T Plant upgrade and operational schedule is well integrated with the sludge storage activities.

- If the confidence level in a durable, extended T Plant mission independent of sludge storage is uncertain, then the ASF conceptual design should be pursued on a parallel path with preparation of T Plant for sludge storage until those uncertainties are resolved.

- Finally, if the confidence level in a durable, extended T Plant mission independent of sludge storage is low, then the ASF design should be selected to provide independence from the T Plant mission risk.



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Abbreviations and Acronyms

ALARA	As Low As Reasonably Achievable
ASF	Alternate Storage Facility
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHPRC	CH2M HILL Plateau Remediation Company
CORAMI	Constructability, Operability, Reliability, Availability, Maintainability, and Inspection
CSB	Canister Storage Building
CSER	Criticality Safety Evaluation Report
CTE	Critical Technology Element
D&D	Decontamination and Decommissioning
DOE	U. S. Department of Energy
EPC	Engineering, Procurement and Construction
FFTF	Fast Flux Test Facility
FY	Fiscal Year
HEPA	High Efficiency Particulate Air [filter]
ICD	Interface Control Document
IGS	Inert Gas System
ISA	Interim Storage Area
ISC	Interim Storage Cask
KE	105-K East [Basin]
KW	105-K West [Basin]
LDC	Large Diameter Container
LFL	Lower Flammability Limit
LLW	Low Level Waste
NEPA	National Environmental Policy Act
NLOP	North Load Out Pit (KE Basin)
PC	Performance Category
PCB	Poly-Chlorinated Biphenyl
RH	Remote Handled
RL	U.S. Department of Energy Richland Operations Office
ROD	Record of Decision
SDC	Seismic Design Category
STP	Sludge Treatment Project
STS	Sludge Transport System
STSC	Sludge Transport and Storage Container
RCRA	Resource Conservation and Recovery Act
TRL	Technology Readiness Level
TRU	Transuranic
TSCA	Toxic Substances Control Act
WBS	Work Breakdown Structure
W&FMP	Waste and Fuels Management Project

1.0 INTRODUCTION

The CH2M HILL Plateau Remediation Company (CHPRC) has recommended to the U.S. Department of Energy a two phase approach for removal and storage (Phase 1) and treatment and packaging for offsite shipment (Phase 2) of the sludge currently stored within the 105-K West Basin.[2] This two phased strategy enables early removal of sludge from the 105-K West Basin, allowing remediation of historical unplanned releases of waste and closure of the 100-K Area by 2015. In Phase 1, the sludge currently stored in the Engineered Containers and Settler Tanks within the 105-K West Basin will be transferred into sludge transport and storage containers (STSCs). The STSCs will be transported to an interim storage facility. In Phase 2, sludge will be processed (treated) to meet shipping and disposal requirements and the sludge will be packaged for final disposal at a geologic repository.

Two Options for Phase 1 Sludge Storage are Evaluated:

- **T Plant**

  T Plant has been used previously for sludge storage. The existing design forms the basis for the evaluation.

- **Alternate Storage Facility (ASF)**

  A pre-conceptual design was developed to provide the basis for the evaluation in this study.

The purpose of this study is to evaluate two alternatives for Phase 1 interim storage of K Basin sludge after its removal from the KW Basin:

- T Plant. T Plant has been used previously for sludge storage, and the existing design forms the basis for the concept evaluated in this assessment.

- Alternate Storage Facility (ASF). A pre-conceptual design was developed to provide the basis for the evaluation in this assessment.

The alternatives are assessed using previously defined selection criteria of safety, regulatory/stakeholder acceptance, technical maturity, operability and maintainability, and programmatic aspects (e.g., cost and schedule).[3]

This Phase 1 sludge storage options study provides the following:

- Key bases and assumptions used for this study are provided later in this section, with more detailed information provided in Appendix A.

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[2] HNF-39744 - Volume 1 and Volume 2, Revision 0, 2009, *Sludge Treatment Project Alternatives Analysis Summary Report*, CH2MHILL Plateau Remediation Company, Richland Washington.

[3] A21C-STP-WP-0002, *Sludge Treatment Project: Plan for Selecting the Preferred Alternative for Disposition of Engineered Container & Settler Tank Sludge from K Basins,* CH2MHILL Plateau Remediation Company, Richland Washington.

- The functions performed by the storage facility are described in Section 2.0; the performance characteristics developed for each of these functions are described in Appendix B.

- Overview descriptions of sludge storage concepts in T Plant and the ASF are included in Sections 3.0 and 4.0, with detailed descriptions provided in Appendices C and D.

- An assessment of Regulatory/ Environmental, Safety, and Safeguards and Security issues for the two alternative storage concepts are described in Sections 5.0 thru 7.0.

- A comparison of cost and schedule information for the alternative storage concepts are provided in Sections 8.0 and 9.0, with details provided in Appendices E and F.

- Risks and Assumptions are discussed in Section 10.0, and a more detailed risk table is provided in Appendix G.

- Assessment of Alternatives is found in Section 11.0.

- Recommendations for the sludge interim storage facility are provided in Section 12.0.

The *Sludge Treatment Project (STP) Alternative Analysis Summary Report* recommended Phase 1 storage of sludge at T Plant.

Additional evaluation of:

- **the suitability of T Plant**
- **an Alternate Storage Facility (ASF)**

were identified as risk mitigation actions.

1.1 BACKGROUND AND SCOPE

In a letter dated March 28, 2008 (08-AMPCP-0151), DOE-Richland Operations Office (RL) directed its contractor to "*...develop and provide, in accordance with DOE Order 413.3A and DOE Draft Standard 1189, a Critical Decision – 1 package that includes alternative analysis for removal of the sludge contained in the K West Basin Engineered Containers, settler tanks, and knock-out pots*".[4] The recommendation resulting from the alternatives analysis[5] was "*...to retrieve and transport sludge without oxidation, to T Plant, for interim storage until a new facility located in the 200 Area Central Plateau is constructed for sludge treatment and packaging.*" The *STP Alternatives Analysis Summary Report*, HNF-39744, describes the analyses performed, the selection process, and the final recommendation.

While evaluating the conclusions of the alternatives study, the CHPRC Decision Support Board considered the

[4] Later direction removed knock-out pots from the scope of the alternatives analysis.
[5] CHPRC-0900009, *Contract Number DE-AC06-08RL14788 – Sludge Treatment Project Alternatives Analysis Summary Report; Request for Concurrence with Recommendation and Path Forward Actions*, Letter J. G. Lehew, CHPRC, to J. C. Connerly, DOE-RL, dated January 26, 2009.

question "*Should the sludge be stored in T Plant or a newly constructed storage facility on the central plateau?*" The board concluded that "*The nuclear and environmental safety advantages of earlier removal of sludge from the river basin outweigh the uncertainty in T Plant suitability.*" and suggested that "*CHPRC and DOE should perform further evaluations of the suitability of T Plant early in the project schedule to further reduce risk.*"

The recommendations of the Decision Support Board were evaluated by the STP and the following risk mitigation action regarding the suitability of T Plant was identified by CHPRC (HNF-39744):

> *The STP will evaluate in parallel the feasibility and cost of a new interim storage facility while completing the evaluation of the suitability of T Plant.*

1.2 BASES AND ASSUMPTIONS

The following provides an overview of the bases and assumptions for sludge storage used in this assessment. A more detailed discussion of the sludge properties, container design, and transport equipment assumed for this study can be found in Appendix A.

Sludge removed from the 105-K East (KE) Basin floor and the 105-K West (KW) Basin floor has been consolidated and is currently stored under water within five Engineered Containers in the KW Basin. The Sludge Treatment Project will retrieve the sludge contained in the Settler Tanks into a sixth, currently empty, Engineered Container. The sludge will then be retrieved from all six Engineered Containers into sludge transport and storage containers (STSCs).

Each STSC is assumed to be shipped from the 105-K West Basin to the storage facility using a sludge transport system (STS) consisting of a cask and trailer that have previously been approved for onsite transport. Figure 1-1 shows the cask loaded on the trailer (i.e. STS) that is assumed to be used for transporting the STSC. Although the design of the STSC is currently under development, for the purposes of this study, the STSC is considered to be very similar to that of the Large Diameter Container ("LDC") that was used previously for loading, transport, and storage of the KE North Loadout Pit sludge (see HNF-6964 for LDC details). Figure 1-2 shows the pre-conceptual design for the STSC. The STSC is equipped with a filtered vent, rupture disk, water addition port, and a clean-out port for sludge removal in Phase 2. The STSC will have a design life of 30-years.

Figure 1-1. STS Cask and Trailer

Figure 1-2. Pre-Conceptual Design for STSC

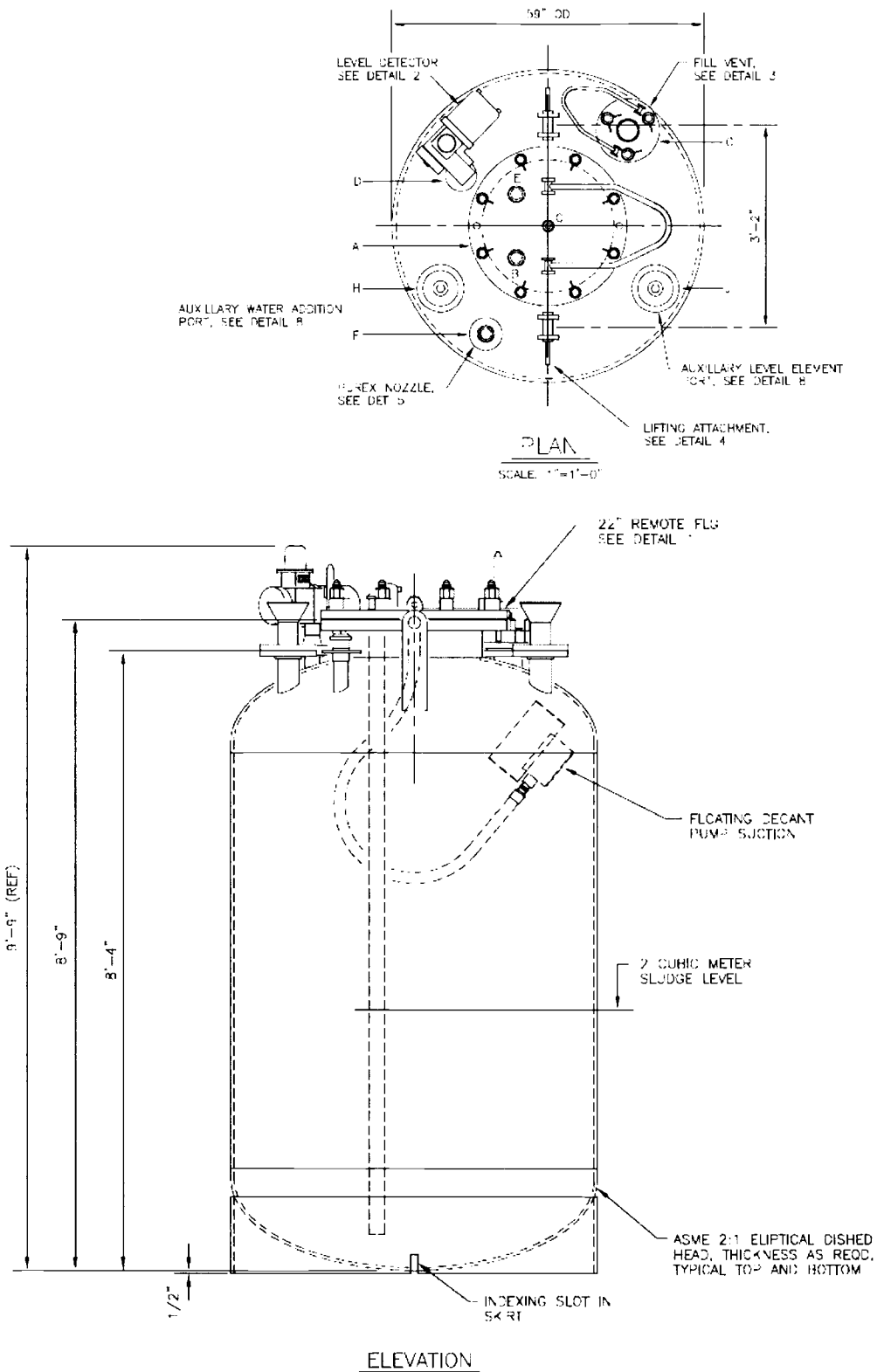


Table 1-1 provides the major assumptions used in this sludge storage assessment. This table is broken into three sections identifying the assumptions that are common to both options, the assumptions that are specific to T Plant, and the assumptions that are specific to the ASF.

The primary assumption underlying this assessment is that T Plant has an ongoing waste management mission through Fiscal Year (FY) 2025 that is independent of the sludge storage mission. If this assumption cannot be validated, the STP life cycle cost for storing sludge at T Plant would increase by more than $100 M.

Key Enabling Assumption

T Plant has an extended, durable waste management mission through FY 2025, independent of the K Basin sludge interim storage mission.

Table 1-1. Bases and Assumptions for the Sludge Storage Assessment

Assumption	Basis
Assumptions Common to T Plant and ASF	
The goal for sludge removal from KW Basin is December 31, 2014.	Project planning supports the DOE 2015 Vision for sludge removal from the River Corridor.
Sludge will remain in interim storage through 2025.	Preliminary project planning for the Phase 2 Sludge Treatment and Packaging Facility projects operations beginning in FY 2021 and completing in FY 2025.
The estimated number of STSCs requiring storage is 30.	The approximately 23.5 m^3 of K West Container sludge in engineered containers SCS-CON-210, -220, -240, -250, and -260 can be packaged into 12 STSC's assuming 2 m^3 per STSC based on past safety assessment (SNF-10823). The estimated 5.4 m^3 of Settler Tank sludge that is to be placed in engineered container SCS-CON-230 can be packaged into 18 STSC's assuming 0.3 m^3 per STSC based on past safety assessment (SNF-10823).
STSCs will be received at the interim storage facility at a rate of one STSC every 2 weeks.	Based on previous alternatives analysis sludge retrieval rate (HNF-39744).
Sludge properties are as described in the sludge data book (SD-SNF-TI-0015, Volume 2, *Sludge*).	The sludge databook provides project approved parameters and derived physical quantities to support development of the STP technical and safety baseline (e.g., shielding, thermal and gas generation, etc.).
Sludge Transport and Storage Containers (STSCs) physical dimensions are the same as the Large Diameter Containers (LDCs).	Current STSC design efforts are based on using the dimensions of the previous LDC to the maximum extent practicable in order to minimize modifications to the transport casks and T Plant.

Table 1-1. Bases and Assumptions for the Sludge Storage Assessment

Assumption	Basis
The STSC Transport Cask and Trailer is the same as that previously approved for the LDC transport.	Current STSC design efforts are based on using the dimensions of the previous LDC to the maximum extent practicable in order to minimize modifications to the transport casks and T Plant.
The STSC Transport Cask will require venting and purging upon receipt at the interim storage facility.	Conservatively based on the previously approved transportation safety requirements for shipping LDCs. Final need for vent and purge will be dependent on final STSC design, loading, and transportation safety requirements.
Safeguards will be terminated on the sludge prior to receipt into interim storage.	Current project baseline. Characterization sampling and analyses (planned or in progress) are required to terminate safeguards.
The storage facility will be a Safeguards & Security Category 3 Limited Area.	This represents a conservative approach to bound security features and cost. The final determination will be established by a vulnerability assessment.
The interim storage facility will be a Hazard Category 2 Nuclear Facility as defined by DOE-STD-1027.	Radionuclide content of sludge inventory to be stored forms the basis for the Hazard Category.
Assumptions Specific to T Plant	
T Plant has a mission through FY 2025, and W&FMP provides the upgrades, modifications, and maintenance required to support continued T Plant operations. No facility costs unrelated to the handling and storage of sludge are included in the STP life cycle cost assessment.	The current CHPRC planning basis for the W&FMP shows that T Plant has an ongoing waste management mission through FY 2025. The W&FMP base planning includes upgrades, modifications, and maintenance required to support continued T Plant operations.
Conceptual and preliminary design and technology development are not required to modify T Plant for sludge storage.	The design for sludge storage at T Plant is the same as that installed previously.
Equipment installed as part of the sludge interim storage mission will remain in T Plant once the interim storage mission is complete and will be dispositioned as part of the overall T Plant D&D. No D&D costs related to the handling and storage of sludge are included in the STP life cycle cost assessment.	A separate strip out and disposal of the sludge storage equipment is neither a realistic nor a cost effective approach to D&D given that the equipment is likely to be grouted in place with the rest of the old cell equipment and fixtures currently in T Plant.

Table 1-1. Bases and Assumptions for the Sludge Storage Assessment

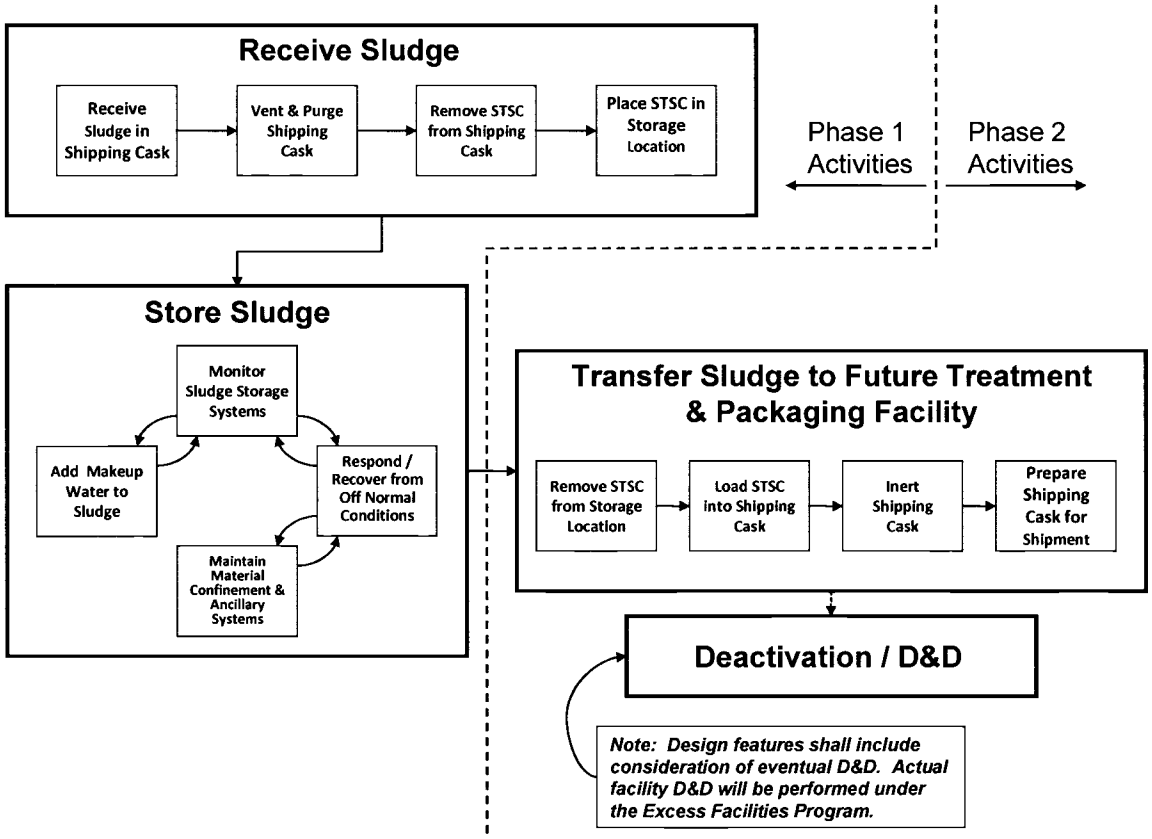
Assumption	Basis
Assumption Specific to the Alternate Storage Facility	
The storage concept at ASF is based on the caissons providing secondary confinement. No additional superstructure will be required.	The caisson is designed to provide secondary confinement and containment, and includes leak detection. This approach has been used successfully for the dry storage of spent fuel at Hanford and other DOE facilities.

2.0 INTERIM STORAGE FUNCTIONAL REQUIREMENTS

Four top-level functions describe the sludge interim storage mission. The primary scope of these functions is to provide interim storage of the K Basin Engineered Container and Settler sludge in a safe, economic, and environmentally sound manner. These functions and their subordinate mid-level functions are shown in Figure 2-1.

Each of the functions listed below are further defined in terms of the performance characteristics required to develop the initial concepts for interim sludge storage at either T Plant or the Alternate Storage Facility. A more detailed discussion of these performance characteristics can be found in Appendix B. Phase 1 activities are better understood and have been developed in greater detail than Phase 2 activities in this study. Phase 2 activities will be more fully defined after selection of the sludge treatment and packaging technology.

Figure 2-1. Top Level Functions for the Interim Storage of K Basins Sludge



3.0 OVERVIEW OF STORAGE CONCEPT FOR T PLANT

T Plant is a 60-year old canyon facility containing cells that have previously been modified and used for the storage of K Basin sludge. Although the radiological characteristics and uranium metal content of the container sludge and settler tank sludge proposed for storage in this study are higher than the sludge inventories considered in the earlier projects, the design for the handling and storage of container and settler tank sludge at T Plant remains unchanged.

The concept for interim storage of sludge at T Plant presented in this study is based upon the following two previous sludge storage projects at T Plant:

- **Storage of KE Basin Sludge in Large Diameter Containers (LDCs).** This project was responsible for the design and installation of systems to receive and store KE sludge[6] within designated T Plant canyon process cells. Facility modifications and installation of equipment were completed in 2003. In November 2003, however, DOE-RL provided direction to investigate alternate disposal options for K Basin sludge. Subsequently, one of the alternate disposal options proposed, transfer to and consolidation of the KE Basin sludge in Engineered Containers in the KW Basin for future treatment, was chosen. As a result of this change to the baseline, preparations for storage of sludge at T Plant were curtailed, and actual storage of the sludge in T Plant did not occur.

- **Storage and treatment of KE Basin North Loadout Pit [NLOP] sludge**. The KE NLOP sludge was chosen for early treatment because of its lower dose and lower concentration of uranium metal as compared to other K Basin sludge streams. In 2006, four LDCs of NLOP sludge were received and stored at T Plant in one of the cells that had been modified for sludge storage under the previous project. The sludge handling and storage systems functioned as designed.

Key T Plant Storage Features

- **Modifications completed, safety basis established, and procedures implemented previously for storing K Basin sludge at T Plant**
- **STSCs will be stored in six cells equipped with cell storage racks, secondary containment, leak detection, and sump pumps. Three of the cells are already modified for sludge storage.**
- **Expansion capability to accommodate additional STSCs if required**
- **Planned upgrades to T Plant crane and facility infrastructure to be funded by W&FMP to maintain canyon in safe and compliant, ready-to-serve condition**

[6] The KE Basin sludge inventory that was the basis for the design of the storage and handling system that was installed in T Plant currently represents ~80% of the Container Sludge inventory.

T Plant is managed and funded by Waste and Fuels Management Project (W&FMP). Baseline funding for T Plant is planned through Fiscal Year (FY) 2028, which encompasses the life cycle for sludge storage. The W&FMP planning includes an established preventive maintenance program and planned upgrades to the facility infrastructure, including the canyon crane, fire protection system, and ventilation system.

Sludge storage in T Plant is expected to have minimal impact on other T Plant activities. Once the sludge containers are placed into the designated cells, the only actions required during interim storage are those associated with periodic surveillance for leak detection, annual monitoring for water loss (and replenishment as required), and periodic crane usage to remove/replace cover blocks. Figure 3-1 shows two LDCs in a T Plant cell.

Figure 3-1. Large Diameter Containers of Sludge in T Plant Cell

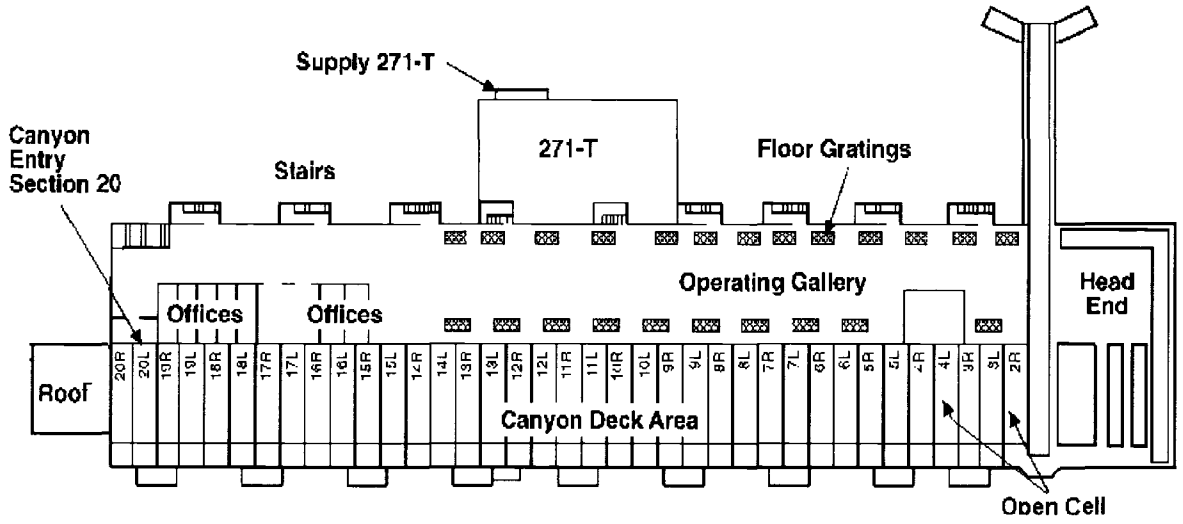
3.1 FACILITY DESCRIPTION

The 221-T building (T Plant) is made of reinforced concrete, 850 ft long by 68 ft wide by 74 ft high. The building consists of the canyon, pipe trench, ventilation tunnel, four galleries (operating, electrical, pipe, and crane), and a head end facility. The head end of the building is not used or affected by sludge storage activities. The upper portion of 221-T, from the canyon deck to the roof, is constructed of lightly reinforced concrete.

The canyon service area consists of 37 cells and one tunnel entrance/exit. The cells are grouped into 40 ft sections arranged in a single row running the length of the building. Each 40 ft section is numbered according to building section number and consists of a pair of cells, one designated

right (R) and one left (L). Several entry and exit doors are located throughout the canyon area. The main personnel canyon entry door is located in Section 20. Formerly serviced by rail and now principally a tractor access, the tunnel (150 ft long) enters the canyon at cell 2L through a motor-driven rolling steel door (16 ft wide by 24 ft high) providing access for transporting equipment into and out of the canyon. Figure 3-2 provides an overview and general arrangement of process cells at T Plant.

Figure 3-2. 221-T Overview and General Arrangement of Process Cells



Each process cell can store six STSCs in the storage rack, and provides secondary containment and leak detection capability. One of the six locations in the storage rack is modified for an Overpack, and is generally left open in case it is needed during operations. Therefore, six process cells are needed to accommodate the estimated 30 STSCs required for sludge storage. Cells 10L, 13L, and 15L already contain sludge storage equipment; [7] therefore, three additional cells will need to be cleaned out and modified to store additional STSCs. Likely candidates are cells 2R, 14R, and 16R.

The sections below provide an overview of the design for the receipt and storage of the sludge at T Plant. Appendix C provides a more detailed description of this design.

3.2 SLUDGE RECEIPT

The T Plant rail tunnel entrance at cell 2L (between the head end and cell 2R in Figure 3-2) provides access to the canyon. The tunnel is no longer used for rail cars and is now principally a motor vehicle access. The sludge transport system (STS), containing a single STSC from K Basins within a transportation cask, enters T Plant via the tunnel. Figure 3-3 shows a cross section (looking north) of the relative configuration of the transport cask and trailer staged in the tunnel, an empty STSC staged at the east end of the tunnel (ready to be loaded into the cask), and

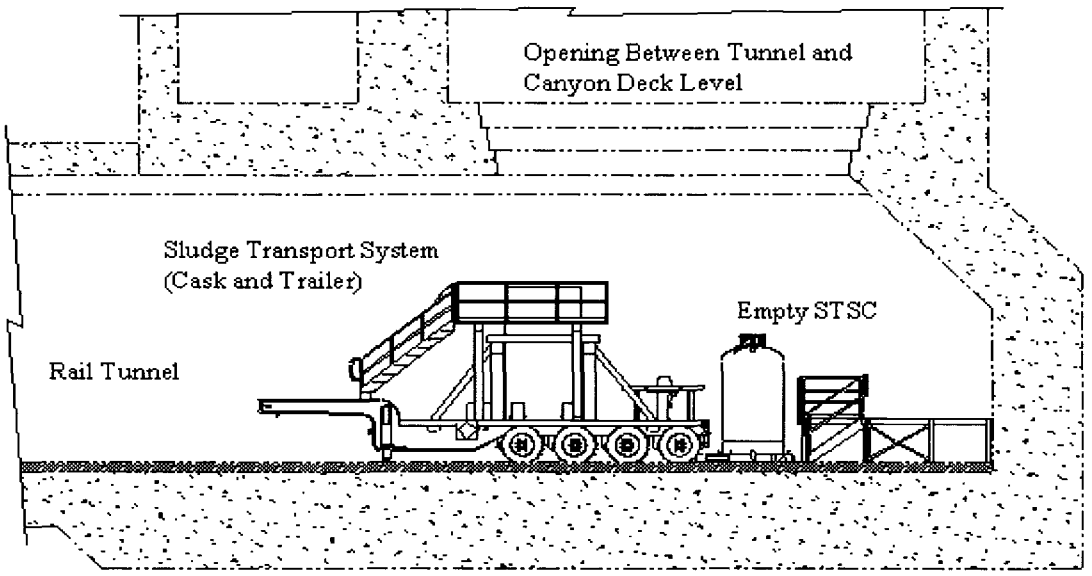
[7] Cell 3L has also been outfitted for sludge storage, but is access to this cell is currently blocked.

the tunnel-to-deck opening interface. The area chosen to stage the empty STSC was selected as a matter of convenience based on its relative proximity to the STS in the tunnel.

The sludge transport system (cask trailer) is staged at the east end of the tunnel and prepared for offloading the sludge container. Personnel manually vent the cask and purge using the inert gas system (IGS) prior to manual removal of the cask lid bolts to maintain an oxygen deficient atmosphere. Personnel then purge the sludge container with an inert gas to reduce the hydrogen concentration, thereby ensuring a flammable mixture does not exist within the container headspace prior to removal of the sludge container from the cask.

The cask lid lifting fixture is secured to the cask lid, the tunnel is posted as a high-radiation area, and facility personnel exit the tunnel. The canyon bridge crane removes the cask lid, offloads the sludge container from the cask, and places the sludge container into a designated storage cell location. High-radiation area postings are removed and personnel reenter the tunnel to support reloading the cask with an empty STSC and placement of the cask lid.

Figure 3-3. Cross Section of Tunnel with Sludge Transport Cask/Trailer and Empty STSC
(Looking North)



3.3 SLUDGE STORAGE

The storage cells are equipped with secondary containment for liquids and leak detection capability. Secondary containment consists of a freestanding liner equipped with a leveling base, and a storage rack. Each secondary containment system is equipped with a leak detection conductivity probe and sump pump. Any liquids leaking from an STSC are retained by the secondary containment and collected in the sump. The bottom of the secondary containment liner is shaped such that any leak will be directed to the sump. Each leak detector assembly is

electrically connected to separate local control panels located in the T Plant operating gallery where monitoring for leaks takes place. If a leak is detected, the leaking STSC is placed into an Overpack (staged in the sixth position in the cell) and the contents of the storage cell secondary containment sump are pumped back into the STSC.

Periodic monitoring (weighing the STSC to indicate mass loss) is performed to determine the water lost due to evaporation. An existing water addition system, comprised of a water container and storage rack, allows water to be added to the STSC as required. Water addition is a remote operation, which uses the canyon crane.

Treatment of the sludge at the interim storage facility is not specifically evaluated in this study. However, the current design does not preclude elevating the temperature of the sludge within the T Plant cells in order to accelerate oxidation of the uranium metal in the sludge. Treatment of sludge during storage will be evaluated as part of the Phase 2 technology selection process.

3.4 SLUDGE TRANSFER TO PHASE 2 TREATMENT AND PACKAGING FACILITY

Transfer of STSCs to the Treatment and Packaging Facility will employ the same remote handling equipment and basically the same process that was used for receipt of the STSCs (only in reverse order of operation). The STSCs will be removed from the canyon cells and placed into the STS cask using the canyon crane. The cask lid will be installed followed by backfilling the cask with inert gas. The STSCs will be transported from T Plant to the packaging facility using the STS and offloaded at the packaging facility similar to the way they were offloaded at T Plant.

3.5 DEACTIVATION / D&D

Equipment installed as part of the sludge interim storage mission will remain in T Plant once the interim storage mission is complete and will be dispositioned as part of the overall T Plant D&D. A separate strip out and disposal of the sludge storage equipment is neither a realistic nor a cost effective approach to D&D given that the equipment is likely to be grouted in place with the rest of the old cell equipment and fixtures currently in T Plant.

4.0 OVERVIEW OF CONCEPT FOR ALTERNATE STORAGE FACILITY

Key Alternative Storage Facility (ASF) Features

- **Outdoor concrete pad with capacity for storage of 30 STSCs in shielding storage caissons**
- **Expansion capability to accommodate additional STSCs if required**
- **Storage caissons provide secondary confinement features and leak detection**
- **Opportunity for co-location with future Treatment & Packaging Facility**

The Alternate Storage Facility (ASF) is proposed to store sludge-filled STSCs inside caissons placed on a roofless outdoor concrete storage pad. The storage pad is similar in design concept to the TMI2 NRC-licensed storage pad at the Idaho National Laboratory and the Interim Storage Area (ISA) pad near Hanford's Canister Storage Building (CSB) site. Both of these facilities are used to store dry spent nuclear fuel outdoors in specifically designed shielding containers. The primary difference between these two facilities and the ASF is that the material inside the STSCs is a wet sludge slurry rather than dry spent nuclear fuel.

Sludge-filled STSCs are transferred to the CSB area using the Sludge Transfer System (STS). Unloading of the STS cask takes place at the STSC storage pad through implementation of a trans-loading operation. Trans-loading is the withdrawal of an STSC from within the STS cask followed by immediate placement of the STSC into a storage caisson. The storage caisson is located at an assigned storage position on the pad prior to trans-loading. The empty caissons are positioned by a transfer carrier (e.g., forklift) or the gantry crane.

4.1 FACILITY LAYOUT

The preferred location for the ASF is at or near an existing Waste Management staffed facility in the Hanford 200 Area. For purposes of concept development, the proposed location is at the CSB area to the north of the main area roadway (generally across from the existing ISA), as shown on Figure 4-1.

The STSC pad is large enough to accommodate 30 STSCs in their shielding caissons. Based upon preliminary shielding calculations, the footprint for each caisson is a 9-ft diameter circle. Adequate space is available at the CSB area for any pad size expected to be required and the pad can be expanded to accept additional caissons, if necessary. A concrete pad is specified in order to facilitate all-weather operations.

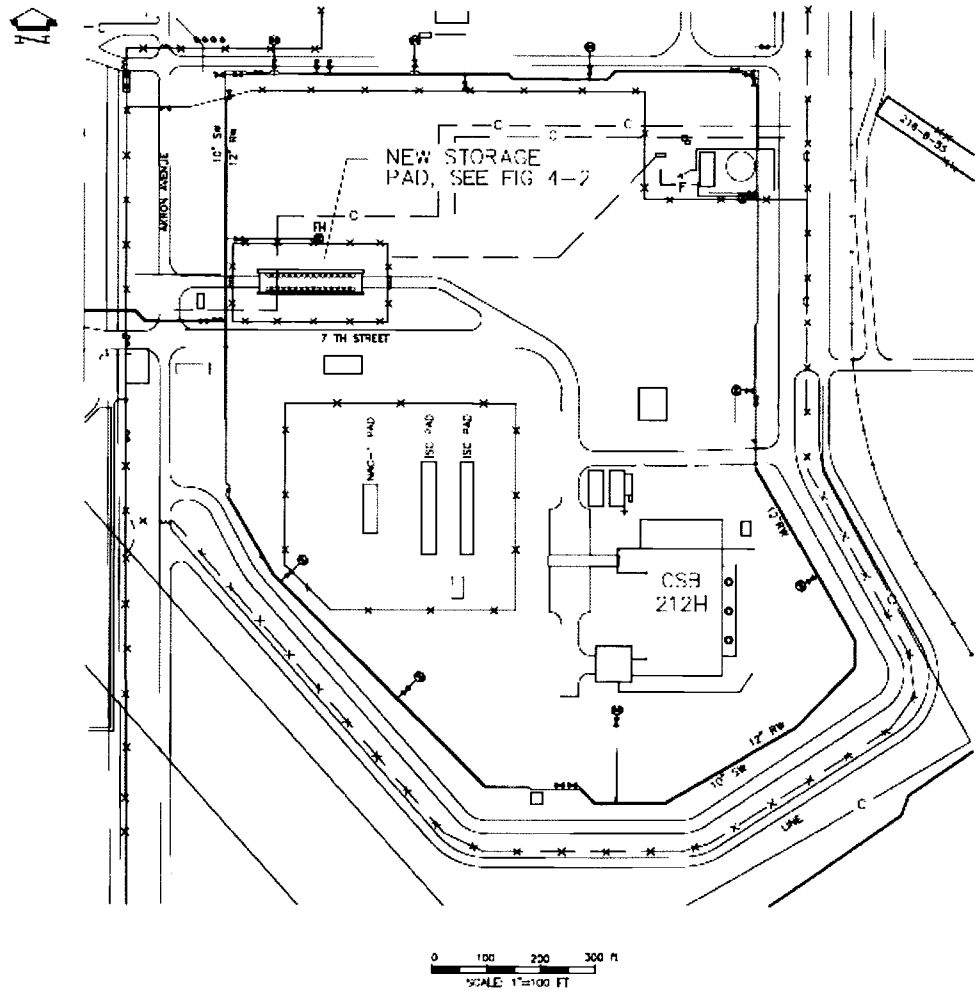
The ASF pad is laid out with two rows of storage caissons separated by a wide central passageway between them for transporter trans-loading using a rail-mounted gantry crane. The STSC pad itself is about 200-ft long, 50-ft wide and approximately one foot thick. The structural design for the pad is conceptually similar to the existing CSB area ISA pads used for the FFTF fuel storage in interim storage casks (ISCs). The ISA pads are seismically designed for FFTF-ISC storage; and design work completed for that project can be applied to the new STSC storage pad design as appropriate. Thick concrete driving surfaces are provided for transporter and

transfer vehicle (e.g., forklift) maneuvering. A gantry crane, maintenance, and parking area is located at one end of the pad; a forklift standby area is also needed near the STSC pad. The storage caissons provide shielding and secondary confinement features as well as the following systems:

- Water level monitoring
- Water addition system
- Sweep gas (air) system
- Leak detection system

Appendix D provides additional details of the storage pad features along with a description of operations and maintenance activities.

Figure 4-1. Canister Storage Building Area Map Showing Proposed ASF Pad



4.2 SLUDGE CONTAINER RECEIPT

Before leaving KW Basin, the STSC and STS cask are purged with an inert gas to reduce the oxygen concentration, thereby ensuring a flammable mixture does not exist within the container headspace before the sludge container is removed from the STS cask. The sludge transport system (STS), containing a single STSC bearing sludge from KW Basin, arrives at the storage pad via normal site roadways. The STS is staged at the pre-identified STSC trans-loading position on the pad. Upon arrival, the cask is vented and purged using the on-site inert gas system (IGS) prior to removing the cask lid bolts manually. The IGS is used during the sludge container offloading process to maintain an inert atmosphere until the cask is opened. The IGS discharges gas from the cask that is monitored for radioactive contamination by radiation control personnel.

After venting and monitoring the STS cask, the transporter is positioned at the shielded withdrawal location for STSC trans-loading. The cask lid is then removed and set aside. The shielding bell is put in place over the cask, and the lid-lifting fixture within the bell is secured to the STSC. Finally, identifying markings on the STSC are read using the remote camera in the shielding bell. The overhead gantry crane then retrieves the STSC from the STS by lifting it into the shielding bell. The shielding bell containing the STSC is moved into the proper position over the storage caisson location, and the STSC is lowered from the shielding bell into the caisson.

Once the STSC is in the caisson, the caisson lid is put back into place and secured. The caisson lid is physically indexed with the STSC to guarantee proper alignment of the water addition and level detection probe holes in the lid with corresponding holes in the STSC. After the lid is aligned and secured, the two probes are manually installed. At this point, caisson loading activities are complete. In preparation for the next shipment, an empty STSC is loaded into the STS for the return trip to the K Basin, and the STS cask lid is secured in place. Details of the process and location for decontamination of the STS cask, if required, will be further developed in later design phases.

4.3 SLUDGE CONTAINER STORAGE

Once stowed inside the caisson, the STSC is "in storage" until it is transferred to the Phase 2 Treatment and Packaging Facility at a future date. Figure 4-2 illustrates an STSC inside a storage caisson.

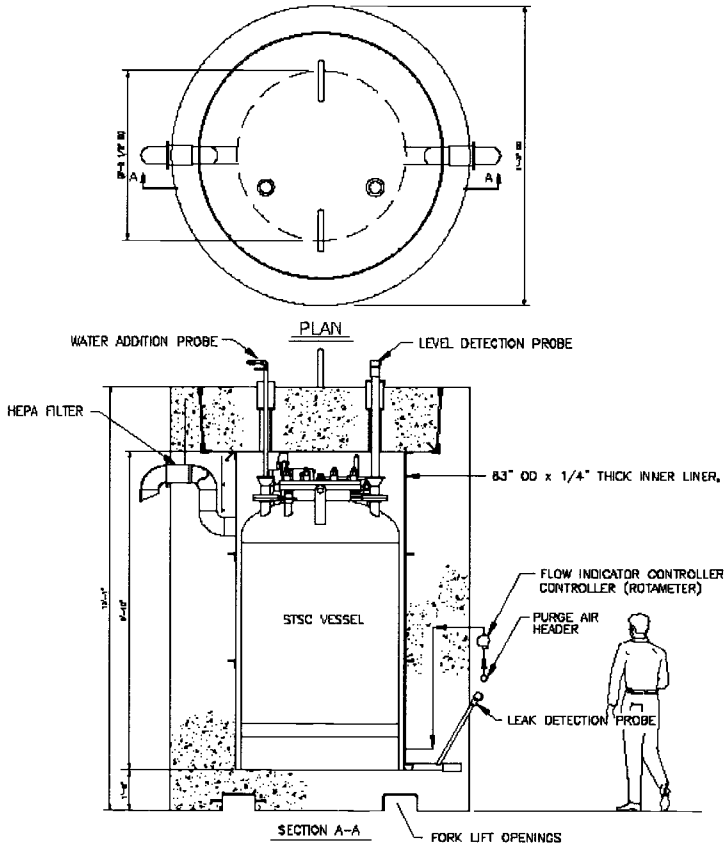
The caisson is instrumented for leak detection, and while in storage, each STSC is monitored for water loss. Because of internal heating and the use of a low-flow forced ventilation sweep gas system to prevent the accumulation of hydrogen, some water will be lost from each STSC over time. Exhaust from the caisson resulting from sweep gas operation is continuously and remotely monitored for contamination, which could indicate a leaking STSC. A water addition system is used to replenish lost water. Water above the sludge is maintained through periodic addition of controlled amounts of water in order to preserve the physical properties of the sludge while it is awaiting treatment.

Leaking from the stainless steel STSC is considered to be an unlikely event; however, a leak detection system is provided with each caisson. Development of a detailed recovery action for a leaking STSC will be included as part of the future design.

Treatment of the sludge at the interim storage facility is not specifically evaluated in this study. However, the current design does not preclude elevating the temperature of the sludge within the caissons in order to accelerate oxidation of the uranium metal in the sludge. Treatment of sludge during storage will be evaluated as part of the Phase 2 technology selection process.

Appendix D includes high level pre-conceptual design details for the Inert Gas System, the Water Addition System, Sweep Gas (Air) System, and major equipment. A step-by-step operational and maintenance description, including pertinent figures, is also provided in Appendix D.

Figure 4-2. STSC Storage Caisson



(Note that the standard 6' Person is shown to give a sense of relative sizes; no inference of personnel protective equipment requirements is intended.)

4.4 SLUDGE TRANSFER TO PHASE 2 TREATMENT AND PACKAGING FACILITY

Transfer of STSCs to the Treatment and Packaging Facility could employ the same remote handling equipment and basically the same process that was used for receipt of the STSCs (only in reverse order of operation).

If the location selected for the Phase 2 treatment facility is adjacent to the ASF, direct transfer of the storage caissons containing the STSCs from the ASF to the Treatment and Packaging Facility using either the rail mounted gantry crane traveling on a railway extension or the large capacity forklift is possible. Use of either the existing gantry crane or a forklift allows the transport of the STSC within its caisson. The STSC would not be removed from the caisson until it is inside of the receipt area of the future Treatment and Packaging Facility. Empty caissons are returned to the pad.

4.5 DEACTIVATION / D&D

Once all STSCs are removed from the ASF pad, disposition of the now empty caissons can begin. Caissons are expected to be non-contaminated and disposable as non-radioactive waste. If a caisson must be decontaminated prior to discard, such a caisson will most likely need to be treated as low activity waste. The ASF pad itself is reinforced concrete and can be sectioned and removed to the burial ground or buried in place. Other equipment associated with the ASF, such as the gantry crane and the large capacity forklift are surplus after their use in D&D is complete. The ASF is expected to remain a non-contaminated facility; this allows for the performance of Deactivation / D&D activities independent of future packaging operations, if desired. The ASF pad could also be used for the storage of future wastes after the STSCs are removed.

5.0 REGULATORY / ENVIRONMENTAL COMPLIANCE

The recommended regulatory pathways and principal documentation needed to implement sludge storage at either T Plant or the ASF are well summarized in Section 9.0 of Volume 2 of the *STP Alternatives Analysis Summary Report* (HNF-39744). That report includes a qualitative assessment of the ease / difficulty of preparing requisite environmental documents and the identification of issues that might create difficulties with regulatory agencies and stakeholder acceptance. Strategies for compliance with the following regulations are addressed in HNF-39744:

- Comprehensive Environmental response, Compensation, and Liability Act (CERCLA)
- CERCLA Record of Decision (ROD) (EPA/ROD/R10-99/059) and ROD Amendment (EPA/ROD/R10-99/059 Amendment) describing the selected remedy for the K Basins spent nuclear fuel, sludge, debris and water.
- National Environmental Policy Act (NEPA)
- Resource Conservation and Recovery Act (RCRA)
- Toxic Substances Control Act (TSCA)

If sludge storage occurs at the ASF, the CERCLA documentation listed above will include the substantive requirements of any required air permitting. If sludge storage occurs at T Plant, the existing Notice of Construction for the facility stack may require minor revision and concurrence with regulators at the Washington Departments of Health and Ecology.

In addition, one or both of the following Hanford compliance reviews may be needed prior to any construction activities at T Plant or the ASF (see HNF-RD-15332):

- Hanford Cultural Resource Compliance Review
- Ecological Compliance Resources Review

6.0 SAFETY

The storage alternatives working group met with subject matter experts in the areas of nuclear safety, radiation control, and fire protection in order to understand key design requirements, to discuss potential approaches for compliance with those requirements, and to identify uncertainties and risks. This section summarizes these discussions.

6.1 NUCLEAR SAFETY

Safety analysis has previously been performed, documented, and approved for large diameter containers of sludge at T Plant (HNF-6527, *Hazard Evaluation for Storage of Spent Nuclear Fuel Sludge at the Solid Waste Treatment Facility*, and HNF-6964, *Safety Assessment for the Storage of K Basins Sludge at T Plant*). The range of unmitigated accidents for T Plant appears inclusive and bounding for potential accidents at the ASF given the pre-conceptual design definition for the ASF.

No new or unique nuclear safety issues that would preclude sludge storage at either T Plant or the ASF are identified. For both sludge storage locations, the nuclear safety hazards consist primarily of deflagration, over pressurization, load drop/spills, container transport/vehicle fire, and direct dose. For the ASF storage pad, missile hazards need to be considered as well. Risks are primarily related to the uranium metal reaction and hydrogen production rate.

6.2 SEISMIC ANALYSIS

Seismic analysis will be performed for the storage of sludge at either facility.

6.2.1 T Plant

The Alternative Study (HNF-39744) identifies potential seismic issues with the existing T Plant facility, specifically the canyon roof. As part of this storage option assessment, a preliminary evaluation was performed to determine the seismic design requirements for storage of K Basin container and settler sludge in containers in T Plant. This evaluation (KBC-40114, *Preliminary Seismic Categorization of T Plant for Storage of K Basin Sludge Containers*) uses historic hazards and safety basis documentation to estimate the potential seismic failures, then analyzes the consequences to determine the performance category (PC) and seismic design category (SDC) in accordance with STP-DI-08-009, *Seismic Classification.*

Based on historic hazards and accident analyses for T Plant that were part of a previously approved safety basis (HNF-6964), a bounding unmitigated accident was defined. That accident is the assumed collapse of the structure and impact to all of the stored sludge. The current sludge inventory and characteristics (HNF-SD-SNF-TI-015, Volume 2) were used, and the consequences were calculated using HNF-8739, *Hanford Safety Analysis and Risk Assessment Handbook (SARAH),* methods, with and without application of DOE-STD-1189 onsite

dispersion. The conclusion is that the T Plant seismic requirements should be based on SDC-2 or PC-2 for storage of STSCs within normally covered cells (KBC-40114).

The T Plant has been previously analyzed to PC-2 (HNF-6033, *Seismic Evaluation of the T Plant 221-T Building for Interim Storage of K Basins Sludge, 200 West Area, Hanford Site*) and SDC-2 (HNF-36856, *T-Plant Seismic Screening Analysis for Project W-591 Solid Waste Processing Center, M-91 Solid Waste Processing Facilities Project*); therefore, no upgrades to the T Plant canyon roof are expected to be needed to support the sludge storage mission. As sludge characterization information becomes available, this conclusion will be revaluated.

6.2.2 ASF

The ASF will be designed to meet current seismic criteria.

6.3 THERMAL/GAS ANALYSES

Analysis of the thermal stability / gas generation potential of the sludge during handling and storage is needed to underpin the design and safety analysis for the sludge storage location selected.

6.3.1 T Plant

For T Plant, the previous thermal/gas analyses will be updated to reflect the KW container and settler sludge streams. Existing analyses, which focus on the KE container sludge, include the following:

- HNF-10858, *Thermal Analysis for T Plant Process Cell Freeze Potential and Over Filled Large Diameter Containers*
- HNF-12563, *Accident and Thermal Analysis for Storing K East Basin Sludge at T Plant*
- SNF-18135, *Design Calculations for Gas Flow and Diffusion Behavior in the Large Diameter Container and Cask.*

Initial thermal and gas analyses for KW container and settler sludge storage at T Plant (KBC-41004, *Sludge Treatment Project Sludge Thermal & Gas Analysis Guidance*) have concluded that flammable conditions in the STSC headspace and storage cell do not occur with the loss of active ventilation (i.e., the T Plant confinement ventilation system does not need to be relied upon to maintain hydrogen concentrations below the lower flammability limit (LFL)).

6.3.2 ASF

The preliminary thermal and gas calculations done for the STSC (KBC-41004) show easily achievable ventilation rates will preclude hydrogen gas buildup from reaching the LFL. The design of the ASF includes active ventilation to meet these requirements.

6.4 CRITICALITY

Previous incredibility analyses for both the container and settler sludge demonstrate that handling and storage of sludge are inherently safe with respect to criticality.

- Criticality Safety Evaluation Report (CSER) 01-0002 (HNF-8513) assumes more than 2000 kg of 0.95% enriched metal was present in the KE sludge packaged in a single LDC. (This amount of metal is greater than the metal estimated to be present in all of the container and settler sludge.) This CSER examines various packing fractions and concluded that all arrangements remained sub-critical. As a result of this evaluation, no criticality controls were required for KE sludge.

- CSER 06-002 (HNF-29029) documented the incredibility analysis for retrieval, transport, and treatment of all sludge streams. This evaluation concluded that no criticality controls were required for either container or settler sludge.

A CSER specifically addressing the storage of the container and settler sludges at a storage facility needs to be prepared. However, based on the results of the previous evaluations listed above, no design or administrative requirements necessary for criticality prevention are expected for sludge storage at either T Plant or the ASF.

6.5 RADCON/ALARA

The doses associated with the two sludge storage alternatives are similar because the same amount (curies) of sludge material is being handled and transported. There are no radiological indicators of significance that demonstrate a preference for either storage option. Regardless of which design concept is selected, a formal ALARA/design review will be conducted to meet the requirements outlined for design in 10 CFR 835, *Occupational Radiation Protection.*

6.6 FIRE PROTECTION

6.6.1 T Plant

Storage of sludge in the T Plant cells does not require additional upgrades to the fire protection systems within the canyon. Installation of a new looped sanitary water system, which consists of approximately 5,600 ft of 12-inch pipe and four new fire hydrants, is expected to be completed by the facility prior to the storage of sludge at the facility.

6.6.2 ASF

The ASF design concept complies with applicable fire protection requirements. No fire protection issues have been identified.

7.0 SAFEGUARDS AND SECURITY

It is assumed that safeguards for the sludge will be terminated prior to leaving the KW Basin; this will happen as soon as "measured values" are obtained from the ongoing characterization campaign.

A Vulnerability Assessment will be required for the storage facility regardless of location. This assessment will result in the classification of the facility and will identify the physical security required. For the purposes of this study, it is conservatively assumed that the storage facility will be a Category 3 Limited Area.

8.0 COST ESTIMATE

The costs associated with sludge storage at T Plant and the ASF are summarized in Table 8-1. Both cost estimates assume K Basin sludge is stored through September 2025, based on completion of the Phase 2 sludge treatment operations. Per discussions with Waste and Fuels Management Project (W&FMP) management, this study assumes that the T Plant facility remains operational and is baseline funded through Fiscal Year (FY) 2025. That is, the costs shown for T Plant are incremental costs associated with sludge handling and storage only; no allocation of the fixed operations costs were used in this comparison.[8]

The costs in Table 8-1 are applicable only for comparison between the two concepts and are not representative of baseline project costs. The methodology, scope and basis for these cost estimates are included in Appendix E.

Table 8-1. Summary Cost Estimates for K Basin Sludge Storage Concepts

Cost Breakdown	Estimated Cost in Millions	
	T Plant[1]	Alternate Storage Facility[2]
Engineering, Procurement, Construction (EPC)	$11 Class 3 Range: $9 to $14	$23 Class 4 Range: $19 to $37
Operations	$3	$2
D&D	$0	$3
Total Life Cycle	$14 Range: $12 to $17	$28 Range: $21 to $39

[1] Due to the maturity of the design for the cell modifications, the T Plant estimate is a Class 3 estimate per the Association for the Advancement of Cost Engineering (AACE) International definitions. A Class 3 estimate has an expected accuracy range from a minus 20% to a plus 30% and is applied to the EPC costs only.

[2] Due to the pre-conceptual nature of its design, the ASF estimate is a Class 4 estimate per the AACE International definitions. A Class 4 estimate has an expected accuracy range from a minus 30% to a plus 50%, and is applied to the EPC costs only.

As shown in Table 8-2, the annual expenditures in the early years of the project are greater for the ASF compared to T Plant. Note that the costs for the Alternate Storage Facility in FY 2026 are for D&D of the facility. Both alternatives have the same operational duration.

[8] It is recognized that T Plant will have a base operations cost in excess of $ 100M during the 10 year storage interval (2015 – 2025) used in the study. Because T Plant is assumed to have a durable, extended waste management mission independent of sludge storage, these costs are not included in the STP life cycle costs.

Table 8-2. Cost Comparison by Fiscal Year

(in Millions of Dollars)

Fiscal Year	T Plant	Alternate Storage Facility
FY 2010	0.6	3.1
FY 2011	2.3	3.3
FY 2012	5.2	6.4
FY 2013	2.8	8.9
FY 2014	1.4	1.0
FY 2015	0.1	0.5
FY 2016	0.1	0.1
FY 2017	0.1	0.1
FY 2018	0.1	0.1
FY 2019	0.1	0.1
FY 2020	0.1	0.1
FY 2021	0.1	0.1
FY 2022	0.1	0.1
FY 2023	0.1	0.1
FY 2024	0.1	0.1
FY 2025	0.3	0.5
FY 2026	---	2.6
Total	**13.7**	**27.7**

Table 8-3 provides the cost comparison of the WBS elements for the life cycle costs for T Plant and the ASF. Due to the mature design and the previous cell modifications at T Plant, no costs were included for technology development, conceptual design, and preliminary engineering design. Equipment installed as part of the sludge storage mission will remain in T Plant and will be deactivated and decommissioned with the rest of the T Plant Facility; therefore, no costs for D&D are shown in the WBS Level 3 Comparison.[9]

For ASF, the actual procurement and construction costs for the caissons, pad and ancillary equipment accounts for about 20% of the life-cycle costs. The majority of the costs are related to the project management, safety documentation, design effort and a conservative technology development estimate for the caisson instrumentation.

[9] If the sludge storage equipment were to be stripped from T Plant as a separate incremental D&D activity, the strip-out and disposal costs would be approximately $3 M. However, a separate strip-out of the sludge storage equipment is neither a realistic or cost effective approach given that the equipment is likely to be grouted in place with the rest of the old cell equipment and fixtures currently in T Plant.

Table 8-3. Cost Comparison by Work Breakdown Structure (Level 3)

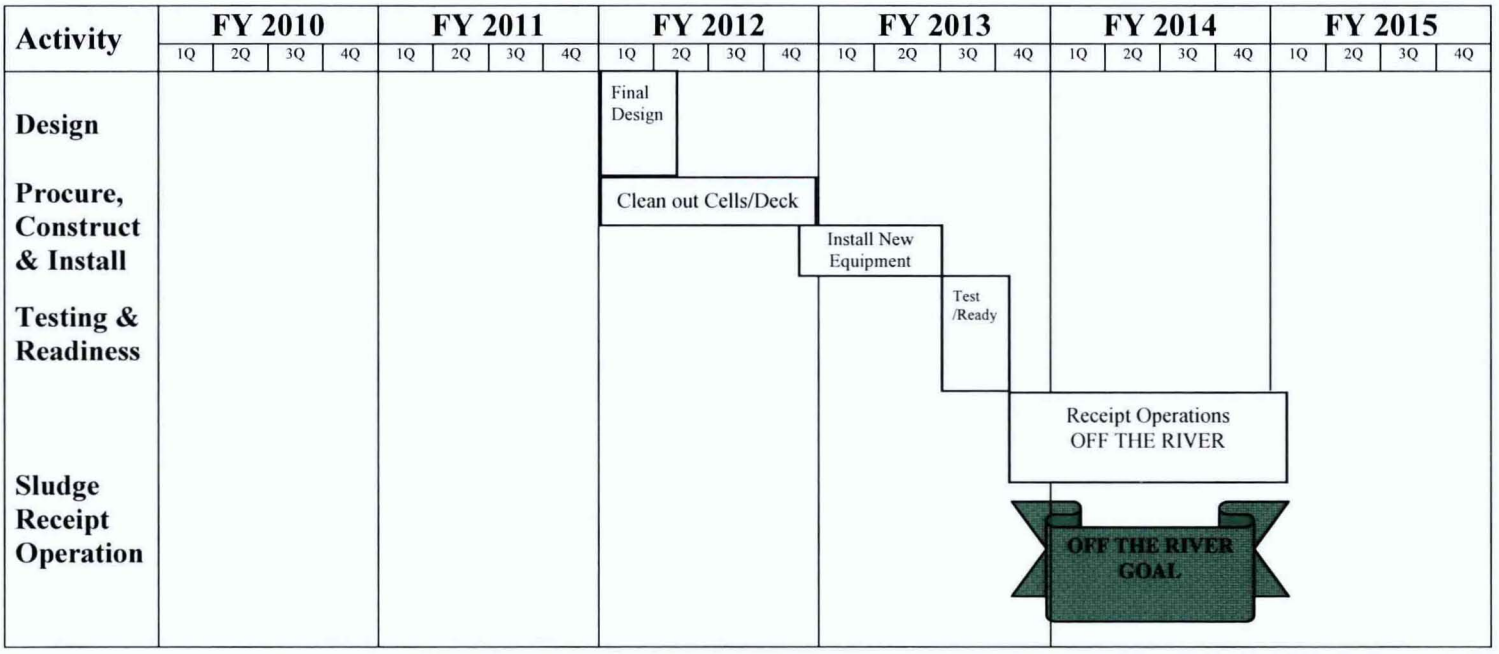
(In Millions of Dollars)

WBS Level 3	WBS Description	T Plant	Alternate Storage Facility
.01.01	Project Management	1.3	1.9
.01.02	Construction Management	2.0	1.7
.02.01	Project/Facility Support	0.7	0.8
.03.01	Environmental Documentation	0.4	0.4
.03.03	Waste Acceptance	0.0	0.1
.04.01	Nuclear Safety	0.8	1.8
.05.01	Radiological Control	0.1	0.1
.06.01	Industrial Safety	0.1	0.1
.07.01	Quality Assurance	0.1	0.1
.08.01	Safeguards & Security	0.0	0.1
.09.01	Technology Development	---	3.8
.10.01	Conceptual Design	---	0.5
.11.01	Preliminary Design	---	0.8
.12.01	Final Design	0.2	1.6
.13.01	Engineering During Construction	0.1	1.1
.14.01	Procurement Support	0.1	0.2
.14.02	Equipment Procurement	0.5	1.9
.15.01	New Construction - Storage Pad	---	2.1
.15.03	Building Modifications	3.2	---
.16.01	CORAMI Evaluation	0.0	0.0
.16.02	Procedure Development	0.0	0.0
.16.03	Readiness Activities/Planning	0.1	0.1
.16.04	System Tests	0.2	0.1
.16.05	Startup	0.1	0.1
.17.01	Contingency	0.9	3.4
.18.01	Operations	1.1	0.4
.18.02	Maintenance	1.7	1.5
.19.01	Deactivation & Decommissioning	---	0.9
.19.02	Demolition	---	0.7
.19.03	Site Restoration	---	0.1
.19.04	Contractor Staff & Office	---	1.3
	Total	**13.7**	**27.7**

9.0 IMPLEMENTATION SCHEDULE

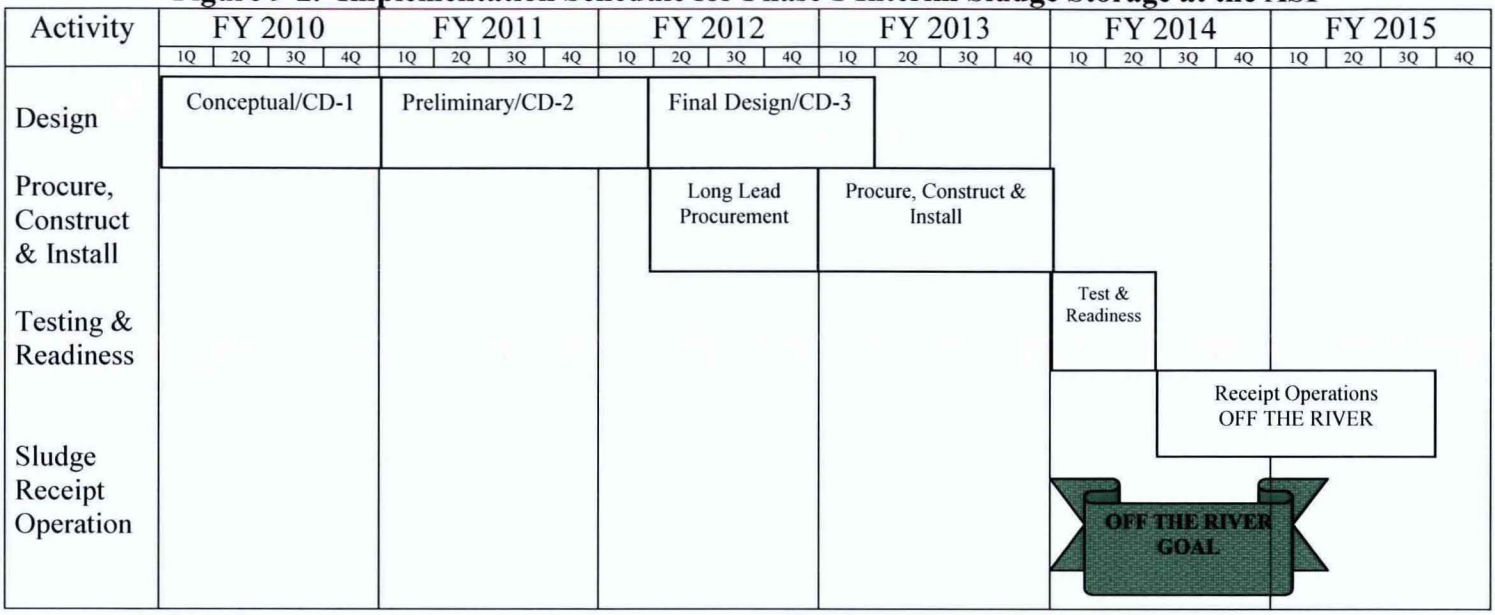
Summaries of the Phase 1 schedule (removal of the sludge from the basin and interim storage) for T Plant and ASF are shown in Figures 9-1 and 9-2, respectively, and include the current goal for removing the sludge from the River. It should be noted that these schedules were developed for comparative purposes and do not represent the project baseline schedule. More detailed schedules for sludge storage at T Plant and the ASF can be found in Appendix F.

Figure 9-1. Implementation Schedule for Phase 1 Sludge Storage at T Plant



As shown in Figure 9-1, the upgrades at T Plant can be implemented on a schedule that will meet the current goal for removal of the sludge from the river corridor. T Plant upgrades do not require additional conceptual or preliminary design, since previous efforts to store sludge have already produced a design suitable for use. This previous work provides a strong basis for the planning for the final design and necessary procurement and construction work. Additionally, the modifications to T Plant can be started at a later date and still meet the project schedule.

Figure 9-2. Implementation Schedule for Phase 1 Interim Sludge Storage at the ASF



The preliminary schedule developed for the ASF shown in Figure 9-2 has a more extensive design schedule due to its pre-conceptual nature and compliance with the requirements of DOE 413.3A and DOE Standard 1189. This schedule indicates that ASF would remove the sludge from the River within 6 months of the current goal.

This schedule estimate was developed for comparative purposes and should not be considered a baseline schedule. The baseline schedule will be developed as the design matures.

10.0 PRELIMINARY RISK ASSESSMENT

The alternatives working group performed a preliminary risk assessment for sludge storage at both T Plant and the ASF in accordance with the CHPRC risk assessment process. All of the risks were determined to have a risk level of Low or Moderate; none of the risks preclude sludge storage at either facility. Results of the preliminary assessment are summarized below, and the completed risk table developed by the working group is presented in Appendix G.

Key Risks

T Plant

- **A change that reduces or eliminates the durable, extended waste management mission could significantly increase the project costs for sludge storage.**

ASF

- **All the risks were deemed to be Low, with the potential need for a confinement structure having the greatest cost and schedule impact.**

10.1 RISK COMMON TO BOTH STORAGE OPTIONS

The probability of having the number of sludge containers exceed the baseline assumptions of 30 is considered to be medium. (See Appendix G, risk numbers T-02 and ASF-02.)

- Because the baseline design calls for using six cells at T Plant, sufficient capacity is available to accommodate an additional 5 STSCs. The cost to clean and outfit an additional cell to accommodate up to six additional STSCs is estimated to be $2 M. Therefore, the overall risk level for the T Plant option is considered to be Low.

- The estimated cost associated with the extra caissons and expansion of the storage pad to accommodate 10 additional STSCs at the ASF is $2 M. Therefore, the overall risk level for the ASF option is also considered to be Low.

10.2 T PLANT RISKS

A change in the conclusions of the seismic evaluation or changes in DOE's risk acceptance criteria could drive costly upgrades to the canyon roof. As discussed in Section 6.2, the probability of this outcome is considered to be low based on preliminary hazards assessment. If modifications to the existing roof are required, the rough order of magnitude cost is estimated to be significant at $10 M. The overall risk level is considered to be Low. (See Appendix G, risk T-01.)

Another identified risk is that system failures at T Plant, due to age of the facility, will impact the ability to support sludge receipt, monitoring, storage, and/or transfer activities. The maintenance activities that will be performed to handle this risk are funded and performed by the W&FMP. Current W&FMP planning includes upgrades to the main T Plant canyon crane, HEPA filter

replacements for the main stack, and electrical upgrades. The likelihood of this risk being realized is medium. Consequences of this risk are judged to be marginal. The overall risk level is low.

Two risks concern the integration of the sludge storage mission with Waste and Fuels Management Project (W&FMP) planning. Risk T-03 considers the potential impact that other work at T Plant canyon may have on sludge storage. Risk T-04 considers the loss of baseline funding for T Plant and resulting increase in the cost assumed for sludge storage.

During this assessment, discussions concerning these risks were held with personnel from the Waste and Fuels Management Project (W&FMP), which is responsible for the operation of T Plant. Overall, the probability that additional T Plant work would adversely impact sludge storage or retrieval of the STSCs was considered to be low, with marginal consequences. The risk that baseline funding for T Plant would be removed for the W&FMP budget was also considered to be low; however, because the cost impact to the sludge storage mission would be critical[10], the overall risk level is considered to be Moderate. (See Appendix G.)

Early development of an Interface Control Document (Memorandum of Agreement) and an integrated upgrade and operational schedule between the Sludge Treatment Project and W&FMP is recommended to manage these risks.

10.3 ALTERNATE STORAGE FACILITY RISKS

The key risk at the ASF is that an additional structure over the caissons might be required to satisfy DOE secondary confinement requirements. CHPRC Nuclear Safety has stated that it believes a case can be supported for the caissons providing the necessary secondary confinement to the sludge containers; therefore the probability of this occurring is considered to be low. Although the impact of adding a more substantial confinement structure over the ASF caissons is considered to be significant, the overall risk level is Low. (See Appendix G, risk ASF-01.)

Remote monitoring of the water level inside the STSCs within the caissons at the ASF is proposed to ensure that the sludge remains covered by a water layer. Sludge expansion during storage (due to oxidation of the uranium metal to uranium oxide and the associated entrapment of hydrogen) may make simple level detection of the STSC contents an unreliable means of determining the amount of water in the container. Various technologies have been proposed to solve this risk, but testing is required. The probability that suitable remote-monitoring water level measurement technology can not be found or developed is low. The consequences are also low, because STSC's could be weighed to determine water loss, if required. Overall risk level is Low. (See Appendix G, risk ASF-03.)

[10] If the baseline funding changes and 100% of the cost to maintain T Plant in a Min Safe condition is allocated solely to the Sludge Storage mission, the life cycle costs for storage of sludge are estimated to be $117 to $124 M.

11.0 ASSESSMENT OF ALTERNATIVES

The alternatives in this study were assessed using the decision criteria in A21C-STP-WP-0002, *Sludge Treatment Project: Plan for Selecting the Preferred Alternative for Disposition of Engineered Container & Settler Tank Sludge from K Basins.* These criteria, which were developed jointly by the STP and DOE-RL, were used previously to rate and rank the alternatives for the removal of the Container and Settler Tank sludges contained in the K West Basin (HNF-39744).

Assessment Results

Safety
- **T Plant and ASF were assessed as a "Go"**

Regulatory/Stakeholder Acceptance
- **T Plant and ASF are comparable**

Technical Maturity
- **T Plant is more technically mature**

Operability and Maintainability
- **T Plant and ASF are comparable**

Programmatic Aspects
- **T Plant has more favorable cost and schedule profiles**

11.1 DECISION CRITERIA

The defined decision criteria as adopted from the recent STP alternatives analysis are:

- Safety,
- Regulatory/Stakeholder Acceptance,
- Technical Maturity,
- Operability and Maintainability, and
- Programmatic Aspects.

For each of these five selection criteria, major goals and measures are listed in Table 11-1. Measures were developed in a manner to show how closely associated goals and/or criteria are achieved. Each criterion has been assigned a "weighting factor" commensurate with its importance; safety was determined to be an overriding criterion and is judged on a go or no-go basis.

Table 11-1. Decision Criteria, Goals, and Measures

Criterion	Weight	Goals	Measures
Safety	Go or No-Go	• Ensure worker and Public Safety	• Nuclear Safety • Seismic Qualification • Criticality Safety • Rad Con / ALARA • Fire Protection
Regulatory/ Stakeholder Acceptance	25	• Provide environmental compliance • Schedule for removing sludge from River Corridor	• Ease / difficulty of obtaining regulatory stakeholder acceptance of environmental documentation • Number of years before sludge is removed from River Corridor

Table 11-1. Decision Criteria, Goals, and Measures

Criterion	Weight	Goals	Measures
Technical Maturity	20	• Maximize confidence in process implementation	• Technology Readiness Level (TRL) must be at 3 or above prior to submittal for CD-1 • Process Flexibility and Robustness
Operability and Maintainability	25	• Maximize operability • Minimize maintenance difficulty and maximize safety	• Ease of process control and operation • As low as reasonably achievable (ALARA) • Reliability • Ease and Frequency of Maintenance • Ease of Implementation • Liquid/solid secondary waste
Programmatic Aspects	30	• Minimize overall system interface • Meet cost and schedule guidance	• Total project cost • Total life-cycle cost • Cost profile (flat funding is preferred) • Schedule impact

11.2 ASSESSMENT RESULTS

Both of the sludge storage alternatives were evaluated by the working group for the five decision criteria and the goals and measures listed for each criterion in Table 11-1. A scoring system of 1 through 5, with 5 being the most favorable, was used to support a multi-variant analysis rating of the alternatives.

The results of the sludge storage options assessment are shown in Table 11-2. Sludge storage at T Plant received a higher score and is the recommended option. Primary discriminators are in the areas of technical maturity and the programmatic aspects of cost and schedule.

The following sections provide the rationale for the scores shown in this table.

Table 11-2. Results of Sludge Storage Options Assessment

Criterion	Weighting Factor	T Plant	Alternate Storage Facility
Safety	Go/No Go	Go	Go
• Nuclear Safety		Go	Go
• Seismic Qualification		Go	Go
• Criticality Safety		Go	Go
• Rad Con /ALARA		Go	Go
• Fire Protection		Go	Go
Regulatory / Stakeholder Acceptance	25%	3 (75)	3 (75)
Technical Maturity	20%	4 (80)	3 (60)
Operability and Maintainability	25%	3 (75)	3 (75)
Programmatic Aspects	30%	4 (120)	3 (90)
• Total Project Cost		3	2
• Total Life-Cycle Costs		5	4
• Cost Profile		4	3
• Schedule Impacts		4	3
Total Score		**350**	**300**

11.2.1 Safety

As described in Section 6.0, no nuclear safety issues were identified that would preclude sludge storage at either T Plant or the ASF. Both alternatives can be configured to control potential hazards by using well-established mitigation methods. As a result, no safety discriminators between the alternatives were identified. Both sludge storage alternatives were ranked as a "Go" with respect to the safety considerations.

11.2.2 Regulatory / Stakeholder Acceptance

T Plant and the ASF were ranked equally with respect to regulatory / stakeholder acceptance.

- Regulatory pathways and principal documentation needed to implement the sludge storage options are described in Section 5.0. The development of regulatory documentation is achievable for both alternatives and is not a discriminator between the alternatives.

- Initial estimated schedules for the alternatives show end dates for the completion of sludge transfers from the basin to the storage facility that are within a year of each other. Therefore, the alternatives were not considered to be significantly different in the time required to move sludge off the river.

11.2.3 Technical Maturity

The technical maturity assessment was based on review and qualitative valuation of the system elements used by T Plant and ASF to meet the top level functions shown in Section 2 and the performance characteristics in Appendix B. The objective of this assessment was to identify any Critical Technology Elements (CTE) that would require additional testing and development to meet the unique conditions for the sludge storage mission. This effort did not include a formal assessment of the CTEs to the EM-20 Technical Readiness Assessment criteria, nor were Technical Readiness Levels assigned. Based on this review, storage in T Plant was judged to be more technically mature than ASF. The rationale for this assessment is discussed below.

For T Plant, the existing design will be used to modify additional cells needed for the sludge storage mission. Because the previous design, testing and demonstration of the equipment during the receipt and storage of the KE Basin NLOP, the design is considered to be technically mature and no new CTEs were identified that require additional testing or development.

The ASF, although only a conceptualized design versus the fully realized T Plant, relies heavily on existing proven and mature approaches for its system features. Gantry cranes, shield bells, caisson storage units, plus the mechanical and instrument systems for the sweep air ventilation system, water addition, and leak detection are all well developed equipment/technologies and are commonly used in the nuclear industry. Application of these items for the ASF will not require technology development. However, one system conceived for the ASF may need some development – the STSC water loss monitoring system.

Water loss monitoring for the STSCs is necessary to ensure that the sludge remains wet so that it can be readily retrieved for treatment.[11] At T Plant, this is done by periodically weighing each STSC. However, since the fully loaded caisson weighs over 60 tons, the use of a load cell to measure weight loss is impractical. In addition, removing the caisson lid to weigh the STSC would introduce a process step in which the sludge within the STSC is unconfined. For these reasons, the pre-conceptual design for the ASF includes remote liquid level monitoring within the STSC. The use of standard liquid level measurement systems is complicated by sludge expansion due to uranium metal oxidation and gas retention. A conservative estimate for the technology development of the water loss measurement system is included in the ASF schedule and cost estimate.

Table 11-3 provides a summary of the system features either in use at T Plant or envisioned as part of the ASF pre-conceptual design.

[11] Laboratory tests have shown that if the sludge is allowed to dry, it may be difficult to re-suspend and slurry from the STSC.

Table 11-3. Comparison of T Plant and ASF System Elements

Top Level Functions	T Plant System Elements	ASF System Elements
Receive Sludge		
Vent & Purge	Inert gas vent & purge system	Inert gas vent & purge system
Move STSC from Cask to Storage	T Plant canyon crane	Commercial gantry crane
Store Sludge		
Monitor Storage Conditions: STSC Visual Inspection	Cameras available to monitor STSCs and cells	Remote camera monitors caisson loading
Monitor Storage Conditions: STSC Leak Detection	Cell liner with conductivity probe & sump pump	Stainless steel lined caisson with conductivity probe
Monitor Storage Conditions: STSC Water Loss Monitoring	Load cell integral with canyon crane hook; STSC weighed annually	**Multi-point conductivity probes provide remote continuous liquid level indication [REQUIRES DEVELOPMENT]**
Add Water to Sludge	Water container filled and moved by crane to STSC for water addition	Water supply container connected to STSC port through caisson lid
Maintain Confinement & Ancillary Systems	- T Plant structure - T Plant canyon crane - T Plant ventilation system - STSC Overpack	- Caisson structure - Gantry crane - Caisson sweep air ventilation system with HEPA filtration
Transfer Sludge to Future Treatment & Packaging Facility		
Move STSC from Storage to Cask	T Plant canyon crane	Commercial gantry crane[1]
Inert shipping cask	Inert gas vent & purge system (same system used during STSC receipt)	Inert gas vent & purge system (same system used during STSC receipt)

[1] If facility is adjacent to the storage pad, the caisson (with STSC) could be moved to the treatment/packaging facility using the gantry crane (by extending the rails) or using a forklift.

11.2.4 Operability and Maintainability

Operability and maintainability for both sludge storage options are relatively uncomplicated, and the assessment team considered them to be similar.

- Initial loading of the STSCs into interim storage represents the greatest amount of operator activity for both T Plant and ASF. Remote systems and shielding are used in both cases to the maximum extent practicable in order to reduce operator exposure.

- Personnel contact with the sludge during the storage interval is also minimized in both cases. Remote monitoring is provided by instrumentation in both cases and the water addition is an infrequent (likely annually) evolution. The ASF would require slightly more operator involvement for removal of the shield plug for the water addition step, but the gantry crane provides a safe, elevated platform from which to work.

- Transfer of the STSCs is likely to have an equivalent amount of operator involvement as the initial loading for T Plant. However, should the new treatment and packaging facility by located adjacent to the ASF, then the caissons could be moved into the new facility using the gantry crane or by forklift, minimizing the complexity of the transfer.

- Equipment maintenance is facilitated by off-the-shelf, easily replaceable parts in both cases.

The following attributes were considered in judging the operability and maintainability for sludge storage at T Plant:

- Primary systems are remote-operated for purposes of ALARA (crane operation, water addition, leak detection).

- Systems have been installed and tested (inert gas system, hoisting and rigging apparatus, secondary containment & leak detection, water addition system).

- Replacement parts for systems provided to support sludge storage are off-the-shelf, readily available, easily maintained and replaceable (spare vent tools, pressure regulators, valves, lifting devices are on hand).

- Upgrades to the main T Plant Canyon Crane, HEPA filter replacements for the main stack, and electrical upgrades are included in the W&FMP planning assumptions. System failures due to the age of the facility are addressed as a project risk (see Section 10.2).

ASF design goals are to maximize operability and reliability while minimizing the difficulty of maintenance and implementation. The following attributes were considered in judging the operability and maintainability for sludge storage at the ASF:

- Sludge materials arriving at the ASF require the STSC to be shielded in order to achieve ALARA; trans-loading sludge receipt activities result in potential exposure to the STSC from above. As a controlling approach, the STSC placement is done by remote crane and shielding bell operation. Preliminary radiological calculations indicate that personnel are to maintain 50-ft distance from the opened STS cask and storage caisson.

- Routine storage activities necessitate accessing of the liquid level detection and leak detection probes. Because a water level is maintained above the settled sludge in the STSCs, the water measurement is not likely to result in significant exposure. Both activities are conducted by operators with radiation control technicians making measurements and controlling access to potentially contaminated or radioactive ports.

- Inert Gas System and Sweep (air) Gas System operations are expected to be of very low dose consequence.

- Maintenance activities associated with all ASF systems (i.e., the level and leak measurement systems, the Inert Gas and Sweep (air) Gas Systems as well as the gantry crane and forklift) are hands-on and take place outside of the shielded caisson. Replacement parts are generally off-the-shelf items.

11.2.5 Programmatic Aspects

Schedule Assessment

Comparison of the schedules between T Plant and ASF shows little difference in the availability of the facility to receive sludge. Any difference is within the limits and uncertainties of the schedule development.

In assessing the overall schedule profile, the T Plant schedule was judged as more favorable. Because the design is complete and several cells are already outfitted for sludge storage, the modifications to T Plant can be completed in less time. The schedule for ASF is longer because its design is currently at a pre-conceptual level. Further ASF design development will be driven by the requirements of DOE 413.3A and DOE Standard 1189. The T Plant schedule provides more "float" than ASF.

Cost Assessment

As shown in Table 8-1, the Engineering, Procurement and Construction (EPC) cost for T Plant modifications was estimated to be $11 million, with a range of $9 million to $14 million, while the EPC cost for the ASF was estimated to be $23 million, with a range of $19 million to $37 million

Total life cycle costs for T Plant are estimated to be between $12 and $17 million. This cost is based on the enabling assumption that the T Plant facility baseline funding is borne by W&FMP

and is baselined in their budget. Total life cycle costs for the ASF are between $21 and $39 million.

The annual funding profiles provided in Table 8-2 show that T Plant has a more favorable profile than ASF. More up-front funding is required to implement the ASF option because the design and testing for this concept has not been developed to the same extent as T Plant storage. The T Plant design is essentially completed, and several cells have previously been modified to support sludge storage.

Table 8-3 provides a direct comparison of the WBS elements that make up the T Plant and ASF costs. Cost differences and the reasons behind them are discussed as follows:

- For Nuclear Safety, the difference between efforts required to modify an existing documented safety analysis for T Plant versus that required to develop a documented safety analysis for ASF accounts for the increased cost to the ASF.

- The costs included for the technology development for ASF are conservative; however, no technology development is planned for T Plant.

- Because the design for the T Plant modifications is essentially complete, the design expenditures for the future modifications are minimal. In contrast, while ASF is a reasonably simple concept, it will be a Category 2 nuclear facility and the design must follow the requirements of DOE Order 413.3A. Consequently, the engineering costs for design are much higher for ASF.

- The cost of the T Plant modifications and the ASF procurement and construction are comparable and do not provide a discriminator.

- Contingency for the ASF is higher than for the T Plant. Because the T Plant cell cleanout and modifications have been done previously, there is less cost and schedule risk for this work compared to the design and construction of the ASF.

- The ASF life cycle estimate includes $3M for D&D activities. Equipment installed as part of the sludge interim storage mission is assumed to remain in T Plant once the interim storage emission is complete and will be dispositioned as part of the overall T Plant D&D. No D&D costs related the handling and storage in T Plant are included in the STP life cycle cost assessment.

Finally, the cost assessment is a comparison of the incremental costs to STP for the preparation and operation of sludge interim storage. While it is recognized that T Plant will have a base operations cost during the 10 year storage interval (2015 – 2025) used in the study of approximately $100M, this cost is not a factor ***provided that T Plant has an existing and durable waste management mission in addition to sludge storage.***

12.0 RECOMMENDATION

Based on the results of the assessment performed, T Plant is recommended for Phase 1 sludge interim storage. Key elements that support this recommendation are the following:

- T Plant has a proven process for storing sludge.
- T Plant storage can be implemented at a lower incremental cost than the ASF.
- T Plant storage has a more favorable schedule profile, which provides more float, than the ASF.

This assessment validates the CHPRC recommendation for Phase 1 interim storage of the sludge at T Plant pending initiation of Phase 2 EPC actions.

Underpinning the recommendation of T Plant for sludge storage is the assumption that T Plant has a durable, extended mission independent of the K Basin sludge interim storage mission. If this assumption is not valid, the conclusions and recommendations of this study would change. The following decision-making strategy, which is dependent on the confidence that DOE has in the long term mission for T Plant, is proposed:

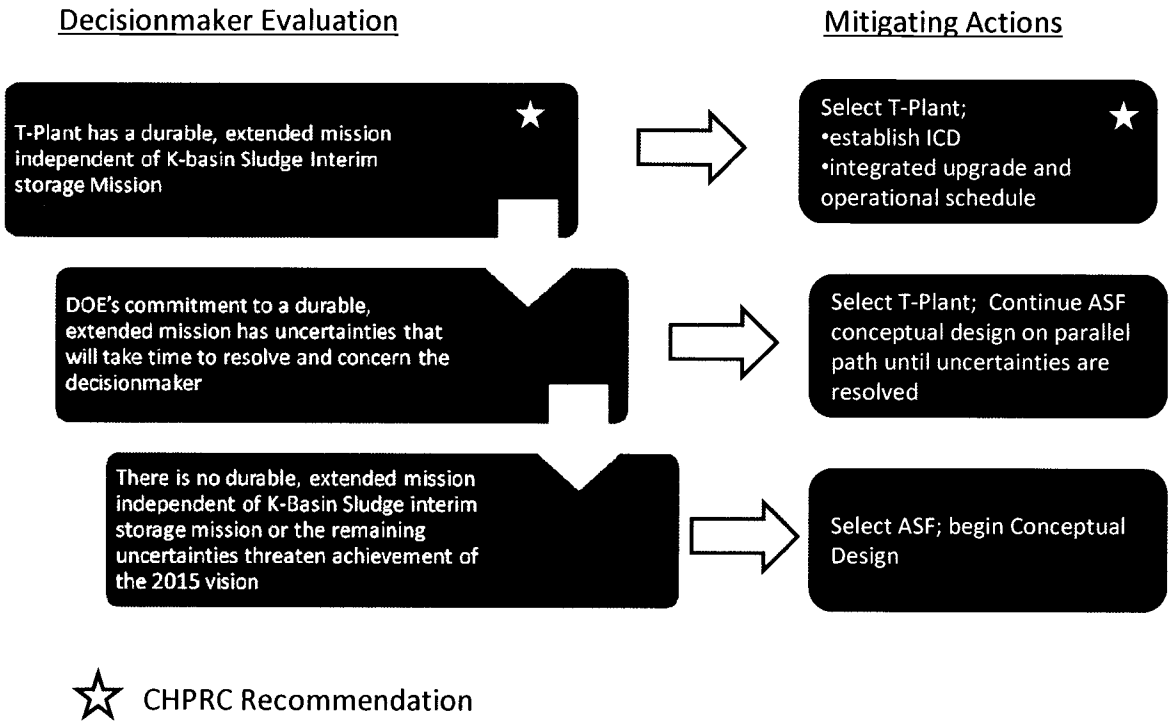
- If the confidence level in a durable, extended T Plant mission independent of sludge storage is high, then the Sludge Treatment Project (STP) would continue to implement the path forward previously described in the Alternatives Report (HNF-39744). Risks to the sludge project can be minimized through the establishment of an Interface Control Document (ICD) defining agreed upon responsibilities for both the STP and T Plant Operations regarding the transfer and storage of sludge and ensuring that the T Plant upgrade and operational schedule is well integrated with the sludge storage activities.

- If the confidence level in a durable, extended T Plant mission independent of sludge storage is uncertain, then the ASF conceptual design should be pursued on a parallel path with preparation of T Plant for sludge storage until those uncertainties are resolved.

- Finally, if the confidence level in a durable, extended T Plant mission independent of sludge storage is low, then the ASF design should be selected to provide independence from the T Plant mission risk.

The strategy above is shown graphically in Figure 12-1.

Figure 12-1. Proposed Decision-Making Strategy for Sludge Storage



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Appendix A

Bases and Assumptions for Development of Sludge Storage Alternatives

A-1 Sludge Properties

Sludge will be retrieved from the six engineered containers in the K West basin (KW) and managed as two separate waste streams (DOE Letter 07-KBC-0057).

- **Container Sludge** is comprised of the sludge collected from the floors and pits of both the KE and KW basins. This sludge is currently in containers CON-210 and -220 (floor and pit sludge from the KW Basin) and containers CON-240, -250 and -260 (floor and pit sludge originally from the KE Basin). The estimated volume of the container sludge is 23.5 m^3. Estimated volumes for each individual container can be found in the sludge databook (SD-SNF-TI-0015, Rev. 14).

  The calculated properties (as settled density, volume % water, total uranium, uranium metal content and decay heat) for containerized sludge used in this study are those found in Table 5.2 of the databook. The calculated radioisotopic inventory used for dose consequence and shielding source terms can be found in Table 5.3 of the databook.

- **Settler Sludge** is comprised of canister and fuel wash sludge that was collected in the settler tanks during SNF retrieval and processing. Once this sludge is retrieved from the settler tanks, it will be collected in an engineered container, CON-230, in KW pending packaging and transfer to the interim storage facility. The estimated volume of the settler sludge is about 5.4 m^3 (SD-SNF-TI-0015, Rev. 14).

  Settler tank sludge encompasses KE and KW sludge generated from fuel, canister, and scrap cleaning operations that is captured in the KW settler tanks after passing through the KOPs (and associated strainers). This sludge is size-segregated by the process, and contains particles that range from micron-size to a maximum of 600 μm. For the purpose of this study the sludge is assumed to be the same as KW canister sludge. The characteristics and radioisotopic inventory data used in this study can be found in the sludge databook.

Upon exiting the K Basins, all sludge streams will be managed as remote-handled transuranic (RH-TRU) waste. The K Basins sludge will be regulated as a polychlorinated biphenyl (PCB) remediation waste under the *Toxic Substances Control Act* (TSCA).

A-2 Sludge Transport and Storage Containers

Sludge from KW will arrive at the storage facility packaged in Sludge Transport and Storage Containers (STSCs).

Although the design of the STSC is currently under development, for the purposes of this study, the STSC is considered to be very similar to that of the Large Diameter Container ("LDC") that has been used previously for loading, transport, and storage of the KE North Loadout Pit sludge. Figure 1-1 (in Section 1 of the main document) shows the STSC as currently conceptualized. The following are key design parameters that are assumed for the future STSC:

- The STSC is assumed to be approximately 1.5 m (59 in.) in diameter and 2.64 m (104 in.) tall excluding the lifting bail and attachments. (The STSC is 3.04 m [120 in.] tall including lifting bail and attachments.)

- Vessel walls and the bottom of the elliptical shell of the LDC are constructed of 1.3 cm (½ in.) thick stainless steel, and the top head has a wall thickness of 1.9 cm (¾ in.)

- The volumetric capacity of the STSC is approximately 4.1 m^3 (~1100 gal).

- Based on the prior safety assessment for the Sludge Transport System (SNF-10823), the payload limit of the STSC is assumed to be 2.0 m^3 (~500 gal) of as settled Container sludge. Because the estimated volume of the container sludge stream is 23.5 m^3, a total of 12 STSCs loaded with container sludge is assumed.

- Based on the prior safety assessment for the Sludge Transport System (SNF-10823), the payload limit of the STSC is assumed to be 0.3 m^3 (~80 gal) of as settled Settler sludge. Because the estimated volume of the container sludge stream is 5.4 m^3, a total of 18 STSCs loaded with settler sludge is assumed.

- The empty weight of the STSC is ~2,000 kg (~4500 lbs); the maximum weight of the filled STSC, including the sludge and water payload and any below-the-hook lifting attachments, does not exceed 8,390 kg (18,500 lb).

- The design operating temperature range is -33°C (-27°F) to 60°C (140°F).

- The design life of the STSC is 30 yr, and all non-serviceable components are designed to perform for this period.

- The STSC is comprised of 316 Stainless Steel and is an ASME code pressure vessel with a design pressure of 150 psi.

- Ports present on the top lid of the STSC will support receipt and storage operations. At a minimum, the following functions will be supported by those ports:

  - Filtered Venting. On the original LDC, air displaced from the container during transport and storage operations was vented via a 5.1 cm (2 in.) port fitted with a passive, sintered steel NucFil® or equivalent filter.

  - Additional Venting and Rupture Disk. On the original LDC, a second, 5.1 cm (2 in.) vent port was fitted with a rupture disk at 340 kPa (50 psig).

  - Water Addition. A water layer covers the as-settled sludge in the STSC when it is received at the storage facility. This water layer is maintained during storage to avoid sludge dry out, which could hinder the eventual sludge retrieval from the containers. On the original LDC, the connection for the water-addition port was

compatible with the 5.1 cm (2 in.) internal diameter pipe on the water-addition system fixtures at T Plant.

- Cleanout. On the original LDC, a 7.6 cm (3 in.) cleanout port provided access to the container for the eventual removal of sludge.

Additional ports may be present to support functions at the packaging or treatment facilities.[A1]

- The water addition port and the cleanout port can be capped prior to shipment. The caps on both of these ports have the capability of being removed upon arrival at the storage facility. The filtered vent port and the vent port fitted with the rupture disk remain unchanged during STSC transport and storage.

- Lifting attachments to the STSC are self-centering such that the STSC hangs vertically during crane handling operations. The lifting attachments do not interfere with water additions to the STSCs.

Loading of the STSC will occur at the KW Basin, and is outside the scope of this study. It is assumed that the filled STSC, as received at the Storage Facility, will be filled with a layer of sludge overlaid with a layer of water and a void space sufficient to allow for estimated levels of sludge expansion during storage. Sludge expansion occurs as a result of the uranium metal oxidation and radiolysis within the sludge (PNNL-14228).

Prior to shipping, the headspace of the STSC is inerted using either helium or argon gas.

A-3 STSC Transport Cask

The STSC will be transported to the storage facility within a cask that has been approved for onsite transport (SNF-10823). The assumed cask assembly is a right circular cylinder composed of an inner shell, outer shell, upper and lower end forgings, closure lid, closure bolts, metal gaskets, port closure bolts, and lead gamma shielding. The outer dimensions are nominally 184 cm (72.3 cm) in diameter and 335 cm (132 in.) in height, and the maximum weight of the loaded cask is 37.2 metric tons (82,000 lb.).

The cask serves as a containment barrier for the loaded STSC. The containment boundary is the inner shell, upper and lower end forgings, closure lids with bolts installed, and the containment (inner) metal gaskets.

The cask inner shell, outer shell, upper and lower forging, and closure lid are all fabricated of Type 304 austenitic stainless steel. The STS cask walls are constructed from inner and outer shells of stainless steel with a layer of lead between the two stainless steel shells. The inner

[A1] For example, the LDC also had a container fill port for use in sludge loading, a filtered outlet port for use during loading (the 5 μm filter was capable of being backwashed), a level device port to accommodate an ultrasonic level detection system, and a sensor wash port to accommodate the instrumentation used for washing the sensor on the level device.

stainless steel shell is 2.5cm (1 in.) thick, and the outer stainless shell is 3.8 cm (1.5 in). The annulus between the two stainless steel shells is nominally 7.95 cm (3.13 in.) and is filled with lead for shielding. The closure lid and bottom forging thickness are 13 cm (5 in.) and 15 cm (6 in.), respectively. The cylindrical cavity is nominally 155 cm (61 in.) in diameter by 307 cm (121 cm.) in length and accepts one STSC.

The 12.7 cm (5 in)-thick lid is fabricated from stainless steel, and is secured to the upper forging with 3.8 cm bolts (1.5 in.) in diameter. The cask lid includes a seal port and two vent ports. The seal test port accesses the volume between the two gaskets on the closure lid, thereby allowing verification of leak tight assembly prior to shipping the loaded package. A drain is provided at the bottom of the cask.

A-4 Transport Trailer

A transport trailer will be used to transport the inerted cask containing a single STSC to the storage facility. The trailer is assumed to be a four-axle, single drop flatbed with an overall length of 10.7 m (35 ft) and a width of 3 m (10 ft). The height of the drop deck is 1.07 m (42 in.) and the overall height is 4.6 m (181 in.). The trailer is fabricated of welded carbon steel shapes, plates, and tubular sections.

The trailer superstructure is a welded framework surrounding the cask, allowing access to the containers during loading and handling operations. The integral cask tie down system consists of 4 deck-mounted lugs, which engage four slots at the base of the cask, plus a tubular framework that envelopes the top of the cask. A work stand is located at the trailer stem. The transport system has leveling capability. Figure 1-2 (in Section 1 of the main document) shows a typical sludge transportation system similar to the one assumed for this study.

The maximum over-the-road weight limit is 82,000 lbs.

A-5 References

HNF-SD-SNF-TI-015, 2009, *Spent Nuclear Fuel Project Technical Databook*, Vol. 2, *Sludge*, Rev. 14, CH2M Hill Plateau Remediation Company, Richland, Washington.

Letter 07-KBC-0057, dated September 19, 2007, *Contract No. DE-AC06-96RL13200 – K Basin Sludge Disposition Direction*, from D. A. Brockman, Manager, Department of Energy, Richland Operations Office, to C. M. Murphy, President and Chief Executive Officer, Fluor Hanford Inc.

PNNL-14228, 2003, *Updated Volumetric Expansion Factors for K Basin Sludge During Storage*, Revision 0, Pacific Northwest National Laboratory, Richland, Washington.

SNF-7765, 2009, *Supporting Basis for SNF Project Technical Databook*, Rev. 3D, CH2M Hill Plateau Remediation Company, Richland, Washington.

Appendix B

Performance Characteristics for Interim Storage of Sludge

This appendix describes the generalized capabilities and expected performance of the sludge interim storage facility to receive, store and remove the sludge from storage in a safe, compliant manner. Chapter 2.0 of this report provided an overview of the four top-level functions that describe the sludge interim storage mission:

- Receive Sludge
  - Receive sludge in shipping cask
  - Vent and purge shipping cask
  - Remove STSC from shipping cask

- Store Sludge
  - Monitor sludge storage conditions
  - Add water to sludge
  - Maintain material confinement and ancillary systems
  - Respond/recover from off-normal conditions

- Transfer Sludge to Future Treatment and Packaging Facility
  - Remove STSC from storage location
  - Load STSC into shipping cask
  - Inert shipping cask
  - Prepare shipping cask for shipment

- Deactivation / D&D

The performance characteristics in this appendix were developed from these top-level functions in order to provide a baseline for the development of the concepts for sludge storage discussed in this report (i.e., either T Plant or the Alternate Storage Facility).

Throughout this section, the use of the words "shall," "should," "may," and "will" convey the following meaning:

- Shall – Denotes a requirement
- Should – Denotes a recommendation. If a "should" requirement cannot be satisfied, justification of an alternative design shall be submitted to the Design Authority for approval.
- May – Denotes a recommendation
- Will – Denotes a statement of fact.

B-1 Receive Sludge

The sludge interim storage facility shall provide receipt and storage for at least 5.4 cubic meters (18 STSCs) of Settler sludge and 23.5 cubic meters (12 STSCs) of Container sludge. The sludge interim storage facility shall be capable of receiving K Basin Container and Settler sludge in STSCs in the shipping cask in a safe and environmentally compliant manner.

- The sludge interim storage facility shall be capable of storing up to 30 STSCs.

The following sections identify performance requirements and constraints unique to the receipt of K Basin Container and Settler sludge.

Receive Sludge in Shipping Cask
The sludge interim storage facility shall be capable of receiving a single shipping cask containing one STSC loaded with sludge into the facility one-at-a-time.

The sludge interim storage facility shall be capable of routinely receiving STSCs at the rate of one per every 2 weeks with a maximum receipt capability of one STSC per week.

The sludge interim storage facility transporter receipt area shall include radiological survey and decontamination equipment to support transporter receipt, STSC removal and shipping cask return operations.

Vent and Purge Shipping Cask
The sludge interim storage facility transporter receipt area shall be capable of venting and purging the shipping cask with inert gas to reduce the hydrogen concentration that may have built up during loading and transport from the basin.

The venting system shall be monitored for radioactivity as an indication of a leak or potential loose contamination on the exterior surface of the STSC.

Remove STSC from Shipping Cask
The sludge interim storage facility transporter receipt area shall include the following capabilities:

- Unbolting and removal of the shipping cask lid
- Prepare/configure STSC for storage
- Hoisting STSC from shipping cask
- Verification of STSC identity and other package specific information
- Reload shipping cask with new, empty STSC for return to K Basin
- Replacement of the shipping cask lid and configuration of the shipping cask (e.g., gasket replacement) for return to K Basin

Place STSC in Storage Location
The sludge interim storage facility shall include capability for placement of the STSC into the designated shielded storage location.

B-2 Store Sludge

The K Basin sludge is classified as a TSCA Remediation Waste because of PCB contamination. As such, storage of the sludge shall meet the requirements specified in 40 CFR Parts 700-766.

STSC secondary containment capability shall be provided to confine any sludge leaks/spills.

The following sections identify performance requirements and constraints unique to the storage of K Basin Container and Settler sludge.

Monitor Sludge Storage Conditions
The sludge interim storage facility shall include the following capabilities:

- STSC visual inspection
- STSC leak detection
- STSC water loss monitoring

The monitoring frequency (e.g., real-time, weekly, monthly, etc.) shall have a documented basis.

Remote monitoring/alarm capability should be considered to the extent practicable.

Add Water to Sludge
The sludge interim storage facility shall include capability for adding water to the stored STSCs.

The water addition system shall be designed to control added water volume and minimize the potential for leaks/spills.

Maintain Material Confinement and Ancillary Systems
The sludge interim storage facility shall provide and maintain safe and compliant confinement for hazardous/radioactive materials. This includes the use of multiple layers of protection to prevent or mitigate hazardous/radioactive material releases, the use of ventilation systems (passive or active) to confine hazardous/radioactive material and control releases of gases, vapors and particulates.

- Overpack capability for a leaking STSC shall be provided in T Plant.[B1]

- Multiple Barriers. The sludge interim storage facility shall be designed with multiple physical barriers to prevent or mitigate the release of hazardous/radioactive material in accordance with the requirements of DOE O 420.1B.

- Material Compatibility. The sludge interim storage facility equipment providing a confinement function shall be fabricated of materials compatible with the material to be stored to minimize corrosion and generation of hydrogen. Metallic surfaces that routinely contact sludge shall be fabricated from stainless steel.

- Ventilation Systems. The sludge interim storage facility shall include a ventilation system to provide for release of hydrogen gas from the STSC while confining radioactive particulate.

- Secondary Confinement. The sludge interim storage facility shall include secondary confinement of the STSCs during storage. Concrete cells, vaults, casks or caissons shall

[B1] For the new facility concept, the cask design shall include a secondary containment vessel.

be provided with corrosion resistant coatings or liners to facilitate recovery from spills and final decontamination and decommissioning. Seams and surfaces shall be sealed to minimize the potential for migration of contamination into the concrete.

- Ancillary Support Systems. The sludge interim storage facility ancillary support systems shall be maintained.

Respond/Recover from Off Normal Conditions
The sludge interim storage facility shall provide capability to respond to and recover from off normal conditions, such as an STSC leak. Additional off normal conditions may be identified during the hazards analysis.

B-3 Transfer Sludge to Future Treatment and Packaging Facility

The sludge interim storage facility shall be capable of transferring shipping casks containing sludge in an STSC out of the facility one-at-a-time.[B2]

The sludge interim storage facility shall include radiological survey and decontamination equipment to support transporter /cask receipt, STSC placement/ cask loading, and shipping cask preparation for shipment operations.

The following sections identify performance requirements and constraints unique to the transfer of K Basin Container and Settler sludge to the future Treatment and Packaging facility.

Remove STSC from Storage Location
The sludge interim storage facility shall include capability for removal of the STSC from the designated storage location to the shipping cask loading station.

Load STSC into Shipping Cask
The sludge interim storage facility shall include the capability to load the STSC into the shipping cask, consistent with the shipping cask requirements.

The sludge interim storage facility shall include the capability to verify STSC identity and other package specific information prior to loading into the shipping cask.

Inert Shipping Cask
The sludge interim storage facility shall include the capability to inert the STSC, consistent with the shipping cask requirements.

Prepare Shipping Cask for Shipment
The sludge interim storage facility shall include the capability to prepare the shipping cask for transport, consistent with the shipping cask requirements.

[B2] Assumption is that the STS cask will also be used to transport the sludge from the interim storage facility to the future Packaging Facility.

B-4 Deactivation / D&D

The sludge interim storage facility shall incorporate design features that enable performance of those activities necessary to place system components into a safe, stable, and environmentally sound condition pending final disposition.

The sludge interim storage facility design shall include features that will facilitate decontamination for future decommissioning, increase the potential for other uses, or both.

In addition, the sludge interim storage facility should incorporate the following design principles:

- Use modular, separable confinements for radioactive and other hazardous materials to preclude contamination of fixed portions of the structure.
- Locate exhaust filtration components of the ventilation systems at or near individual enclosures so as to minimize long runs of internally contaminated ductwork.
- Provide equipment that precludes, to the extent practicable, the accumulation of radioactive or other hazardous materials in relatively inaccessible areas including curves and turns in piping and ductwork. Provisions that allow for visual inspection shall be included.
- Placement of controls and drive mechanisms outside of radioactively contaminated areas to minimize potential contamination, thereby minimizing hazardous and radioactive waste upon closure.
- Use materials that reduce the amount of radioactive and other hazardous materials requiring disposal and that are easily decontaminated.
- Provide designs that ease cut-up, dismantlement, removal and packaging of contaminated equipment from the facility (e.g., bolted connections).
- Use lifting lugs on large vessels and equipment.
- Provide fully-drainable piping systems that carry contaminated or potentially contaminated liquids.
- Should be decontaminated to Low Level Waste (LLW) to the extent practicable.

Appendix C

T Plant Design Detail

APPENDIX C

T Plant Design Detail and System Description

This storage design detail and system description is based upon two previous projects associated with storage of K East Basin sludge at T Plant.

- The first project, *Sludge Handling System – Spent Fuel Subproject A.13(b)*, was to store K East Basin floor, pit, and canister sludge packaged in large diameter containers (LDCs) within designated T Plant canyon process cells. This first project progressed through final design starting in 2001 and completed facility modifications and installation of equipment in 2003. A Contractor Readiness Assessment was completed in April 2003 that declared T Plant was ready to receive and store K East Basin sludge. In mid-2003, the K Basin helium purge system was modified to adopt argon as the inert gas (rather than helium) and subsequent modifications to the inert gas system at T Plant were completed in late 2003. A Management Readiness Self Assessment at T Plant was initiated to supplement the previous readiness assessment. However, this supplemental readiness assessment was suspended due to a change in direction from DOE-RL in December 2003 (i.e., pursue alternative disposal solutions such as treating the sludge rather than store the sludge at T Plant). Plans for storage of sludge at T Plant were curtailed, and as a result, actual storage of the K East Basin floor, pit, and canister sludge did not take place.

- The second project (i.e., storage and treatment of K East Basin North Loadout Pit [NLOP] sludge) was completed and took place during the 2004 – 2006 timeframe. Four LDCs of NLOP sludge were ultimately stored in a T Plant process cell before being treated. The treatment of the NLOP sludge stream (conducted at T Plant from October 2005 through June 2006) consisted of a grouting process that yielded 332 [55-gallon] drums of immobilized, contact-handled transuranic waste.

The process for storage of the K West Container sludge and the Settler Tank sludge (contained in vented STSCs) within the thick-walled concrete process cells at T Plant is conceptually the same as the previous campaigns conducted at T Plant. The design of the storage container previously referred to as a "large diameter container (LDC)" will be modified to incorporate lessons learned thereby improving its loading/unloading functional capabilities. The new storage container is referred to as a "sludge transport and storage container" (STSC). The basic configuration and dimensional parameters of the STSC are expected to be similar to the LDC. The existing sludge transport system (cask and trailer) and the existing in-cell storage racks in T Plant will be used to the maximum extent possible.

The total inventory of K West Container sludge (approximately 23.5 m^3) currently residing in engineered containers SCS-CON-210, 220, 240, 250, and 260 can be packaged into 12 STSCs (assuming 2 m^3 per STSC). The Settler Tank sludge inventory (approximately 5.4 m^3) can be packaged into 18 STSCs (assume 0.3 m^3 per STSC). Therefore, thirty STSCs are expected to be required for sludge storage.

Each T Plant cell can accommodate six STSCs in the storage rack, and one of the six positions is sized to accept an Overpack. Assuming 5 STSCs are stored per cell (with one position per cell reserved for an Overpack), six cells are needed for the projected 30 STSCs. Because the sixth "Overpack position" can accommodate an STSC and leak recovery operations require that a minimum of one empty position for all six cells is maintained for leak recovery, the six cells provide additional contingency for up to 5 additional STSCs.

The modified 221-T building currently provides the capability for receipt and storage of up to 18 STSCs in three cells (10L, 13L, and 15L) that are already modified for sludge storage. An additional cell, 3L, also has been prepared for sludge storage, but access to this cell is currently encumbered by another T Plant activity. Process cells 14R, 16R, and 2R are the primary candidate cells for the additional cells required sludge storage.

Table C-1 summarizes the status of the six storage cells (10L, 13L, 15L, 14L, 16R, and 2R) being considered for storage of KW Basin sludge, as well as the status for an additional three cells (3L, 8R, and 9L) that could be also used if needed.

Table C-1. T Plant Storage Cell Summary

Storage Cell	Current Status	Comments
Cells Ready for Sludge Storage		
3L (Access to this cell is currently encumbered)	One of the original four cells prepared for storage of KE Basin sludge. Modifications still intact and operational. CH-TRU waste repackaging unit (PermaCon structure) is installed on deck above that prohibits access to cell below.	PermaCon structure would need to be relocated to access Cell 3L.
10L *	One of the original four cells prepared for storage of KE Basin sludge. Modifications still intact and operational. Cell currently being used to store one NLOP sludge LDC and one Sand Filter Media LDC.	In order to take full advantage of the storage capacity of cell, the two LDCs would need to be processed through the NLOP Grouting System – or – the LDCs would need to be relocated to another storage area.
13L *	One of the original four cells prepared for storage of KE Basin sludge. Modifications still intact and operational.	No interferences exist and access to cell is unencumbered.
15L *	One of the original four cells prepared for storage of KE Basin sludge. Modifications still intact and operational.	No interferences exist and access to cell is unencumbered.
Cells Already Cleaned Out		
14R *	Previously cleaned out and currently free of equipment and debris.	This cell is a prime candidate to be modified for KW Basin sludge storage
8R (Access is encumbered)	Previously cleaned out and currently free of equipment and debris. The NLOP Sludge Grouting System is installed directly above the cell on the canyon	This cell is a candidate to be modified for KW Basin sludge storage; however, the NLOP Sludge Grouting System equipment would need to be relocated or dismantled/

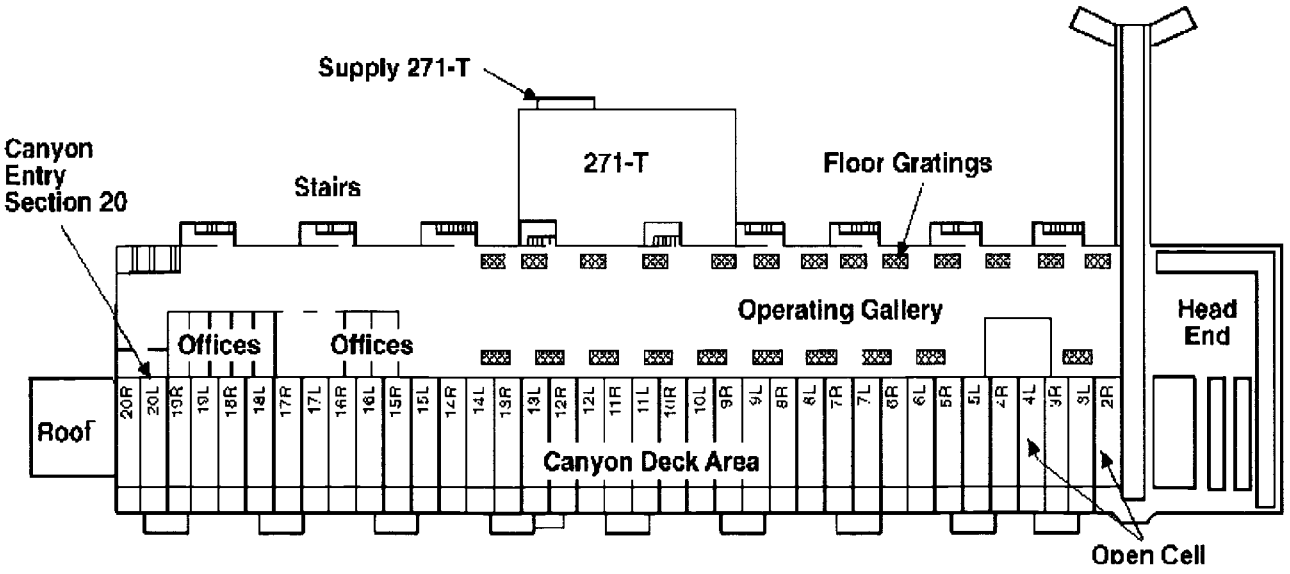
Table C-1. T Plant Storage Cell Summary

Storage Cell	Current Status	Comments
	deck.	disposed of.
Cells Partially Cleaned Out		
16R * (Minimal effort)	Previously cleaned out, but has since been used to store equipment cleared from the canyon deck.	In order for this cell to be used, the stored equipment would need to be retrieved/disposed of, and the cell modified for KW Basin sludge storage.
2R * (Moderate effort to fully clean out)	Previously stored Shippingport Spent Fuel. Contains approximately 30,000 gallons of water, spent fuel storage racks, and misc debris/equipment.	T Plant management offers this cell as a prime candidate to be cleaned out and modified for KW Basin sludge storage.
9L (Minimal effort and encumbered)	Previously cleaned out, but has since been used to store equipment cleared from the canyon deck. The NLOP Sludge Grouting System is installed directly above the cell on the canyon deck.	In order for this cell to be used, the NLOP Grouting System equipment would need to be relocated or dismantled/disposed of, and the stored equipment would need to be retrieved and disposed of followed by cell modifications.

* Asterisk indicates one of six cells that are considered prime candidates for KW Basin sludge storage.

An overview of the T Plant canyon and general arrangement of the process cells is shown in Figure C-1.

Figure C-1. 221-T Overview and General Arrangement of Process Cells



DESIGN SUMMARY

The Sludge Handling System (SHS) project provided the equipment necessary to receive, store, and maintain K East Basin radioactive sludge at T Plant. The design for storage of the K West Basin sludge at T Plant is basically the same as that of the K East Basin sludge under the SHS Project with respect to design features, functional requirements, and remote-handling aspects. In keeping with the principles of ALARA, the systems supplied are designed to operate remotely.

The KW sludge will be packaged in specially designed stainless steel containers, referred to as sludge transport and storage containers (STSCs), and shipped to T Plant in 200-West Area for interim storage. A shipment consists of one sludge-filled STSC, which will be transported in a trailer-mounted shipping cask. The shipping cask and trailer is designed to fit in the T Plant access tunnel. The sludge container will be off-loaded from the shipping cask in the access tunnel using the main T Plant canyon crane (either the 10-ton or the 45-ton hook) and placed within specially designed storage racks installed in the T Plant Canyon process cells.

HNF-8766, *Final Design Report for the Sludge Handling System,* presents a review of the SHS design. The Final Design Report contains design drawing / equipment lists, calculations / analyses supporting equipment and system design, equipment acceptance test reports, and inspection surveillance checklists. The definitive design was based on the requirements stated in HNF-6579, *Baseline Design Criteria for the Sludge Handling System.* HNF-8767, *Sludge Handling System Compliance Matrix,* provides a cross-walk to demonstrate compliance between design criteria specified in HNF-6579 and the final design. Drawing number H-2-830343 provides the general drawing list and key plan for the Sludge Handling System. As previously stated, the design for storage of KW Basin sludge at T Plant is not expected to be appreciably different from the design presented in HNF-8766.

GENERAL OPERATIONS AND MAINTENANCE

The basic sequence of operations for sludge container receipt, handling, and storage is as follows.

- Sludge transport system (cask and trailer) is staged at the east end of the tunnel (trailer is leveled and the tractor exits the tunnel).
- Cask is vented and purged using the inert gas system (manual hookup to the cask vent port, the cask drain port).
- Cask lid bolts are manually loosened, removed, and stored on the transporter platform for future retrieval.
- Cask lid lifting fixture is manually secured to the cask lid.
- Tunnel is posted as a High Radiation Area and workers exit the tunnel.

- Canyon crane removes cask lid from cask and stows lid on the cask lid pedestal (cradle) located on the back of the transport trailer (this is a remote operation).

- Canyon crane removes designated port plug from STSC (previously identified as the cleanout port plug), inserts STSC inert gas system purge lance, and purges STSC through open port (remote operation).

- Canyon crane removes the second port plug (previously identified as the water addition port plug) from the STSC.

- Canyon crane removes the storage cell cover blocks (if not done previous to receipt of sludge shipment).

- Canyon crane hoists the STSC from the STS cask, obtains tare weight of STSC (baseline), verifies container identification, and places the STSC in storage cell (remote operation).

- Canyon crane reloads cask with empty STSC and replaces cask lid (remote operation).

- The cask lid lifting fixture is removed by canyon crane, cask lid bolts are installed and torqued to specification (manual operation).

- The tractor is coupled to the cask transport trailer, leveling jacks are retracted, and STS exits tunnel (radiological release surveys are performed prior to STS exiting the tunnel).

- Canyon crane places cover blocks over storage cell (remote operation).

- Periodic surveillance using remote-operated camera system is performed to verify compliant storage of waste in cell (established as an annual activity to visually verify container integrity and stable condition).

- Periodic weighing of sludge container (using canyon crane/load cell) is performed to determine amount of water lost due to evaporation and ongoing chemical reaction (established as an annual activity).

- Water is added to sludge container accordingly to replenish water loss (current container weight subtracted from initial baseline container weight to determine relative water loss).

Routine maintenance activities associated with sludge storage at T Plant include the following:

- Preventive maintenance will be performed on the "below the hook" lifting devices in accordance with the *Hanford Site Hoisting and Rigging Manual* (DOE-RL-92-036). The lifting devices are subjected to "heavy service" conditions; therefore, they are required to be inspected every 6 months.

- The inert gas system pressure gages and flow meters must be calibrated at regular intervals (determined to be annually).

- Secondary Containment Liner/Storage Rack, Leveling Frame - no maintenance is required for these subsystems accept for preventive maintenance inspection of the secondary containment frame lifting device in accordance with the *Hanford Site Hoisting and Rigging Manual* (DOE-RL-92-036).

- Secondary containment leak detection system functions are verified during periodic surveillance (established as a daily activity).

- The water addition container ball valve must be maintained and exercised to ensure proper operation before each use.

- A comprehensive preventive maintenance program has been established and is performed annually on the canyon crane per the *Hanford Site Hoisting and Rigging Manual* (DOE-RL-92-036). Preventive maintenance and inspections cover all electrical and mechanical systems on the crane.

A comprehensive preventive maintenance program has been established for the canyon Confinement Ventilation System (CVS) in accordance with established procedures. Major CVS components inspected and maintained include the stack sampling probe/transport tube, stack fans, HEPA filter banks, and pre-filters.

BASIC DESIGN FEATURES, EQUIPMENT, AND ANCILLARY SYSTEMS

The basic design features, equipment, and T Plant building modifications that were implemented during the Sludge Handling System subproject are as follows:

- Installation of new storage racks, leveling frames, secondary containment/liner systems with leak detectors, and remote-operated spill removal systems within selected T Plant process cells.

- Installation of a weighing system integral with the T Plant crane. T Plant Operations must be able to ascertain the weight of an STSC at receipt to determine its baseline weight and to periodically weigh the STSC to determine the amount of water lost during storage. A new hook and load cell was designed to interface with the existing canyon crane 10-ton hook to accomplish this operation.

- Installation of the inert gas system equipment that interfaces with the existing Sludge Transport System to allow purging of shipping casks upon sludge receipt. The Inert Gas System (IGS) is designated as a Safety Significant System that is used to mitigate the hazards associated with hydrogen buildup in the Cask and STSC during shipping from the K Basin. The equipment is comprised of piping, valves, instrumentation to vent and purge the cask/STSC headspace by sweeping argon through the cask from the inlet drain out through a vent path on top of the cask. The cask is vented and purged with argon using the inert gas system prior to removing the cask lid bolts (manual operation). The IGS is used during the sludge container offloading process to maintain an oxygen deficient atmosphere until the cask is opened. Argon purge of the sludge container is performed to reduce the hydrogen concentration to ensure a flammable mixture does not exist within the container headspace prior to the sludge container removal from the cask.

- Installation of new wall jacks for relocating T Plant existing portable cameras, as desired, to facilitate monitoring of sludge storage cells. The sludge has been determined to be a TSCA waste and, as such, surveillance and storage requirements were negotiated with the Environmental Protection Agency. Interfaces with the existing canyon video system were installed to allow remote viewing of the cells when the cover blocks are removed. There are four new sets of camera jacks installed adjacent to designated cells in the canyon.

- Installation of a water addition system and fill station to replace water loss from the STSC during storage. Loss of water during storage due to evaporation is expected. If the sludge is allowed to dry out it will become hardened and virtually impossible to remobilize for eventual retrieval and treatment. T Plant will determine water loss annually through weight measurements and will add water as appropriate. The water addition system is comprised of a crane accessible water addition container with a capacity of 200 pounds of water. The stand for the water addition container is also a remote fill station for the water addition container. The water addition container can be remotely filled from outside the canyon and the water can be added to the STSC remotely.

- Overpack container to be used in the event a leak occurs from an STSC. The Overpack container may be located at T Plant or a storage facility away from T Plant (2101M). Should a leaking STSC be detected, the Overpack container will be placed in the Overpack position in the cell storage rack, the leaking container will be placed in the Overpack, and the lid will be placed on the Overpack.

- Installation of new instrumentation to the 291-T Stack to meet the requirements of a "Major" Stack including purchasing and installing new pump and instrumentation enclosures and cabinets with associated piping, and Alpha and Beta-Gamma CAMs with pumps.

DESIGN DETAIL AND SYSTEM DESCRIPTION

Inert Gas System

The inert gas system general arrangement and design details are shown on design drawings H-2-831044, H-2-831045, and H-2-831046. Purge flow rates and durations have been calculated and documented in SNF-18135, *Design Calculations for Gas Flow and Diffusion Behavior in the Large Diameter Container and Cask.*

Upon receipt of the STSC and cask at T Plant, the cask gas pressure is measured and vented. Following this initial venting, the cask headspace is purged by sweeping argon through the cask from the inlet drain out through a vent path on top of the cask. This is the same method used to purge the air from the cask at the KE Basin. Since the heavy argon gas produces a near slug-type flow with respect to the lighter argon-hydrogen mixed gas on top, the sweep-through purge proves to be very efficient.

After the cask has been successfully purged, the cask lid is removed. The argon cover gas within the cask and over the STSC is restored. The STSC cleanout port is opened to safely facilitate insertion of a lance (pipe) to purge and inert the STSC headspace gas. The inserted lance supplies an argon purge rate of approximately 3 scfm, which will push the accumulated mixture of argon-hydrogen gas in the STSC headspace out through the opening or gap between the lance and cleanout port. After the STSC has been purged, the second port (water addition port) is opened and the STSC is hoisted out of the cask and placed in a designated storage cell. See Figure C-2 for a simplified diagram of the inert gas system (excerpt from drawing H-2-831044 - P & ID). Inerting tool details are shown in Figure C-3.

Figure C-2. Simplified Diagram – Inert Gas System

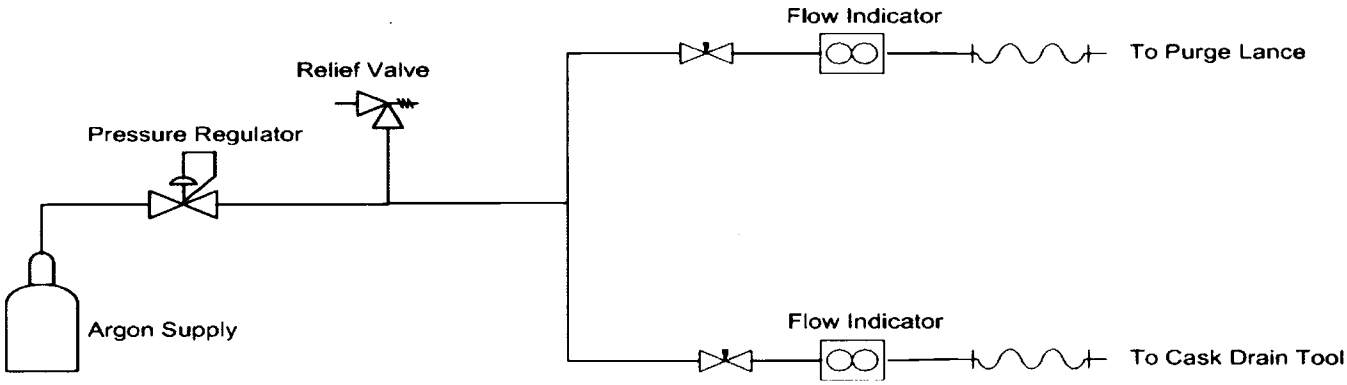
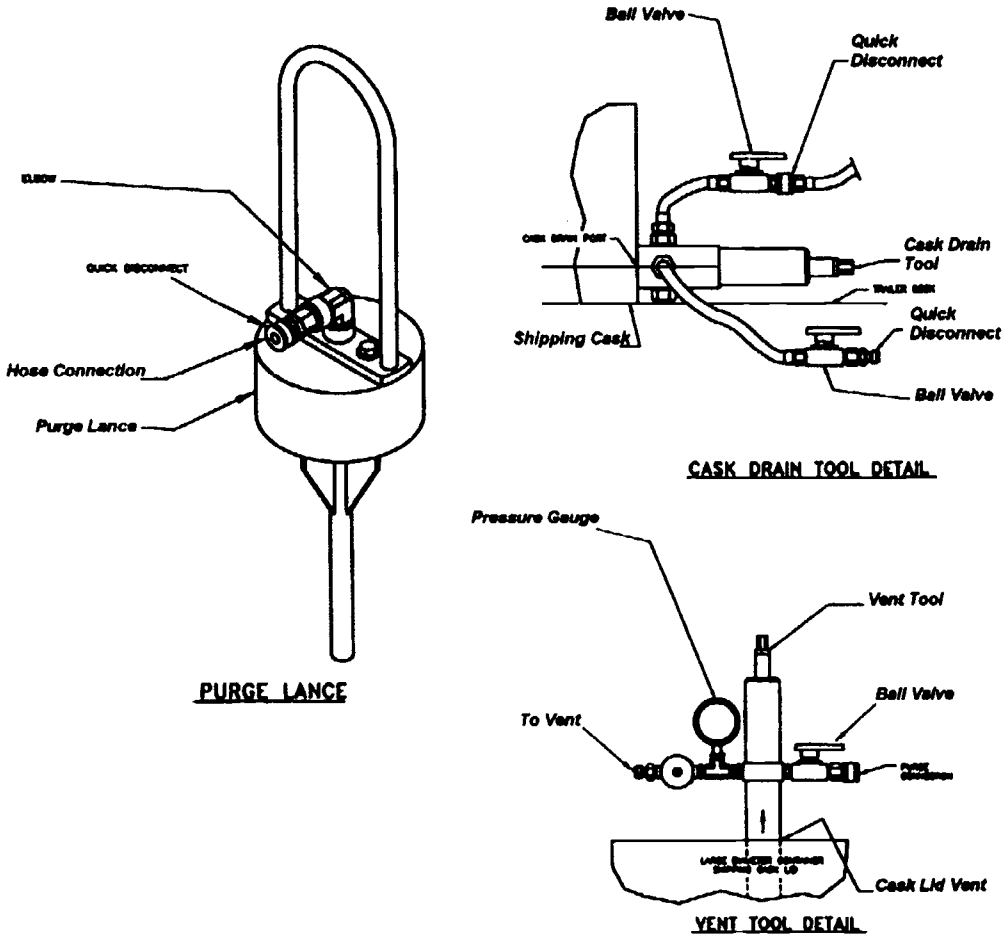


Figure C-3. Inerting Tool Details



Storage Racks / Leveling Frame / Secondary Containment Configuration

The general arrangement drawings and details for the storage racks, leveling frame assembly, and secondary containment basin are shown on the following drawings:

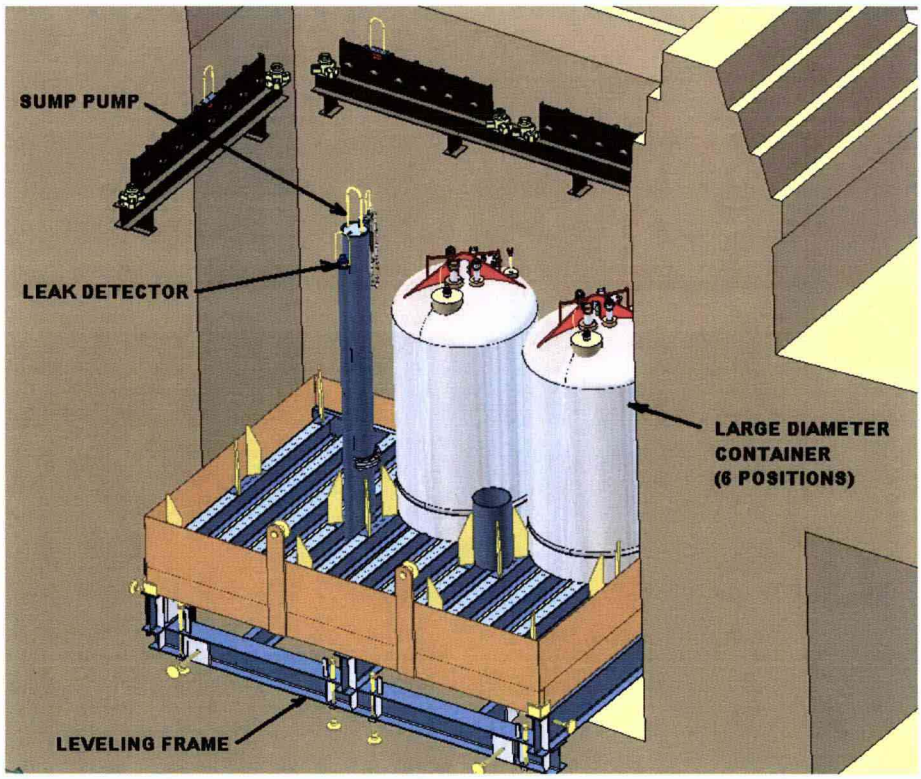
- H-2-830345 – General Arrangement Large Diameter Container
- H-2-830347 – Secondary Containment Leveling Frame Assembly
- H-2-830348 – Secondary Containment Assembly

Storage of KE sludge must provide an area that can be shielded to protect workers and secondary containment to protect the environment. T Plant process cells 3L, 10L, 13L, and 15L were selected for storage of the STSCs. The process cells are approximately 13 ft long by 17 ft wide by 28 ft deep. The cells are constructed of concrete with 6-ft thick removable cover blocks. The T Plant canyon was designed for remote operation that will allow the STSCs to be handled with minimum radiation dose to the workers. Once in the process cells, the thick cover blocks provide adequate shielding for normal canyon operations. These process cells were seismically

evaluated to confirm the structural adequacy (HNF-6033, *Seismic Evaluation of the T Plant 221-T Building for Interim Storage for K Basins Sludge*). However, the concrete alone cannot provide secondary containment. The KE sludge is designated as a TSCA waste and must be stored within compliant secondary containment. Secondary containment must have equipment to detect and remove any leakage.

Secondary containment consists of a freestanding liner equipped with a leveling base, a rack to hold the STSCs, a leak detector, and a sump pump. Figure C-4 shows the secondary containment assembly as it is located in a process cell. Cells 3L, 10L, 13L, and 15L have been fitted with a secondary containment liner and storage rack assembly.

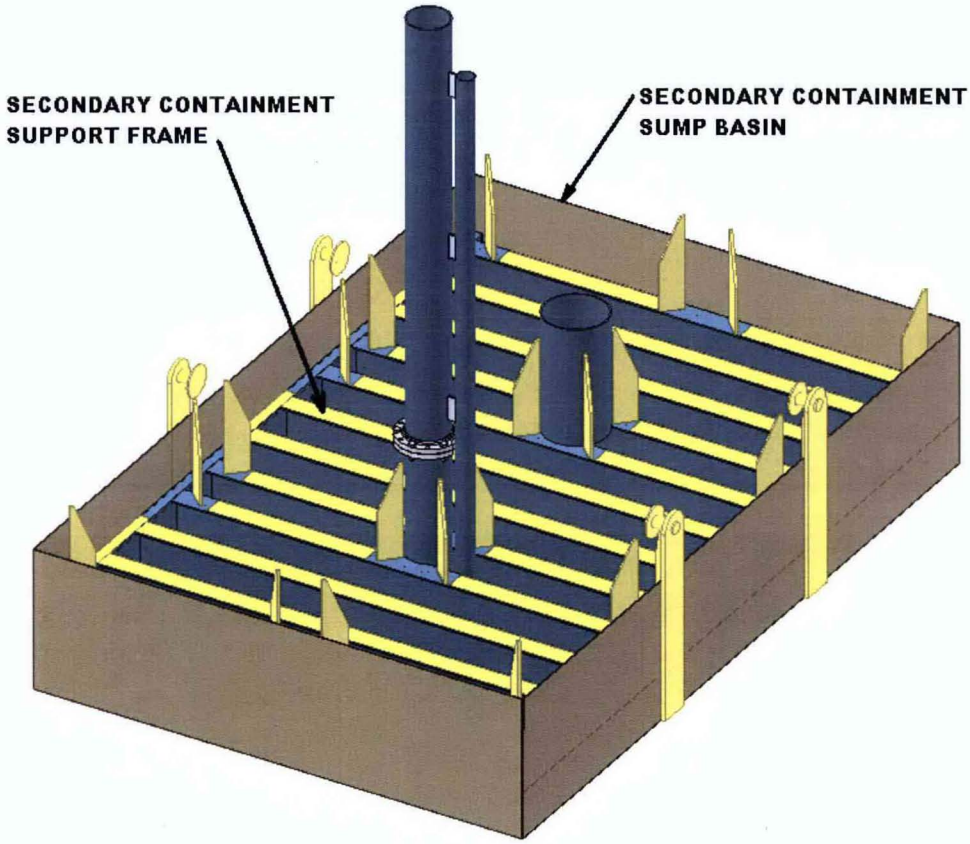
Figure C-4. Secondary Containment Assembly



The secondary containment liner is designed for volume requirements based on TSCA, which requires the liner capacity to be equal to at least 2 times the volume of the largest container or 25% of the total volume of the stored waste, whichever is greater. The bottom of the liner is equipped with an integral sump. The storage rack placed inside the liner is equipped with support/guide tubes for the leak detection and leak removal systems. Figure C-5 shows the liner/storage rack assembly. The storage racks can each hold 6 STSCs, which includes a position reserved for an Overpack to be used in the event of a leaking sludge container. The storage rack container locations are marked 1 through 6 (see drawing H-2-830345). Location 1 is slightly larger and is designed to store an overpack container. The liner and storage rack frame are constructed from carbon steel. The support tubes, alignment guides, and wear plates are

constructed from stainless steel. All carbon steel was coated with Ameron® epoxy coatings. The support/guide tubes for the leak detection and leak removal systems were fabricated from stainless steel because coating was impractical. The alignment guides and wear plates are fabricated from stainless steel because they come into contact with the stainless steel STSCs.

Figure C-5. Secondary Containment Liner/Storage Rack Assembly



Leak Detection

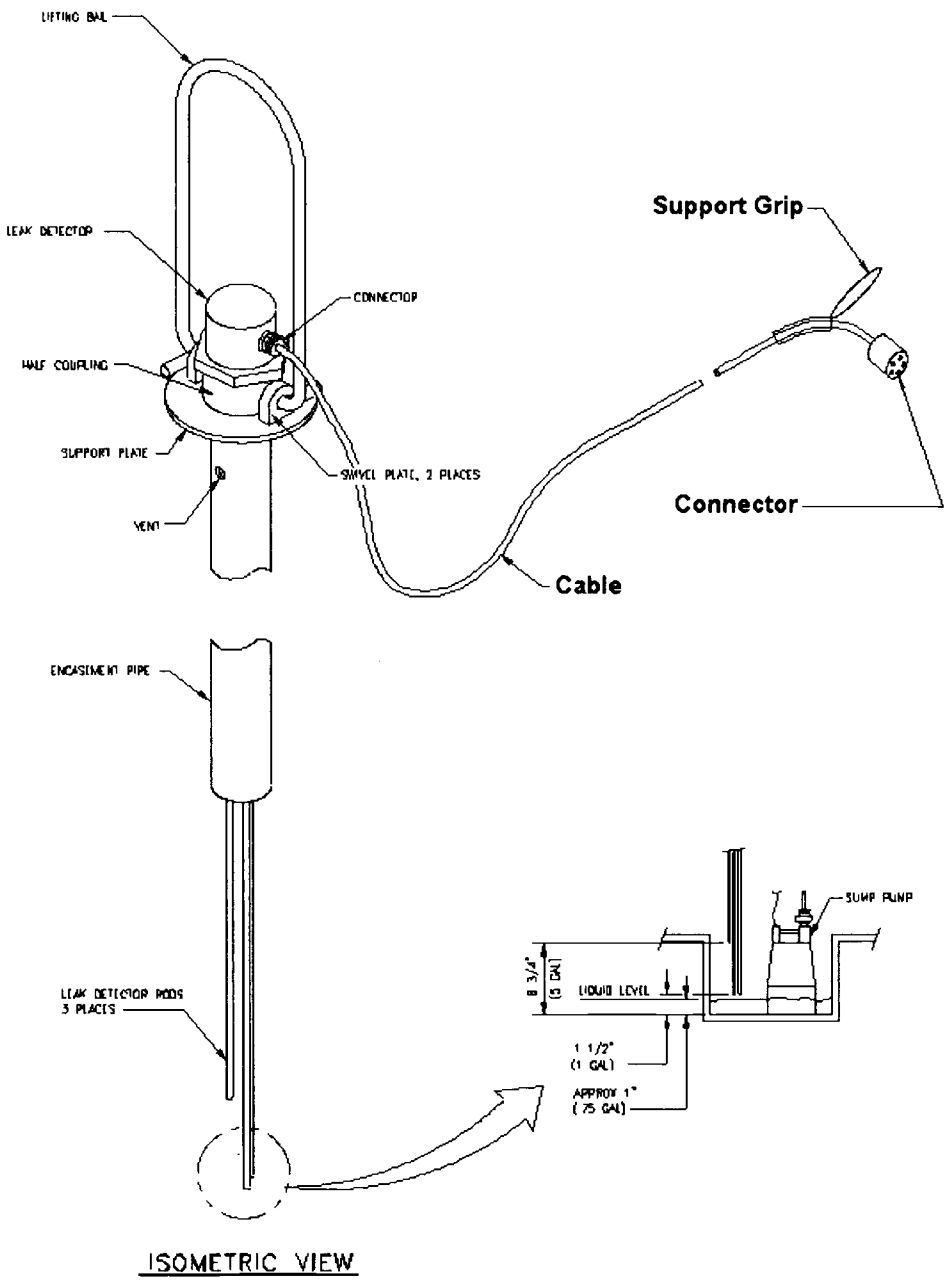
The general arrangement and leak detection equipment are shown on the following design drawings:

- H-2-830351 – Secondary Containment Leak Detector Support
- H-2-830372 – Leak Detector Enclosure Assembly
- H-2-830361 – Enlarged Plans Section 3, 10, 13, 15
- H-2-830362 – Elevations and Details

Liquids leaking from an STSC are retained by the secondary containment and collect in the sump. The bottom of the secondary containment liner is shaped such that any leak will be directed to the sump. Each secondary containment system is equipped with a leak detection system. The leak detection system design is based on conductivity probes (electrodes)

positioned over and in the secondary containment sump. Each leak detector assembly is electrically connected to separate local control panels located in the T Plant operating gallery. The local control panels are connected to a central annunciator panel located in Room 218 of the Operating Gallery. The leak detector assemblies are designed to be remotely lowered into place using the canyon crane. The secondary containment system provides a vertical support structure to hold the assembly. Figure C-6 shows the leak detector assembly.

Figure C-6. Leak Detector Assembly



The three probes within each leak detector assembly are called Low (for level sump low, or LSL), High (for level sump high, or LSH), and Common. Any liquid that collects in the sump will cause the liquid level to rise. When the liquid level has raised high enough to contact the Low and Common probes simultaneously, an electrical circuit is completed and alarms the local and remote annunciator panels. Each continuity probe is made of a 1/4-in. stainless steel rod. Each rod is suspended on an insulated electrode holder within the leak detector assembly. The rods themselves are insulated with a sheath along their length to prevent inadvertent contact with adjacent rods or the detector assembly supports. Insulated spacers are used to maintain spacing between rods and to prevent excessive movement.

Each probe is attached to an electrode plug in the insulated electrode holder, which forms the instrument head of the detector assembly. The electrode plug has a ceramic insulator with a center feedthrough. The electrode holder can be opened to provide access to the wire termination points.

The conductivity relays are housed in their respective local control panels located in the T Plant operating gallery. There is a single relay associated with each of the Low and High probes (two relays total) and sharing the Common probe. The relays (LSL and LSH) apply a low voltage (approximately 8 V ac, 30 mA shorted) between the Common and respective Low or High level probe.

The leak detection system has been designed to be "fail-safe." The conductivity relay is configured for what is referred to as "inverse operation." This means that the relay is energized when there is no leak detected. When a leak is detected, or electrical power is lost, the relay deenergizes and actuates the local and remote alarms. A normally closed (shelf-state) contact is used to energize a local panel light to signal operators that the relay is actuated.

A normally open contact (closed when there is no leak) is used to signal the Room 218 annunciator (ANN-218). The annunciator circuit is supervised. This means that a break in the circuit between the relay and the annunciator will result in an alarm condition. There is no annunciator connection installed for the LSH relay.

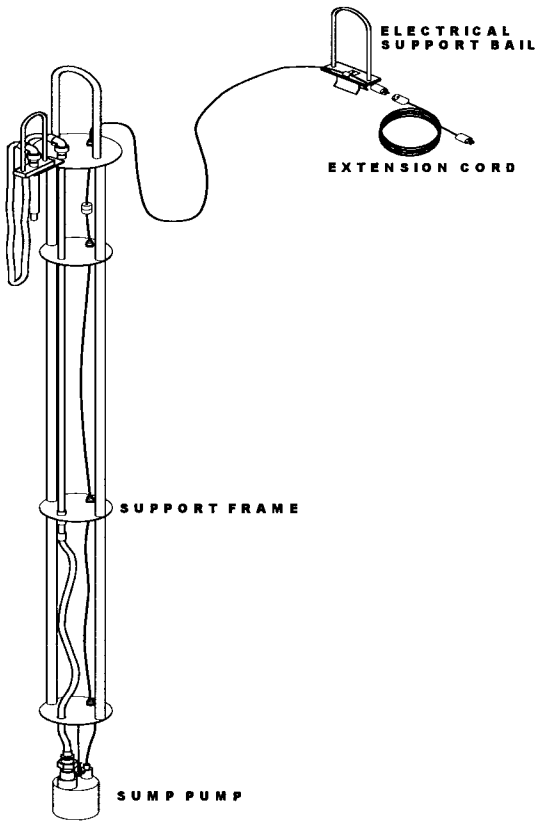
An additional conductor from each of the Low and High probes is brought out of the cell to the control panel as part of a test circuit with a test button. When the test button is pressed, the test circuit verifies the function of the relay sensing circuit, the wire connection at the probe, and the general integrity of the circuit paths.

Leak Removal

The leak removal system is designed to be installed when needed. The leak removal assembly is kept in storage until it is required for use in T Plant. The assembly consists of a sump pump, a support frame, pipe, flexible hose, stinger, and electrical wire (reference design drawing H-2-830350 for details). Figure C-7 shows the leak removal assembly. A 1/3-hp motor electrically powers the sump pump. The pump is capable of pumping liquids with up to 500 ppm solids. The support frame is made from stainless steel to be compatible with the support tube. Outlet piping is made from stainless steel pipe and flexible hose. The electrical supply for the pump is

flexible SO type cable. The leak removal assembly can be placed in the support tube remotely using the T Plant canyon crane. Electrical support bails attached to the cords allow the crane operator to remotely move and connect the electrical cables to the process cell walls at discrete locations (to prevent accidental damage to the cords).

Figure C-7. Leak Removal Assembly



Water Addition System

The STSCs are vented to the storage cell through open ports and NucFil® filters to prevent over pressurization during sludge storage. This vent path allows for water loss from the STSCs by evaporation. Over an extended period of time, evaporation due to air flow and sludge chemical reaction (decay heat) will deplete the water mass in the STSCs. Using KE Basin design basis sludge parameters, calculations show that approximately 94 lbs. of water per year will be lost due to evaporation (HNF-12563). The initial water level in each STSC is determined by weighing the container at receipt prior to placement in its designated storage locations. Periodic

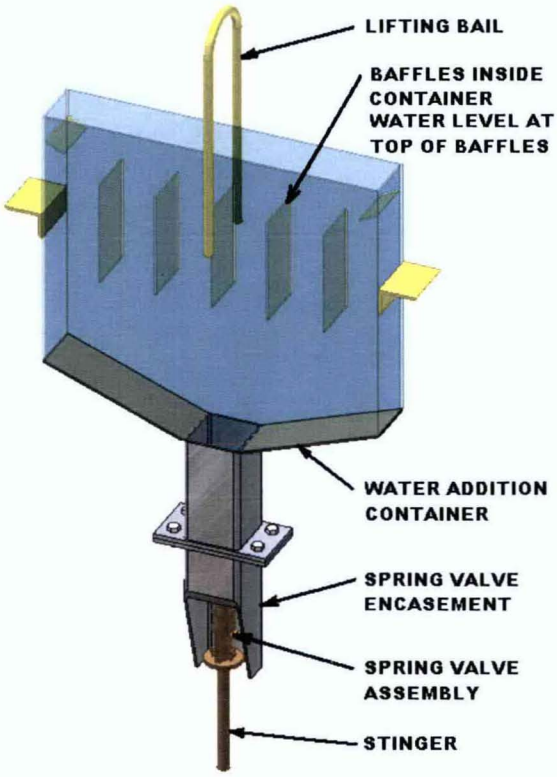
monitoring (weighing the STSC to indicate mass of water loss) of stored STSC is will be performed to identify the need for water addition. The water addition system provides the means to replace the water lost. The water addition system is comprised of a water container and storage rack located near Section 3 of the canyon. The water container is filled remotely from the Operations Gallery to the appropriate level (not to exceed its capacity of 200 lbs or 24 gallons). The canyon crane hoists the water container from its storage rack, positions the water container over the sludge container, inserts the water container stinger through the sludge container water addition port, and empties the contents of the water container into the sludge container to replenish water lost due to evaporation.

The general arrangement and water addition system equipment are shown on the following design drawings:

- H-2-830344 – General Arrangement Water Addition Station
- H-2-830352 – Water Addition Container Assembly
- H-2-830353 – Water Addition Support Stand Assembly

The water addition container assembly is fabricated of welded and bolted stainless steel plate, shapes, and flanges that form an open bucket with a fixed bail at the top. The bucket may be easily filled, lifted by the existing T Plant crane, and maneuvered to any stored STSC that requires makeup water. The water addition container is sized to contain 200 lb of water (approximately 3 ft^3, or 24 gal.). Figure C-8 shows the water addition container assembly.

Figure C-8. Water Addition Container Assembly



The water addition container assembly is designed with a narrow rectangular cross section for weight balance and to allow the crane operator to have a clear view of the water fill operation. Baffles are added to the water addition container to prevent water from sloshing over the sides while the full bucket is being moved from its storage location to the STSC. The tops of the baffles are visible to the crane operator and when filled to this point, the bucket contains approximately 200 lb of water.

The lower portion of the water addition container necks down to a short square section that is flanged at the bottom. A penetration into this flange accommodates a stainless steel pipe nipple, welded to the flange on one end and bolted on the other, that allows the bucket to be emptied into the STSC through an attached ball valve, spring, and "stinger" which make up the spring valve assembly.

The spring valve assembly is protected from damage and accidental operation by a square stainless steel encasement that is flanged at the top and bolted to the flange at the bottom of the water addition vessel. The ball valve in the spring valve assembly is spring-loaded to open on contact with the STSC fill port. When the water addition container is lowered onto the STSC with the stinger inserted into the fill port, a lever arm is pushed and rotated upwards, the spring is compressed, and the ball valve is rotated 90 degrees to its full open position. In this configuration, makeup water flows out of the water addition container and into the STSC.

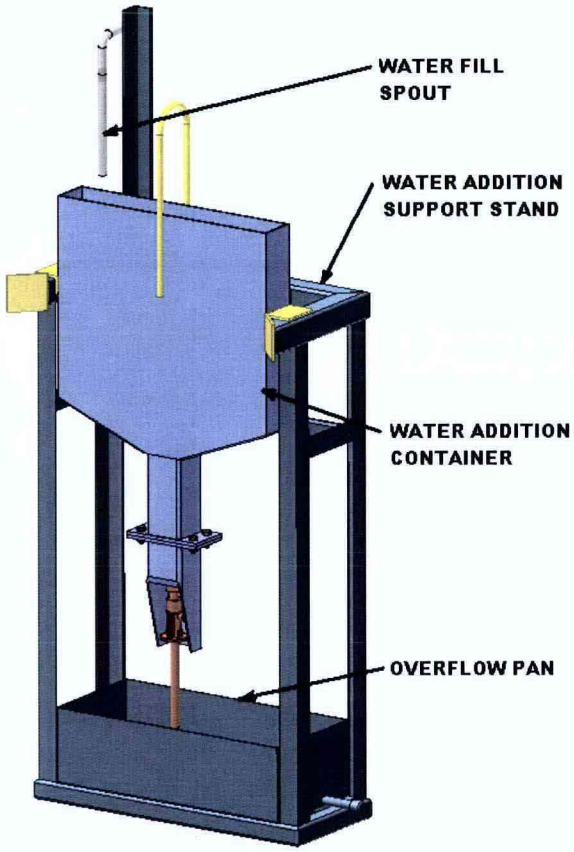
When the water addition container is empty, the bucket is raised high enough for the stinger to clear the STSC fill port. The compressed spring extends back to its original position, rotating the lever arm down and closing the ball valve stopping any residual flow of water into the STSC.

The interface between the spring valve assembly and the STSC fill port is sealed on contact by a firm neoprene gasket that adheres to the surface of the gasket that is attached to the lower spring collar assembly. This gasket interface reduces the likelihood of the STSC venting through any path other than the Nucfil® filter (per ALARA).

When not in use, the water addition container assembly is stored on its storage rack located on the T Plant canyon deck. When needed, the water addition container is filled while residing in the storage rack. Figure C-9 shows the water addition container storage rack.

A permanently installed fill connection with piping and a normally open isolation valve are installed and supported by the storage rack (drawing H-2-830344). The fill connection is routed from the existing demineralized water system located in the T Plant operating gallery. A second, normally closed, isolation valve is installed in the T Plant operating gallery. Water is routed from the operating gallery to the T Plant canyon through a flexible hose routed through an existing penetration in the canyon wall. The flexible hose has an isolation valve on each side of the penetration and the hose is used for ease of installation through the penetration. On the canyon side of the penetration, where the flexible hose exits the wall, the penetration is left open to allow a drain path for condensation that may occur between the outer surface of the flexible hose and the inner surface of the penetration. A drain valve is provided in the T Plant canyon at the system low point to allow the system to drain after use to prevent freezing. A high-point vent is provided in the operating gallery to facilitate the draining process.

Figure C-9. Water Addition Container in Support Stand



Below-the-Hook Lifting Devices

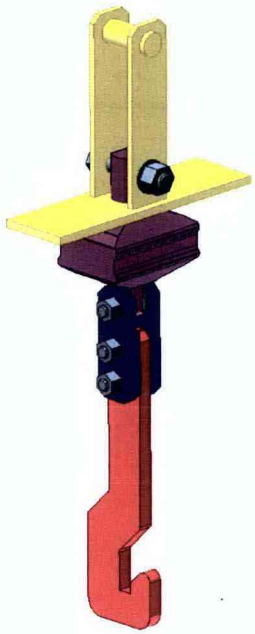
The facility bridge crane is used to remotely offload sludge containers from the sludge transport system as well as to reload the transport cask with an empty sludge container before returning to the K Basin. The sludge handling system uses three below-the-hook lifting devices designed to interface with the STSC and the STSC shipping cask lid, namely the load cell lifting device, the adaptor hook assembly, and the extension hook assembly. The extension hook and adapter hook lifting assemblies are used for hoisting operations that do not require the use of the load cell lifting device (i.e., when the weight of the STSC have already been recorded). Each device is classified as a below-the-hook lifting device in accordance with the *Hanford Site Hoisting and Rigging Manual* (DOE-RL-92-036). The purpose of each device is described below.

Load Cell Lifting Device

The load cell lifting device assembly (drawing H-2-830640) was designed and fabricated to act as the interface between the T Plant 10-ton crane hook and the lifting bails on the STSC. The assembly is designed for remote handling and will engage the 10-ton crane and the bails on the STSC without assistance from workers in the canyon. When attached, the assembly is capable of vertical and horizontal movements only (rotation is not permitted), as any other movements could cause damage to the load cell. The assembly weighs approximately 466 lb and is rated at

19,400 pounds. The rated capacity of the device is limited by the 20,000-lb rated load of the 10-ton crane hook. The rated load of the device is approximately the rated load of the 10-ton crane hook with the device weight subtracted. Figure C-10 depicts the load cell lifting device.

Figure C-10. Load Cell Lifting Device



Upon arrival at T Plant, each STSC will be weighed using the load cell lifting device to determine its baseline weight. Periodically during storage, the STSCs will be weighed to determine the amount of water covering the sludge lost due to evaporation. Each time an STSC is weighed, the data should be recorded in order to create trending analysis addressing evaporation. (Reference HNF-12563, section 7.4, where yearly net water loss is estimated at 225 lbs.).

The load cell assembly is capable of weighing STSCs up to the capacity of the load cell hook with an accuracy of ± 0.1% of the load cell rated load. (The rated load of the load cell is 30,000 lbs; however, the capacity of the hook governs its use). The accuracy of the load cell is ±30 lb, well within the margin defined by the ±50-lb design requirement. The weighing system consists of two components: the crane load cell and the load weight indicator. The crane load cell unit contains the primary weighing instrument with battery-powered microcontroller and radio modem. The antenna is integral to the unit.

The load cell has a momentary contact toggle switch located on the side of the unit. When the load cell is activated, a red light near the switch will begin blinking. The load cell battery is housed inside the load cell unit, accessible through a spring-latched cover. The battery plugs into the load cell and powers the instrumentation, microcontroller, and radio modem.

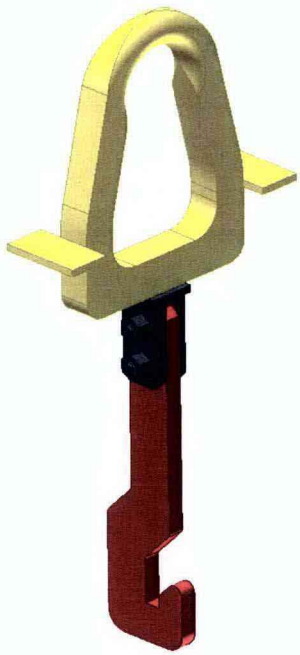
The weight indicator is located in the crane cab and is powered by 120 VAC. The unit is connected to a remotely mounted antenna via a coaxial cable. The remote antenna is required to achieve signal strength sufficient to communicate with the load cell.

Load cells and indicators are paired together via an internal device-addressing scheme. The addresses must match for the units to function and communicate properly. The factory default configuration is used for the sludge handling system application.

Adapter Hook Assembly

The adapter hook assembly (drawing H-2-830805) was designed to act as the interface between the T Plant 45-ton crane hook, the lifting bails on the STSC, and the shipping cask lid. The assembly is designed for remote handling and will engage the 45-ton crane hook and the bail on the STSC or shipping cask lid without assistance from workers in the canyon. When attached, the assembly is capable of the same range of motion as the 45-ton crane. The assembly weighs approximately 415 lb and is rated at 19,400 lb (see Figure C-11).

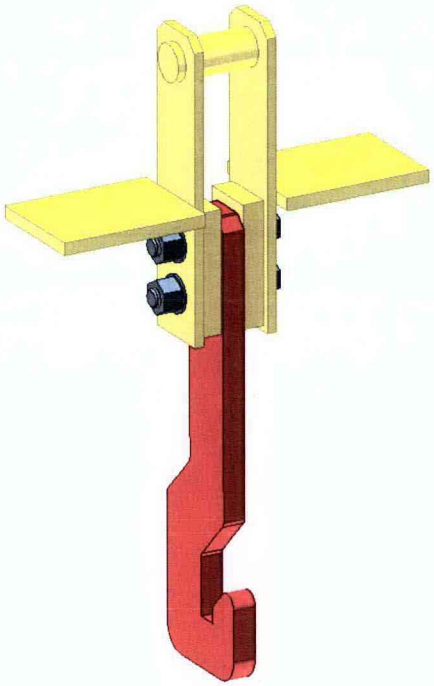
Figure C-11. Adapter Hook Assembly



Extension Hook Assembly

The extension hook assembly (drawing H-2-830641) was designed to act as an interface between the T Plant 10-ton crane hook, the bails on the STSC, and the shipping cask lid. The assembly is designed for remote handling and will engage the 10-ton crane and the bails on the STSC and shipping cask lid without assistance from workers in the canyon. When attached, the assembly is capable of the same range of movement as the 10-ton crane. The extension hook assembly weighs approximately 265 lb and is rated at 19,400 lb (see Figure C-12).

Figure C-12. Extension Hook Assembly



Large Diameter Container Overpack

The STSC Overpack provides containment and storage for a damaged or leaking STSC. The Overpack is cylindrical, made from welded stainless steel, can be handled remotely using the T Plant canyon crane, and is equipped with a removable lid. The Overpack is staged on the canyon deck and placed into the storage cell where the leaking sludge container has been detected. The canyon crane is used to place leaking container into the Overpack; and the secondary containment sump pump transfers the liquids in the sump back into the overpacked leaking container.

General assembly and design details are shown on drawings H-2-830354, and H-2-830355. The STSC overpack container is shown in Figure C-13.

The STSC Overpack lid is designed to fit loosely on the top of the Overpack container and is not structurally attached to the Overpack cylinder in any way. The 1-in. thick stainless steel lid is fitted with a lifting bail to allow it to be removed from a remote location using the T Plant canyon crane. The Overpack lid is also equipped with two 3-in. diameter vents and a Nucfil® filter to ensure adequate venting of hydrogen during storage. The vent holes are placed symmetrically in the Overpack lid to maintain balance.

Figure C-13. STSC Overpack Container

The periphery of the upper 6 in. of the Overpack cylinder is reinforced by a 1-in. thick by 6-in. wide ring that is welded to the cylinder wall. This stiffener ring provides structural integrity at this cylinder elevation to allow the Overpack to be lifted by the two installed lifting trunnions at this location. The lifting trunnions are solid 3-in. bar, 5 in. long that are welded to and extend through the stiffener ring.

The bottom of the Overpack consists of circular 9/16-in. thick stainless steel plate, circumferentially welded to the bottom of the Overpack cylinder and reinforced by a specially designed base frame assembly. The base frame assembly consists of a channel shape rolled to the same diameter as the Overpack cylinder and welded to the bottom of the cylinder. The rolled channel shape contains straight 5-in. wide by 1-in. thick bar that runs the diameter and chord length in five locations within the rolled channel. These straight pieces of bar are welded to the rolled channel at each end and are stitch welded to the Overpack container bottom plate.

The design of the Overpack allows it to be lifted by the lifting trunnions using a specially designed Overpack lifting assembly using the existing T Plant canyon crane. The Overpack may only be moved with the lid in place (to satisfy a facility radiological requirement for contamination control and is not a structural requirement). The Overpack (6,300 lb empty) plus the maximum weight of an STSC (18,500 lb) is lifted using the Overpack lifting device (shown in Figure C-14.

Figure C-14. Overpack Lifting Device

The STSC Overpack is not intended to be used as a "transport container". The actions that could be taken in the event of a leaking STSC (within an Overpack) would be to transfer the contents of the leaking STSC (and residual material contained within the Overpack) to a new STSC. The new STSC could then be loaded into the sludge transport cask for shipment to the processing facility. The sludge transfer system accommodating this type of recovery is yet to be designed, although this recovery option appears to be more cost effective than that of designing and fabricating a new transport system capable of transporting an Overpack.

Surveillance Video Camera System

The T Plant video camera system provides the capability to monitor activities in the T Plant canyon. For sludge handling, the system will aid all remote operations and provides real–time recording of the movement and placement of the STSCs. The existing system was modified for sludge activities. The video camera system includes two portable cameras in Section 3 of the canyon, two cameras mounted on the 45-ton bridge crane, one wall-mounted camera in Section 2 of the canyon, one wall-mounted camera in Section 18 of the canyon, and two cameras in the access tunnel. Cameras are controlled and monitored, and video-tape recorded from Room 218 in the Operating Gallery. Cameras mounted on the 45-ton crane are controlled from the crane cab and can be monitored and video-tape recorded from Room 218.

Confinement Ventilation System

An exhaust duct runs for most of the length of the canyon. The duct is molded into the solid concrete structure, 17ft 6 in. below deck level and 7 ft east of the process cells. This duct measures 10 ft 6 in. square. The exhaust duct begins at Section 20 and runs to Section 3, where it exits the building in an underground concrete duct leading to the 291-T HEPA filter banks and 291-T stack. Each process cell is tied to the exhaust duct. The process cell airspace communicates with the canyon airspace through designed air gaps between the steps in cell cover blocks and the deck concrete structure. The 291-T confinement ventilation system pulls air through the exhaust duct and ventilates each cell by drawing air down through these gaps between the cover blocks and the canyon deck.

An evaluation of the existing condition of the ventilation system versus DNFSB 2004-2 requirements was performed to determine gaps. This evaluation is documented in FH-0601990A R2, DNFSB Recommendation 2004-2, Table 5.1, "*Information for the Hanford Waste Receiving and Packaging (Wrap) and T Plant Facilities*". The evaluation concluded that "*Based on the high cost and only moderate benefits, none of the modifications for the 221-T canyon confinement ventilation system are recommended for implementation.*" Specifically, one identified gap is the fact that the 221-T Canyon has single tiered confinement ventilation systems. The other gaps associated with instrumentation upgrade and HEPA filter addition or replacements do not provide sufficient benefit for the estimated costs and modifications are not recommended.

Based on current operations no modifications are recommended for these facilities. The proposed mission to store KW Basin sludge in the canyon is similar to the existing activities currently conducted at T Plant. Storage of KW Basin sludge does not pose hazards, accident scenarios, or accident consequences that are significantly different from those previously evaluated. Therefore, modifications to the existing confinement ventilation system are not anticipated to be driven by storage of KW Basin sludge.

Canyon Bridge Crane

The T Plant canyon has one electrically operated overhead master bridge crane. The bridge crane, operated from the shielded crane cab, moves parallel to the canyon and is able to access any point on the canyon deck area. The crane is equipped with a 45 ton hoist, a 10 ton hoist, and two 1 ton auxiliary hoists. The 45 ton hoist (which was originally designed as a 75 ton hoist, now de-rated to 45 ton) is used for canyon cell cover block removal and other heavy lifting tasks. The 10 ton hoist is capable of being rotated and is used for precise equipment positioning in the canyon/tunnel. The 10 ton hoist is used to remove STSCs from the transport cask and to place the STSCs into the process cells for storage. The 1 ton auxiliary hoists are used for small loads and do not rotate. The crane operator has control of two electric impact wrenches mounted in tandem with the 1 ton auxiliary hoists for remote equipment removal or installation. This allows for remote operation of equipment in cells or other high dose situations. The crane cab is located behind a shielded wall that runs the length of the canyon. Optical and closed circuit television systems allow the crane operator to perform lifts and manipulations in the canyon without exposure to high radiation sources. The crane cab is equipped with a high efficiency particulate air (HEPA) filtered heating, ventilation and air conditioning system, and a continuous air monitor.

An engineering study (HNF-37927) was completed in September 2008 to assess the existing condition of the canyon crane, determine recommended modifications, and develop rough order magnitude costs to implement the recommended modifications. These modifications would ensure canyon bridge crane availability and reliability for continued operation. These recommended modifications and ROM costs (total of $2.72M) were developed in support of T Plant's extended mission relative to the M-91 project; however, it can be argued none of these modifications are necessary for storage of sludge (i.e., continued preventive maintenance of the crane system should be sufficient for the mission of sludge storage at T Plant). The ROM costs for crane modifications, as determined by HNF-37927, are as follows:

- Mechanical Maintenance -- $830K to replace wire ropes, bridge line shaft bearings, crane drive wheels, monorail hoists, 45/10 ton hoist brakes

- Lighting / CCTV -- $282K to install modern closed circuit television system as a backup to the existing mechanical optics system

- Electrical System -- $1603K to replace the electrical drive systems for trolley and bridge

As a result of the recommendations posed by HNF-37927, the Waste and Fuels Management Project (W&FMP) near term planning assumptions makes provisions to maintain the T Plant canyon crane in a safe and compliant ready-to-serve condition. Upgrades to the canyon crane mechanical optics and electrical systems are planned to take place in FY 2011. The most vulnerable subsystem of the crane is that of the aging mechanical optics system. Installation of a modern multi camera and display closed circuit television system will serve as a backup should the existing mechanical optics system fail beyond repair.

Fire Protection System Water Supply Loop

The Department of Energy (DOE), Contractor Requirements Document (CRD) DOE O 420.1A (Supplemented Revision 0), Facility Safety, Section 6.b.3 requires water supplies for fire protection to be of the looped grid type, providing two independent points of supply and two-way flow where the Maximum Possible Fire Loss exceeds $1 million. The Waste Management Project (WMP) requested an exemption to this requirement for the T Plant complex. Relief from this requirement was recommended by the Fire Hazard Analysis for T Plant Complex (HNF-SD-CP-FHA-002, Rev. 1) and repeated in the most current revision of the Fire Hazards Analysis for the T Plant Complex (HNF-SD-CP-FHA-002, Rev. 2). The DOE exemption to this requirement extends until 2013; however, if T Plant continues to serve its current mission or a new mission is identified this requirement will likely be reevaluated.

The new looped water system will include approximately 5,600 feet of 12 inch pipe, four new fire hydrants, and will be connected to the existing potable water system in two places. This will provide two sources of potable water to T Plant, meeting the requirements for a looped system. In addition, the loop is sized sufficiently to meet future T Plant missions. This route follows the alignment of existing gravel roadways, where possible, and greatly minimizes the chances of encountering underground contamination. This layout has been reviewed by Water Utilities. The estimated cost (rough order of magnitude) for the water line is $1.8 million.

Summary of Key Design Drawings, Calculations, and Technical Evaluations

The following is a list of key design drawings, supporting calculations, and technical evaluations performed for storage of K East Basin sludge at T Plant. This list presents the key documents that provide the technical baseline for storage of KE Basin Sludge that would be used as a starting point for evaluation of the K West Basin sludge storage at T Plant.

Design Drawing	Title
H-2-830343	General Drawing List and Key Plan
H-2-830345	General Arrangement Large Diameter Containers
H-2-830347	Secondary Containment Leveling Frame Assembly
H-2-830348	Secondary Containment Assembly
H-2-830350	Secondary Containment Sump Pump Assembly
H-2-830351	Secondary Containment Leak Detector Support
H-2-830352	Water Addition Container Assembly
H-2-830354	Large Diameter Overpack Assembly
H-2-830640	Lifting Device Load Cell
H-2-830641	Extension Hook Lifting Device
H-2-830805	45-Ton to 10-Ton LDC Adaptor Hook Assembly
H-2-831044	Sludge Handling Inert Gas System P & ID
H-2-831045	Sludge Handling System Inert Gas System General Arrangement
H-2-830361	Enlarged Plans Sections 3, 10, 13, & 15
H-2-830362	Elevations and Details
H-2-830363	Video Camera System Sections
H-2-830364	Video Camera System Elevations and Details
H-2-831046	Sludge Handling Inert Gas System Purge Lance
H-2-831047	Sludge Handling Inert Gas Ventilation General Arrangement

Calculation No.	Title
HNF-8766-M-01	Overpack Container Lifting Lug Stress Analysis
HNF-8766-M-02	Type 1 Container Storage Cell Sump Level and Sump Pump Flow
HNF-8766-M-03	Overpack Container Weight Calculations
HNF-8766-M-04	Overpack Container Shell Thickness and Stress Analysis
HNF-8766-M-07	Lifting Device (Load Cell) and Extension Hook Assembly Analysis
HNF-8766-M-08	Container Plug Analysis
HNF-8766-M-13	Overpack Annulus Water Level and Weight
HNF-8766-CS-009	SHS Cask Vent Tool Leak test Criteria
HNF-8766-C-01	Secondary Containment Assembly, Type 1 Storage Rack Design

HNF-8766-C-02	Secondary Containment Assembly, Volume Calculations
HNF-8766-C-03	Secondary Containment Assembly, Liner Design
HNF-8766-C-04	Secondary Containment Assembly, Liner Lifting Lug Design
HNF-8766-C-05	Secondary Containment Lifting Assembly Design
HNF-8766-C-06	Leveling Frame Assembly Design
HNF-8766-C-07	Overpack Lifting Assembly Design
HNF-8766-C-08	Independent Check of Overpack Top Stiffener Ring
HNF-8766-C-09	Leveling Frame Assembly Seismic Design
HNF-8766-C-10	Water Addition Container and Support Stand Design
HNF-8766-C-11	Sump Pump Encasement Seismic Evaluation
HNF-8766-C-12	Lifting Bail Design
HNF-8766-C-14	Load Cell Support Stand Design
HNF-8766-C-15	Electrical Equipment Anchorage
HNF-8766-C-16	2-Hook Support Stand
HNF-8766-C-17	45-Ton to 10-Ton LDC Adapter Hook Lifting Device

Document No.	Title and Brief Description
HNF-6579	*Baseline Design Criteria for the Sludge Handling System,* establishes the design requirements for Subproject A-13(b), Sludge Handling System.
HNF-6527	*Hazards Evaluation for Storage of Sludge at the Solid Waste Treatment Facility,* identifies accident types (i.e., over pressurization, spills and sprays, drops, hydrogen burn, fire, contamination or injury of operating personnel).
HNF-6964	*Safety Assessment for K Basins Sludge Storage at T Plant,* provides analyses that examine the potential consequences of normal, abnormal, and accident conditions and considerations of worker safety associated with sludge receipt, handling, and storage activities.
HNF-8766	*Final Design report for the Sludge Handling System,* presents a review of the definitive design of the Sludge Handling System.
HNF-8767	*Compliance Matrix for Sludge Handling System*, provides a crosswalk of how each design requirement specified in HNF-6579 has been addressed and satisfied in the final design.

HNF-6033	*Seismic Evaluation of the T Plant 221-T Building for Interim Storage of K Basins Sludge,* provides the seismic evaluation for the T Plant canyon structure documenting the capability to meet Performance Category 2 criteria.
HNF-12563	*Accident and Thermal Analysis for Storing K East Basin Sludge at T Plant,* concludes headspace of vented containers stored in process cells will remain below LFL (4% hydrogen) and provides analysis of water loss due to evaporation.
HNF-18135	*Design Calculations for Gas Flow and Diffusion Behavior in the Large Diameter Container and Cask,* provides the analysis of gas behavior during T Plant operations which include venting the LDC/Cask upon receipt, the cask sweep-through purge, the LDC purge with force argon delivery into the LDC with one open port, followed by the natural sweep-through purge with two open LDC ports.
HNF-11362	*Hydrodynamic and Thermal Behavior of Reactive Sludge in Storage Containers,* analyzes conditions associated with hydrogen bubbles generated within the sludge matrix.
HNF-10858	*Thermal Analysis for T Plant Process Cell Freeze Potential and Over Filled Large Diameter Containers in T Plant,* concludes the sludge-laden LDCs will not freeze in the process cells, and will remain thermally stable during long term storage at T Plant.
HNF-8769	*Estimates of Radiation Dose Rates Near Large Diameter Containers in T Plant,* provides estimates of dose rates at various points in the canyon emitted by sludge-laden LDCs stored in process cells.
HNF-14786	*ALARA Plan for Storage of K Basin Sludge in the T Plant 221-T Canyon,* presents all ALARA related activities required for planning and preparation of LDC sludge storage including design, construction, shipment receipt, cask purging, container offloading/placement, cask closure and shipping release within the canyon.

Appendix D

Alternate Storage Facility
Pre-Conceptual Design Detail

APPENDIX D

Alternate Storage Facility Pre-Conceptual Design Detail

This appendix contains additional pre-conceptual design information for the Alternate Storage Facility (ASF). The ASF consists of a reinforced concrete pad capable of storing 30 or more STSCs contained in storage caissons. The caissons provide shielding as well as secondary confinement for the RH TRU sludge contained in the STSCs. The caissons are positioned in two rows of approximately 15 units each. A space between the rows provides STS cask transporter access. A gantry crane (nominally 40-ton capacity) straddles the two rows of caissons and the central transporter access aisle and together with a shielding bell is used to trans-load the STSCs from the STS into the caissons. The crane runs on two pad level rails, one on each outer side of the caisson rows. Additional equipment includes a large capacity forklift used for caisson positioning, an inert gas cask purging system for STS cask unloading, Sweep Air caisson ventilation system, Water Level Detection system, and STSC leak detection system. The ASF pad area is enclosed inside a perimeter fence, includes specific new area lighting, and is provided with paved entry and exit roadways. Figure D-1a shows a plan view of the ASF layout at the Canister Storage Building (CSB) area.

The ASF pad layout is shown in elevation view with the STS trailer in trans-loading position on Figure D-1b. A standard 6' person shown in this and other Figures gives a sense of relative sizes – no inference of personnel protective equipment requirements is intended.

Figure D-1a. Alternate Storage Facility Pad Conceptual Layout

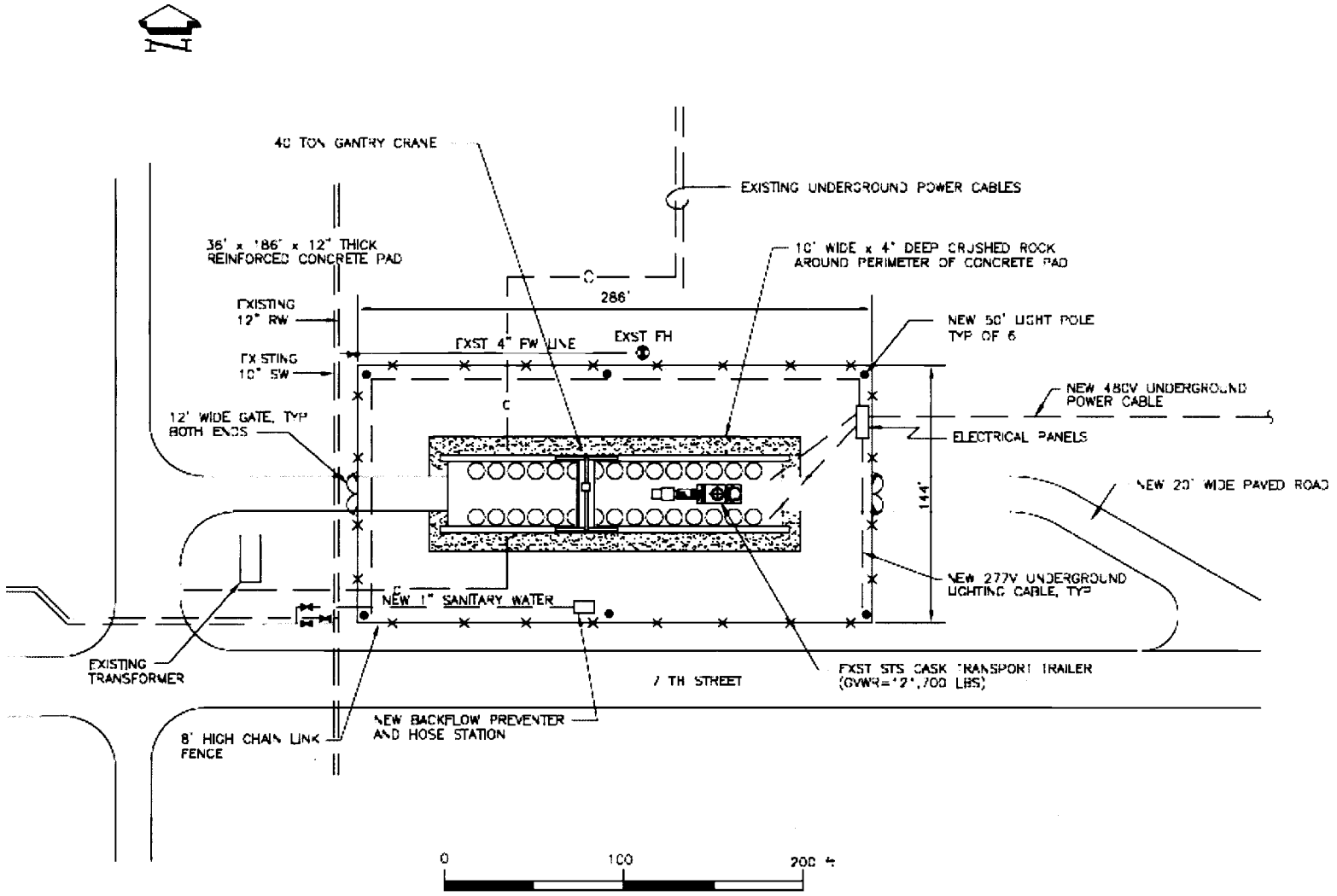
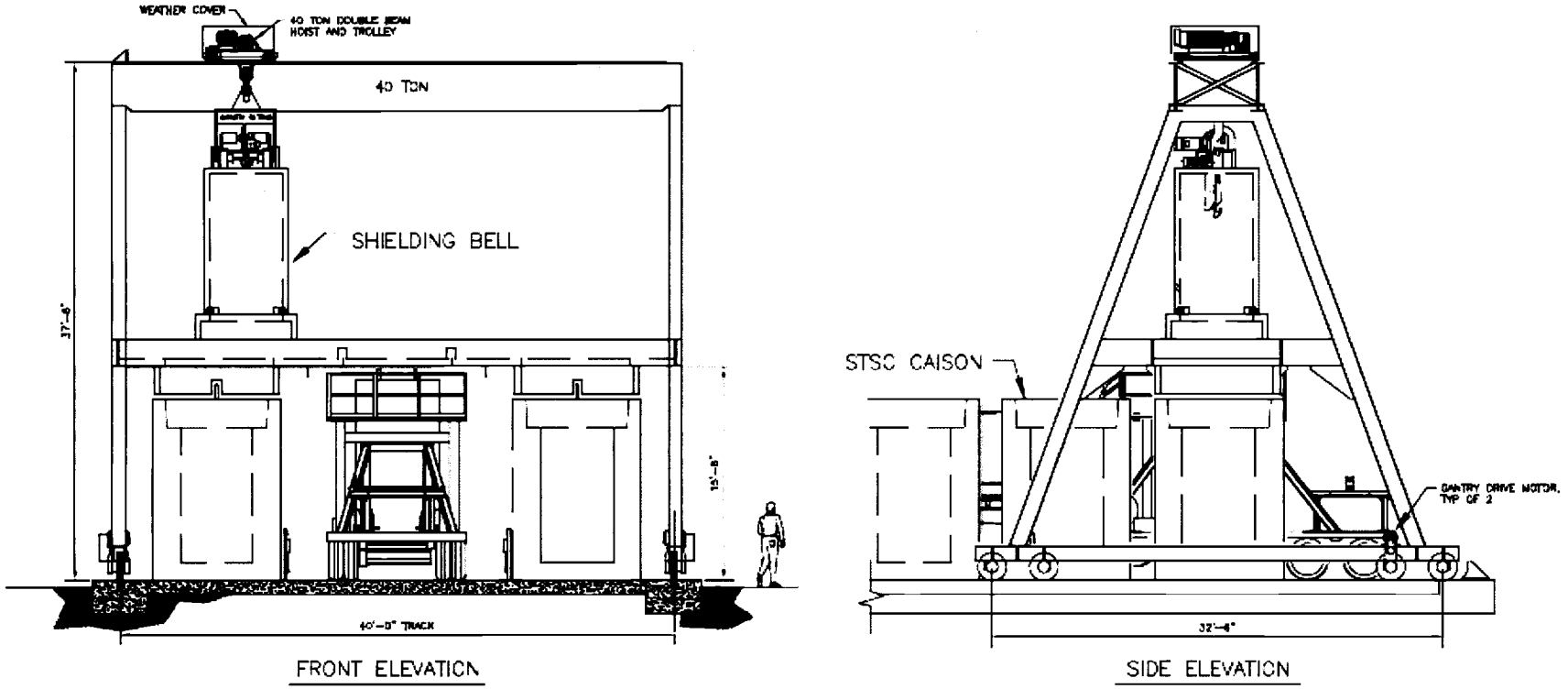


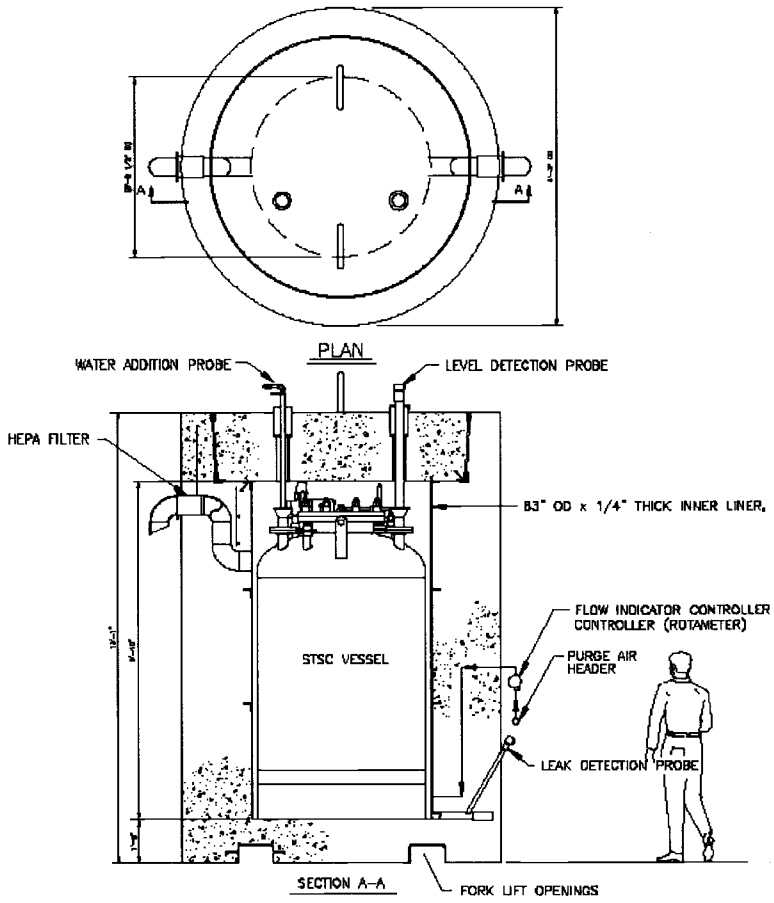
Figure D-1b. Alternate Storage Facility Pad Gantry Crane



A storage caisson containing an STSC is depicted in Figure D-2. Water addition, level detection, leak detection, and sweep air connections are also shown. Specific design details for these systems may result in significant changes relative to what is shown on the figure. For example, additional design calculations and/or testing may demonstrate that the requirement for removal of hydrogen generated in the STSCs is adequately met through convective ventilation.

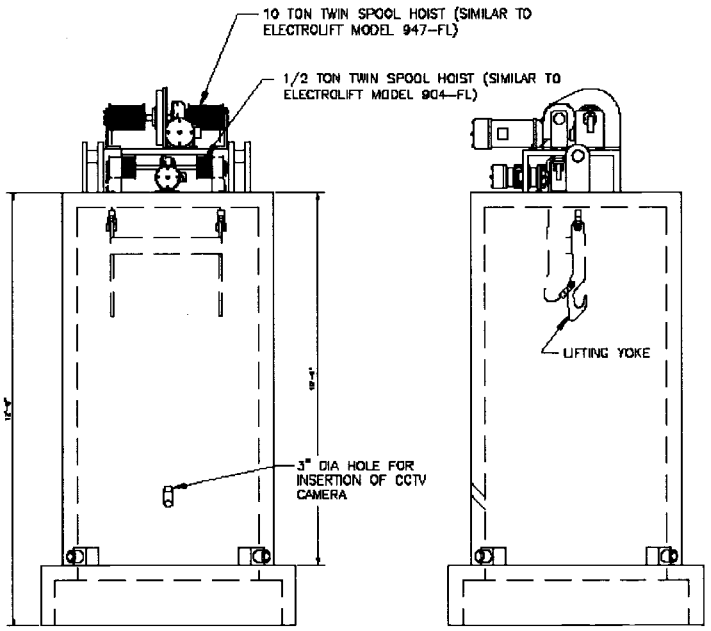
Satisfactory demonstration of convective ventilation would eliminate the need for a powered ventilation system to sweep the hydrogen from the interior of the caissons. Diurnal and seasonal temperature changes and the induced caisson breathing both impact the designs of the level detection, water addition, leak detection, and sweep air systems and must be appropriately accounted for. It is also possible more detailed analyses may show that heating features to prevent freezing and shade provisions to control summer-time heat buildup are required. On the other hand, studies performed for Phase 2 design of the treatment facility may show that pre-treatment on the ASF pad by allowing for warmer storage temperatures is desirable.

Figure D-2. Storage Caisson



The use of a Shielding Bell, one possible approach to ALARA design, is shown on Figure D-3. The provision of shielding, identification of a personnel exclusion area, and limitation of time near the STSC are factors to be optimized in the final design. In the concept described here for cost and schedule comparison purposes, the Shielding Bell is vital to protection of facility workers and anyone else in the nearby area. This is because of the relatively high radiation associated with an unshielded STSC. Due to weight restrictions associated with the STS trailer design, the shielding afforded by the bell is less than that available from the caisson and is not sufficient to allow facility workers to remain in close proximity to the STS cask or the caisson during STSC trans-loading. If additional shielding is required, then as-yet un-designed temporary trailer support fixtures provide a potential solution

Figure D-3. Shielding Bell



The figures below are provided to more completely describe the ASF operation sequence. The various steps of the sludge receipt operation and maintenance activities during in-caisson storage are described below. Figures D-4a through D-4f show the receipt and storage operations as conceived at the ASF.

Figure D-4a. STSC Transfer to Storage Caisson – Remove Caisson Cover Block

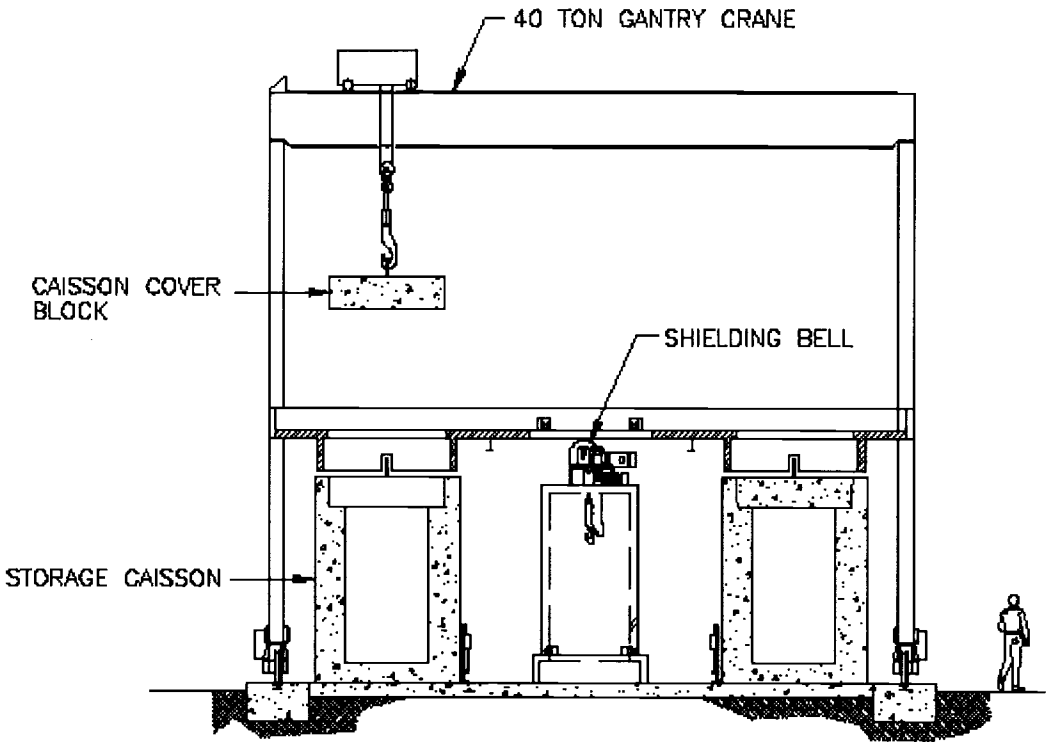
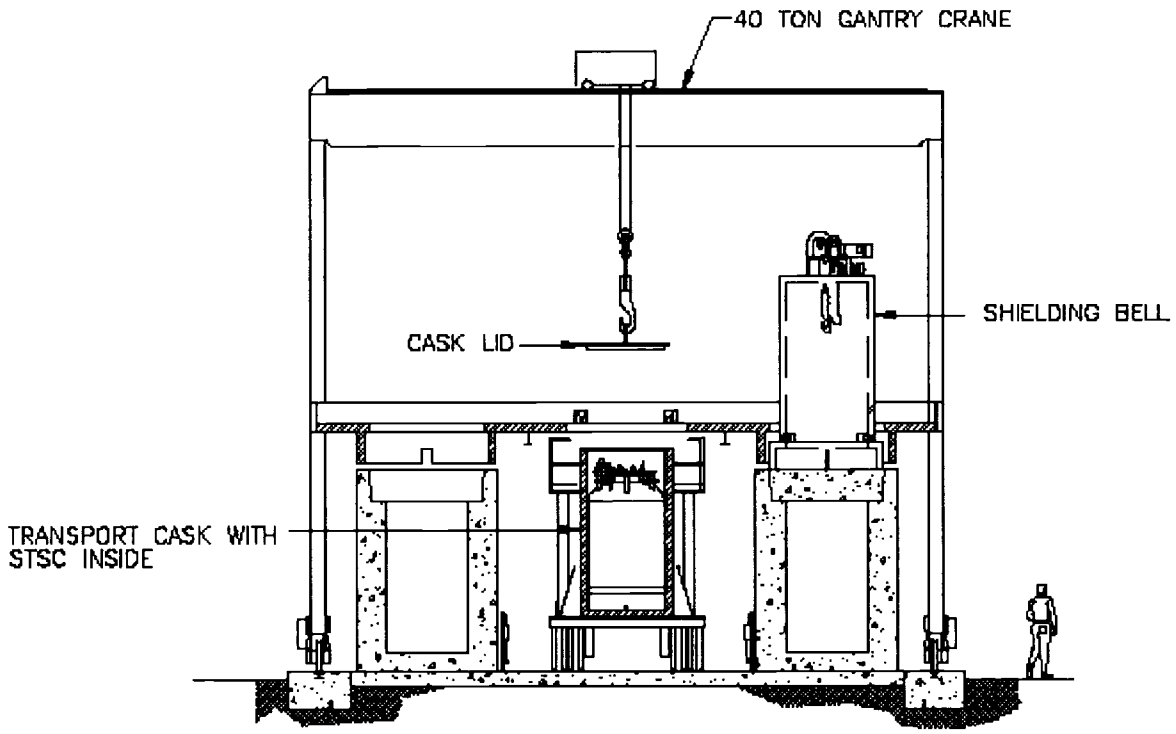
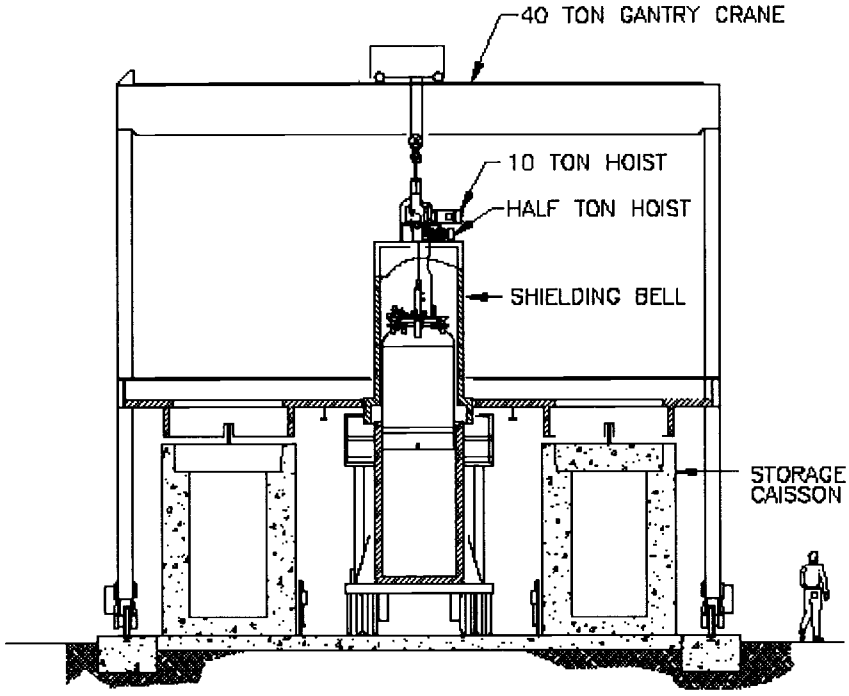


Figure D-4b. STSC Transfer to Storage Caisson – Remove STS Cask Lid



- MOVE THE SHIELDING BELL FROM ITS STORED POSITION ON THE PAD TO A POSITION ON TOP OF THE OPPOSING STORAGE CAISSON.
- UN-BOLT THE CASK LID, THEN MOVE THE TRANSPORT TRAILER UNDER THE 40 TON HOIST.
- USING THE 40 TON HOIST, RAISE THE CASK LID. PULL THE TRANSPORT TRAILER FORWARD AND PLACE THE LID ON THE PLATFORM PROVIDED ON THE TRAILER.

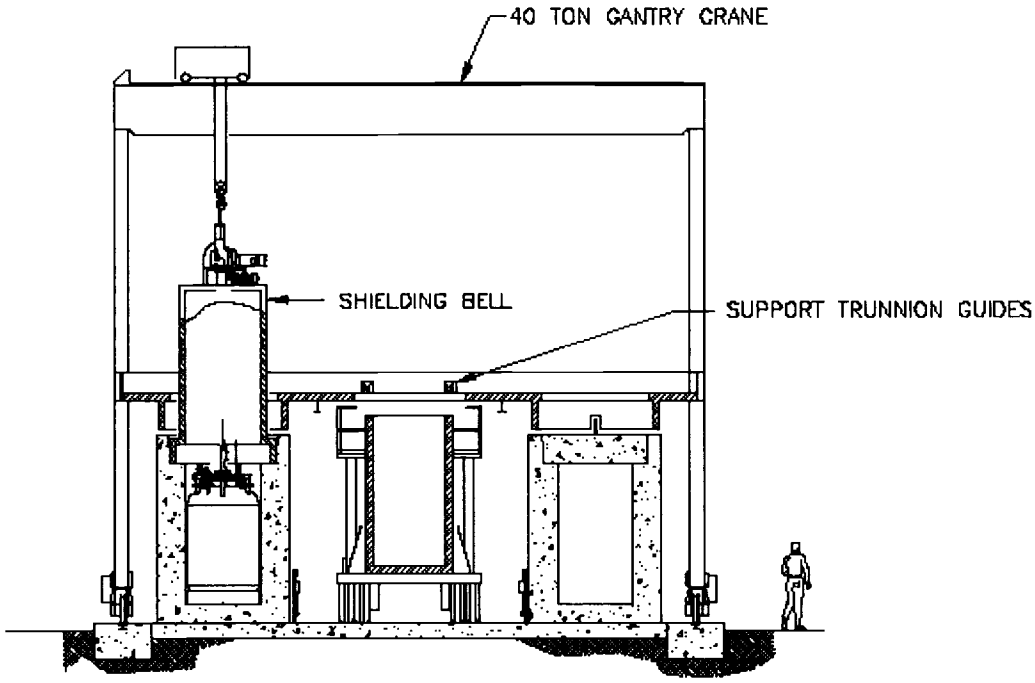
Figure D-4c. STSC Transfer to Storage Caisson – Lift STSC into Shielding Bell



- REPOSITION TRANSPORT TRAILER TO RECIEVE THE SHIELDING BELL.
- POSITION THE BELL OVER THE CASK. EXTEND THE 4 SUPPORT TRUNNIONS ON THE BELL AND LOWER IT UNTIL THEY REST IN THE TRUNNION GUIDES.
- TRANSFER STSC FROM CASK TO BELL USING 10 TON HOIST ON TOP OF SHIELDING BELL. USE THE REMOTE CCTV TO CONFIRM THAT HOOKS IN THE INTERNAL LIFTING YOKE ARE ENGAGED.

NOTE: BOTH THE 10 TON AND THE HALF TON HOISTS OPERATE TOGETHER AT THE SAME SPEED DURING THE RAISING AND LOWERING OF STSC.

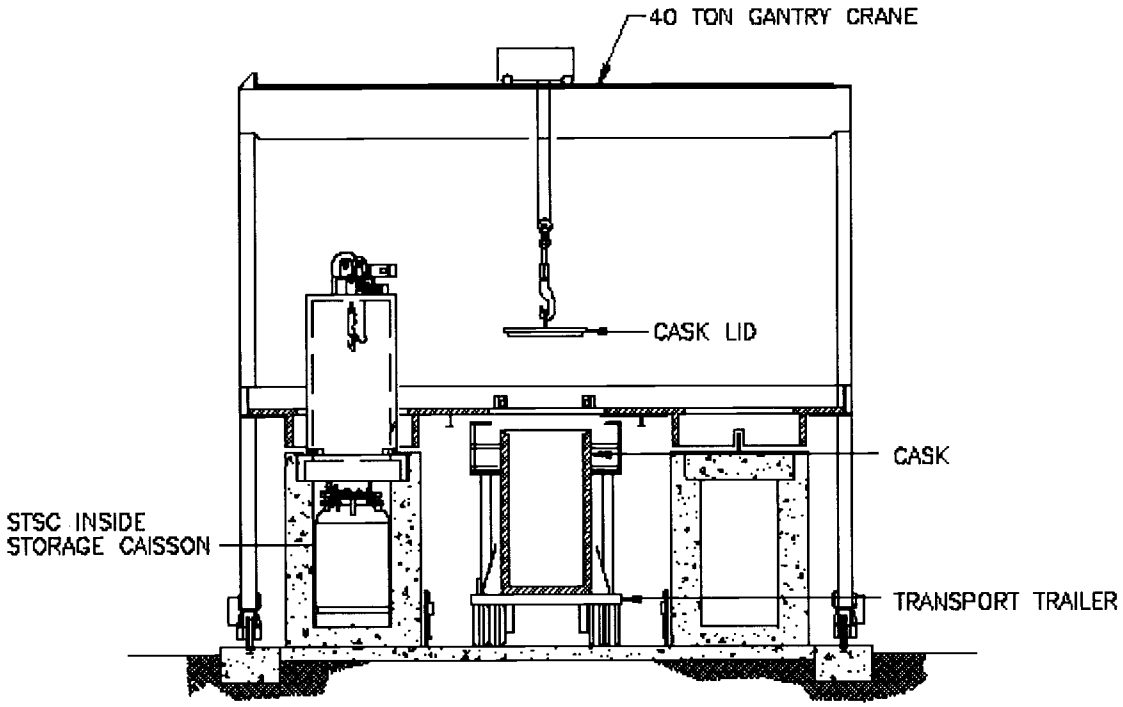
Figure D-4d. STSC Transfer to Storage Caisson – Lower STSC into Caisson



- USING THE 40 TON HOIST, RAISE SHIELDING BELL, WITH STSC INSIDE, JUST HIGH ENOUGH TO CLEAR SUPPORT TRUNNION GUIDES.
- MOVE BELL TO POSITION IT OVER STORAGE CAISSON, THEN LOWER IT ON TO THE CAISSON. PERSONNEL MUST REMAIN A MIN. OF 50 FEET AWAY FROM CASK DURING THIS TRANSFER.
- USING 10 TON HOIST HOOK WITHIN THE SHIELDING BELL, LOWER THE STSC INTO STORAGE CAISSON. USE THE HALF TON HOIST HOOK ALSO LOCATED IN THE BELL, TO DISENGAGE AND CLEAR STSC LIFTING ATTACHMENTS.

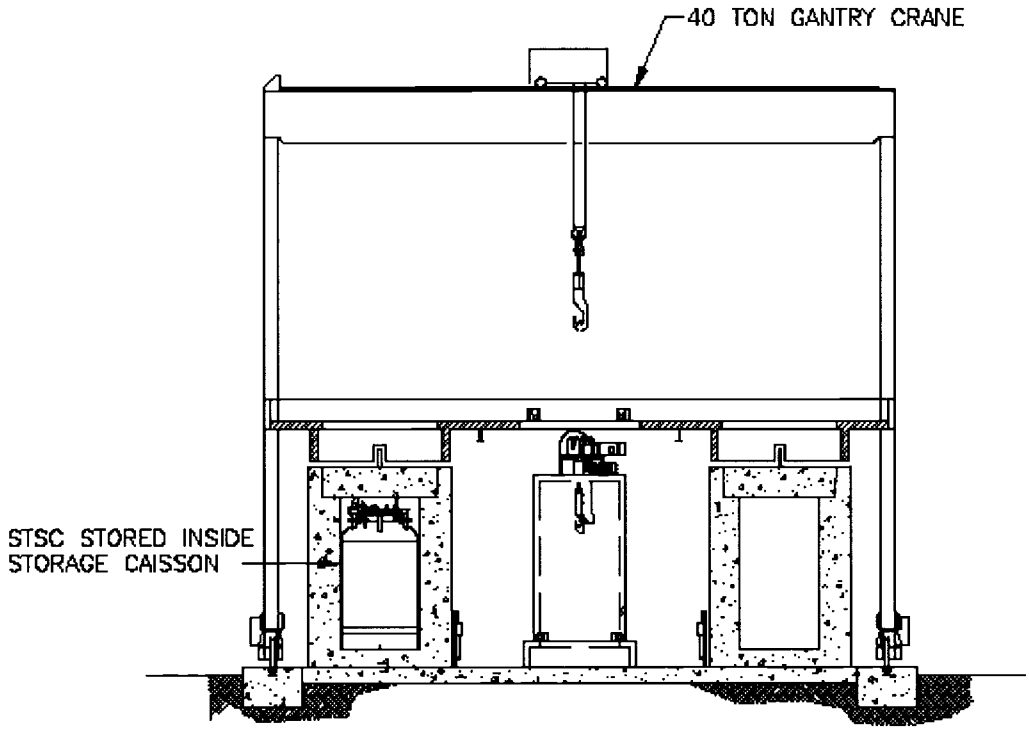
NOTE: SHIELDING BELL'S INTERNAL CCTV IS USED TO VERIFY THAT STSC LIFTING YOKE HOOKS ARE CLEAR OF LIFTING ATTACHMENTS PRIOR TO RETRACTION.

Figure D-4e. STSC Transfer to Storage Caisson – Replace STS Cask Lid



- USING THE 40 TON HOIST, RETRIEVE CASK LID FROM BACK OF TRAILER AND PLACE IT ON THE CASK.
- REMOVE THE TRAILER FROM THE PAD.

Figure D-4f. STSC Transfer to Storage Caisson – Return Shielding Bell



- USING THE 40 TON HOIST, RETURN THE SHIELDING BELL TO ITS STORED POSITION ON THE PAD.
- RETRIEVE AND REPLACE THE STORAGE CAISSON COVER BLOCK. TRANSFER IS NOW COMPLETE.

SPECIFIC OPERATIONS AND MAINTENANCE ACTIVITIES

Operations activities are as follows:

- In preparation for trans-loading of the STSC into a pre-identified storage caisson, the caisson lid is removed and set aside using the gantry crane. (See Figure D-4a.)
- Upon arrival at the storage pad, the cask transport trailer (STS transporter) is driven into the specified trans-loading location between the legs of the gantry crane.
- The STS cask is vented and purged using the inert gas system (IGS - manual operation).
- Cask lid bolts are removed and the cask lid lifting fixture is attached (manual operation).
- The gantry crane removes cask lid and sets it onto its stowed position on the STS trailer (remote operation). (See Figure D-4b.)
- The gantry crane removes the STSC cleanout port plug and IGS is used to purge the STSC through a dedicated opened port (remote operation).
- The gantry crane hoists the STSC from the STS cask and into the shielding bell. (See Figure D-4c.)
- The gantry crane moves the shielding bell over and lowers the STSC into the storage caisson (remote operation). (See Figure D-4d.)
- The gantry crane places the STS lid back on the STS cask and the transporter is driven to an empty STSC loading location. (See Figure D-4e.)
- The gantry crane places the Storage Caisson lid into position and places the shielding bell in its stored location between the caisson rows. (See Figure D-4f.)
- The gantry crane removes the cask lid and loads the STS cask with an empty STSC. The cask lid is replaced, and the cask transport trailer exits the storage pad area.
- A large forklift positions empty STSCs and empty storage caissons into the gantry crane work area as required.
- Initial water level measurements are taken of each newly-loaded storage caisson using the water level detection system. Conceptualized water level detection and water addition probes are shown on Figure D-5.
- Periodic surveillance is performed to verify container integrity and to confirm that there is sufficient water to cover the settled sludge. Water is maintained over the sludge to keep it from becoming difficult to remove from the STSC at a later date. Water level change can occur due to leaking from the STSC, evaporation, and/or ongoing sludge

expansion from uranium metal corrosion. No safety issue is associated with loss of water cover; other means of water loss detection, such as loaded caisson weighing, may later be considered. However, caisson-located designs for water addition, level detection and leak detection are included in this design for cost and schedule purposes. Figure D-6 shows a conceptual design for the leak detection feature and the plug removal tool.

- When water level measurement indicates the need, water is added to each STSC. The specific frequency for this activity is based on calculations and measurements.

Figure D-5. STSC Water Level Detection and Addition System Concepts

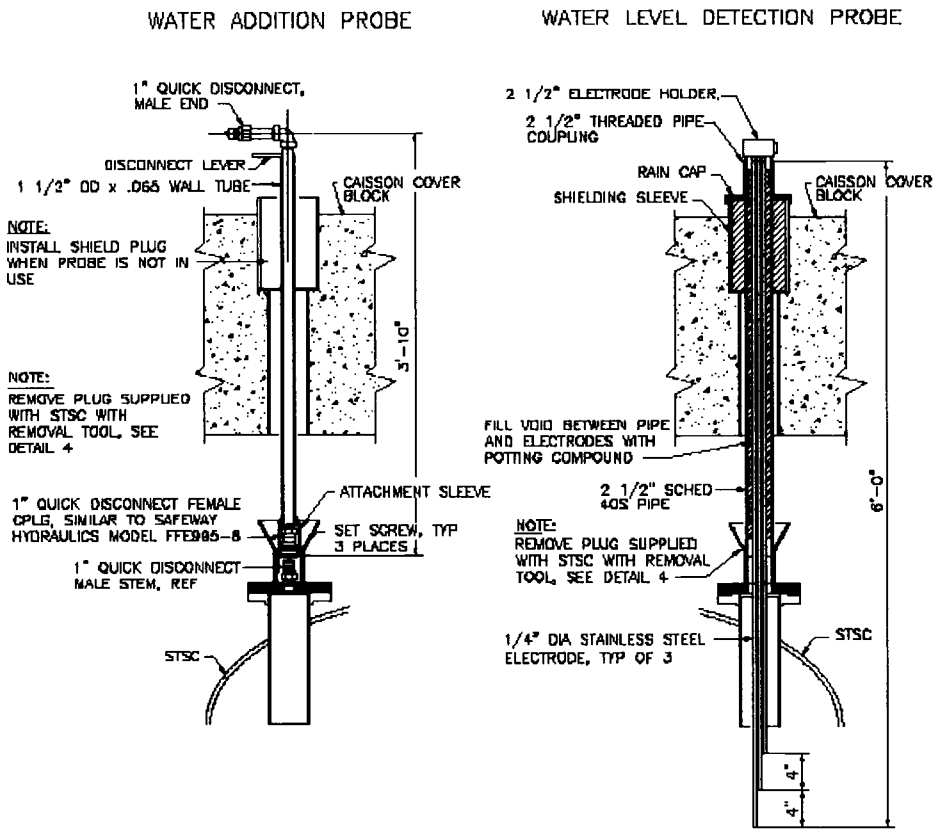
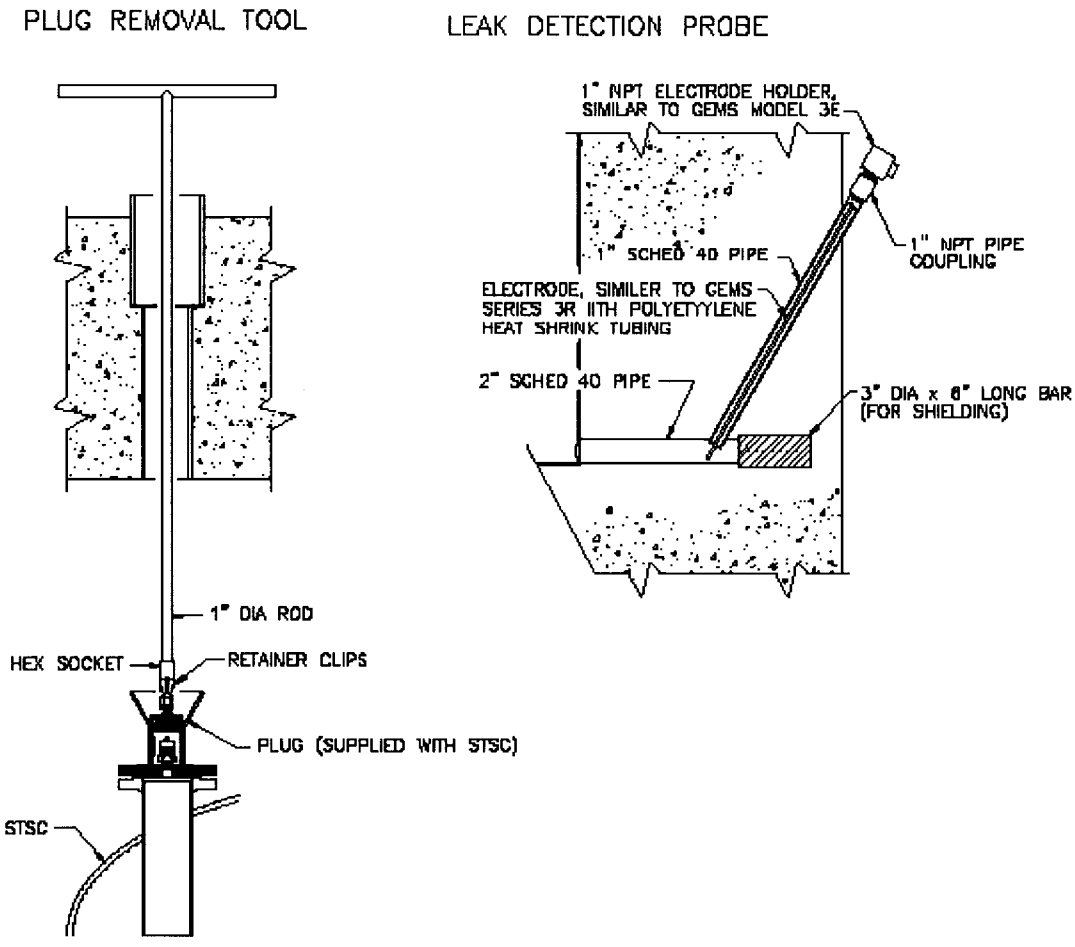


Figure D-6. STSC Plug Removal and Leak Detection Concepts



MAINTENANCE ACTIVITIES

- Preventive maintenance is performed on the "below the hook" lifting devices in accordance with the Hanford Site Hoisting and Rigging Manual. The lifting devices are subjected to "heavy service" conditions; therefore, they are required to be inspected every 6 months. The gantry crane reeving, cables, and structure are also inspected periodically as required by the manufacturer and the Hoisting and Rigging Manual.

- The heavy duty forklift is maintained by vehicle maintenance (Hanford Central Shops) personnel.

- The IGS pressure gages and flow meters are calibrated at regular intervals (probably annually).

- Preventive and other periodic maintenance of gantry bridge travel rails and overhead gantry crane trolley rails is required.

- Inspection and maintenance of the shielding bell, the forklift and any other mechanical devices associated with the trans-loading operations is performed regularly.

- The water addition system is inspected and maintained to ensure availability for use if and when water fill activities are deemed necessary.

- Leak detection system inspection and maintenance ensures suitability for use.

- The positive ventilation sweep air system is inspected and maintained to ensure continued availability for use. Maintenance of the air compressor and airflow metering change-out calibration activities are conducted in accordance with manufacturers' recommendations and/or safety requirements.

Appendix E

Cost Estimate Detail

Table of Contents

Interim Storage of K Basin Sludge

T Plant vs. Alternative Storage Facility

Basis of Estimate

Purpose

The purpose of these estimates is to provide a cost comparison of up grading, T Plant, an existing canyon facility or building an alternate storage (open air) facility with low operating and maintenance costs to safely store the K Basin sludge. Below is the summarized cost data for the Interim Storage of K Basin sludge for each alternative.

Lifecycle Costs	T-Plant Sludge Storage 0%MinSafe $M	New Facility for Sludge Storage $M
Engineering, Procurement, Construction	***$13***	***$24***
Operations	***$3***	***$2***
Operations & D&D		***$3***
Total Life Cycle	***$16***	***$29***
Class 3/4 Expected Accuracy Range	Class 3	Class 4
(-20% to + 30%)/ (-30% to +50%)	$13 to $20 M	$22 to $41 M

Estimate Types

The T Plant estimate is a Class 3 estimate per the Association for the Advancement of Cost Engineering (AACE) International definitions. A Class 3 estimate has an expected accuracy range from a minus 20% to a plus 30 %. A more thorough discussion of a Class 3 estimate is included at the end of this document.

The Alternate Facility estimate is a Class 4 estimate per the Association for the Advancement of Cost Engineering (AACE) International definitions. A Class 4 estimate has an expected accuracy range from a minus 30% to a plus 50 %. A more thorough discussion of a Class 4 estimate is included at the end of this document.

Scope

The scope for the T Plant estimate is to complete upgrades to store the sludge in the existing cells of a Category 2 canyon facility. Facility utilizes active negative pressure HEPA filtration ventilation system. Estimate items were based on four sets of data:

- Existing drawings from the "T-Plant, Sludge Handling System Subproject SNF Sub Project A-13(b)" a previous project.
- Conceptual estimates for the previous project with some actual costs.
- Discussions with T Plant personnel (Facility Director, Facility Operations Manager, Facility Operations Lead, Facility Engineering Lead, Manager of Operations Waste compliance).
- Discussions with site experts (Nuclear Safety, Environments Remediation, IS&H, etc)

The scope for the Alternate Facility estimate is to store the waste in concrete caissons on a secure, fenced, concrete pad. Caissons storage units use a active, low pressure HEPA filter ventilation. Estimate items were based on three sets of data.

- Three conceptual drawings: Civil Unloading and Storage Site/Plot Plan, Assembly STSC Unloading 40 ton Gantry Crane, and Assembly STSC Transfer Bell Plan and Elevations.
- Discussions with Plant personnel.
- Discussions with site experts (Nuclear Safety, Environments Remediation, IS&H, etc)

Cost Sources

The construction costs are based on the work scope quantity take off. Material pricing and labor hours were developed from RS Means Commercial Building Construction Costs, site engineering experience, and Subject Matter Experts (SME). Labor productivity was adjusted from commercial to site specific nuclear process quality control rates. Quotes from Vendors were obtained where possible. Costs from previous estimates were escalated to current dollars and used when quotes were not obtainable.

The estimating software used was Timberline Extended by Sage Software. The estimating software pulls standard cost data from the RS Means Commercial Building Construction Cost database. The software also has the flexibility to make customized cost items as required per the scope of the project.

Hanford site employee rates by the COCS classification were per the current rates being used on site. Construction Craft Labor rates were based on the HSSA Craft Labor rates for January 1, 2009. These rates included travel, base wage, Workman's Comp, FICA, SUI, FUTA, and fringe.

Methodology

Two separate estimates are included in this report. The first estimate's scope is for the expansion and upgrade of T Plant to store the sludge on the Hanford site. The second estimate's scope is to design, construct, and store, on a concrete pad, the K Basin sludge. The estimates include the following Lifecycle costs:

- Capital Construction Costs
- Program Costs
- Operations Costs
- D&D Costs (New Pad)

Based on the scope of work detailed estimate items were generated in the estimates. Detailed estimate items were derived from SME's man hour estimates and drawings (previous construction or conceptual). Typical items that are associated with the work were also included. For instance, placing concrete would require a typical item, testing the concrete. The detailed estimate items were coded with three levels of a WBS, schedule activity, fiscal year, work scope item, and by contract type. These codes enable various sorting and comparison to similar coded estimates and to apply various applicable markups to the items.

Work Breakdown Structure

The scope included for each estimate is broken down by the Work Breakdown Structure (WBS). Level 1 WBS T, is the associated scope for the T Plant Sludge Storage project. Level 1 WBS A, is the associated scope for the Alternate Storage Facility. WBS Level 2 is the same for each project.

WBS Level 2	Description
.01	Project Management
.02	Project Support
.03	Environmental Doc., Permitting, & Waste Acceptance
.04	Nuclear Safety
.05	Radiological Control
.06	Industrial Safety
.07	Quality Assurance
.08	Safeguards & Security
.09	Technology Development
.10	Conceptual Design
.11	Preliminary Design
.12	Final Design
.13	Engineering During Construction
.14	Procurement
.15	Construction
.16	Start up & Testing
.17	Contingency
.18	Operations and Maintenance
.19	Deactivation & Decommissioning

Markups

The following marks ups on construction labor were applied as follows:

- Small tools 1.0%
- Consumables 3.0%
- PPE 4.0%.

A labor productivity adjustment of 118% add on factor was applied to labor hours for site work. A labor productivity adjustment of 218% add on factor was applied to the T Plant hot cell work scope. These factors adjust commercial database productivity for different work

site conditions. The productivity factor evaluation for each factor is explained later in this report.

Other markups ("Addon" amounts) were applied as follows:

- Sales Tax on materials and equipment is 8.3%
- Public Liability Insurance is 2% of costs
- Performance and Payment Bond is 2.0%
- Subcontractor Fee/Profit 25%
- General Requirements (on site construction contractor) 18%
- Escalation by Fiscal Year at a compounded rate of 2.0% per year
- Site G&A is 8.5%

The estimating software (Timberline) applies the Addon amount to the direct costs on the Totals (last) page of the estimate. The estimating software can allocate these Addon costs back into the estimate spreadsheet either on the cost elements or in the Addon Amount Column. When the Addon Amount Column is used, each of the different Addon amounts applied to all the cost elements on that line item are summed for a combined total Addon amount. Due to the multiyear duration of this lifecycle cost estimate a minimum number of Addon criteria were used for the allocation process. This method takes the Addon costs calculated and allocates (spreads) the dollars over the grouping designated. This method results in about 0.8% cost delta between where the costs were calculated and where the costs are spread.

The estimates were prepared in 2009 dollars. The project costs were escalated for work in years 2010 through 2026. Costs were escalated by 2.0% per year.

A graduated risk/contingency factor was applied on each line item in the estimate. Factor ranged from 0% on Operations and D&D costs to 35% on the concrete storage Caisson. T Plant Contingency ranged from 5% to 25% with a Midpoint at 15%. The New Pad Storage Contingency ranged from 15% to 35 % with the Midpoint at 25%. Contingency was totaled by year, removed from the "add on" Totals page and placed in "WBS .17" by year.

Engineering Costs for the New Storage Pad were based on a percentage of the construction costs. They are listed below:

- Conceptual Design @ 10%
- Preliminary Design @ 15%
- Detailed Design @ 30%
- Engineering and Inspection During Construction@ 20%

Costs for Project Management, Construction Management, Procurement, Nuclear Safety, etc. were resource loaded by year based on SME man hour estimates.

Comparisons

Cost Comparison by Fiscal Year

Year	T-Plant Sludge Storage 0%MinSafe $M	Alternate Storage Facility $M
Fiscal Year 2010	$.6	$3.1
Fiscal Year 2011	$2.3	$3.3
Fiscal Year 2012	$5.3	$3.8
Fiscal Year 2013	$4.8	$6.3
Fiscal Year 2014	$1.4	$7.6
Fiscal Year 2015	$.1	$.5
Fiscal Year 2016	$.1	$.3
Fiscal Year 2017	$.1	$.1
Fiscal Year 2018	$.1	$.1
Fiscal Year 2019	$.1	$.1
Fiscal Year 2020	$.1	$.1
Fiscal Year 2021	$.1	$.1
Fiscal Year 2022	$.1	$.1
Fiscal Year 2023	$.1	$.1
Fiscal Year 2024	$.1	$.1
Fiscal Year 2025	$.3	$.5
Fiscal Year 2026		$2.6
Total	**$15.7**	**$29.2**

Cost Comparison by WBS Level 3

WBS Lvl 3	Description	T-Plant Sludge Storage 0%MinSafe $M	Alternate Storage Facility $M
.01.01	Project Management	$1.3	$2.0
.01.02	Construction Management	$2.0	$2.6
.02.01	Project/Facility Support	$.7	$.9
.03.01	Environmental Documentation	$.4	$.4
.03.03	Waste Acceptance	$.0	$.1
.04.01	Nuclear Safety	$.9	$1.8
.05.01	Radiological Control	$.1	$.1
.06.01	Industrial Safety	$.1	$.1
.07.01	Quality Assurance	$.1	$.2
.08.01	Safeguards & Security	$.0	$.1
.09.01	Technology Development		$3.8
.10.01	Conceptual Design		$.5
.11.01	Preliminary Design		$.8
.12.01	Final Design	$.2	$1.6
.13.01	Engineering During Construction	$.1	$1.1
.14.01	Procurement Support	$.1	$.2
.14.02	Equipment Procurement	$.5	$2.0
.15.01	New Construction - Storage Pad		$2.1
.15.03	Bldg. Modifications	$5.0	
.16.01	CORAMI evaluation	$.0	$.0
.16.02	Procedure development	$.0	$.0
.16.03	Readiness Activities/Planning	$.1	$.1
.16.04	System Tests	$.2	$.1
.16.05	Startup	$.1	$.1
.17.01	Contingency	$1.1	$3.8
.18.01	Operations	$1.1	$.4
.18.02	Maintenance	$1.7	$1.4
.19.01	Deactivation & Decommissioning		$.9
.19.02	Demolition		$.7
.19.03	Site Restoration		$.1
.19.04	Contractor Staff & office		$1.3
	Total	**$15.7**	**$29.2**

T Plant Sludge Storage 0% Min Safe

Project name T-Plant Sludge Storage R2

Labor rate table Hanford FY09

Equipment rate table COMM2008

Notes
T Plant Sludge Storage - 0 % Min Safe Costs
2010 Project Starts
2011 Site Modification
2012 Final Design & Long Lead Procurement
2013 Procure and Install- Cell up grades
2014 Unload and Storage Operations Maintenance and Min Safe
2015 Storage, Water addition, Maintenance
2016 Storage, Water addition, Maintenance
2017 Storage, Water addition, Maintenance
2018 Storage, Water addition, Maintenance
2019 Storage, Water addition, Maintenance
2020 Storage, Water addition, Maintenance
2021 Storage, Water addition, Maintenance
2022 Storage, Water addition, Maintenance
2023 Storage, Water addition, Maintenance
2024 Storage, Water addition, Maintenance
2025 Storage, Water addition, Maintenance, Load out and Ship

Report format Sorted by 'WBS Lvl 1/WBS Lvl 2/WBS Lvl 3/Year/Sch Acty/Class ID'
'Detail' summary

T Plant Sludge Storage 0% Min Safe

CH2MHILL

WBS Lvl 2	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
	T Plant Storage									
.01	Project Management	31,859.6	2,784,511	8,260				2,792,771	478,678	3,271,449
.02	Project Support	7,020.0	578,690					578,690	83,873	662,563
.03	Environmental Doc., Permitting, & Waste Acceptance	4,530.1	375,905		10,000			385,905	54,908	440,813
.04	Nuclear Safety	7,924.0	748,131					748,131	103,094	851,225
.05	Radiological Control	940.0	89,253					89,253	12,807	102,060
.06	Industrial Safety	780.0	55,380					55,380	8,027	63,407
.07	Quality Assurance	1,144.0	86,086					86,086	13,382	99,468
.08	Safeguards & Security	320.0	18,078					18,078	2,466	20,545
.12	Final Design	2,040.0	179,454					179,454	28,216	207,669
.13	Engineering During Construction	1,500.0	121,845					121,845	21,743	143,588
.14	Procurement	1,230.0	72,480	370,790				443,270	102,530	545,799
.15	Construction	37,078.6	2,174,871	403,495	1,000,880	238,965		3,818,211	1,156,678	4,974,889
.16	Start up & Testing	4,840.0	363,023					363,023	64,782	427,805
.17	Contingency						979,622	979,622	158,184	1,137,806
.18	Operations and Maintenance	29,952.0	1,880,965	198,800	27,864		41,250	2,148,879	601,227	2,750,107
	T Plant Storage	131,158.2	9,528,672	981,345	1,038,744	238,965	1,020,872	12,808,597	2,890,594	15,699,192

T Plant Sludge Storage 0% Min Safe

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Estimate Totals

Description	Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total	
Labor	9,528,672		131,158.221 hrs				60.70%	
Material	981,345						6.25%	
Subcontract	1,038,744						6.62%	
Equipment	238,965		2,768.804 hrs				1.52%	
Other	1,020,872						6.50%	
	12,808,598	**12,808,598**					**81.59**	**81.59%**
Sales Tax	81,452			8.30000 %	C		0.52%	
Sales Tax on Rental Equip	19,834			8.30000 %	C		0.13%	
	101,286	**12,909,884**					**0.65**	**82.23%**
Construction General Req.	171,356			18.00000 %	C		1.09%	
	171,356	**13,081,240**					**1.09**	**83.32%**
Subcontractor Liability Ins.	23,399			2.00000 %	C		0.15%	
Subcontractor Bond	29,248			2.50000 %	C		0.19%	
	52,647	**13,133,887**					**0.34**	**83.66%**
Subcontractor OH&P	292,484			25.00000 %	C		1.86%	
	292,484	**13,426,371**					**1.86**	**85.52%**
FY2010 Escalation	11,353			2.00000 %	C		0.07%	
FY2011 Escalation	80,369			4.04000 %	C		0.51%	
FY2012 Escalation	274,288			6.12100 %	C		1.75%	
FY2013 Escalation	298,531			8.24300 %	C		1.90%	
FY2014 Escalation	122,280			10.40800 %	C		0.78%	
FY2015 Escalation	9,664			12.61600 %	C		0.06%	
FY2016 Escalation	11,390			14.86900 %	C		0.07%	
FY2017 Escalation	13,149			17.16600 %	C		0.08%	
FY2018 Escalation	14,944			19.50900 %	C		0.10%	
FY2019 Escalation	16,775			21.89900 %	C		0.11%	
FY2020 Escalation	18,643			24.33700 %	C		0.12%	
FY2021 Escalation	20,548			26.82400 %	C		0.13%	
FY2022 Escalation	22,491			29.36100 %	C		0.14%	
FY2023 Escalation	24,473			31.94800 %	C		0.16%	
FY2024 Escalation	26,494			34.58700 %	C		0.17%	
FY2025 Escalation	77,539			37.27900 %	C		0.49%	
	1,042,931	**14,469,302**					**6.64**	**92.17%**
Site G&A on Markups	141,160			8.50000 %	O		0.90%	
General & Administrative	1,088,731			8.50000 %	C		6.93%	
	1,229,891	**15,699,193**					**7.83**	**100.00%**
Risk - Zero					C			
Risk - Low					C			
Risk - Low - Medium					C			
Risk - Medium					C			
Risk - Medium - High					C			
Risk - High					C			
		15,699,193						**100.00%**
Total		***15,699,193***						

T Plant Sludge Storage 0% Min Safe

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WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
T				T Plant Storage									
	.01			Project Management									
		.01.01		Project Management									
			TP01010110	Project Management FY 2010	3,598.4	350,754	1,040				351,794	40,902	392,696
			TP01010111	Project Management FY 2011	3,598.4	350,754	1,040				351,794	48,078	399,872
			TP01010112	Project Management FY 2012	3,598.4	350,754	1,040				351,794	55,399	407,193
			TP01010113	Project Management FY 2013	899.6	87,689	260				87,949	15,716	103,665
				.01.01 Project Management	11,694.8	1,139,951	3,380				1,143,331	160,095	1,303,426
		.01.02		Construction Management									
			TP01020111	Construction Management	2,698.8	253,867	780				254,647	34,804	289,451
			TP01020112	Construction Management FY 2012	11,076.0	881,903	2,600				884,503	173,091	1,057,594
			TP01020113	Construction Management FY 2013	6,390.0	508,790	1,500				510,290	110,688	620,979
				.01.02 Construction Management	20,164.8	1,644,560	4,880				1,649,440	318,583	1,968,023
				.01 Project Management	31,859.6	2,784,511	8,260				2,792,771	478,678	3,271,449
	.02			Project Support									
		.02.01		Project/Facility Support									
			TP02010110	Facility Support to Project	1,872.0	154,317					154,317	17,904	172,221
			TP02010111	Facility Support to Project	1,872.0	154,317					154,317	21,052	175,369
			TP02010112	Facility Support to Project	1,872.0	154,317					154,317	24,263	178,581
			TP02010113	Facility Support to Project	1,404.0	115,738					115,738	20,654	136,391
				.02.01 Project/Facility Support	7,020.0	578,690					578,690	83,873	662,563
				.02 Project Support	7,020.0	578,690					578,690	83,873	662,563
	.03			Environmental Doc., Permitting, & Waste Acceptance									
		.03.01		Environmental Documentation									
			TP03010111	CERCLA Documentation(Includes NEPA) FY 2011	3,010.1	249,775					249,775	34,075	283,850
			TP03010311	Hanford Cutural Resource Review				5,000			5,000	682	5,682
			TP03010411	Ecological Compliance Resource Review FY 2011				5,000			5,000	682	5,682
			TP03010511	Review Support	260.0	21,575					21,575	2,943	24,518
			TP03010512	Review Support	260.0	21,575					21,575	3,392	24,967
			TP03010513	Review Support	520.0	43,150					43,150	7,700	50,850
				.03.01 Environmental Documentation	4,050.1	336,075		10,000			346,075	49,474	395,549
		.03.03		Waste Acceptance									
			TP03030111	Waste Acceptance	480.0	39,830					39,830	5,434	45,264
				.03.03 Waste Acceptance	480.0	39,830					39,830	5,434	45,264
				.03 Environmental Doc., Permitting, & Waste Acceptance	4,530.1	375,905		10,000			385,905	54,908	440,813
	.04			Nuclear Safety									
		.04.01		Nuclear Safety									
			TP04010111	Hazard Analysis FY 2011	760.0	72,162					72,162	9,844	82,006
			TP04010211	Accident Analysis FY 2011	1,440.0	136,728					136,728	18,653	155,381
			TP04010311	Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563) FY 2011	520.0	49,374					49,374	6,736	56,110
			TP04010411	GAP Analysis	320.0	26,131					26,131	3,565	29,696
			TP04010511	Control Definitions	800.0	75,960					75,960	10,363	86,323
			TP04010611	MDSA	1,440.0	136,728					136,728	18,653	155,381
			TP04010711	Criticality Safety Analysis	480.0	45,576					45,576	6,218	51,794
			TP04010911	Fire Hazard Analysis FY 2011	240.0	22,788					22,788	3,109	25,897
			TP04011011	EPHA	1,560.0	148,122					148,122	20,207	168,329
			TP04011112	Un-reviewed Safety Questions (USQ) Support	208.0	19,750					19,750	3,105	22,855
			TP04011113	Un-reviewed Safety Questions (USQ) Support	156.0	14,812					14,812	2,643	17,455
				.04.01 Nuclear Safety	7,924.0	748,131					748,131	103,094	851,225
				.04 Nuclear Safety	7,924.0	748,131					748,131	103,094	851,225
	.05			Radiological Control									
		.05.01		Radiological Control									
			TP05010110	RADCON Engineering Support	208.0	19,750					19,750	2,291	22,041
			TP05010111	RADCON Engineering Support	208.0	19,750					19,750	2,694	22,444
			TP05010112	RADCON Engineering Support	208.0	19,750					19,750	3,105	22,855

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
			TP05010113	RADCON Engineering Support	156.0	14,812					14,812	2,643	17,455
			TP05010211	ALARA Plan FY 2011	160.0	15,192					15,192	2,073	17,265
				.05.01 Radiological Control	940.0	89,253					89,253	12,807	102,060
				.05 Radiological Control	940.0	89,253					89,253	12,807	102,060
	.06			Industrial Safety									
		.06.01		Industrial Safety									
			TP06010110	Industrial Safety	208.0	14,768					14,768	1,713	16,481
			TP06010111	Industrial Safety	208.0	14,768					14,768	2,015	16,783
			TP06010112	Industrial Safety FY 2012	208.0	14,768					14,768	2,322	17,090
			TP06010113	Industrial Safety FY 2013	156.0	11,076					11,076	1,977	13,053
				.06.01 Industrial Safety	780.0	55,380					55,380	8,027	63,407
				.06 Industrial Safety	780.0	55,380					55,380	8,027	63,407
	.07			Quality Assurance									
		.07.01		Quality Assurance									
			TP07010111	Quality Assurance	416.0	31,304					31,304	4,271	35,575
			TP07010112	Quality Assurance FY 2012	416.0	31,304					31,304	4,922	36,226
			TP07010113	Quality Assurance FY 2013	312.0	23,478					23,478	4,190	27,668
				.07.01 Quality Assurance	1,144.0	86,086					86,086	13,382	99,468
				.07 Quality Assurance	1,144.0	86,086					86,086	13,382	99,468
	.08			Safeguards & Security									
		.08.01		Safeguards & Security									
			TP08010111	Vulnerability Assessment FY 2011	320.0	18,078					18,078	2,466	20,545
				.08.01 Safeguards & Security	320.0	18,078					18,078	2,466	20,545
				.08 Safeguards & Security	320.0	18,078					18,078	2,466	20,545
	.12			Final Design									
		.12.01		Final Design									
			TP12010112	Final Design FY 2012	2,040.0	179,454					179,454	28,216	207,669
				.12.01 Final Design	2,040.0	179,454					179,454	28,216	207,669
				.12 Final Design	2,040.0	179,454					179,454	28,216	207,669
	.13			Engineering During Construction									
		.13.01		Engineering During Construction									
			TP13010113	Engineering During Construction FY 2013	1,500.0	121,845					121,845	21,743	143,588
				.13.01 Engineering During Construction	1,500.0	121,845					121,845	21,743	143,588
				.13 Engineering During Construction	1,500.0	121,845					121,845	21,743	143,588
	.14			Procurement									
		.14.01		Procurement Support									
			TP14010112	Procurement Support FY2012	780.0	45,963					45,963	7,227	53,190
			TP14010113	Procurement Support FY 2013	450.0	26,517					26,517	4,732	31,249
				.14.01 Procurement Support	1,230.0	72,480					72,480	11,959	84,439
		.14.02		Equipment Procurement									
			TP14020112	Equipment Procurement FY 2012			300,290				300,290	72,139	372,429
			TP14020113	Equipment Procurement FY 2013			70,500				70,500	18,432	88,932
				.14.02 Equipment Procurement			370,790				370,790	90,571	461,361
				.14 Procurement	1,230.0	72,480	370,790				443,270	102,530	545,799
	.15			Construction									
		.15.03		Bldg. Modifications									
			TP15030112	Clean off Canyon Deck (Relocate Permacons and NLOP grout equip.)	13,458.0	810,508	35,831	1,480	994		848,813	136,516	985,329
			TP15030212	Cleanout Cell 14R	160.0	9,839	21,962	329,000			360,801	58,552	419,353
			TP15030313	Install new Cell equipment	6,955.2	403,987	22,563		140,356		566,906	216,730	783,636
			TP15030613	Infrastructure - Water Supply Loop	14,519.7	828,593	246,555	12,400	94,787		1,182,335	584,451	1,766,786
			TP15030813	Install Inert Gas Exhaust Ducting	216.0	14,927	8,597		414		23,939	9,329	33,268
			TP15030913	Water Addition system	695.7	38,511	24,062		2,413		64,987	25,492	90,479
			TP15031013	Tunnel Egress Stairs	594.0	38,989					38,989	6,958	45,946

WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
			TP15032012	Cleanout Cell 16R	160.0	9,839	21,962	329,000			360,801	58,552	419,353
			TP15032112	Cleanout Cell 2R	320.0	19,678	21,962	329,000			370,640	60,099	430,739
				.15.03 Bldg. Modifications	37,078.6	2,174,871	403,495	1,000,880	238,965		3,818,211	1,156,678	4,974,889
				.15 Construction	37,078.6	2,174,871	403,495	1,000,880	238,965		3,818,211	1,156,678	4,974,889
	.16			Start up & Testing									
		.16.01		CORAMI evaluation									
			TP16010213	CORAMI evaluation	240.0	19,296					19,296	3,443	22,739
				.16.01 CORAMI evaluation	240.0	19,296					19,296	3,443	22,739
		.16.02		Procedure development									
			TP16010313	Procedure development	520.0	40,074					40,074	7,151	47,226
				.16.02 Procedure development	520.0	40,074					40,074	7,151	47,226
		.16.03		Readiness Activities/Planning									
			TP16010413	Readiness Activities/Planning	880.0	69,216					69,216	12,352	81,568
				.16.03 Readiness Activities/Planning	880.0	69,216					69,216	12,352	81,568
		.16.04		System Tests									
			TP16020113	System Tests	1,600.0	130,970					130,970	23,372	154,341
				.16.04 System Tests	1,600.0	130,970					130,970	23,372	154,341
		.16.05		Startup									
			TP16020313	Startup	1,600.0	103,467					103,467	18,464	121,931
				.16.05 Startup	1,600.0	103,467					103,467	18,464	121,931
				.16 Start up & Testing	4,840.0	363,023					363,023	64,782	427,805
	.17			Contingency									
		.17.01		Contingency									
			TP17010110	Contingency FY 2010						27,031	27,031	3,136	30,167
			TP17011111	Contingency FY 2011						94,730	94,730	12,923	107,653
			TP17011312	Contingency FY 2012						516,571	516,571	81,221	597,792
			TP17011313	Contingency FY 2013						341,290	341,290	60,903	402,193
				.17.01 Contingency						979,622	979,622	158,184	1,137,806
				.17 Contingency						979,622	979,622	158,184	1,137,806
	.18			Operations and Maintenance									
		.18.01		Operations									
			TP18010514	Operations Unload & Load	2,178.0	131,394					131,394	26,292	157,686
			TP18010525	Open & Load Out	2,178.0	131,394					131,394	61,599	192,993
			TP18010615	Water Addition	162.0	10,200					10,200	2,266	12,466
			TP18010616	Water Addition	162.0	10,200					10,200	2,496	12,695
			TP18010617	Water Addition	162.0	10,200					10,200	2,730	12,930
			TP18010618	Water Addition	162.0	10,200					10,200	2,969	13,169
			TP18010619	Water Addition	162.0	10,200					10,200	3,213	13,412
			TP18010620	Water Addition	162.0	10,200					10,200	3,462	13,661
			TP18010621	Water Addition	162.0	10,200					10,200	3,715	13,915
			TP18010622	Water Addition	162.0	10,200					10,200	3,974	14,174
			TP18010623	Water Addition	162.0	10,200					10,200	4,238	14,437
			TP18010624	Water Addition	162.0	10,200					10,200	4,507	14,707
			TP18010625	Water Addition	162.0	10,200					10,200	4,782	14,981
			TP18020314	Confinement Ventilation System PM	5,130.0	354,577	99,400	13,932		20,625	488,534	106,006	594,540
				.18.01 Operations	11,268.0	729,560	99,400	13,932		20,625	863,517	232,249	1,095,766
		.18.02		Maintenance									
			TP18020114	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	3,004	18,014
			TP18020115	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	3,335	18,346
			TP18020116	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	3,673	18,684
			TP18020117	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	4,018	19,029
			TP18020118	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	4,370	19,380
			TP18020119	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	4,729	19,739
			TP18020120	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	5,094	20,105
			TP18020121	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	5,468	20,478
			TP18020122	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	5,849	20,859

T Plant Sludge Storage 0% Min Safe

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WBS Lvl 1	WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
			TP18020123	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	6,237	21,247
			TP18020124	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	6,633	21,644
			TP18020125	Semi Annual Below the hook lifting devices PM	252.0	15,011					15,011	7,037	22,048
			TP18020214	Annual inert gas system calibration	72.0	4,355					4,355	871	5,226
			TP18020215	Annual inert gas system calibration	72.0	4,355					4,355	968	5,322
			TP18020216	Annual inert gas system calibration	72.0	4,355					4,355	1,066	5,420
			TP18020217	Annual inert gas system calibration	72.0	4,355					4,355	1,166	5,520
			TP18020218	Annual inert gas system calibration	72.0	4,355					4,355	1,268	5,622
			TP18020219	Annual inert gas system calibration	72.0	4,355					4,355	1,372	5,726
			TP18020220	Annual inert gas system calibration	72.0	4,355					4,355	1,478	5,832
			TP18020221	Annual inert gas system calibration	72.0	4,355					4,355	1,586	5,941
			TP18020222	Annual inert gas system calibration	72.0	4,355					4,355	1,697	6,051
			TP18020223	Annual inert gas system calibration	72.0	4,355					4,355	1,809	6,164
			TP18020224	Annual inert gas system calibration	72.0	4,355					4,355	1,924	6,279
			TP18020225	Annual inert gas system calibration	72.0	4,355					4,355	2,041	6,396
			TP18020314	Confinement Ventilation System PM	5,130.0	354,577	99,400	13,932		20,625	488,534	106,006	594,540
			TP18020414	Annual Crane Maintenance	805.5	47,037					47,037	9,412	56,449
			TP18020415	Annual Crane Maintenance	805.5	47,037					47,037	10,451	57,488
			TP18020416	Annual Crane Maintenance	805.5	47,037					47,037	11,511	58,548
			TP18020417	Annual Crane Maintenance	805.5	47,037					47,037	12,591	59,628
			TP18020418	Semi Annual Below the hook lifting devices PM	805.5	47,037					47,037	13,693	60,730
			TP18020419	Annual Crane Maintenance	805.5	47,037					47,037	14,817	61,854
			TP18020420	Annual Crane Maintenance	805.5	47,037					47,037	15,964	63,001
			TP18020421	Semi Annual Below the hook lifting devices PM	805.5	47,037					47,037	17,134	64,171
			TP18020422	Annual Crane Maintenance	805.5	47,037					47,037	18,327	65,364
			TP18020423	Annual Crane Maintenance	805.5	47,037					47,037	19,544	66,581
			TP18020424	Annual Crane Maintenance	805.5	47,037					47,037	20,785	67,823
			TP18020425	Annual Crane Maintenance	805.5	47,037					47,037	22,052	69,089
				.18.02 Maintenance	18,684.0	1,151,405	99,400	13,932		20,625	1,285,362	368,978	1,654,340
				.18 Operations and Maintenance	29,952.0	1,880,965	198,800	27,864		41,250	2,148,879	601,227	2,750,107
				T T Plant Storage	131,158.2	9,528,672	981,345	1,038,744	238,965	1,020,872	12,808,597	2,890,594	15,699,192

T Plant Sludge Storage 0% Min Safe

Project name T-Plant Sludge Storage R2

Labor rate table Hanford FY09

Equipment rate table COMM2008

Notes
T Plant Sludge Storage - 0 % Min Safe Costs
2010 Project Starts
2011 Site Modification
2012 Final Design & Long Lead Procurement
2013 Procure and Install- Cell up grades
2014 Unload and Storage Operations Maintenance and Min Safe
2015 Storage, Water addition, Maintenance
2016 Storage, Water addition, Maintenance
2017 Storage, Water addition, Maintenance
2018 Storage, Water addition, Maintenance
2019 Storage, Water addition, Maintenance
2020 Storage, Water addition, Maintenance
2021 Storage, Water addition, Maintenance
2022 Storage, Water addition, Maintenance
2023 Storage, Water addition, Maintenance
2024 Storage, Water addition, Maintenance
2025 Storage, Water addition, Maintenance, Load out and Ship

Report format Sorted by 'WBS Lvl 1/WBS Lvl 2/WBS Lvl 3/Year/Sch Acty/Class ID'
'Detail' summary

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
.01 Project Management																			
.01.01 Project Management																			
FY10 Fiscal Year 2010																			
TP01010110 Project Management FY 2010																			
Civil Engineers	-1	Project Engineer	52.00 wk	0 E020	34.600 ch/wk	1,799.2	92.33 /ch	166,120	10.00 /wk	520	-	-	-	-	-	-	166,640	19,377	186,017
Managers & Executives	-1	Project Manager	52.00 wk	0 M020	34.600 ch/wk	1,799.2	102.62 /ch	184,634	10.00 /wk	520	-	-	-	-	-	-	185,154	21,525	206,679
Project Management						**3,598.4**		**350,754**		**1,040**							**351,794**	**40,902**	**392,696**
TP01010110 Project Management FY 2010						3,598.4		350,754		1,040							351,794	40,902	392,696
FY10 Fiscal Year 2010						**3,598.4**		**350,754**		**1,040**							**351,794**	**40,902**	**392,696**
FY11 Fiscal Year 2011																			
TP01010111 Project Management FY 2011																			
Civil Engineers	-1	Project Engineer	52.00 wk	0 E020	34.600 ch/wk	1,799.2	92.33 /ch	166,120	10.00 /wk	520	-	-	-	-	-	-	166,640	22,776	189,416
Managers & Executives	-1	Project Manager	52.00 wk	0 M020	34.600 ch/wk	1,799.2	102.62 /ch	184,634	10.00 /wk	520	-	-	-	-	-	-	185,154	25,302	210,456
Project Management						**3,598.4**		**350,754**		**1,040**							**351,794**	**48,078**	**399,872**
TP01010111 Project Management FY 2011						3,598.4		350,754		1,040							351,794	48,078	399,872
FY11 Fiscal Year 2011						**3,598.4**		**350,754**		**1,040**							**351,794**	**48,078**	**399,872**
FY12 Fiscal Year 2012																			
TP01010112 Project Management FY 2012																			
Civil Engineers	-1	Project Engineer	52.00 wk	0 E020	34.600 ch/wk	1,799.2	92.33 /ch	166,120	10.00 /wk	520	-	-	-	-	-	-	166,640	26,244	192,884
Managers & Executives	-1	Project Manager	52.00 wk	0 M020	34.600 ch/wk	1,799.2	102.62 /ch	184,634	10.00 /wk	520	-	-	-	-	-	-	185,154	29,155	214,309
Project Management						**3,598.4**		**350,754**		**1,040**							**351,794**	**55,399**	**407,193**
TP01010112 Project Management FY 2012						3,598.4		350,754		1,040							351,794	55,399	407,193
FY12 Fiscal Year 2012						**3,598.4**		**350,754**		**1,040**							**351,794**	**55,399**	**407,193**
FY13 Fiscal Year 2013																			
TP01010113 Project Management FY 2013																			
Civil Engineers	-1	Project Engineer	13.00 wk	0 E020	34.600 ch/wk	449.8	92.33 /ch	41,530	10.00 /wk	130	-	-	-	-	-	-	41,660	7,445	49,105
Managers & Executives	-1	Project Manager	13.00 wk	0 M020	34.600 ch/wk	449.8	102.62 /ch	46,158	10.00 /wk	130	-	-	-	-	-	-	46,288	8,271	54,559
Project Management						**899.6**		**87,689**		**260**							**87,949**	**15,716**	**103,665**
TP01010113 Project Management FY 2013						899.6		87,689		260							87,949	15,716	103,665
FY13 Fiscal Year 2013						**899.6**		**87,689**		**260**							**87,949**	**15,716**	**103,665**
.01.01 Project Management						**11,694.8**		**1,139,951**		**3,380**							**1,143,331**	**160,095**	**1,303,426**
.01.02 Construction Management																			
FY11 Fiscal Year 2011																			
TP01020111 Construction Management																			
First Line Supervisors	-1	FWS	26.00 wk	0 M010	34.600 ch/wk	899.6	78.54 /ch	70,655	10.00 /wk	260	-	-	-	-	-	-	70,915	9,696	80,610
Project & Program Managers	-1	CM	26.00 wk	0 M030	34.600 ch/wk	899.6	117.10 /ch	105,343	10.00 /wk	260	-	-	-	-	-	-	105,603	14,428	120,031
Planner/Scheduler/Estimators	-1	Planner	26.00 wk	0 P070	34.600 ch/wk	899.6	86.56 /ch	77,869	10.00 /wk	260	-	-	-	-	-	-	78,129	10,680	88,809
1CM						**2,698.8**		**253,867**		**780**							**254,647**	**34,804**	**289,451**
TP01020111 Construction Management						2,698.8		253,867		780							254,647	34,804	289,451
FY11 Fiscal Year 2011						**2,698.8**		**253,867**		**780**							**254,647**	**34,804**	**289,451**
FY12 Fiscal Year 2012																			
TP01020112 Construction Management FY 2012																			
Other Crafts	-1	2 Laborers	52.00 wk	0 C120	69.200 ch/wk	3,598.4	52.19 /ch	187,801	-	-	-	-	-	-	-	-	187,801	63,332	251,133
First Line Supervisors	-1	FWS	52.00 wk	0 M010	34.600 ch/wk	1,799.2	78.54 /ch	141,309	10.00 /wk	520	-	-	-	-	-	-	141,829	22,343	164,172
Project & Program Managers	-1	CM	52.00 wk	0 M030	34.600 ch/wk	1,799.2	117.10 /ch	210,686	10.00 /wk	520	-	-	-	-	-	-	211,206	33,251	244,458
Planner/Scheduler/Estimators	-1	Planner	52.00 wk	0 P070	34.600 ch/wk	1,799.2	86.56 /ch	155,739	10.00 /wk	520	-	-	-	-	-	-	156,259	24,612	180,871
Other Professionals	-1	Field Safety	52.00 wk	0 P170	20.000 ch/wk	1,040.0	89.60 /ch	93,184	10.00 /wk	520	-	-	-	-	-	-	93,704	14,776	108,480
Other Professionals	-1	Field QC	52.00 wk	0 P170	20.000 ch/wk	1,040.0	89.60 /ch	93,184	10.00 /wk	520	-	-	-	-	-	-	93,704	14,776	108,480

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
1CM						**11,076.0**		**881,903**		**2,600**							**884,503**	**173,091**	**1,057,594**
TP01020112 Construction Management FY 2012						11,076.0		881,903		2,600							884,503	173,091	1,057,594
FY12 Fiscal Year 2012						**11,076.0**		**881,903**		**2,600**							**884,503**	**173,091**	**1,057,594**
FY13 Fiscal Year 2013																			
TP01020113 Construction Management FY 2013																			
Other Crafts	-1	2 Laborers	30.00 wk	0 C120	69.200 ch/wk	2,076.0	52.19 /ch	108,346	-	-	-	-	-	-	-	-	108,346	38,837	147,183
First Line Supervisors	-1	FWS	30.00 wk	0 M010	34.600 ch/wk	1,038.0	78.54 /ch	81,525	10.00 /wk	300	-	-	-	-	-	-	81,825	14,627	96,451
Project & Program Managers	-1	CM	30.00 wk	0 M030	34.600 ch/wk	1,038.0	117.10 /ch	121,550	10.00 /wk	300	-	-	-	-	-	-	121,850	21,769	143,619
Planner/Scheduler/Estimators	-1	Planner	30.00 wk	0 P070	34.600 ch/wk	1,038.0	86.56 /ch	89,849	10.00 /wk	300	-	-	-	-	-	-	90,149	16,112	106,261
Other Professionals	-1	Field Safety	30.00 wk	0 P170	20.000 ch/wk	600.0	89.60 /ch	53,760	10.00 /wk	300	-	-	-	-	-	-	54,060	9,672	63,732
Other Professionals	-1	Field QC	30.00 wk	0 P170	20.000 ch/wk	600.0	89.60 /ch	53,760	10.00 /wk	300	-	-	-	-	-	-	54,060	9,672	63,732
1CM						**6,390.0**		**508,790**		**1,500**							**510,290**	**110,688**	**620,979**
TP01020113 Construction Management FY 2013						6,390.0		508,790		1,500							510,290	110,688	620,979
FY13 Fiscal Year 2013						**6,390.0**		**508,790**		**1,500**							**510,290**	**110,688**	**620,979**
.01.02 Construction Management						**20,164.8**		**1,644,560**		**4,880**							**1,649,440**	**318,583**	**1,968,023**
.01 Project Management						**31,859.6**		**2,784,511**		**8,260**							**2,792,771**	**478,678**	**3,271,449**
.02 Project Support																			
.02.01 Project/Facility Support																			
FY10 Fiscal Year 2010																			
TP02010110 Facility Support to Project																			
Electrical Engineers	-1	2ea 0.1 FTE	52.00 wk	0 E040	8.000 ch/wk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	3,823	36,774
Environmental Engineers	-1	0.1 FTE Environmental Compliance	52.00 wk	0 E050	4.000 ch/wk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	2,003	19,262
Mechanical Engineers	-1	2ea 0.1 FTE	52.00 wk	0 E070	8.000 ch/wk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	4,138	39,806
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	2,291	22,041
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 ch/wk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	1,665	16,012
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 ch/wk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	1,895	18,232
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 ch/wk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	2,089	20,093
Facility Support to Project						**1,872.0**		**154,317**									**154,317**	**17,904**	**172,221**
TP02010110 Facility Support to Project						1,872.0		154,317									154,317	17,904	172,221
FY10 Fiscal Year 2010						**1,872.0**		**154,317**									**154,317**	**17,904**	**172,221**
FY11 Fiscal Year 2011																			
TP02010111 Facility Support to Project																			
Electrical Engineers	-1	2ea 0.1 FTE	52.00 wk	0 E040	8.000 ch/wk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	4,495	37,447
Environmental Engineers	-1	0.1 FTE Environmental Compliance	52.00 wk	0 E050	4.000 ch/wk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	2,355	19,614
Mechanical Engineers	-1	2ea 0.1 FTE	52.00 wk	0 E070	8.000 ch/wk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	4,866	40,534
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	2,694	22,444
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 ch/wk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	1,957	16,305
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 ch/wk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	2,229	18,565
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 ch/wk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	2,456	20,461
Facility Support to Project						**1,872.0**		**154,317**									**154,317**	**21,052**	**175,369**
TP02010111 Facility Support to Project						1,872.0		154,317									154,317	21,052	175,369
FY11 Fiscal Year 2011						**1,872.0**		**154,317**									**154,317**	**21,052**	**175,369**
FY12 Fiscal Year 2012																			
TP02010112 Facility Support to Project																			
Electrical Engineers	-1	2ea 0.1 FTE	52.00 wk	0 E040	8.000 ch/wk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	5,181	38,132
Environmental Engineers	-1	0.1 FTE Environmental Compliance	52.00 wk	0 E050	4.000 ch/wk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	2,714	19,974
Mechanical Engineers	-1	2ea 0.1 FTE	52.00 wk	0 E070	8.000 ch/wk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	5,608	41,276
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	3,105	22,855
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 ch/wk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	2,256	16,604
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 ch/wk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	2,569	18,905
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 ch/wk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	2,831	20,835
Facility Support to Project						**1,872.0**		**154,317**									**154,317**	**24,263**	**178,581**
TP02010112 Facility Support to Project						1,872.0		154,317									154,317	24,263	178,581
FY12 Fiscal Year 2012						**1,872.0**		**154,317**									**154,317**	**24,263**	**178,581**
FY13 Fiscal Year 2013																			
TP02010113 Facility Support to Project																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Electrical Engineers	-1	2ea 0.1 FTE	39.00 wk	0 E040	8.000 ch/wk	312.0	79.21 /ch	24,714	-	-	-	-	-	-	-	-	24,714	4,410	29,124
Environmental Engineers	-1	0.1 FTE Environmental Compliance	39.00 wk	0 E050	4.000 ch/wk	156.0	82.98 /ch	12,945	-	-	-	-	-	-	-	-	12,945	2,310	15,255
Mechanical Engineers	-1	2ea 0.1 FTE	39.00 wk	0 E070	8.000 ch/wk	312.0	85.74 /ch	26,751	-	-	-	-	-	-	-	-	26,751	4,774	31,525
Nuclear Engineers	-1	0.1 FTE	39.00 wk	0 E080	4.000 ch/wk	156.0	94.95 /ch	14,812	-	-	-	-	-	-	-	-	14,812	2,643	17,455
RAD Engineers	-1	0.1 FTE	39.00 wk	0 E100	4.000 ch/wk	156.0	68.98 /ch	10,761	-	-	-	-	-	-	-	-	10,761	1,920	12,681
First Line Supervisors	-1	0.1 FTE	39.00 wk	0 M010	4.000 ch/wk	156.0	78.54 /ch	12,252	-	-	-	-	-	-	-	-	12,252	2,186	14,439
Planner/Scheduler/Estimators	-1	0.1 FTE	39.00 wk	0 P070	4.000 ch/wk	156.0	86.56 /ch	13,503	-	-	-	-	-	-	-	-	13,503	2,410	15,913
Facility Support to Project						**1,404.0**		**115,738**									**115,738**	**20,654**	**136,391**
TP02010113 Facility Support to Project						1,404.0		115,738									115,738	20,654	136,391
FY13 Fiscal Year 2013						**1,404.0**		**115,738**									**115,738**	**20,654**	**136,391**
.02.01 Project/Facility Support						**7,020.0**		**578,690**									**578,690**	**83,873**	**662,563**
.02 Project Support						**7,020.0**		**578,690**									**578,690**	**83,873**	**662,563**
.03 Environmental Doc., Permitting, & Waste Acceptance																			
.03.01 Environmental Documentation																			
FY11 Fiscal Year 2011																			
TP03010111 CERCLA Documentation(Includes NEPA) FY 2011																			
Environmental Engineers	-1	NEPA Values (in FFS)	8.66 wk	0 E050	34.600 ch/wk	299.6	82.98 /ch	24,864	-	-	-	-	-	-	-	-	24,864	3,392	28,256
Environmental Engineers	-1	ESD or ROD Amendment	3.25 wk	0 E050	34.600 ch/wk	112.4	82.98 /ch	9,325	-	-	-	-	-	-	-	-	9,325	1,272	10,598
Environmental Engineers	-1	Proposed Plan to Amend the ROD**	4.33 wk	0 E050	34.600 ch/wk	149.8	82.98 /ch	12,432	-	-	-	-	-	-	-	-	12,432	1,696	14,128
Environmental Engineers	-1	Fact Sheet (RD - Completion)	2.17 wk	0 E050	40.000 ch/wk	86.6	82.98 /ch	7,186	-	-	-	-	-	-	-	-	7,186	980	8,166
Environmental Engineers	-1	Fact Sheet (ESD or ROD Amendment)	2.17 wk	0 E050	40.000 ch/wk	86.6	82.98 /ch	7,186	-	-	-	-	-	-	-	-	7,186	980	8,166
Environmental Engineers	-1	RD for 200 Area Storage (90% design)	4.33 wk	0 E050	34.600 ch/wk	149.8	82.98 /ch	12,432	-	-	-	-	-	-	-	-	12,432	1,696	14,128
Environmental Engineers	-1	Rad Air NOC Evaluation (T Plant) ARAR (New)	1.08 wk	0 E050	34.600 ch/wk	37.4	82.98 /ch	3,101	-	-	-	-	-	-	-	-	3,101	423	3,524
Environmental Engineers	-1	DOE O 435.1 Compliance	1.08 wk	0 E050	40.000 ch/wk	43.3	82.98 /ch	3,595	-	-	-	-	-	-	-	-	3,595	490	4,085
Environmental Engineers	-1	Focused Feasibility Study	6.50 wk	0 E050	34.600 ch/wk	224.7	82.98 /ch	18,648	-	-	-	-	-	-	-	-	18,648	2,544	21,192
Environmental Engineers	-1	RD / RA Work Plan (interim storage only)	2.17 wk	0 E050	40.000 ch/wk	86.6	82.98 /ch	7,186	-	-	-	-	-	-	-	-	7,186	980	8,166
Environmental Engineers	-1	Significance Evaluation / RL Interface	4.33 wk	0 E050	40.000 ch/wk	173.2	82.98 /ch	14,372	-	-	-	-	-	-	-	-	14,372	1,961	16,333
CERCLA Documentation(Includes NEPA)						**1,450.1**		**120,327**									**120,327**	**16,415**	**136,742**
Environmental Engineers	-1	Waterline loop	15.00 wk	0 E050	40.000 ch/wk	600.0	82.98 /ch	49,788	-	-	-	-	-	-	-	-	49,788	6,792	56,580
DOH State Report						**600.0**		**49,788**									**49,788**	**6,792**	**56,580**
Environmental Engineers	-1	Waterline loop	24.00 wk	0 E050	40.000 ch/wk	960.0	82.98 /ch	79,661	-	-	-	-	-	-	-	-	79,661	10,867	90,528
NEPA/ECO/RADCOM						**960.0**		**79,661**									**79,661**	**10,867**	**90,528**
TP03010111 CERCLA Documentation(Includes NEPA) FY 2011						3,010.1		249,775									249,775	34,075	283,850
TP03010311 Hanford Cutural Resource Review																			
Cultural Review	-1		1.00 ls				/ls		-	-	5,000.00 /ls	5,000	-	-	-	-	5,000	682	5,682
Cultural Resource Review												**5,000**					**5,000**	**682**	**5,682**
TP03010311 Hanford Cutural Resource Review												5,000					5,000	682	5,682
TP03010411 Ecological Compliance Resource Review FY 2011																			
Ecological Review	-1		1.00 ls				/ls		-	-	5,000.00 /ls	5,000	-	-	-	-	5,000	682	5,682
Ecological Compliance Resource Review												**5,000**					**5,000**	**682**	**5,682**
TP03010411 Ecological Compliance Resource Review FY 2011												5,000					5,000	682	5,682
TP03010511 Review Support																			
Environmental Engineers	-1	1.5FTEs/mo Hcz Analysis EMS	6.50 wk	0 E050	40.000 ch/wk	260.0	82.98 /ch	21,575	-	-	-	-	-	-	-	-	21,575	2,943	24,518
Review Support						**260.0**		**21,575**									**21,575**	**2,943**	**24,518**
TP03010511 Review Support						260.0		21,575									21,575	2,943	24,518
FY11 Fiscal Year 2011						**3,270.1**		**271,350**				**10,000**					**281,350**	**38,382**	**319,732**
FY12 Fiscal Year 2012																			
TP03010512 Review Support																			
Environmental Engineers	-1	1.5FTEs/mo Design	6.50 wk	0 E050	40.000 ch/wk	260.0	82.98 /ch	21,575	-	-	-	-	-	-	-	-	21,575	3,392	24,967

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Review Support						**260.0**		**21,575**									**21,575**	**3,392**	**24,967**
TP03010512 Review Support						260.0		21,575									21,575	3,392	24,967
FY12 Fiscal Year 2012						**260.0**		**21,575**									**21,575**	**3,392**	**24,967**
FY13 Fiscal Year 2013																			
TP03010513 Review Support																			
Environmental Engineers	-1	1.5FTEs/mo Construction	6.50 wk	0 E050	40.000 ch/wk	260.0	82.98 /ch	21,575	-	-	-	-	-	-	-	-	21,575	3,850	25,425
Environmental Engineers	-1	1.5FTEs/mo Start Up (SU)	6.50 wk	0 E050	40.000 ch/wk	260.0	82.98 /ch	21,575	-	-	-	-	-	-	-	-	21,575	3,850	25,425
Review Support						**520.0**		**43,150**									**43,150**	**7,700**	**50,850**
TP03010513 Review Support						520.0		43,150									43,150	7,700	50,850
FY13 Fiscal Year 2013						**520.0**		**43,150**									**43,150**	**7,700**	**50,850**
.03.01 Environmental Documentation						**4,050.1**		**336,075**				**10,000**					**346,075**	**49,474**	**395,549**
.03.03 Waste Acceptance																			
FY11 Fiscal Year 2011																			
TP03030111 Waste Acceptance																			
Environmental Engineers	-1	2 ea	6.00 wk	0 E050	80.000 ch/wk	480.0	82.98 /ch	39,830	-	-	-	-	-	-	-	-	39,830	5,434	45,264
Waste Acceptance						**480.0**		**39,830**									**39,830**	**5,434**	**45,264**
TP03030111 Waste Acceptance						480.0		39,830									39,830	5,434	45,264
FY11 Fiscal Year 2011						**480.0**		**39,830**									**39,830**	**5,434**	**45,264**
.03.03 Waste Acceptance						**480.0**		**39,830**									**39,830**	**5,434**	**45,264**
.03 Environmental Doc., Permitting, & Waste Acceptance						**4,530.1**		**375,905**				**10,000**					**385,905**	**54,908**	**440,813**
.04 Nuclear Safety																			
.04.01 Nuclear Safety																			
FY11 Fiscal Year 2011																			
TP04010111 Hazard Analysis FY 2011																			
Nuclear Engineers	-1		19.00 wk	0 E080	40.000 ch/wk	760.0	94.95 /ch	72,162	-	-	-	-	-	-	-	-	72,162	9,844	82,006
Hazard Analysis						**760.0**		**72,162**									**72,162**	**9,844**	**82,006**
TP04010111 Hazard Analysis FY 2011						760.0		72,162									72,162	9,844	82,006
TP04010211 Accident Analysis FY 2011																			
Nuclear Engineers	-1		18.00 wk	0 E080	80.000 ch/wk	1,440.0	94.95 /ch	136,728	-	-	-	-	-	-	-	-	136,728	18,653	155,381
Accident Analysis						**1,440.0**		**136,728**									**136,728**	**18,653**	**155,381**
TP04010211 Accident Analysis FY 2011						1,440.0		136,728									136,728	18,653	155,381
TP04010311 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563) FY 2011																			
Nuclear Engineers	-1		13.00 wk	0 E080	40.000 ch/wk	520.0	94.95 /ch	49,374	-	-	-	-	-	-	-	-	49,374	6,736	56,110
Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						**520.0**		**49,374**									**49,374**	**6,736**	**56,110**
TP04010311 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563) FY 2011						520.0		49,374									49,374	6,736	56,110
TP04010411 GAP Analysis																			
Chemical Engineers- E010	-1		8.00 wk	0 E010	40.000 ch/wk	320.0	81.66 /ch	26,131	-	-	-	-	-	-	-	-	26,131	3,565	29,696
GAP Analysis						**320.0**		**26,131**									**26,131**	**3,565**	**29,696**
TP04010411 GAP Analysis						320.0		26,131									26,131	3,565	29,696
TP04010511 Control Definitions																			
Nuclear Engineers	-1	2 ea	10.00 wk	0 E080	80.000 ch/wk	800.0	94.95 /ch	75,960	-	-	-	-	-	-	-	-	75,960	10,363	86,323

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Control Definitions						**800.0**		**75,960**									**75,960**	**10,363**	**86,323**
TP04010511 Control Definitions						800.0		75,960									75,960	10,363	86,323
TP04010611 MDSA																			
Nuclear Engineers	-1		36.00 wk	0 E080	40.000 ch/wk	1,440.0	94.95 /ch	136,728	-	-	-	-	-	-	-	-	136,728	18,653	155,381
MDSA						**1,440.0**		**136,728**									**136,728**	**18,653**	**155,381**
TP04010611 MDSA						1,440.0		136,728									136,728	18,653	155,381
TP04010711 Criticality Safety Analysis																			
Nuclear Engineers	-1		6.00 wk	0 E080	80.000 ch/wk	480.0	94.95 /ch	45,576	-	-	-	-	-	-	-	-	45,576	6,218	51,794
Criticality Safety Analysis						**480.0**		**45,576**									**45,576**	**6,218**	**51,794**
TP04010711 Criticality Safety Analysis						480.0		45,576									45,576	6,218	51,794
TP04010911 Fire Hazard Analysis FY 2011																			
Nuclear Engineers	-1		6.00 wk	0 E080	40.000 ch/wk	240.0	94.95 /ch	22,788	-	-	-	-	-	-	-	-	22,788	3,109	25,897
Fire Hazard Analysis						**240.0**		**22,788**									**22,788**	**3,109**	**25,897**
TP04010911 Fire Hazard Analysis FY 2011						240.0		22,788									22,788	3,109	25,897
TP04011011 EPHA																			
Nuclear Engineers	-1		39.00 wk	0 E080	40.000 ch/wk	1,560.0	94.95 /ch	148,122	-	-	-	-	-	-	-	-	148,122	20,207	168,329
EPHA						**1,560.0**		**148,122**									**148,122**	**20,207**	**168,329**
TP04011011 EPHA						1,560.0		148,122									148,122	20,207	168,329
FY11 Fiscal Year 2011						**7,560.0**		**713,569**									**713,569**	**97,346**	**810,915**
FY12 Fiscal Year 2012																			
TP04011112 Un-reviewed Safety Questions (USQ) Support																			
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	3,105	22,855
Un-reviewed Safety Questions (USQ) Support						**208.0**		**19,750**									**19,750**	**3,105**	**22,855**
TP04011112 Un-reviewed Safety Questions (USQ) Support						208.0		19,750									19,750	3,105	22,855
FY12 Fiscal Year 2012						**208.0**		**19,750**									**19,750**	**3,105**	**22,855**
FY13 Fiscal Year 2013																			
TP04011113 Un-reviewed Safety Questions (USQ) Support																			
Nuclear Engineers	-1	0.1 FTE	39.00 wk	0 E080	4.000 ch/wk	156.0	94.95 /ch	14,812	-	-	-	-	-	-	-	-	14,812	2,643	17,455
Un-reviewed Safety Questions (USQ) Support						**156.0**		**14,812**									**14,812**	**2,643**	**17,455**
TP04011113 Un-reviewed Safety Questions (USQ) Support						156.0		14,812									14,812	2,643	17,455
FY13 Fiscal Year 2013						**156.0**		**14,812**									**14,812**	**2,643**	**17,455**
.04.01 Nuclear Safety						**7,924.0**		**748,131**									**748,131**	**103,094**	**851,225**
.04 Nuclear Safety						**7,924.0**		**748,131**									**748,131**	**103,094**	**851,225**
.05 Radiological Control																			
.05.01 Radiological Control																			
FY10 Fiscal Year 2010																			
TP05010110 RADCON Engineering Support																			
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	2,291	22,041
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**2,291**	**22,041**
TP05010110 RADCON Engineering Support						208.0		19,750									19,750	2,291	22,041
FY10 Fiscal Year 2010						**208.0**		**19,750**									**19,750**	**2,291**	**22,041**
FY11 Fiscal Year 2011																			
TP05010111 RADCON Engineering Support																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	2,694	22,444
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**2,694**	**22,444**
TP05010111 RADCON Engineering Support						208.0		19,750									19,750	2,694	22,444
TP05010211 ALARA Plan FY 2011																			
Nuclear Engineers	-1	2 ea	2.00 wk	0 E080	80.000 ch/wk	160.0	94.95 /ch	15,192	-	-	-	-	-	-	-	-	15,192	2,072	17,264
ALARA Plan						**160.0**		**15,192**									**15,192**	**2,072**	**17,264**
TP05010211 ALARA Plan FY 2011						160.0		15,192									15,192	2,072	17,264
FY11 Fiscal Year 2011						**368.0**		**34,942**									**34,942**	**4,767**	**39,708**
FY12 Fiscal Year 2012																			
TP05010112 RADCON Engineering Support																			
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	3,106	22,855
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**3,105**	**22,855**
TP05010112 RADCON Engineering Support						208.0		19,750									19,750	3,105	22,855
FY12 Fiscal Year 2012						**208.0**		**19,750**									**19,750**	**3,105**	**22,855**
FY13 Fiscal Year 2013																			
TP05010113 RADCON Engineering Support																			
Nuclear Engineers	-1	0.1 FTE	39.00 wk	0 E080	4.000 ch/wk	156.0	94.95 /ch	14,812	-	-	-	-	-	-	-	-	14,812	2,643	17,455
RADCON Engineering Support						**156.0**		**14,812**									**14,812**	**2,643**	**17,455**
TP05010113 RADCON Engineering Support						156.0		14,812									14,812	2,643	17,455
FY13 Fiscal Year 2013						**156.0**		**14,812**									**14,812**	**2,643**	**17,455**
.05.01 Radiological Control						**940.0**		**89,253**									**89,253**	**12,807**	**102,060**
.05 Radiological Control						**940.0**		**89,253**									**89,253**	**12,807**	**102,060**
.06 Industrial Safety																			
.06.01 Industrial Safety																			
FY10 Fiscal Year 2010																			
TP06010110 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	1,713	16,481
Industrial Safety						**208.0**		**14,768**									**14,768**	**1,713**	**16,481**
TP06010110 Industrial Safety						208.0		14,768									14,768	1,713	16,481
FY10 Fiscal Year 2010						**208.0**		**14,768**									**14,768**	**1,713**	**16,481**
FY11 Fiscal Year 2011																			
TP06010111 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	2,015	16,783
Industrial Safety						**208.0**		**14,768**									**14,768**	**2,015**	**16,783**
TP06010111 Industrial Safety						208.0		14,768									14,768	2,015	16,783
FY11 Fiscal Year 2011						**208.0**		**14,768**									**14,768**	**2,015**	**16,783**
FY12 Fiscal Year 2012																			
TP06010112 Industrial Safety FY 2012																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	2,322	17,090
Industrial Safety						**208.0**		**14,768**									**14,768**	**2,322**	**17,090**
TP06010112 Industrial Safety FY 2012						208.0		14,768									14,768	2,322	17,090
FY12 Fiscal Year 2012						**208.0**		**14,768**									**14,768**	**2,322**	**17,090**
FY13 Fiscal Year 2013																			
TP06010113 Industrial Safety FY 2013																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Safety Engineer	-1	0.1 FTE	39.00 wk	0 E120	4.000 ch/wk	156.0	71.00 /ch	11,076	-	-	-	-	-	-	-	-	11,076	1,977	13,053
Industrial Safety						**156.0**		**11,076**									**11,076**	**1,977**	**13,053**
TP06010113 Industrial Safety FY 2013						156.0		11,076									11,076	1,977	13,053
FY13 Fiscal Year 2013						**156.0**		**11,076**									**11,076**	**1,977**	**13,053**
.06.01 Industrial Safety						**780.0**		**55,380**									**55,380**	**8,027**	**63,407**
.06 Industrial Safety						**780.0**		**55,380**									**55,380**	**8,027**	**63,407**
.07 Quality Assurance																			
.07.01 Quality Assurance																			
FY11 Fiscal Year 2011																			
TP07010111 Quality Assurance																			
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 ch/wk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	4,271	35,575
Quality Assurance						**416.0**		**31,304**									**31,304**	**4,271**	**35,575**
TP07010111 Quality Assurance						416.0		31,304									31,304	4,271	35,575
FY11 Fiscal Year 2011						**416.0**		**31,304**									**31,304**	**4,271**	**35,575**
FY12 Fiscal Year 2012																			
TP07010112 Quality Assurance FY 2012																			
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 ch/wk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	4,922	36,226
Quality Assurance						**416.0**		**31,304**									**31,304**	**4,922**	**36,226**
TP07010112 Quality Assurance FY 2012						416.0		31,304									31,304	4,922	36,226
FY12 Fiscal Year 2012						**416.0**		**31,304**									**31,304**	**4,922**	**36,226**
FY13 Fiscal Year 2013																			
TP07010113 Quality Assurance FY 2013																			
Quality Control Engineers	-1	0.3 FTE	39.00 wk	0 E110	8.000 ch/wk	312.0	75.25 /ch	23,478	-	-	-	-	-	-	-	-	23,478	4,190	27,668
Quality Assurance						**312.0**		**23,478**									**23,478**	**4,190**	**27,668**
TP07010113 Quality Assurance FY 2013						312.0		23,478									23,478	4,190	27,668
FY13 Fiscal Year 2013						**312.0**		**23,478**									**23,478**	**4,190**	**27,668**
.07.01 Quality Assurance						**1,144.0**		**86,086**									**86,086**	**13,382**	**99,468**
.07 Quality Assurance						**1,144.0**		**86,086**									**86,086**	**13,382**	**99,468**
.08 Safeguards & Security																			
.08.01 Safeguards & Security																			
FY11 Fiscal Year 2011																			
TP08010111 Vulnerability Assessment FY 2011																			
Administrative Assistants	-1		4.00 wk	0 G010	40.000 ch/wk	160.0	47.45 /ch	7,592	-	-	-	-	-	-	-	-	7,592	1,036	8,628
Safeguard & Security	-1		4.00 wk	0 P140	40.000 ch/wk	160.0	65.54 /ch	10,486	-	-	-	-	-	-	-	-	10,486	1,431	11,917
Vulnerability Assessment						**320.0**		**18,078**									**18,078**	**2,466**	**20,545**
TP08010111 Vulnerability Assessment FY 2011						320.0		18,078									18,078	2,466	20,545
FY11 Fiscal Year 2011						**320.0**		**18,078**									**18,078**	**2,466**	**20,545**
.08.01 Safeguards & Security						**320.0**		**18,078**									**18,078**	**2,466**	**20,545**
.08 Safeguards & Security						**320.0**		**18,078**									**18,078**	**2,466**	**20,545**
.12 Final Design																			
.12.01 Final Design																			
FY12 Fiscal Year 2012																			
TP12010112 Final Design FY 2012																			
Electrical Engineers	-1	2ea	8.00 wk	0 E040	80.000 ch/wk	640.0	79.21 /ch	50,694	-	-	-	-	-	-	-	-	50,694	7,971	58,665
Mechanical Engineers	-1	2ea	8.00 wk	0 E070	80.000 ch/wk	640.0	85.74 /ch	54,874	-	-	-	-	-	-	-	-	54,874	8,628	63,501
Mechanical Engineers	-1	1ea HVAC	3.00 wk	0 E070	40.000 ch/wk	120.0	85.74 /ch	10,289	-	-	-	-	-	-	-	-	10,289	1,618	11,907

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Drafters	-1	Mechanical & Electrical	8.00 wk	0 T020	80.000 ch/wk	640.0	99.37 /ch	63,597	-	-	-	-	-	-	-	-	63,597	9,999	73,596
Functions and Requirements Document update (HNF-6579)						**2,040.0**		**179,454**									**179,454**	**28,216**	**207,669**
TP12010112 Final Design FY 2012						2,040.0		179,454									179,454	28,216	207,669
FY12 Fiscal Year 2012						**2,040.0**		**179,454**									**179,454**	**28,216**	**207,669**
.12.01 Final Design						**2,040.0**		**179,454**									**179,454**	**28,216**	**207,669**
.12 Final Design						**2,040.0**		**179,454**									**179,454**	**28,216**	**207,669**
.13 Engineering During Construction																			
.13.01 Engineering During Construction																			
FY13 Fiscal Year 2013																			
TP13010113 Engineering During Construction FY 2013																			
Electrical Engineers	-1		30.00 wk	0 E040	10.000 ch/wk	300.0	79.21 /ch	23,763	-	-	-	-	-	-	-	-	23,763	4,241	28,004
Mechanical Engineers	-1		30.00 wk	0 E070	10.000 ch/wk	300.0	85.74 /ch	25,722	-	-	-	-	-	-	-	-	25,722	4,590	30,312
Nuclear Engineers	-1		30.00 wk	0 E080	10.000 ch/wk	300.0	94.95 /ch	28,485	-	-	-	-	-	-	-	-	28,485	5,083	33,568
Quality Control Engineers	-1		30.00 wk	0 E110	10.000 ch/wk	300.0	75.25 /ch	22,575	-	-	-	-	-	-	-	-	22,575	4,029	26,604
Safety Engineer	-1		30.00 wk	0 E120	10.000 ch/wk	300.0	71.00 /ch	21,300	-	-	-	-	-	-	-	-	21,300	3,801	25,101
Engineering During Construction						**1,500.0**		**121,845**									**121,845**	**21,743**	**143,588**
TP13010113 Engineering During Construction FY 2013						1,500.0		121,845									121,845	21,743	143,588
FY13 Fiscal Year 2013						**1,500.0**		**121,845**									**121,845**	**21,743**	**143,588**
.13.01 Engineering During Construction						**1,500.0**		**121,845**									**121,845**	**21,743**	**143,588**
.13 Engineering During Construction						**1,500.0**		**121,845**									**121,845**	**21,743**	**143,588**
.14 Procurement																			
.14.01 Procurement Support																			
FY12 Fiscal Year 2012																			
TP14010112 Procurement Support FY2012																			
Secretaries	-1		52.00 wk	0 G040	5.000 ch/wk	260.0	36.30 /ch	9,438	-	-	-	-	-	-	-	-	9,438	1,484	10,922
Buyers/Procurement/Contracting	-1		52.00 wk	0 P030	10.000 ch/wk	520.0	70.24 /ch	36,525	-	-	-	-	-	-	-	-	36,525	5,743	42,268
Procurement Support						**780.0**		**45,963**									**45,963**	**7,227**	**53,190**
TP14010112 Procurement Support FY2012						780.0		45,963									45,963	7,227	53,190
FY12 Fiscal Year 2012						**780.0**		**45,963**									**45,963**	**7,227**	**53,190**
FY13 Fiscal Year 2013																			
TP14010113 Procurement Support FY 2013																			
Secretaries	-1		30.00 wk	0 G040	5.000 ch/wk	150.0	36.30 /ch	5,445	-	-	-	-	-	-	-	-	5,445	972	6,417
Buyers/Procurement/Contracting	-1		30.00 wk	0 P030	10.000 ch/wk	300.0	70.24 /ch	21,072	-	-	-	-	-	-	-	-	21,072	3,760	24,832
Procurement Support						**450.0**		**26,517**									**26,517**	**4,732**	**31,249**
TP14010113 Procurement Support FY 2013						450.0		26,517									26,517	4,732	31,249
FY13 Fiscal Year 2013						**450.0**		**26,517**									**26,517**	**4,732**	**31,249**
.14.01 Procurement Support						**1,230.0**		**72,480**									**72,480**	**11,959**	**84,439**
.14.02 Equipment Procurement																			
FY12 Fiscal Year 2012																			
TP14020112 Equipment Procurement FY 2012																			
Structural steel frames, containment basins, sump pum supports, Leak detection supports, water add container	-2	Monarch Metals - Leveling frames, Support Stands, Leak Detector Supports, lifting assembly, sump pump supports, water add container, etc. for four cells $326,644. Escalted from 2003 to 2009 @ 2.4% per year = $376,594.4. Assume 3 cells would be 75% of the costs ie $282,445.80.	1.00 ls				/ls		282,445.80 /ls	282,446	-	-	/ls	-	-	282,446	67,852	350,298
Leveling frame & Support Stand		**3 cells**								**282,446**							**282,446**	**67,852**	**350,298**
Tank leak detectn systems,for hydrcrb&hazards liqds/v,controller,data acquisition,for use with all probes,24 channel.incl printer,modem,rs232 port	-2	Leak Detectors Enclosure per Parts List H 2-830372	3.00 ea				-	-	5,948.00 /ea	17,844	-	-	-	-	-	-	17,844	4,287	22,131

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Leak Detection 3 cells										**17,844**							**17,844**	**4,287**	**22,131**
TP14020112 Equipment Procurement FY 2012										**300,290**							**300,290**	**72,139**	**372,429**
FY12 Fiscal Year 2012										**300,290**							**300,290**	**72,139**	**372,429**
FY13 Fiscal Year 2013																			
TP14020113 Equipment Procurement FY 2013																			
Closed circuit television system (CCTV), surveillance, one station (camera & monitor)	-2		2.00 lot				/lot		1,200.00 /lot	2,400	-	-	-	-	-	-	2,400	627	3,027
Closed circuit television system (CCTV), surveillance, for additional camera stations, add	-2		2.00 ea				/ea		670.00 /ea	1,340	-	-	-	-	-	-	1,340	350	1,690
Closed circuit television system (CCTV), industrial quality, for weatherproof camera station, add	-2		4.00 ea				/ea		940.00 /ea	3,760	-	-	-	-	-	-	3,760	983	4,743
Closed circuit television system (CCTV), industrial quality, for pan and tilt, add	-2		4.00 ea				/ea		2,425.00 /ea	9,700	-	-	-	-	-	-	9,700	2,536	12,236
Closed circuit television system (CCTV), industrial quality, for zoom lens - remote cont, add, min	-2		4.00 ea				/ea		2,250.00 /ea	9,000	-	-	-	-	-	-	9,000	2,353	11,353
Video surveillance camera accessories, single camera VCR	-2		4.00 ea				/ea		500.00 /ea	2,000	-	-	-	-	-	-	2,000	523	2,523
Video Camera System		**2 additional cells**								**28,200**							**28,200**	**7,373**	**35,573**
Closed circuit television system (CCTV), surveillance, one station (camera & monitor)	-2		3.00 lot				/lot		1,200.00 /lot	3,600	-	-	-	-	-	-	3,600	941	4,541
Closed circuit television system (CCTV), surveillance, for additional camera stations, add	-2		3.00 ea				/ea		670.00 /ea	2,010	-	-	-	-	-	-	2,010	526	2,536
Closed circuit television system (CCTV), industrial quality, for weatherproof camera station, add	-2		6.00 ea				/ea		940.00 /ea	5,640	-	-	-	-	-	-	5,640	1,475	7,115
Closed circuit television system (CCTV), industrial quality, for pan and tilt, add	-2		6.00 ea				/ea		2,425.00 /ea	14,550	-	-	-	-	-	-	14,550	3,804	18,354
Closed circuit television system (CCTV), industrial quality, for zoom lens - remote cont, add, min	-2		6.00 ea				/ea		2,250.00 /ea	13,500	-	-	-	-	-	-	13,500	3,530	17,030
Video surveillance camera accessories, single camera VCR	-2		6.00 ea				/ea		500.00 /ea	3,000	-	-	-	-	-	-	3,000	784	3,784
Video Camera System		**3 cells**								**42,300**							**42,300**	**11,059**	**53,359**
TP14020113 Equipment Procurement FY 2013										**70,500**							**70,500**	**18,432**	**88,932**
FY13 Fiscal Year 2013										**70,500**							**70,500**	**18,432**	**88,932**
.14.02 Equipment Procurement										**370,790**							**370,790**	**90,571**	**461,361**
.14 Procurement						**1,230.0**		**72,480**		**370,790**							**443,270**	**102,530**	**545,799**
.15 Construction																			
.15.03 Bldg. Modifications																			
FY12 Fiscal Year 2012																			
TP15030112 Clean off Canyon Deck (Relocate Permacons and NLOP grout equip.)																			
Millwrights	-3	2 ea	2.00 wk	0 C060	80.000 ch/wk	160.0	57.58 /ch	9,213	-	-	-	-	-	-	-	-	9,213	1,449	10,661
Structural or Metal Worker	-3	4 ea	2.00 wk	0 C090	160.000 ch/wk	320.0	57.89 /ch	18,525	-	-	-	-	-	-	-	-	18,525	2,913	21,437
First Line Supervisors	-3	1ea	2.00 wk	0 M010	40.000 ch/wk	80.0	78.54 /ch	6,283	-	-	-	-	-	-	-	-	6,283	988	7,271
Industrial Hygienists	-3	1ea	2.00 wk	0 P090	40.000 ch/wk	80.0	72.95 /ch	5,836	-	-	-	-	-	-	-	-	5,836	918	6,754
Material Moving Equipment Operators	-3	1ea	2.00 wk	0 R030	40.000 ch/wk	80.0	56.91 /ch	4,553	-	-	-	-	-	-	-	-	4,553	716	5,269
Other Operators	-3	2 ea	2.00 wk	0 R080	80.000 ch/wk	160.0	57.10 /ch	9,136	-	-	-	-	-	-	-	-	9,136	1,436	10,572
Health Physics Technicians	-3	1ea	2.00 wk	0 T050	40.000 ch/wk	80.0	53.43 /ch	4,274									4,274	672	4,946
Permacon D&D						**960.0**		**57,820**									**57,820**	**9,091**	**66,911**
Box, Metal, DOT Strong tight, 4' x 4' x 6' (2.718m3), w/composite liner	-3	4.13 tons per box max	36.00 ea				-	-	810.64 /ea	29,183	-	-	-	-	-	-	29,183	7,011	36,194
Standard Waste Box (SWB) 1.9m3	-3	2003 Costs_Note: Pricing 10-2-03 Standard Waste Box (SWB) (67.2cf-1.9cm)_Escalated to 2007 dollars ($)	2.00 ea				-	-	3,324.20 /ea	6,648	-	-	-	-	-	-	6,648	1,597	8,246
LLMW - Disposal @ Hanford ERDIFF	-3	LDC Transfer Enclosure ASSY	4.00 ton				-	-	-	-	40.00 /ton	160	-	-	-	-	160	25	185
LLMW - Disposal @ Hanford ERDIFF	-3	Buffertank Enclosure Skid Assembly	22.50 ton				-	-	-	-	40.00 /ton	900	-	-	-	-	900	142	1,042
LLMW - Disposal @ Hanford ERDIFF	-3	Drum Loading Enclosure Assembly	10.00 ton				-	-	-	-	40.00 /ton	400	-	-	-	-	400	63	463
LLMW - Disposal @ Hanford ERDIFF	-3	Electrical Rack Assembly	0.50 ton				-	-	-	-	40.00 /ton	20	-	-	-	-	20	3	23
Millwrights	-3	2 ea	26.00 wk	0 C060	80.000 ch/wk	2,080.0	57.58 /ch	119,766	-	-	-	-	-	-	-	-	119,766	18,831	138,597
Structural or Metal Worker	-3	4 ea	26.00 wk	0 C090	160.000 ch/wk	4,160.0	57.89 /ch	240,822	-	-	-	-	-	-	-	-	240,822	37,865	278,687
First Line Supervisors	-3	1ea	26.00 wk	0 M010	40.000 ch/wk	1,040.0	78.54 /ch	81,682	-	-	-	-	-	-	-	-	81,682	12,843	94,524
Industrial Hygienists	-3	1ea	26.00 wk	0 P090	40.000 ch/wk	1,040.0	72.95 /ch	75,868	-	-	-	-	-	-	-	-	75,868	11,929	87,797
Material Moving Equipment Operators	-3	1ea	26.00 wk	0 R030	40.000 ch/wk	1,040.0	56.91 /ch	59,186	-	-	-	-	-	-	-	-	59,186	9,306	68,492
Other Operators	-3	2 ea	26.00 wk	0 R080	80.000 ch/wk	2,080.0	57.10 /ch	118,768	-	-	-	-	-	-	-	-	118,768	18,674	137,442
Health Physics Technicians	-3	1ea	26.00 wk	0 T050	40.000 ch/wk	1,040.0	53.43 /ch	55,567	-	-	-	-	-	-	-	-	55,567	8,737	64,304
Haul waste Boxes to ERDIFF	-3	4 Boxes per load	9.00 trip	B34Na	2.000 ch/trip	18.0	57.10 /ch	1,028	-	-	-	-	55.23 /ch	994	-	-	2,022	400	2,422
NLOP Grout Equipment D&D						**12,498.0**		**752,688**		**35,831**		**1,480**		**994**			**790,993**	**127,425**	**918,418**
TP15030112 Clean off Canyon Deck (Relocate Permacons and NLOP grout equip.)						**13,458.0**		**810,508**		**35,831**		**1,480**		**994**			**848,813**	**136,516**	**985,329**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
TP15030212 Cleanout Cell 14R																			
Drum, Removable Head, White, 55 GLL(0.207m3), DOT 17C	-5	2003 Costs_Note: Pricing 10-2-03_Escalated to 2007 dollars ($)	194.00 ea				-	-	50.53 /ea	9,802	-	-	-	-	-	-	9,802	2,355	12,157
Box, Metal, DOT Strong tight, 4' x 4' x 6' (2.718m3), w/composite liner	-5	2002 Costs_Note: ROCKY Flats PROCUREMENT WAREHOUSE CATALOG 10/4/02_Escalated to 2007 dollars ($)	15.00 ea				-	-	810.64 /ea	12,160	-	-	-	-	-	-	12,160	2,921	15,081
Macro encapsulation - Permafix Cat 1	-5		40.00 m3				-	-	-	-	3,500.00 /m3	140,000	-	-	-	-	140,000	22,012	162,012
Macro encapsulation - Permafix Cat 3	-5		31.50 m3				-	-	-	-	6,000.00 /m3	189,000	-	-	-	-	189,000	29,717	218,717
First Line Supervisors	-5		1.00 wk	0 M010	40.000 ch/wk	40.0	78.54 /ch	3,142	-	-	-	-	-	-	-	-	3,142	494	3,636
Material Moving Equipment Operators	-5		1.00 wk	0 R030	40.000 ch/wk	40.0	56.91 /ch	2,276	-	-	-	-	-	-	-	-	2,276	358	2,634
Other Operators	-5		1.00 wk	0 R080	40.000 ch/wk	40.0	57.10 /ch	2,284	-	-	-	-	-	-	-	-	2,284	359	2,643
Health Physics Technicians	-5		1.00 wk	0 T050	40.000 ch/wk	40.0	53.43 /ch	2,137	-	-	-	-	-	-	-	-	2,137	336	2,473
Cell 14 R		**Open & Transport**				**160.0**		**9,839**		**21,962**		**329,000**					**360,801**	**58,552**	**419,353**
TP15030212 Cleanout Cell 14R						160.0		9,839		21,962		329,000					360,801	58,552	419,353
TP15032012 Cleanout Cell 16R																			
Drum, Removable Head, White, 55 GLL(0.207m3), DOT 17C	-5	2003 Costs_Note: Pricing 10-2-03_Escalated to 2007 dollars ($)	194.00 ea				-	-	50.53 /ea	9,802	-	-	-	-	-	-	9,802	2,355	12,157
Box, Metal, DOT Strong tight, 4' x 4' x 6' (2.718m3), w/composite liner	-5	2002 Costs_Note: ROCKY Flats PROCUREMENT WAREHOUSE CATALOG 10/4/02_Escalated to 2007 dollars ($)	15.00 ea				-	-	810.64 /ea	12,160	-	-	-	-	-	-	12,160	2,921	15,081
Macro encapsulation - Permafix Cat 1	-5		40.00 m3				-	-	-	-	3,500.00 /m3	140,000	-	-	-	-	140,000	22,012	162,012
Macro encapsulation - Permafix Cat 3	-5		31.50 m3				-	-	-	-	6,000.00 /m3	189,000	-	-	-	-	189,000	29,717	218,717
First Line Supervisors	-5		1.00 wk	0 M010	40.000 ch/wk	40.0	78.54 /ch	3,142	-	-	-	-	-	-	-	-	3,142	494	3,636
Material Moving Equipment Operators	-5		1.00 wk	0 R030	40.000 ch/wk	40.0	56.91 /ch	2,276	-	-	-	-	-	-	-	-	2,276	358	2,634
Other Operators	-5		1.00 wk	0 R080	40.000 ch/wk	40.0	57.10 /ch	2,284	-	-	-	-	-	-	-	-	2,284	359	2,643
Health Physics Technicians	-5		1.00 wk	0 T050	40.000 ch/wk	40.0	53.43 /ch	2,137	-	-	-	-	-	-	-	-	2,137	336	2,473
Cell 16 R		**Open & Transport**				**160.0**		**9,839**		**21,962**		**329,000**					**360,801**	**58,552**	**419,353**
TP15032012 Cleanout Cell 16R						160.0		9,839		21,962		329,000					360,801	58,552	419,353
TP15032112 Cleanout Cell 2R																			
Drum, Removable Head, White, 55 GLL(0.207m3), DOT 17C	-5	2003 Costs_Note: Pricing 10-2-03_Escalated to 2007 dollars ($)	194.00 ea				-	-	50.53 /ea	9,802	-	-	-	-	-	-	9,802	2,355	12,157
Box, Metal, DOT Strong tight, 4' x 4' x 6' (2.718m3), w/composite liner	-5	2002 Costs_Note: ROCKY Flats PROCUREMENT WAREHOUSE CATALOG 10/4/02_Escalated to 2007 dollars ($)	15.00 ea				-	-	810.64 /ea	12,160	-	-	-	-	-	-	12,160	2,921	15,081
Macro encapsulation - Permafix Cat 1	-5		40.00 m3				-	-	-	-	3,500.00 /m3	140,000	-	-	-	-	140,000	22,012	162,012
Macro encapsulation - Permafix Cat 3	-5		31.50 m3				-	-	-	-	6,000.00 /m3	189,000	-	-	-	-	189,000	29,717	218,717
First Line Supervisors	-5		2.00 wk	0 M010	40.000 ch/wk	80.0	78.54 /ch	6,283	-	-	-	-	-	-	-	-	6,283	988	7,271
Material Moving Equipment Operators	-5		2.00 wk	0 R030	40.000 ch/wk	80.0	56.91 /ch	4,553	-	-	-	-	-	-	-	-	4,553	716	5,269
Other Operators	-5		2.00 wk	0 R080	40.000 ch/wk	80.0	57.10 /ch	4,568	-	-	-	-	-	-	-	-	4,568	718	5,286
Health Physics Technicians	-5		2.00 wk	0 T050	40.000 ch/wk	80.0	53.43 /ch	4,274	-	-	-	-	-	-	-	-	4,274	672	4,946
Cell 2 R		**Open & Transport**				**320.0**		**19,678**		**21,962**		**329,000**					**370,640**	**60,099**	**430,739**
TP15032112 Cleanout Cell 2R						320.0		19,678		21,962		329,000					370,640	60,099	430,739
FY12 Fiscal Year 2012						**14,098.0**		**849,865**		**101,717**		**988,480**		**994**			**1,941,056**	**313,719**	**2,254,775**
FY13 Fiscal Year 2013																			
TP15030313 Install new Cell equipment																			
Set frames	-3		5.00 ea	E2a	28.662 ch/ea	859.9	341.64 /ch	48,961	182.00 /ea	910	-	-	195.88 /ch	28,071	-	-	77,942	30,344	108,286
Set leak detection support frames	-3		5.00 ea	E2a	28.662 ch/ea	859.9	341.64 /ch	48,961	182.00 /ea	910	-	-	195.88 /ch	28,071	-	-	77,942	30,344	108,286
Set sump pump support frames	-3		5.00 ea	E2a	28.662 ch/ea	859.9	341.64 /ch	48,961	182.00 /ea	910	-	-	195.88 /ch	28,071	-	-	77,942	30,344	108,286
Set containment basins	-3		5.00 ea	E2a	28.662 ch/ea	859.9	341.64 /ch	48,961	182.00 /ea	910	-	-	195.88 /ch	28,071	-	-	77,942	30,344	108,286
Set overpack container	-3		5.00 ea	E2a	28.662 ch/ea	859.9	341.64 /ch	48,961	182.00 /ea	910	-	-	195.88 /ch	28,071	-	-	77,942	30,344	108,286
Leveling frame & Support Stand		**3 cells**				**4,299.4**		**244,806**		**4,550**				**140,356**			**389,712**	**151,720**	**541,432**
Flexible metal hose, stainless steel braided, welded on carbon steel ends, threaded, 1/2" diameter x 12"	-3	McMaster Carr 54905K32	3.00 ea	STPi1a	1.062 ch/ea	3.2	55.36 /ch	176	52.20 /ea	157	-	-	-	-	-	-	333	132	465
Flexible metal hose, metal stainless steel braid, 1/2" diameter x 1"	-3	McMaster Carr 54905K32 $1.25 per inch or $15 per foot	75.00 lf				/lf		15.00 /lf	1,125	-	-	-	-	-	-	1,125	497	1,622
Pump, pedestal sump, solid brass, 21 GPM, 1/3 H.P., at 15' head, includes float control	-3		3.00 ea	PLUM1a	5.096 ch/ea	15.3	55.36 /ch	846	251.00 /ea	753	-	-	-	-	-	-	1,599	636	2,235
Wire connector, screw type, #18 to #10	-3		16.00 ea	ELEC1a	0.106 ch/ea	1.7	60.19 /ch	102	0.15 /ea	2	-	-	-	-	-	-	105	38	142
Wire connector, screw type, #18 to #10	-3		6.00 ea	ELEC1	0.106 ch/ea	0.6	59.61 /ch	38	0.15 /ea	1	-	-	-	-	-	-	39	14	53
Portable cord, type SO, 600 volt, 3 conductor, #12, in tray or exposed	-3		60.00 lf	ELEC1a	0.030 ch/lf	1.8	60.19 /ch	110	0.92 /lf	55	-	-	-	-	-	-	165	64	228
Wire, copper, solid, 600 volt, #10, type THWN-THHN, in raceway	-3		27.15 clf	ELEC1	2.564 ch/clf	69.6	59.61 /ch	4,149	23.00 /clf	624	-	-	-	-	-	-	4,774	1,763	6,537
Control cable, copper, THHN wire with PVC jacket, 600 V, 8 wires, #14	-3		28.40 clf	ELEC1a	4.807 ch/clf	136.5	60.19 /ch	8,217	69.50 /clf	1,974	-	-	-	-	-	-	10,191	3,817	14,008
Rigid galvanized steel conduit, 3/4" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-3	control conduit	350.00 lf	ELEC1a	0.318 ch/lf	111.5	60.19 /ch	6,709	2.54 /lf	889	-	-	-	-	-	-	7,598	2,797	10,395

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Rigid galvanized steel conduit, 3/4" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-3	power conduit	900.00 lf	ELEC1	0.318 ch/lf	286.6	59.61 /ch	17,084	2.54 /lf	2,286	-	-	-	-	-	-	19,370	7,133	26,504
Pull boxes, sheet metal, type SC, raintight & weatherproof, 6" L x 6" W x 6" D, NEMA 3R	-3	power conduit	18.00 ea	ELEC1	2.548 ch/ea	45.9	59.61 /ch	2,734	21.00 /ea	378	-	-	-	-	-	-	3,112	1,147	4,258
Pull boxes, sheet metal, type SC, raintight & weatherproof, 8" L x 6" W x 6" D, NEMA 3R	-3	control conduit	7.00 ea	ELEC1a	3.185 ch/ea	22.3	60.19 /ch	1,342	26.00 /ea	182	-	-	-	-	-	-	1,524	561	2,085
Knockouts, metal boxes & enclosures, with hole saw, 3/4" pipe size, to 8' high	-3	control conduit	14.00 ea	ELEC1a	0.542 ch/ea	7.6	60.19 /ch	457	-	-	-	-	-	-	-	-	457	164	621
Knockouts, metal boxes & enclosures, with hole saw, 3/4" pipe size, to 8' high	-3	power conduit	36.00 ea	ELEC1	0.542 ch/ea	19.5	59.61 /ch	1,163	-	-	-	-	-	-	-	-	1,163	417	1,580
Leak Detection Systems, for hazardous liquids	-3		3.00 ea	ELEC1a	57.325 ch/ea	172.0	60.19 /ch	10,351	/ea		-	-	-	-	-	-	10,351	3,710	14,062
Leak Detection 3 cells						**894.1**		**53,479**		**8,426**							**61,905**	**22,889**	**84,795**
Coaxial connectors, BNC jack for, RG A/U #59 cable	-3		8.00 ea	ELEC1a	0.607 ch/ea	4.9	60.19 /ch	292	4.73 /ea	38	-	-	-	-	-	-	330	121	451
Coaxial cable, 75 ohm, RG 6/U	-3	2cable from each cell to Rm. 218	13.30 clf	ELEC1a	3.185 ch/clf	42.4	60.19 /ch	2,549	32.00 /clf	426	-	-	-	-	-	-	2,975	1,102	4,077
Closed circuit television system (CCTV), surveillance, one station (camera & monitor)	-3		2.00 tot	ELEC2a	9.799 ch/tot	39.2	120.38 /ch	2,359	/tot		-	-	-	-	-	-	2,359	846	3,205
Closed circuit television system (CCTV), surveillance, for additional camera stations, add	-3		2.00 ea	ELEC1a	9.436 ch/ea	18.9	60.19 /ch	1,136	/ea		-	-	-	-	-	-	1,136	407	1,543
Closed circuit television system (CCTV), industrial quality, for weatherproof camera station, add	-3		4.00 ea	ELEC1a	19.598 ch/ea	78.4	60.19 /ch	4,718	/ea		-	-	-	-	-	-	4,718	1,691	6,410
Closed circuit television system (CCTV), industrial quality, for pan and tilt, add	-3		4.00 ea	ELEC1a	19.598 ch/ea	78.4	60.19 /ch	4,718	/ea		-	-	-	-	-	-	4,718	1,691	6,410
Closed circuit television system (CCTV), industrial quality, for zoom lens - remote cont, add, min	-3		4.00 ea	ELEC1a	12.739 ch/ea	51.0	60.19 /ch	3,067	/ea		-	-	-	-	-	-	3,067	1,099	4,166
Video surveillance camera accessories, single camera VCR	-3		4.00 ea	ELEC1a	8.493 ch/ea	34.0	60.19 /ch	2,045	/ea		-	-	-	-	-	-	2,045	733	2,778
Video Camera System		**2 additional cells**				**347.0**		**20,885**		**463**							**21,349**	**7,691**	**29,040**
Flexible metal hose, stainless steel braided, welded on carbon steel ends, threaded, 1/2" diameter x 12"	-3	McMaster Carr 54905K32	3.00 ea	STPi1a	1.062 ch/ea	3.2	55.36 /ch	176	52.20 /ea	157	-	-	-	-	-	-	333	132	465
Flexible metal hose, metal stainless steel braid, 1/2" diameter x 1"	-3	McMaster Carr 54905K32 $1.25 per inch or $15 per foot	75.00 lf				/lf		15.00 /lf	1,125	-	-	-	-	-	-	1,125	497	1,622
Pump, pedestal sump, solid brass, 21 GPM, 1/3 H.P., at 15' head, includes float control	-3		3.00 ea	PLUM1a	5.096 ch/ea	15.3	55.36 /ch	846	251.00 /ea	753	-	-	-	-	-	-	1,599	636	2,235
Wire connector, screw type, #18 to #10	-3		16.00 ea	ELEC1a	0.106 ch/ea	1.7	60.19 /ch	102	0.15 /ea	2	-	-	-	-	-	-	105	38	142
Wire connector, screw type, #18 to #10	-3		6.00 ea	ELEC1	0.106 ch/ea	0.6	59.61 /ch	38	0.15 /ea	1	-	-	-	-	-	-	39	14	53
Portable cord, type SO, 600 volt, 3 conductor, #12, in tray or exposed	-3		60.00 lf	ELEC1a	0.030 ch/lf	1.8	60.19 /ch	110	0.92 /lf	55	-	-	-	-	-	-	165	64	228
Wire, copper, solid, 600 volt, #10, type THWN-THHN, in raceway	-3		27.15 clf	ELEC1	2.564 ch/clf	69.6	59.61 /ch	4,149	23.00 /clf	624	-	-	-	-	-	-	4,774	1,763	6,537
Control cable, copper, THHN wire with PVC jacket, 600 V, 8 wires, #14	-3		28.40 clf	ELEC1a	4.807 ch/clf	136.5	60.19 /ch	8,217	69.50 /clf	1,974	-	-	-	-	-	-	10,191	3,817	14,008
Rigid galvanized steel conduit, 3/4" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-3	control conduit	350.00 lf	ELEC1a	0.318 ch/lf	111.5	60.19 /ch	6,709	2.54 /lf	889	-	-	-	-	-	-	7,598	2,797	10,395
Rigid galvanized steel conduit, 3/4" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-3	power conduit	900.00 lf	ELEC1	0.318 ch/lf	286.6	59.61 /ch	17,084	2.54 /lf	2,286	-	-	-	-	-	-	19,370	7,133	26,504
Pull boxes, sheet metal, type SC, raintight & weatherproof, 6" L x 6" W x 6" D, NEMA 3R	-3	power conduit	18.00 ea	ELEC1	2.548 ch/ea	45.9	59.61 /ch	2,734	21.00 /ea	378	-	-	-	-	-	-	3,112	1,147	4,258
Pull boxes, sheet metal, type SC, raintight & weatherproof, 8" L x 6" W x 6" D, NEMA 3R	-3	control conduit	7.00 ea	ELEC1a	3.185 ch/ea	22.3	60.19 /ch	1,342	26.00 /ea	182	-	-	-	-	-	-	1,524	561	2,085
Knockouts, metal boxes & enclosures, with hole saw, 3/4" pipe size, to 8' high	-3	control conduit	14.00 ea	ELEC1a	0.542 ch/ea	7.6	60.19 /ch	457	-	-	-	-	-	-	-	-	457	164	621
Knockouts, metal boxes & enclosures, with hole saw, 3/4" pipe size, to 8' high	-3	power conduit	36.00 ea	ELEC1	0.542 ch/ea	19.5	59.61 /ch	1,163	-	-	-	-	-	-	-	-	1,163	417	1,580
Leak Detection Systems, for hazardous liquids	-3		3.00 ea	ELEC1a	57.325 ch/ea	172.0	60.19 /ch	10,351	/ea		-	-	-	-	-	-	10,351	3,710	14,062
Leak Detection 3 cells						**894.1**		**53,479**		**8,426**							**61,905**	**22,889**	**84,795**
Coaxial connectors, BNC jack for, RG A/U #59 cable	-3		12.00 ea	ELEC1a	0.607 ch/ea	7.3	60.19 /ch	438	4.73 /ea	57	-	-	-	-	-	-	495	182	677
Coaxial cable, 75 ohm, RG 6/U	-3	2cable from each cell to Rm. 218	20.00 clf	ELEC1a	3.185 ch/clf	63.7	60.19 /ch	3,834	32.00 /clf	640		-	-	-	-	-	4,474	1,657	6,130
Closed circuit television system (CCTV), surveillance, one station (camera & monitor)	-3		3.00 tot	ELEC2a	9.799 ch/tot	58.8	120.38 /ch	3,539	/tot		-	-	-	-	-	-	3,539	1,269	4,807
Closed circuit television system (CCTV), surveillance, for additional camera stations, add	-3		3.00 ea	ELEC1a	9.436 ch/ea	28.3	60.19 /ch	1,704	/ea		-	-	-	-	-	-	1,704	611	2,315
Closed circuit television system (CCTV), industrial quality, for weatherproof camera station, add	-3		6.00 ea	ELEC1a	19.598 ch/ea	117.6	60.19 /ch	7,078	/ea		-	-	-	-	-	-	7,078	2,537	9,615
Closed circuit television system (CCTV), industrial quality, for pan and tilt, add	-3		6.00 ea	ELEC1a	19.598 ch/ea	117.6	60.19 /ch	7,078	/ea		-	-	-	-	-	-	7,078	2,537	9,615
Closed circuit television system (CCTV), industrial quality, for zoom lens - remote cont, add, min	-3		6.00 ea	ELEC1a	12.739 ch/ea	76.4	60.19 /ch	4,601	/ea		-	-	-	-	-	-	4,601	1,649	6,250
Video surveillance camera accessories, single camera VCR	-3		6.00 ea	ELEC1a	8.493 ch/ea	51.0	60.19 /ch	3,067	/ea		-	-	-	-	-	-	3,067	1,099	4,166
Video Camera System		**3 cells**				**520.6**		**31,338**		**697**							**32,034**	**11,541**	**43,575**
TP15030313 Install new Cell equipment						**6,955.2**		**403,987**		**22,563**				**140,356**			**566,906**	**216,730**	**783,636**
TP15030613 Infrastructure - Water Supply Loop																			
LLMW - Disposal @ Hanford ERDIFF	-4	Soil from waterline loop	310.00 ton				-	-	-	-	40.00 /ton	12,400	-	-	-	-	12,400	2,213	14,613
Project Manager	-1		33.00 wk	zPM	40.000 mh/wk	1,320.0	101.66 /mh	134,227	-	-	-	-	-	-	-	-	134,227	63,550	197,777
Superintendent	-1		33.00 wk	zSupt	40.000 mh/wk	1,320.0	96.30 /mh	127,112	-	-	-	-	-	-	-	-	127,112	60,181	187,293
Field Engineer	-1		33.00 wk	zFE	40.000 mh/wk	1,320.0	64.20 /mh	84,740	-	-	-	-	-	-	-	-	84,740	40,120	124,860
Time Keeper	-1		33.00 wk	zTime	40.000 mh/wk	1,320.0	39.73 /mh	52,441	-	-	-	-	-	-	-	-	52,441	24,828	77,269
Clerk	-1		33.00 wk	zClerk	40.000 mh/wk	1,320.0	14.43 /mh	19,052	-	-	-	-	-	-	-	-	19,052	9,020	28,072
Field Personnel, general purpose laborer, average	-1		33.00 week	CLAB1	40.000 ch/week	1,320.0	42.93 /ch	56,669	-	-	-	-	-	-	-	-	56,669	26,830	83,499
SO Testing Support Mechanical	-4		4.00 wk	STPi2	40.000 ch/wk	320.0	143.94 /ch	23,031	-	-	-	-	-	-	-	-	23,031	10,904	33,935
Office Trailer, furnished, rent per month, 50' x 12', excl. hookups	-4		1.00 ea				-	-	375.00 /ea	375	-	-	-	-	-	-	375	209	584
Field Office Expense, office equipment rental, average	-4		8.00 mo				-	-	150.00 /mo	1,200	-	-	-	-	-	-	1,200	668	1,868
Field Office Expense, office supplies, average	-4		8.00 mo				-	-	95.00 /mo	760	-	-	-	-	-	-	760	423	1,183
Field Office Expense, telephone bill; avg. bill/month, incl. long dist	-4		8.00 mo				-	-	210.00 /mo	1,680	-	-	-	-	-	-	1,680	935	2,615

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Field Office Expense, field office lights & HVAC	-4		8.00 mo				-	-	110.00 /mo	880	-	-	-	-	-	-	880	490	1,370
Mobilization or demobilization, dozer, loader, backhoe or excavator, 70 H.P. to 250 H.P., up to 50 miles	-4	Backhoe & /front end loader in & out	4.00 ea	B34N	4.367 ch/ea	17.5	48.02 /ch	839	-	-	-	-	55.23 /ch	965	-	-	1,803	934	2,737
Mobilization or demobilization, delivery charge for small equipment on flatbed trailer, minimum	-4	Compaction Equipment	4.00 ea	A3A	2.183 ch/ea	8.7	48.02 /ch	419	-	-	-	-	15.18 /ch	133	-	-	552	272	824
Barricades, barricade tape, polyethylene, 7 mils thick, 3" wide x 500' long roll	-4	Buried Cable Warning tape	12.00 ea				-	-	25.00 /ea	300	-	-	-	-	-	-	300	167	467
Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees	-4	2 road crossings	23.00 sy	B38	0.042 ch/sy	4.8	222.88 /ch	213	-	-	-	-	125.28 /ch	120	-	-	333	168	501
Selective demolition, saw cutting, asphalt, up to 3" deep	-4	4 cuts across road	138.00 lf	B89	0.017 ch/lf	4.6	95.06 /ch	218	0.38 /lf	52	-	-	47.18 /ch	108	-	-	379	193	572
Structural concrete,ready mix,normal weight,3000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-4	pipe encasement	148.50 cy				-	-	100.00 /cy	14,850	-	-	-	-	-	-	14,850	8,263	23,113
Structural concrete,ready mix,normal weight,4000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-4	thrust blocks	3.00 cy				-	-	106.00 /cy	318	-	-	-	-	-	-	318	177	495
Structural concrete, placing, spread footing, direct chute, over 5 C.Y., includes vibrating, excludes material	-4	thrust blocks	3.00 cy	C6	0.146 ch/cy	2.6	262.19 /ch	115	-	-	-	-	6.20 /ch	3	-	-	117	56	173
Structural concrete, placing, spread footing, direct chute, over 5 C.Y., includes vibrating, excludes material	-4	pipe encasement	148.50 cy	C6	0.146 ch/cy	129.7	262.19 /ch	5,668	-	-	-	-	6.20 /ch	134	-	-	5,802	2,758	8,560
Excavating, trench or continuous footing, common earth, 3/4 C.Y. excavator, 1' to 4' deep, excludes sheeting or dewatering	-4		2,074.07 bcy	B12F	0.065 ch/bcy	268.3	89.98 /ch	12,072	-	-	-	-	68.66 /ch	9,214	-	-	21,287	10,843	32,129
Backfill, structural, common earth, 80 H.P. dozer, 50' haul, excludes compaction	-4		1,431.11 lcy	B10L	0.018 ch/lcy	38.5	68.51 /ch	1,758	-	-	-	-	47.43 /ch	1,217	-	-	2,975	1,509	4,484
Fill by borrow and utility bedding, for pipe and conduit, sand, dead or bank, excludes compaction	-4		954.07 lcy	B6	0.116 ch/lcy	333.3	132.91 /ch	14,765	10.00 /lcy	9,541	-	-	35.68 /ch	3,963	-	-	28,269	14,505	42,774
Fill by borrow and utility bedding, for pipe and conduit, compacting bedding in trench	-4		954.07 ecy	A1D	0.194 ch/ecy	185.2	42.93 /ch	7,949	-	-	-	-	3.88 /ch	718	-	-	8,667	4,163	12,830
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	-4		1,431.11 ecy	B10G	0.013 ch/ecy	28.8	68.51 /ch	1,317	-	-	-	-	125.75 /ch	2,417	-	-	3,734	1,968	5,702
Plant-mix asphalt paving, for highways and large paved areas, binder course, 4" thick	-4	2 road crossings	23.00 sy	B25	0.004 ch/sy	1.1	484.58 /ch	47	11.30 /sy	260	-	-	295.48 /ch	29	-	-	335	183	518
Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick	-4	2 road crossings	23.00 sy	B25B	0.003 ch/sy	0.8	531.63 /ch	34	6.35 /sy	146	-	-	322.85 /ch	20	-	-	200	109	309
Metal parking bumpers, pipe bollards, conc filled/painted, 8' L x 4' D hole, 8" diam.	-4		24.00 ea	B6	1.164 ch/ea	83.8	132.91 /ch	3,714	515.00 /ea	12,360	-	-	35.68 /ch	997	-	-	17,071	9,191	26,263
Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	-4		11,020.00 sy	B81	0.002 ch/sy	65.1	137.99 /ch	2,996	0.16 /sy	1,763	-	-	69.18 /ch	1,502	-	-	6,261	3,235	9,496
Public water utility distribution piping,ductile iron pipe,cement lined,mechanical joint,fittings,18'lgs,12"diam,class 50,excludes excavation backfill	-4	Public Water Utility Distribution Piping, ductile iron pipe, cement lined, mechanical joint, no fittings, 18' lengths, 12" diameter, class 50, excludes excavation or backfill	5,600.00 lf	B21A	0.166 ch/lf	4,646.3	276.85 /ch	257,266	31.00 /lf	173,600	-	-	76.38 /ch	70,973	-	-	501,838	257,895	759,734
Public water utility distribution piping,fitting,90 degree bend elbow,mechanical joint,ductile iron,cement lined,12"diameter,class 50 water piping	-4	Public Water Utility Distribution Piping, fitting, 90 degree bend or elbow, mechanical joint, ductile iron, cement lined, 12" diameter, class 50 water piping	4.00 ea	B21A	1.659 ch/ea	33.2	276.85 /ch	1,837	730.00 /ea	2,920	-	-	76.38 /ch	507	-	-	5,264	2,777	8,040
Pubic Water Utility Distribution Piping, fitting, wye or tee, ductile iron, cement lined, mechanical joint, 12" diameter, class 50 water piping	-4		4.00 ea	B21A	2.488 ch/ea	49.8	276.85 /ch	2,755	1,400.00 /ea	5,600	-	-	76.38 /ch	760	-	-	9,116	4,844	13,959
Public Water Utility Distribution Piping, fitting, 45 degree bend, ductile iron, cement lined, mechanical joint, 12" diameter, class 50 water piping	-4		4.00 ea	B21A	1.659 ch/ea	33.2	276.85 /ch	1,837	440.00 /ea	1,760	-	-	76.38 /ch	507	-	-	4,104	2,131	6,235
Public Water Utility Distribution Piping, butterfly valves cast iron, with extension box, 12" diameter	-4		2.00 ea	B21	5.822 ch/ea	40.8	168.63 /ch	1,964	2,350.00 /ea	4,700	-	-	16.18 /ch	188	-	-	6,852	3,650	10,502
Water Utility Distribution Fire Hydraunts, two way, 4'-0" depth, 5 - 1/4" valve, includes mechanical joints, excludes excavation and backfill	-4		4.00 ea	B21	1.941 ch/ea	27.2	168.63 /ch	1,309	650.00 /ea	2,600	-	-	16.18 /ch	126	-	-	4,035	2,136	6,171
Water Utility Distribution Fire Hydraunts, lower barrel extension with stem, 3'-0", excludes excavation and backfill	-4		6.00 ea	B20	1.456 ch/ea	26.2	145.11 /ch	1,267	670.00 /ea	4,020	-	-	-	-	-	-	5,287	2,837	8,124
Water utility distrbtn fire hydraunts,indicator post,non-adj valve size,4"-14",4'-0"bury,includes bolts and gaskets,excludes excavation and backfill	-4	Water Utility Distribution Fire Hydraunts, indicator post, non-adjustable valve size, 4" - 14", 4'-0" bury, includes bolts and gaskets, excludes excavation and backfill	6.00 ea	B21	1.941 ch/ea	40.8	168.63 /ch	1,964	665.00 /ea	3,990	-	-	16.18 /ch	188	-	-	6,142	3,255	9,397
Public Water Supply domestic water, pipe sterilization, chlorine	-4		6.00 ea	CLAB2	17.467 ch/ea	209.6	85.86 /ch	8,999	480.00 /ea	2,880	-	-	-	-	-	-	11,879	5,863	17,742
Looped Grid Water Supply						**14,519.7**		**828,593**		**246,555**		**12,400**		**94,787**			**1,182,335**	**584,451**	**1,766,786**
TP15030613 Infrastructure - Water Supply Loop						**14,519.7**		**828,593**		**246,555**		**12,400**		**94,787**			**1,182,335**	**584,451**	**1,766,786**
TP15030813 Install Inert Gas Exhaust Ducting																			
Pipe, 20 ga. gal, butt weld, 8" diameter, 20 ga. gal, includes weld joint and clevis type hangers 10' OC	-3		12.00 lf	Q16	0.242 ch/lf	8.7	215.91 /ch	628	36.00 /lf	432	-	-	7.03 /ch	20	-	-	1,081	425	1,505
Pipe, 20 ga. gal, butt weld, 10" diameter, includes weld joint and clevis type hangers 10' OC	-3		20.00 lf	Q16	0.320 ch/lf	19.2	215.91 /ch	1,382	50.00 /lf	1,000	-	-	7.03 /ch	45	-	-	2,427	957	3,383
Pipe, 20 ga. gal, , butt weld, 12" diameter, schedule 10, includes weld joint and clevis type hangers 10' OC	-3		10.00 lf	Q16	0.381 ch/lf	11.4	215.91 /ch	823	62.50 /lf	625	-	-	7.03 /ch	27	-	-	1,474	583	2,057
Pipe, 20 ga. gal, welding labor, per joint, 8" pipe size, making the weld, includes the weld machine	-3		2.00 ea	Q15	2.168 ch/ea	8.7	143.94 /ch	624	-	-	-	-	7.03 /ch	30	-	-	655	237	892
Pipe, 20 ga. gal, , welding labor, per joint, 10" pipe size, making the weld, includes the weld machine	-3		1.00 ea	Q15	2.749 ch/ea	5.5	143.94 /ch	396	-	-	-	-	7.03 /ch	19	-	-	415	150	565
Pipe, 20 ga. gal, welding labor, per joint, 12" pipe size, making the weld, includes the weld machine	-3		1.00 ea	Q15	3.463 ch/ea	6.9	143.94 /ch	499	-	-	-	-	7.03 /ch	24	-	-	523	189	712
Elbow, 90 Deg., 20 ga. gal, butt weld, 8", includes the weld machine	-3		2.00 ea	Q16	2.899 ch/ea	17.4	215.91 /ch	1,252	104.00 /ea	208	-	-	7.03 /ch	41	-	-	1,500	558	2,059
Elbow, 90 Deg., 20 ga. gal, 12" includes the weld machine	-3		1.00 ea	Q16	3.670 ch/ea	11.0	215.91 /ch	792	202.50 /ea	203	-	-	7.03 /ch	26	-	-	1,021	385	1,405
Transitions, 20 ga. gal, long, butt weld, 12", includes the weld machine	-3		4.00 ea	Q16	4.624 ch/ea	55.5	215.91 /ch	3,994	312.50 /ea	1,250	-	-	7.03 /ch	130	-	-	5,374	2,041	7,414
Elbow, 45 Deg., 20 ga. gal, includes the weld machine	-3		2.00 ea	Q16	3.670 ch/ea	22.0	215.91 /ch	1,585	143.50 /ea	287	-	-	7.03 /ch	52	-	-	1,923	717	2,641
Duct accessories, exhaust vent damper, automatic, opposed blade, 8" x 8", includes electric actuator	-3		2.00 ea	SHEE1	0.364 ch/ea	0.7	59.25 /ch	43	60.00 /ea	120	-	-	-	-	-	-	163	68	232
Ductwork, flexible coated fiberglass fabric on corrosion resistant metal helix, non-insulated, 8" diameter, pressure to 12"(WG) UL-181	-3		10.00 lf	Q9	0.040 ch/lf	0.8	118.50 /ch	47	1.86 /lf	19	-	-	-	-	-	-	66	25	91
Fans, industrial exhauster, 1000 CFM, 1-1/2 H.P.	-3		2.00 ea	Q20	3.200 ch/ea	16.0	148.30 /ch	949	1,825.00 /ea	3,650	-	-	-	-	-	-	4,599	1,952	6,551

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Wire connector, screw type, #18 to #12	-3		6.00 ea	ELEC1	0.033 ch/ea	0.2	59.61 /ch	12	0.10 /ea	1	-	-	-	-	-	-	13	5	17
Wire connector, screw type, #18 to #12	-3		8.00 ea	ELEC1	0.033 ch/ea	0.3	59.61 /ch	16	0.10 /ea	1	-	-	-	-	-	-	17	6	23
Wire, copper, solid, 600 volt, #12, type THWN-THHN, in raceway	-3	power	3.15 clf	ELEC1	0.727 ch/clf	2.3	59.61 /ch	137	14.90 /clf	47	-	-	-	-	-	-	183	70	253
Control cable, copper, THHN wire with PVC jacket, 600 V, 4 wires, #14	-3	control	4.20 clf	ELEC1	1.143 ch/clf	4.8	59.61 /ch	286	39.00 /clf	164	-	-	-	-	-	-	450	175	625
Rigid galvanized steel conduit, 3/4" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-3	power	100.00 lf	ELEC1	0.100 ch/lf	10.0	59.61 /ch	596	2.54 /lf	254	-	-	-	-	-	-	850	326	1,176
Rigid galvanized steel conduit, 3/4" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-3	control	100.00 lf	ELEC1	0.100 ch/lf	10.0	59.61 /ch	596	2.54 /lf	254	-	-	-	-	-	-	850	326	1,176
Pull boxes, sheet metal, type SC, raintight & weatherproof, 6" L x 6" W x 6" D, NEMA 3R	-3	power	2.00 ea	ELEC1	0.800 ch/ea	1.6	59.61 /ch	95	21.00 /ea	42	-	-	-	-	-	-	137	53	190
Pull boxes, sheet metal, type SC, raintight & weatherproof, 6" L x 6" W x 6" D, NEMA 3R	-3	control	2.00 ea	ELEC1	0.800 ch/ea	1.6	59.61 /ch	95	21.00 /ea	42	-	-	-	-	-	-	137	53	190
Knockouts, metal boxes & enclosures, with hole saw, 3/4" pipe size, to 8' high	-3	power	4.00 ea	ELEC1	0.170 ch/ea	0.7	59.61 /ch	41	-	-	-	-	-	-	-	-	41	15	55
Knockouts, metal boxes & enclosures, with hole saw, 3/4" pipe size, to 8' high	-3	control	4.00 ea	ELEC1	0.170 ch/ea	0.7	59.61 /ch	41	-	-	-	-	-	-	-	-	41	15	55
Inert Gas Exhaust Ducting						**216.0**		**14,927**		**8,597**				**414**			**23,939**	**9,329**	**33,268**
TP15030813 Install Inert Gas Exhaust Ducting						**216.0**		**14,927**		**8,597**				**414**			23,939	9,329	33,268
TP15030913 Water Addition system																			
Gasket and bolt set, for flanges, 150 lb., 2" pipe size	-3		4.00 ea	PLUM1a	1.344 ch/ea	5.4	55.36 /ch	298	4.49 /ea	18	-	-	-	-	-	-	315	115	430
Pipe, stainless steel, welded, 2" pipe size, schedule 40, type 304, includes weld joint and clevis type hangers 10' OC	-3		1,000.00 lf	Q15a	0.282 ch/lf	563.4	110.72 /ch	31,192	16.75 /lf	16,750	-	-	7.03 /ch	1,979	-	-	49,921	19,449	69,370
Elbow, 90 Deg., stainless steel, socket weld, 3000 lb., 2", type 304, includes the weld machine	-3		10.00 ea	Q15a	2.406 ch/ea	48.1	110.72 /ch	2,664	350.00 /ea	3,500	-	-	7.03 /ch	169	-	-	6,333	2,575	8,907
Elbow, 45 Deg., stainless steel, socket weld, 3000 lb., 2", type 304, includes the weld machine	-3		5.00 ea	Q15a	2.406 ch/ea	24.1	110.72 /ch	1,332	390.00 /ea	1,950	-	-	7.03 /ch	85	-	-	3,366	1,376	4,742
Tee, stainless steel, socket weld, 3000 lb., 2", type 304, includes the weld machine	-3		2.00 ea	Q15a	3.616 ch/ea	14.5	110.72 /ch	801	485.00 /ea	970	-	-	7.03 /ch	51	-	-	1,822	738	2,559
Flange, stainless steel, welded, slip-on, 150 lb., 2" diam., type 304, includes front and back weld	-3		8.00 ea	Q15a	2.314 ch/ea	37.0	110.72 /ch	2,049	61.00 /ea	488	-	-	7.03 /ch	130	-	-	2,667	1,007	3,675
Valves, stainless steel, ball, threaded, 2"	-3		2.00 ea	STPI1a	1.588 ch/ea	3.2	55.36 /ch	176	193.00 /ea	386	-	-	-	-	-	-	562	233	795
Water Addition system						**695.7**		**38,511**		**24,062**				**2,413**			**64,987**	**25,492**	**90,479**
TP15030913 Water Addition system						695.7		38,511		24,062				2,413			64,987	25,492	90,479
TP15031013 Tunnel Egress Stairs																			
Structural or Metal Worker	-2	4 ea	1.00 dy	0 C090	36.000 ch/dy	36.0	57.89 /ch	2,084	-	-	-	-	-	-	-	-	2,084	372	2,456
Safety Engineer	-2	1ea	1.00 dy	0 E120	45.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	570	3,765
First Line Supervisors	-2	1 ea	1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	126	833
Material Moving Equipment Operators	-2	1 ea	1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	91	604
1st Tunnel Egress Stairs out						**99.0**		**6,498**									**6,498**	**1,160**	**7,658**
Structural or Metal Worker	-2	4 ea	1.00 dy	0 C090	36.000 ch/dy	36.0	57.89 /ch	2,084	-	-	-	-	-	-	-	-	2,084	372	2,456
Safety Engineer	-2	1ea	1.00 dy	0 E120	45.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	570	3,765
First Line Supervisors	-2	1 ea	1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	126	833
Material Moving Equipment Operators	-2	1 ea	1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	91	604
1st Tunnel Egress Stairs in						**99.0**		**6,498**									**6,498**	**1,160**	**7,658**
Structural or Metal Worker	-2	4 ea	1.00 dy	0 C090	36.000 ch/dy	36.0	57.89 /ch	2,084	-	-	-	-	-	-	-	-	2,084	372	2,456
Safety Engineer	-2	1ea	1.00 dy	0 E120	45.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	570	3,765
First Line Supervisors	-2	1 ea	1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	126	833
Material Moving Equipment Operators	-2	1 ea	1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	91	604
2nd Tunnel Egress Stairs out						**99.0**		**6,498**									**6,498**	**1,160**	**7,658**
Structural or Metal Worker	-2	4 ea	1.00 dy	0 C090	36.000 ch/dy	36.0	57.89 /ch	2,084	-	-	-	-	-	-	-	-	2,084	372	2,456
Safety Engineer	-2	1ea	1.00 dy	0 E120	45.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	570	3,765
First Line Supervisors	-2	1 ea	1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	126	833
Material Moving Equipment Operators	-2	1 ea	1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	91	604
2nd Tunnel Egress Stairs in						**99.0**		**6,498**									**6,498**	**1,160**	**7,658**
Structural or Metal Worker	-2	4 ea	1.00 dy	0 C090	36.000 ch/dy	36.0	57.89 /ch	2,084	-	-	-	-	-	-	-	-	2,084	372	2,456
Safety Engineer	-2	1ea	1.00 dy	0 E120	45.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	570	3,765
First Line Supervisors	-2	1 ea	1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	126	833
Material Moving Equipment Operators	-2	1 ea	1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	91	604
3rd Tunnel Egress Stairs out						**99.0**		**6,498**									**6,498**	**1,160**	**7,658**
Structural or Metal Worker	-2	4 ea	1.00 dy	0 C090	36.000 ch/dy	36.0	57.89 /ch	2,084	-	-	-	-	-	-	-	-	2,084	372	2,456
Safety Engineer	-2	1ea	1.00 dy	0 E120	45.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	570	3,765
First Line Supervisors	-2	1 ea	1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	126	833
Material Moving Equipment Operators	-2	1 ea	1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	91	604

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
2nd Tunnel Egress Stairs In						**99.0**		**6,498**									**6,498**	**1,160**	**7,658**
TP15031013 Tunnel Egress Stairs						594.0		38,989									38,989	6,958	45,946
FY13 Fiscal Year 2013						**22,980.6**		**1,325,006**		**301,777**		**12,400**		**237,971**			**1,877,155**	**842,959**	**2,720,114**
.15.03 Bldg. Modifications						**37,078.6**		**2,174,871**		**403,495**		**1,000,880**		**238,965**			**3,818,211**	**1,156,678**	**4,974,889**
.15 Construction						**37,078.6**		**2,174,871**		**403,495**		**1,000,880**		**238,965**			**3,818,211**	**1,156,678**	**4,974,889**
.16 Start up & Testing																			
.16.01 CORAMI evaluation																			
FY13 Fiscal Year 2013																			
TP16010213 CORAMI evaluation																			
Nuclear Engineers	-1		2.00 wk	0 E080	40.000 ch/wk	80.0	94.95 /ch	7,596	-	-	-	-	-	-	-	-	7,596	1,356	8,952
Quality Control Engineers	-1		2.00 wk	0 E110	40.000 ch/wk	80.0	75.25 /ch	6,020	-	-	-	-	-	-	-	-	6,020	1,074	7,094
Safety Engineer	-1		2.00 wk	0 E120	40.000 ch/wk	80.0	71.00 /ch	5,680	-	-	-	-	-	-	-	-	5,680	1,014	6,694
CORAMI evaluation						**240.0**		**19,296**									**19,296**	**3,443**	**22,739**
TP16010213 CORAMI evaluation						240.0		19,296									19,296	3,443	22,739
FY13 Fiscal Year 2013						**240.0**		**19,296**									**19,296**	**3,443**	**22,739**
.16.01 CORAMI evaluation						**240.0**		**19,296**									**19,296**	**3,443**	**22,739**
.16.02 Procedure development																			
FY13 Fiscal Year 2013																			
TP16010313 Procedure development																			
Nuclear Engineers	-1		3.00 wk	0 E080	40.000 ch/wk	120.0	94.95 /ch	11,394	-	-	-	-	-	-	-	-	11,394	2,033	13,427
Quality Control Engineers	-1		3.00 wk	0 E110	40.000 ch/wk	120.0	75.25 /ch	9,030	-	-	-	-	-	-	-	-	9,030	1,611	10,641
Safety Engineer	-1		3.00 wk	0 E120	40.000 ch/wk	120.0	71.00 /ch	8,520	-	-	-	-	-	-	-	-	8,520	1,520	10,040
Industrial Hygienists	-1		2.00 wk	0 P090	40.000 ch/wk	80.0	72.95 /ch	5,836	-	-	-	-	-	-	-	-	5,836	1,041	6,877
Technical Writers & Editors	-1		2.00 wk	0 P160	40.000 ch/wk	80.0	66.18 /ch	5,294	-	-	-	-	-	-	-	-	5,294	945	6,239
Procedure development						**520.0**		**40,074**									**40,074**	**7,151**	**47,226**
TP16010313 Procedure development						520.0		40,074									40,074	7,151	47,226
FY13 Fiscal Year 2013						**520.0**		**40,074**									**40,074**	**7,151**	**47,226**
.16.02 Procedure development						**520.0**		**40,074**									**40,074**	**7,151**	**47,226**
.16.03 Readiness Activities/Planning																			
FY13 Fiscal Year 2013																			
TP16010413 Readiness Activities/Planning																			
Nuclear Engineers	-1		5.00 wk	0 E080	40.000 ch/wk	200.0	94.95 /ch	18,990	-	-	-	-	-	-	-	-	18,990	3,389	22,379
Quality Control Engineers	-1		5.00 wk	0 E110	40.000 ch/wk	200.0	75.25 /ch	15,050	-	-	-	-	-	-	-	-	15,050	2,686	17,736
Safety Engineer	-1		5.00 wk	0 E120	40.000 ch/wk	200.0	71.00 /ch	14,200	-	-	-	-	-	-	-	-	14,200	2,534	16,734
Planner/Scheduler/Estimators	-1		3.00 wk	0 P070	40.000 ch/wk	120.0	86.56 /ch	10,387	-	-	-	-	-	-	-	-	10,387	1,854	12,241
Technical Writers & Editors	-1		4.00 wk	0 P160	40.000 ch/wk	160.0	66.18 /ch	10,589	-	-	-	-	-	-	-	-	10,589	1,890	12,478
Readiness Activities/Planning						**880.0**		**69,216**									**69,216**	**12,352**	**81,568**
TP16010413 Readiness Activities/Planning						880.0		69,216									69,216	12,352	81,568
FY13 Fiscal Year 2013						**880.0**		**69,216**									**69,216**	**12,352**	**81,568**
.16.03 Readiness Activities/Planning						**880.0**		**69,216**									**69,216**	**12,352**	**81,568**
.16.04 System Tests																			
FY13 Fiscal Year 2013																			
TP16020113 System Tests																			
Electrical Engineers	-1		8.00 wk	0 E040	40.000 ch/wk	320.0	79.21 /ch	25,347	-	-	-	-	-	-	-	-	25,347	4,523	29,870
Mechanical Engineers	-1		8.00 wk	0 E070	40.000 ch/wk	320.0	85.74 /ch	27,437	-	-	-	-	-	-	-	-	27,437	4,896	32,333
Plant Engineers	-1		8.00 wk	0 E100	40.000 ch/wk	320.0	68.98 /ch	22,074	-	-	-	-	-	-	-	-	22,074	3,939	26,013
Quality Control Engineers	-1		8.00 wk	0 E110	40.000 ch/wk	320.0	75.25 /ch	24,080	-	-	-	-	-	-	-	-	24,080	4,297	28,377
Construction Engineers	-1		8.00 wk	0 E140	40.000 ch/wk	320.0	100.10 /ch	32,032	-	-	-	-	-	-	-	-	32,032	5,716	37,748
System Tests						**1,600.0**		**130,970**									**130,970**	**23,372**	**154,341**
TP16020113 System Tests						1,600.0		130,970									130,970	23,372	154,341
FY13 Fiscal Year 2013						**1,600.0**		**130,970**									**130,970**	**23,372**	**154,341**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
.16.04 System Tests						1,600.0		130,970									130,970	23,372	154,341
.16.05 Startup																			
FY13 Fiscal Year 2013																			
TP16020313 Startup																			
Electrician	-1		4.00 wk	0 C020	40.000 ch/wk	160.0	60.19 /ch	9,630	-	-	-	-	-	-	-	-	9,630	1,719	11,349
Nuclear Engineers	-1		4.00 wk	0 E080	40.000 ch/wk	160.0	94.95 /ch	15,192	-	-	-	-	-	-	-	-	15,192	2,711	17,903
Plant Engineers	-1		4.00 wk	0 E100	40.000 ch/wk	160.0	68.98 /ch	11,037	-	-	-	-	-	-	-	-	11,037	1,970	13,006
Quality Control Engineers	-1		4.00 wk	0 E110	40.000 ch/wk	160.0	75.25 /ch	12,040	-	-	-	-	-	-	-	-	12,040	2,149	14,189
Safety Engineer	-1		4.00 wk	0 E120	40.000 ch/wk	160.0	71.00 /ch	11,360	-	-	-	-	-	-	-	-	11,360	2,027	13,387
Material Moving Equipment Operators	-1		4.00 wk	0 R030	40.000 ch/wk	160.0	56.91 /ch	9,106	-	-	-	-	-	-	-	-	9,106	1,625	10,731
Nuclear Plant Operators	-1		4.00 wk	0 R040	40.000 ch/wk	160.0	54.70 /ch	8,752	-	-	-	-	-	-	-	-	8,752	1,562	10,314
Nuclear Waste Process Operator	-1		4.00 wk	0 R050	40.000 ch/wk	160.0	58.05 /ch	9,288	-	-	-	-	-	-	-	-	9,288	1,657	10,945
Utilities System Operators	-1		4.00 wk	0 R070	40.000 ch/wk	160.0	49.54 /ch	7,926	-	-	-	-	-	-	-	-	7,926	1,414	9,341
Other Operators	-1		4.00 wk	0 R080	40.000 ch/wk	160.0	57.10 /ch	9,136	-	-	-	-	-	-	-	-	9,136	1,630	10,766
Startup						1,600.0		103,467									103,467	18,464	121,931
TP16020313 Startup						1,600.0		103,467									103,467	18,464	121,931
FY13 Fiscal Year 2013						1,600.0		103,467									103,467	18,464	121,931
.16.05 Startup						1,600.0		103,467									103,467	18,464	121,931
.16 Start up & Testing						4,840.0		363,023									363,023	64,782	427,805
.17 Contingency																			
.17.01 Contingency																			
FY10 Fiscal Year 2010																			
TP17010110 Contingency FY 2010																			
Contingency	-0		1.00 ls				-	-	0.00 /ls	0	-	-	-	-	27,031.00 /ls	27,031	27,031	3,136	30,167
Contingency																27,031	27,031	3,136	30,167
TP17010110 Contingency FY 2010																27,031	27,031	3,136	30,167
FY10 Fiscal Year 2010																27,031	27,031	3,136	30,167
FY11 Fiscal Year 2011																			
TP17011111 Contingency FY 2011																			
Contingency	-0		1.00 ls				-	-	0.00 /ls	0	-	-	-	-	94,730.00 /ls	94,730	94,730	12,923	107,653
Contingency																94,730	94,730	12,923	107,653
TP17011111 Contingency FY 2011																94,730	94,730	12,923	107,653
FY11 Fiscal Year 2011																94,730	94,730	12,923	107,653
FY12 Fiscal Year 2012																			
TP17011312 Contingency FY 2012																			
Contingency	-0		1.00 ls				-	-	0.00 /ls	0	-	-	-	-	516,571.00 /ls	516,571	516,571	81,221	597,792
Contingency																516,571	516,571	81,221	597,792
TP17011312 Contingency FY 2012																516,571	516,571	81,221	597,792
FY12 Fiscal Year 2012																516,571	516,571	81,221	597,792
FY13 Fiscal Year 2013																			
TP17011313 Contingency FY 2013																			
Contingency	-0		1.00 ls				-	-	0.00 /ls	0	-	-	-	-	341,290.00 /ls	341,290	341,290	60,903	402,193
Contingency																341,290	341,290	60,903	402,193
TP17011313 Contingency FY 2013																341,290	341,290	60,903	402,193
FY13 Fiscal Year 2013																341,290	341,290	60,903	402,193
.17.01 Contingency																979,622	979,622	158,184	1,137,806
.17 Contingency																979,622	979,622	158,184	1,137,806
.18 Operations and Maintenance																			
.18.01 Operations																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
FY14 Fiscal Year 2014																			
TP18010514 Operations Unload & Load																			
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	622	3,732
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	626	3,752
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	407	2,438
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	119	713
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	424	2,545
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	394	2,364
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	307	1,844
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	617	3,700
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	866	5,194
Cell 10 L		**Open & Transport**				**363.0**		**21,899**									**21,899**	**4,382**	**26,281**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	622	3,732
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	626	3,752
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	407	2,438
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	119	713
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	424	2,545
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	394	2,364
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	307	1,844
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	617	3,700
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	866	5,194
Cell 13 L		**Open & Transport**				**363.0**		**21,899**									**21,899**	**4,382**	**26,281**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	622	3,732
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	626	3,752
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	407	2,438
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	119	713
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	424	2,545
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	394	2,364
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	307	1,844
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	617	3,700
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	866	5,194
Cell 14 R		**Open & Transport**				**363.0**		**21,899**									**21,899**	**4,382**	**26,281**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	622	3,731
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	626	3,752
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	407	2,438
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	119	713
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	424	2,545
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	394	2,364
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	307	1,844
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	617	3,700
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	866	5,194
Cell 15L		**Open & Transport**				**363.0**		**21,899**									**21,899**	**4,382**	**26,281**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	622	3,731
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	626	3,752
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	407	2,438
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	119	713
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	424	2,545
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	394	2,364
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	307	1,844
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	617	3,700
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	866	5,194
Cell 16 R		**Open & Transport**				**363.0**		**21,899**									**21,899**	**4,382**	**26,281**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	622	3,732
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	626	3,752
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	407	2,438
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	119	713
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	424	2,545
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	394	2,364
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	307	1,844
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	617	3,700
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	866	5,194
Cell 2 R		**Open & Transport**				**363.0**		**21,899**									**21,899**	**4,382**	**26,281**
TP18010514 Operations Unload & Load						**2,178.0**		**131,394**									**131,394**	**26,292**	**157,686**
TP18020314 Confinement Ventilation System PM																			
Project & Program Managers	-0	HRB, Prep and Actions	8.00 dy	0 M030	72.000 ch/dy	576.0	117.10 /ch	67,450	-	-	-	-	-	-	-	-	67,450	13,497	80,946
Greenhouse/shelter, with Anterrooms	-0		2.00 ea				/ea		20,000.00 /ea	40,000	-	-	-	-	-	-	40,000	11,324	51,324

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Fixative, Bulbs, BGaskets, Anti C's, PAPRS< etc	-0		1.00 ls				/ls		/ls		-	-	-	-	15,000.00 /ls	15,000	15,000	3,002	18,002
Air filter, HEPA filter complete	-0		80.00 ea				/ea		630.00 /ea	50,400	-	-	-	-	-	-	50,400	14,268	64,668
Burial	-0	Based on Past WWOC experience	1.00 ls				/ls		-	-	-	-	/ls		5,625.00 /ls	5,625	5,625	1,126	6,751
Permafix NW Processing	-0	$4.30/lb w/HEPA @ 45 lbs ea	3,240.00 lbs				/lbs		/lbs		4.30 /lbs	13,932	/lbs		-	-	13,932	2,788	16,720
Waste Box	-0		2.00 ea				/ea		4,500.00 /ea	9,000	-	-	-	-	-	-	9,000	2,548	11,548
Material/Other						**576.0**		**67,450**		**99,400**		**13,932**				**20,625**	**201,407**	**48,552**	**249,958**
Environmental Engineers	-0		15.00 dy	0 E050	9.000 ch/dy	135.0	82.98 /ch	11,202	-	-	-	-	-	-	-	-	11,202	2,242	13,444
Nuclear Engineers	-0		12.00 dy	0 E080	9.000 ch/dy	108.0	94.95 /ch	10,255	-	-	-	-	-	-	-	-	10,255	2,052	12,307
Quality Control Engineers	-0		2.00 dy	0 E110	9.000 ch/dy	18.0	75.25 /ch	1,355	-	-	-	-	-	-	-	-	1,355	271	1,626
Safety Engineer	-0		2.00 dy	0 E120	9.000 ch/dy	18.0	71.00 /ch	1,278	-	-	-	-	-	-	-	-	1,278	256	1,534
Light Vehicle Drivers	-0		4.00 dy	0 L070	9.000 ch/dy	36.0	49.49 /ch	1,782	-	-	-	-	-	-	-	-	1,782	357	2,138
First Line Supervisors	-0		5.00 dy	0 M010	9.000 ch/dy	45.0	78.54 /ch	3,534	-	-	-	-	-	-	-	-	3,534	707	4,242
Planner/Scheduler/Estimators	-0		20.00 dy	0 P070	9.000 ch/dy	180.0	86.56 /ch	15,581	-	-	-	-	-	-	-	-	15,581	3,118	18,699
Other Professionals	-0	WMR/Other Waste	3.00 dy	0 P170	9.000 ch/dy	27.0	89.60 /ch	2,419	-	-	-	-	-	-	-	-	2,419	484	2,903
Material Moving Equipment Operators	-0	AJHA	1.00 dy	0 R030	36.000 ch/dy	36.0	56.91 /ch	2,049	-	-	-	-	-	-	-	-	2,049	410	2,459
Planning/Procurement						**603.0**		**49,454**									**49,454**	**9,896**	**59,350**
Millwrights	-0		2.00 dy	0 C060	9.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Structural or Metal Worker	-0		5.00 dy	0 C060	27.000 ch/dy	135.0	57.58 /ch	7,773	-	-	-	-	-	-	-	-	7,773	1,555	9,329
Environmental Engineers	-0		2.00 dy	0 E050	9.000 ch/dy	18.0	82.98 /ch	1,494	-	-	-	-	-	-	-	-	1,494	299	1,793
Nuclear Engineers	-0		2.00 dy	0 E080	9.000 ch/dy	18.0	94.95 /ch	1,709	-	-	-	-	-	-	-	-	1,709	342	2,051
Quality Control Engineers	-0		2.00 dy	0 E110	9.000 ch/dy	18.0	75.25 /ch	1,355	-	-	-	-	-	-	-	-	1,355	271	1,626
Safety Engineer	-0		5.00 dy	0 E120	9.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	639	3,834
Light Vehicle Drivers	-0		4.00 dy	0 L070	9.000 ch/dy	36.0	49.49 /ch	1,782	-	-	-	-	-	-	-	-	1,782	357	2,138
First Line Supervisors	-0		8.00 dy	0 M010	9.000 ch/dy	72.0	78.54 /ch	5,655	-	-	-	-	-	-	-	-	5,655	1,132	6,786
Material Moving Equipment Operators	-0		8.00 dy	0 R030	27.000 ch/dy	216.0	56.91 /ch	12,293	-	-	-	-	-	-	-	-	12,293	2,460	14,752
Health Physics Technicians	-0		5.00 dy	0 T050	45.000 ch/dy	225.0	53.43 /ch	12,022	-	-	-	-	-	-	-	-	12,022	2,406	14,427
Instrument & Control Tech	-0		2.00 dy	0 T070	18.000 ch/dy	36.0	60.48 /ch	2,177	-	-	-	-	-	-	-	-	2,177	436	2,613
Field Setup/Prep Work						**837.0**		**50,490**									**50,490**	**10,103**	**60,593**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 1						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 2						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 3						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 4						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
TP18020314 Confinement Ventilation System PM		1 change in 10 years				5,130.0		354,577		99,400		13,932				20,625	488,534	106,006	594,540
FY14 Fiscal Year 2014						**7,308.0**		**485,971**		**99,400**		**13,932**				**20,625**	**619,928**	**132,298**	**752,226**
FY15 Fiscal Year 2015																			
TP18010615 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	157	864
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	114	626
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	107	588
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**378**	**2,078**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	157	864
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	114	626
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	107	588
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**378**	**2,078**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	157	864
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	114	626
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	107	588
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**378**	**2,078**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	157	864
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	114	626
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	107	588
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**378**	**2,078**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	157	864
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	114	626
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	107	588
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**378**	**2,078**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	157	864
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	114	626
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	107	588
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**378**	**2,078**
TP18010615 Water Addition						162.0		10,200									10,200	2,266	12,466
FY15 Fiscal Year 2015						**162.0**		**10,200**									**10,200**	**2,266**	**12,466**
FY16 Fiscal Year 2016																			
TP18010616 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	173	880
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	125	638
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	118	599
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**416**	**2,116**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	173	880
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	125	638
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	118	599
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**416**	**2,116**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	173	880
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	125	638
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	118	599

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**416**	**2,116**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	173	880
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	125	638
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	118	599
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**416**	**2,116**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	173	880
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	125	638
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	118	599
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**416**	**2,116**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	173	880
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	125	638
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	118	599
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**416**	**2,116**
TP18010616 Water Addition						**162.0**		**10,200**									**10,200**	**2,496**	**12,695**
FY16 Fiscal Year 2016						**162.0**		**10,200**									**10,200**	**2,496**	**12,695**
FY17 Fiscal Year 2017																			
TP18010617 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	189	896
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	137	649
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	129	610
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**455**	**2,155**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	189	896
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	137	649
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	129	610
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**455**	**2,155**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	189	896
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	137	649
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	129	610
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**455**	**2,155**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	189	896
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	137	649
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	129	610
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**455**	**2,155**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	189	896
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	137	649
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	129	610
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**455**	**2,155**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	189	896
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	137	649
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	129	610
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**455**	**2,155**
TP18010617 Water Addition						**162.0**		**10,200**									**10,200**	**2,730**	**12,930**
FY17 Fiscal Year 2017						**162.0**		**10,200**									**10,200**	**2,730**	**12,930**
FY18 Fiscal Year 2018																			
TP18010618 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	206	913
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	149	661
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	140	621
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**495**	**2,195**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	206	913
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	149	661
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	140	621

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**495**	**2,195**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	206	913
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	149	661
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	140	621
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**495**	**2,195**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	206	913
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	149	661
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	140	621
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**495**	**2,195**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	206	913
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	149	661
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	140	621
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**495**	**2,195**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	206	913
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	149	661
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	140	621
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**495**	**2,195**
TP18010618 Water Addition						**162.0**		**10,200**									**10,200**	**2,969**	**13,169**
FY18 Fiscal Year 2018						**162.0**		**10,200**									**10,200**	**2,969**	**13,169**
FY19 Fiscal Year 2019																			
TP18010619 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	223	930
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	161	674
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	151	632
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**535**	**2,235**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	223	930
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	161	674
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	151	632
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**536**	**2,235**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	223	930
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	161	674
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	151	632
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**535**	**2,235**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	223	930
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	161	674
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	151	632
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**535**	**2,235**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	223	930
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	161	674
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	151	632
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**536**	**2,235**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	223	930
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	161	674
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	151	632
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**535**	**2,235**
TP18010619 Water Addition						**162.0**		**10,200**									**10,200**	**3,213**	**13,412**
FY19 Fiscal Year 2019						**162.0**		**10,200**									**10,200**	**3,213**	**13,412**
FY20 Fiscal Year 2020																			
TP18010620 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	240	947
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	174	686
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	163	644

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**577**	**2,277**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	240	947
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	174	686
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	163	644
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**577**	**2,277**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	240	947
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	174	686
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	163	644
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**577**	**2,277**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	240	947
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	174	686
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	163	644
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**577**	**2,277**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	240	947
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	174	686
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	163	644
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**577**	**2,277**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	240	947
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	174	686
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	163	644
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**577**	**2,277**
TP18010620 Water Addition						**162.0**		**10,200**									**10,200**	**3,462**	**13,661**
FY20 Fiscal Year 2020						**162.0**		**10,200**									**10,200**	**3,462**	**13,661**
FY21 Fiscal Year 2021																			
TP18010621 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	257	964
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	187	699
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	175	656
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**619**	**2,319**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	257	964
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	187	699
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	175	656
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**619**	**2,319**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	257	964
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	187	699
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	175	656
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**619**	**2,319**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	257	964
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	187	699
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	175	656
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**619**	**2,319**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	257	964
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	187	699
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	175	656
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**619**	**2,319**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	257	964
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	187	699
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	175	656
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**619**	**2,319**
TP18010621 Water Addition						**162.0**		**10,200**									**10,200**	**3,715**	**13,915**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
FY21 Fiscal Year 2021						**162.0**		**10,200**									**10,200**	**3,715**	**13,915**
FY22 Fiscal Year 2022																			
TP18010622 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	275	982
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	200	712
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	187	668
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**662**	**2,362**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	275	982
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	200	712
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	187	668
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**662**	**2,362**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	275	982
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	200	712
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	187	668
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**662**	**2,362**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	275	982
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	200	712
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	187	668
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**662**	**2,362**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	275	982
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	200	712
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	187	668
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**662**	**2,362**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	275	982
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	200	712
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	187	668
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**662**	**2,362**
TP18010622 Water Addition						**162.0**		**10,200**									**10,200**	**3,974**	**14,174**
FY22 Fiscal Year 2022						**162.0**		**10,200**									**10,200**	**3,974**	**14,174**
FY23 Fiscal Year 2023																			
TP18010623 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	294	1,001
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	213	725
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	200	681
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**706**	**2,406**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	294	1,001
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	213	725
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	200	681
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**706**	**2,406**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	294	1,001
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	213	725
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	200	681
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**706**	**2,406**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	294	1,001
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	213	725
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	200	681
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**706**	**2,406**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	294	1,001
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	213	725
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	200	681

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**706**	**2,406**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	294	1,001
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	213	725
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	200	681
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**706**	**2,406**
TP18010623 Water Addition						**162.0**		**10,200**									**10,200**	**4,238**	**14,437**
FY23 Fiscal Year 2023						**162.0**		**10,200**									**10,200**	**4,238**	**14,437**
FY24 Fiscal Year 2024																			
TP18010624 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	312	1,019
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	226	739
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	213	693
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**751**	**2,451**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	312	1,019
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	226	739
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	212	693
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**751**	**2,451**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	312	1,019
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	226	739
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	212	693
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**751**	**2,451**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	312	1,019
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	226	739
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	212	693
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**751**	**2,451**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	312	1,019
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	226	739
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	212	693
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**751**	**2,451**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	312	1,019
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	226	739
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	212	693
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**751**	**2,451**
TP18010624 Water Addition						**162.0**		**10,200**									**10,200**	**4,507**	**14,707**
FY24 Fiscal Year 2024						**162.0**		**10,200**									**10,200**	**4,507**	**14,707**
FY25 Fiscal Year 2025																			
TP18010525 Open & Load Out																			
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	1,458	4,567
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	1,466	4,592
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	953	2,984
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	278	872
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	994	3,115
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	923	2,893
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	720	2,257
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	1,446	4,529
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	2,029	6,357
Cell 10 L		**Open & Transport**				**363.0**		**21,899**									**21,899**	**10,267**	**32,166**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	1,458	4,567
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	1,466	4,592
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	953	2,984
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	278	872
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	994	3,115
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	923	2,893
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	720	2,257
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	1,446	4,529
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	2,029	6,357

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Cell 13 L		**Open & Transport**				**363.0**		**21,899**									**21,899**	**10,267**	**32,166**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	1,458	4,567
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	1,466	4,592
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	953	2,984
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	278	872
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	994	3,115
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	923	2,893
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	720	2,257
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	1,446	4,529
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	2,029	6,357
Cell 14 R		**Open & Transport**				**363.0**		**21,899**									**21,899**	**10,267**	**32,166**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	1,458	4,567
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	1,466	4,592
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	953	2,984
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	278	872
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	994	3,115
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	923	2,893
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	720	2,257
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	1,446	4,529
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	2,029	6,357
Cell 15L		**Open & Transport**				**363.0**		**21,899**									**21,899**	**10,267**	**32,166**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	1,458	4,567
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	1,466	4,592
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	952	2,984
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	278	872
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	994	3,115
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	923	2,893
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	720	2,257
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	1,446	4,529
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	2,029	6,357
Cell 16 R		**Open & Transport**				**363.0**		**21,899**									**21,899**	**10,267**	**32,166**
Millwrights	-0		2.00 ea	0 C060	27.000 ch/ea	54.0	57.58 /ch	3,109	-	-	-	-	-	-	-	-	3,109	1,458	4,567
Structural or Metal Worker	-0		2.00 ea	0 C090	27.000 ch/ea	54.0	57.89 /ch	3,126	-	-	-	-	-	-	-	-	3,126	1,466	4,592
Quality Control Engineers	-0		1.00 ea	0 E110	27.000 ch/ea	27.0	75.25 /ch	2,032	-	-	-	-	-	-	-	-	2,032	953	2,984
Light Vehicle Drivers	-0		3.00 ea	0 L070	4.000 ch/ea	12.0	49.49 /ch	594	-	-	-	-	-	-	-	-	594	278	872
First Line Supervisors	-0		1.00 ea	0 M010	27.000 ch/ea	27.0	78.54 /ch	2,121	-	-	-	-	-	-	-	-	2,121	994	3,115
Industrial Hygienists	-0		1.00 ea	0 P090	27.000 ch/ea	27.0	72.95 /ch	1,970	-	-	-	-	-	-	-	-	1,970	923	2,893
Material Moving Equipment Operators	-0		1.00 ea	0 R030	27.000 ch/ea	27.0	56.91 /ch	1,537	-	-	-	-	-	-	-	-	1,537	720	2,257
Other Operators	-0		2.00 ea	0 R080	27.000 ch/ea	54.0	57.10 /ch	3,083	-	-	-	-	-	-	-	-	3,083	1,446	4,529
Health Physics Technicians	-0		3.00 ea	0 T050	27.000 ch/ea	81.0	53.43 /ch	4,328	-	-	-	-	-	-	-	-	4,328	2,029	6,357
Cell 2 R		**Open & Transport**				**363.0**		**21,899**									**21,899**	**10,267**	**32,166**
TP18010525 Open & Load Out						**2,178.0**		**131,394**									**131,394**	**61,599**	**192,993**
TP18010625 Water Addition																			
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	331	1,038
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	240	752
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	225	706
Water Addition per cell		**Cell 14 R**				**27.0**		**1,700**									**1,700**	**797**	**2,497**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	331	1,038
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	240	752
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	225	706
Water Addition per cell		**Cell 10 L**				**27.0**		**1,700**									**1,700**	**797**	**2,497**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	331	1,038
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	240	752
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	225	706
Water Addition per cell		**Cell 16 R**				**27.0**		**1,700**									**1,700**	**797**	**2,497**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	331	1,038
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	240	752
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	225	706
Water Addition per cell		**Cell 13 L**				**27.0**		**1,700**									**1,700**	**797**	**2,497**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	331	1,038
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	240	752
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	225	706

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Water Addition per cell		**Cell 2 R**				**27.0**		**1,700**									**1,700**	**797**	**2,497**
First Line Supervisors	-0		1.00 dy	0 M010	9.000 ch/dy	9.0	78.54 /ch	707	-	-	-	-	-	-	-	-	707	331	1,038
Material Moving Equipment Operators	-0		1.00 dy	0 R030	9.000 ch/dy	9.0	56.91 /ch	512	-	-	-	-	-	-	-	-	512	240	752
Health Physics Technicians	-0		1.00 dy	0 T050	9.000 ch/dy	9.0	53.43 /ch	481	-	-	-	-	-	-	-	-	481	225	706
Water Addition per cell		**Cell 15L**				**27.0**		**1,700**									**1,700**	**797**	**2,497**
TP18010625 Water Addition						162.0		10,200									10,200	4,782	14,981
FY25 Fiscal Year 2025						**2,340.0**		**141,594**									**141,594**	**66,381**	**207,974**
.18.01 Operations						**11,268.0**		**729,560**		**99,400**		**13,932**				**20,625**	**863,517**	**232,249**	**1,095,766**
.18.02 Maintenance																			
FY14 Fiscal Year 2014																			
TP18020114 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	834	5,002
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	834	5,002
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	283	1,697
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	283	1,697
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	385	2,308
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	385	2,308
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**3,004**	**18,014**
TP18020114 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	3,004	18,014
TP18020214 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	871	5,226
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**871**	**5,226**
TP18020214 Annual inert gas system calibration						72.0		4,355									4,355	871	5,226
TP18020314 Confinement Ventilation System PM																			
Project & Program Managers	-0	HRB, Prep and Actions	8.00 dy	0 M030	72.000 ch/dy	576.0	117.10 /ch	67,450	-	-	-	-	-	-	-	-	67,450	13,497	80,946
Greenhouse/shelter, with Anterrooms	-0		2.00 ea				/ea		20,000.00 /ea	40,000	-	-	-	-	-	-	40,000	11,324	51,324
Fixative, Bulbs, BGaskets, Anti C's, PAPRS< etc	-0		1.00 ls				/ls		/ls	-	-	-	-	-	15,000.00 /ls	15,000	15,000	3,002	18,002
Air filter, HEPA filter complete	-0		80.00 ea				/ea		630.00 /ea	50,400	-	-	-	-	-	-	50,400	14,268	64,668
Burial	-0	Based on Past WWOC experience	1.00 ls				/ls		-	-	-	-	/ls		5,625.00 /ls	5,625	5,625	1,126	6,751
Permafix NW Processing	-0	$4 30/lb w/HEPA @ 45 lbs ea	3,240.00 lbs				/lbs		/lbs		4.30 /lbs	13,932	/lbs				13,932	2,788	16,720
Waste Box	-0		2.00 ea				/ea		4,500.00 /ea	9,000	-	-	-	-	-	-	9,000	2,548	11,548
Material/Other						**576.0**		**67,450**		**99,400**		**13,932**				**20,625**	**201,407**	**48,552**	**249,958**
Environmental Engineers	-0		15.00 dy	0 E050	9.000 ch/dy	135.0	82.98 /ch	11,202	-	-	-	-	-	-	-	-	11,202	2,242	13,444
Nuclear Engineers	-0		12.00 dy	0 E080	9.000 ch/dy	108.0	94.95 /ch	10,255	-	-	-	-	-	-	-	-	10,255	2,052	12,307
Quality Control Engineers	-0		2.00 dy	0 E110	9.000 ch/dy	18.0	75.25 /ch	1,355	-	-	-	-	-	-	-	-	1,355	271	1,626
Safety Engineer	-0		2.00 dy	0 E120	9.000 ch/dy	18.0	71.00 /ch	1,278	-	-	-	-	-	-	-	-	1,278	256	1,534
Light Vehicle Drivers	-0		4.00 dy	0 L070	9.000 ch/dy	36.0	49.49 /ch	1,782	-	-	-	-	-	-	-	-	1,782	357	2,138
First Line Supervisors	-0		5.00 dy	0 M010	9.000 ch/dy	45.0	78.54 /ch	3,534	-	-	-	-	-	-	-	-	3,534	707	4,242
Planner/Scheduler/Estimators	-0		20.00 dy	0 P070	9.000 ch/dy	180.0	86.56 /ch	15,581	-	-	-	-	-	-	-	-	15,581	3,118	18,699
Other Professionals	-0	WMR/Other Waste	3.00 dy	0 P170	9.000 ch/dy	27.0	89.60 /ch	2,419	-	-	-	-	-	-	-	-	2,419	484	2,903
Material Moving Equipment Operators	-0	AJHA	1.00 dy	0 R030	36.000 ch/dy	36.0	56.91 /ch	2,049	-	-	-	-	-	-	-	-	2,049	410	2,459
Planning/Procurement						**603.0**		**49,454**									**49,454**	**9,896**	**59,350**
Millwrights	-0		2.00 dy	0 C060	9.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Structural or Metal Worker	-0		5.00 dy	0 C060	27.000 ch/dy	135.0	57.58 /ch	7,773	-	-	-	-	-	-	-	-	7,773	1,555	9,329
Environmental Engineers	-0		2.00 dy	0 E050	9.000 ch/dy	18.0	82.98 /ch	1,494	-	-	-	-	-	-	-	-	1,494	299	1,793
Nuclear Engineers	-0		2.00 dy	0 E080	9.000 ch/dy	18.0	94.95 /ch	1,709	-	-	-	-	-	-	-	-	1,709	342	2,051
Quality Control Engineers	-0		2.00 dy	0 E110	9.000 ch/dy	18.0	75.25 /ch	1,355	-	-	-	-	-	-	-	-	1,355	271	1,626
Safety Engineer	-0		5.00 dy	0 E120	9.000 ch/dy	45.0	71.00 /ch	3,195	-	-	-	-	-	-	-	-	3,195	639	3,834
Light Vehicle Drivers	-0		4.00 dy	0 L070	9.000 ch/dy	36.0	49.49 /ch	1,782	-	-	-	-	-	-	-	-	1,782	357	2,138
First Line Supervisors	-0		8.00 dy	0 M010	9.000 ch/dy	72.0	78.54 /ch	5,655	-	-	-	-	-	-	-	-	5,655	1,132	6,786
Material Moving Equipment Operators	-0		8.00 dy	0 R030	27.000 ch/dy	216.0	56.91 /ch	12,293	-	-	-	-	-	-	-	-	12,293	2,460	14,752
Health Physics Technicians	-0		5.00 dy	0 T050	45.000 ch/dy	225.0	53.43 /ch	12,022	-	-	-	-	-	-	-	-	12,022	2,406	14,427
Instrument & Control Tech	-0		2.00 dy	0 T070	18.000 ch/dy	36.0	60.48 /ch	2,177	-	-	-	-	-	-	-	-	2,177	436	2,613
Field Setup/Prep Work						**837.0**		**50,490**									**50,490**	**10,103**	**60,593**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 1						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 2						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 3						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
Electrician	-0		2.00 dy	0 C020	18.000 ch/dy	36.0	60.19 /ch	2,167	-	-	-	-	-	-	-	-	2,167	434	2,600
Millwrights	-0		6.00 dy	0 C060	18.000 ch/dy	108.0	57.58 /ch	6,219	-	-	-	-	-	-	-	-	6,219	1,244	7,463
Structural or Metal Worker	-0		1.00 dy	0 C060	18.000 ch/dy	18.0	57.58 /ch	1,036	-	-	-	-	-	-	-	-	1,036	207	1,244
Environmental Engineers	-0		3.00 dy	0 E050	9.000 ch/dy	27.0	82.98 /ch	2,240	-	-	-	-	-	-	-	-	2,240	448	2,689
Nuclear Engineers	-0		3.00 dy	0 E080	9.000 ch/dy	27.0	94.95 /ch	2,564	-	-	-	-	-	-	-	-	2,564	513	3,077
Safety Engineer	-0		3.00 dy	0 E120	9.000 ch/dy	27.0	71.00 /ch	1,917	-	-	-	-	-	-	-	-	1,917	384	2,301
Laborers	-0	Shipping/Handling for Disposal	2.00 dy	0 L000	36.000 ch/dy	72.0	49.49 /ch	3,563	-	-	-	-	-	-	-	-	3,563	713	4,276
Light Vehicle Drivers	-0		2.00 dy	0 L070	9.000 ch/dy	18.0	49.49 /ch	891	-	-	-	-	-	-	-	-	891	178	1,069
First Line Supervisors	-0		6.00 dy	0 M010	9.000 ch/dy	54.0	78.54 /ch	4,241	-	-	-	-	-	-	-	-	4,241	849	5,090
Material Moving Equipment Operators	-0		6.00 dy	0 R030	27.000 ch/dy	162.0	56.91 /ch	9,219	-	-	-	-	-	-	-	-	9,219	1,845	11,064
Health Physics Technicians	-0		6.00 dy	0 T050	27.000 ch/dy	162.0	53.43 /ch	8,656	-	-	-	-	-	-	-	-	8,656	1,732	10,388
Instrument & Control Tech	-0	V&B Testing	1.50 dy	0 T070	45.000 ch/dy	67.5	60.48 /ch	4,082	-	-	-	-	-	-	-	-	4,082	817	4,899
Change Out Bank # 4						**778.5**		**46,796**									**46,796**	**9,364**	**56,160**
TP18020314 Confinement Ventilation System PM		**1 change in 10 years**				**5,130.0**		**354,577**		**99,400**		**13,932**				**20,625**	**488,534**	**106,006**	**594,540**
TP18020414 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	163	975
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	64	383
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	206	1,233
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	337	2,020
Day 1 AM						**72.0**		**4,099**									**4,099**	**820**	**4,919**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	217	1,300
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	64	383
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	192	1,154
Day 1 PM						**58.5**		**3,488**									**3,488**	**698**	**4,186**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	217	1,300
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	192	1,154

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 2 AM						**54.0**		**3,169**									**3,169**	**634**	**3,803**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	217	1,300
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	192	1,154
Day 2 PM						**54.0**		**3,169**									**3,169**	**634**	**3,803**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	217	1,300
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	192	1,154
Day 3 AM						**54.0**		**3,169**									**3,169**	**634**	**3,803**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	217	1,300
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	192	1,154
Day 3 PM						**54.0**		**3,169**									**3,169**	**634**	**3,803**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 4 AM						**40.5**		**2,386**									**2,386**	**478**	**2,864**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 4 PM						**38.0**		**2,130**									**2,130**	**426**	**2,557**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 5 AM						**40.5**		**2,386**									**2,386**	**478**	**2,864**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 5 PM						**40.5**		**2,386**									**2,386**	**478**	**2,864**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 6 AM						**40.5**		**2,386**									**2,386**	**478**	**2,864**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 6 PM						**40.5**		**2,386**									**2,386**	**478**	**2,864**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	163	975
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	206	1,233
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	337	2,020

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 7 AM						**72.0**		**4,133**									**4,133**	**827**	**4,960**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	163	975
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	103	617
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	192	1,154
Day 7 PM						**49.5**		**2,898**									**2,898**	**580**	**3,478**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	217	1,300
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	71	424
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	154	925
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	289	1,731
Day 8 AM						**67.5**		**3,906**									**3,906**	**782**	**4,688**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	108	650
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	51	307
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	51	308
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	144	866
Day 8 PM						**31.5**		**1,776**									**1,776**	**355**	**2,131**
TP18020414 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**9,412**	**56,449**
FY14 Fiscal Year 2014						**6,259.5**		**420,979**		**99,400**		**13,932**				**20,625**	**554,936**	**119,293**	**674,230**
FY15 Fiscal Year 2015																			
TP18020115 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	926	5,094
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	926	5,094
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	314	1,728
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	314	1,728
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	427	2,351
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	427	2,351
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**3,335**	**18,346**
TP18020115 Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**3,335**	**18,346**
TP18020215 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	968	5,322
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**968**	**5,322**
TP18020215 Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**968**	**5,322**
TP18020415 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	181	993
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	71	390
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	228	1,256
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	374	2,057
Day 1 AM						**72.0**		**4,099**									**4,099**	**911**	**5,010**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	241	1,324
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	71	390
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	214	1,175
Day 1 PM						**58.5**		**3,488**									**3,488**	**775**	**4,263**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	241	1,324
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	214	1,175
Day 2 AM						**54.0**		**3,169**									**3,169**	**704**	**3,873**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	241	1,324
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	214	1,175
Day 2 PM						**54.0**		**3,169**									**3,169**	**704**	**3,873**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	241	1,324
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	214	1,175
Day 3 AM						**54.0**		**3,169**									**3,169**	**704**	**3,873**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	241	1,324
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	214	1,175
Day 3 PM						**54.0**		**3,169**									**3,169**	**704**	**3,873**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 4 AM						**40.5**		**2,386**									**2,386**	**530**	**2,917**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 4 PM						**36.0**		**2,130**									**2,130**	**473**	**2,604**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 5 AM						**40.5**		**2,386**									**2,386**	**530**	**2,917**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 5 PM						**40.5**		**2,386**									**2,386**	**530**	**2,917**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 6 AM						**40.5**		**2,386**									**2,386**	**530**	**2,917**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 6 PM						**40.5**		**2,386**									**2,386**	**530**	**2,917**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	181	993
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	228	1,256
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	374	2,057
Day 7 AM						**72.0**		**4,133**									**4,133**	**918**	**5,051**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	181	993
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	79	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	114	628
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	214	1,175
Day 7 PM						**49.5**		**2,898**									**2,898**	**644**	**3,542**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	241	1,324
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	78	432
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	171	942
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	321	1,763
Day 8 AM						**67.5**		**3,906**									**3,906**	**868**	**4,774**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	120	662
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	57	313
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	57	314
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	160	882
Day 8 PM						**31.5**		**1,776**									**1,776**	**395**	**2,171**
TP18020415 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**10,451**	**57,488**
FY15 Fiscal Year 2015						**1,129.5**		**66,402**									**66,402**	**14,753**	**81,156**
FY16 Fiscal Year 2016																			
TP18020116 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,020	5,188
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,020	5,188
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	346	1,760
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	346	1,760
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	471	2,394
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	471	2,394
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**3,673**	**18,684**
TP18020116 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	3,673	18,684
TP18020216 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,066	5,420
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,066**	**5,420**
TP18020216 Annual inert gas system calibration						72.0		4,355									4,355	1,066	5,420
TP18020416 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	199	1,011
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	78	398
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	252	1,279
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	412	2,095
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,003**	**5,102**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	265	1,349
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	78	398
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	235	1,197
Day 1 PM						**58.5**		**3,488**									**3,488**	**854**	**4,342**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	265	1,349
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	235	1,197
Day 2 AM						**54.0**		**3,169**									**3,169**	**775**	**3,944**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	265	1,349
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	235	1,197

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 2 PM						**54.0**		**3,169**									**3,169**	**775**	**3,944**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	265	1,349
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	235	1,197
Day 3 AM						**54.0**		**3,169**									**3,169**	**775**	**3,944**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	265	1,349
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	235	1,197
Day 3 PM						**54.0**		**3,169**									**3,169**	**775**	**3,944**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 4 AM						**40.5**		**2,386**									**2,386**	**584**	**2,970**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 4 PM						**36.0**		**2,130**									**2,130**	**521**	**2,652**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 5 AM						**40.5**		**2,386**									**2,386**	**584**	**2,970**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 5 PM						**40.5**		**2,386**									**2,386**	**584**	**2,970**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 6 AM						**40.5**		**2,386**									**2,386**	**584**	**2,970**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 6 PM						**40.5**		**2,386**									**2,386**	**584**	**2,970**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	199	1,011
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	252	1,279
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	412	2,095
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,011**	**5,144**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	199	1,011
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	87	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	126	640
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	235	1,197

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 7 PM						**49.5**		**2,898**									**2,898**	**709**	**3,607**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	265	1,349
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	86	440
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	189	959
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	353	1,796
Day 8 AM						**67.5**		**3,906**									**3,906**	**956**	**4,862**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	133	674
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	63	319
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	63	320
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	177	898
Day 8 PM						**31.5**		**1,776**									**1,776**	**435**	**2,211**
TP18020416 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**11,511**	**58,548**
FY16 Fiscal Year 2016						**1,129.5**		**66,402**									**66,402**	**16,249**	**82,652**
FY17 Fiscal Year 2017																			
TP18020117 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,116	5,284
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,116	5,284
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	378	1,792
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	378	1,792
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	515	2,438
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	515	2,438
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**4,018**	**19,029**
TP18020117 Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**4,018**	**19,029**
TP18020217 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,166	5,520
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,166**	**5,520**
TP18020217 Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,166**	**5,520**
TP18020417 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	218	1,030
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	86	405
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	275	1,303
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	451	2,134
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,097**	**5,196**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	290	1,373
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	86	405
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	257	1,219
Day 1 PM						**58.5**		**3,488**									**3,488**	**934**	**4,422**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	290	1,373
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	257	1,219
Day 2 AM						**54.0**		**3,169**									**3,169**	**848**	**4,017**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	290	1,373
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	257	1,219
Day 2 PM						**54.0**		**3,169**									**3,169**	**848**	**4,017**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	290	1,373
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	257	1,219
Day 3 AM						**54.0**		**3,169**									**3,169**	**848**	**4,017**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	290	1,373
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	257	1,219
Day 3 PM						**54.0**		**3,169**									**3,169**	**848**	**4,017**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 4 AM						**40.5**		**2,386**									**2,386**	**639**	**3,025**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 4 PM						**36.0**		**2,130**									**2,130**	**570**	**2,701**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 5 AM						**40.5**		**2,386**									**2,386**	**639**	**3,025**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 5 PM						**40.5**		**2,386**									**2,386**	**639**	**3,025**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 6 AM						**40.5**		**2,386**									**2,386**	**639**	**3,025**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 6 PM						**40.5**		**2,386**									**2,386**	**639**	**3,025**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	218	1,030
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	275	1,303
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	451	2,134
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,106**	**5,239**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	218	1,030
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	138	651
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	257	1,219
Day 7 PM						**49.5**		**2,898**									**2,898**	**776**	**3,673**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	290	1,373
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	95	448
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	206	977
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	386	1,829
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,046**	**4,952**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	145	687
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	69	325
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	69	326
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	193	914
Day 8 PM						**31.5**		**1,776**									**1,776**	**475**	**2,251**
TP18020417 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**12,591**	**59,628**
FY17 Fiscal Year 2017						**1,129.5**		**66,402**									**66,402**	**17,775**	**84,177**
FY18 Fiscal Year 2018																			
TP18020118 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,213	5,381
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,213	5,381
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	412	1,825
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	412	1,825
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	560	2,483
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	560	2,483
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**4,370**	**19,380**
TP18020118 Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**4,370**	**19,380**
TP18020218 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,268	5,622
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,268**	**5,622**
TP18020218 Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,268**	**5,622**
TP18020418 Semi Annual Below the hook lifting devices PM																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	237	1,049
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	93	413
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	299	1,327
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	490	2,173
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,193**	**5,292**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	315	1,399
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	93	413
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	280	1,242
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,015**	**4,504**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	315	1,399
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	280	1,242
Day 2 AM						**54.0**		**3,169**									**3,169**	**922**	**4,091**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	315	1,399
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	280	1,242
Day 2 PM						**54.0**		**3,169**									**3,169**	**922**	**4,091**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	315	1,399
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	280	1,242

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 3 AM						**54.0**		**3,169**									**3,169**	**922**	**4,091**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	315	1,399
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	280	1,242
Day 3 PM						**54.0**		**3,169**									**3,169**	**922**	**4,091**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 4 AM						**40.5**		**2,386**									**2,386**	**695**	**3,081**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 4 PM						**36.0**		**2,130**									**2,130**	**620**	**2,751**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 5 AM						**40.5**		**2,386**									**2,386**	**695**	**3,081**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	663
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 5 PM						**40.5**		**2,386**									**2,386**	**695**	**3,081**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	663
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 6 AM						**40.5**		**2,386**									**2,386**	**695**	**3,081**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 6 PM						**40.5**		**2,386**									**2,386**	**695**	**3,081**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	237	1,049
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	299	1,327
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	490	2,173
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,203**	**5,336**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	237	1,049
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	150	664
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	280	1,242
Day 7 PM						**49.5**		**2,898**									**2,898**	**844**	**3,741**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	315	1,399
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	103	456
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	224	995
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	420	1,863

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,137**	**5,044**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	158	699
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	75	331
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	75	332
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	210	931
Day 8 PM						**31.5**		**1,776**									**1,776**	**517**	**2,293**
TP18020418 Semi Annual Below the hook lifting devices PM						805.5		47,037									47,037	13,693	60,730
FY18 Fiscal Year 2018						**1,129.5**		**66,402**									**66,402**	**19,330**	**85,733**
FY19 Fiscal Year 2019																			
TP18020119 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,313	5,481
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,313	5,481
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	445	1,859
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	445	1,859
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	606	2,529
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	606	2,529
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**4,728**	**19,739**
TP18020119 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	4,728	19,739
TP18020219 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,372	5,726
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,372**	**5,726**
TP18020219 Annual inert gas system calibration						72.0		4,355									4,355	1,372	5,726
TP18020419 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	256	1,069
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	101	420
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	324	1,352
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	530	2,213
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,291**	**5,390**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	341	1,425
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	101	420
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	303	1,265
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,099**	**4,587**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	341	1,425
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	303	1,265
Day 2 AM						**54.0**		**3,169**									**3,169**	**998**	**4,167**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	341	1,425
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	303	1,265
Day 2 PM						**54.0**		**3,169**									**3,169**	**998**	**4,167**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	341	1,425
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	303	1,265
Day 3 AM						**54.0**		**3,169**									**3,169**	**998**	**4,167**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	341	1,425
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	303	1,265
Day 3 PM						**54.0**		**3,169**									**3,169**	**998**	**4,167**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 4 AM						**40.5**		**2,386**									**2,386**	**752**	**3,138**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 4 PM						**36.0**		**2,130**									**2,130**	**671**	**2,801**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 5 AM						**40.5**		**2,386**									**2,386**	**752**	**3,138**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 5 PM						**40.5**		**2,386**									**2,386**	**752**	**3,138**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 6 AM						**40.5**		**2,386**									**2,386**	**752**	**3,138**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 6 PM						**40.5**		**2,386**									**2,386**	**752**	**3,138**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	256	1,069
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	324	1,352
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	530	2,213
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,302**	**5,435**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	256	1,069
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	162	676
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	303	1,265
Day 7 PM						**49.5**		**2,898**									**2,898**	**913**	**3,811**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	341	1,425
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	111	465
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	243	1,014
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	454	1,897
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,231**	**5,137**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	171	712
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	81	337
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	81	338

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	227	949
Day 8 PM						**31.5**		**1,776**									**1,776**	**559**	**2,336**
TP18020419 Annual Crane Maintenance						805.5		47,037									47,037	14,817	61,854
FY19 Fiscal Year 2019						**1,129.5**		**66,402**									**66,402**	**20,917**	**87,320**
FY20 Fiscal Year 2020																			
TP18020120 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,415	5,583
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,415	5,583
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	480	1,894
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	480	1,894
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	653	2,576
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	653	2,576
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**5,094**	**20,105**
TP18020120 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	5,094	20,105
TP18020220 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,478	5,832
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,478**	**5,832**
TP18020220 Annual inert gas system calibration						72.0		4,355									4,355	1,478	5,832
TP18020420 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	276	1,088
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	108	428
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	349	1,377
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	571	2,254
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,391**	**5,490**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	368	1,451
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	108	428
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	326	1,288
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,184**	**4,672**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	368	1,451
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	326	1,288
Day 2 AM						**54.0**		**3,169**									**3,169**	**1,075**	**4,244**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	368	1,451
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	326	1,288
Day 2 PM						**54.0**		**3,169**									**3,169**	**1,075**	**4,244**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	368	1,451
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	326	1,288
Day 3 AM						**54.0**		**3,169**									**3,169**	**1,075**	**4,244**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	368	1,451
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	326	1,288

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 3 PM						**54.0**		**3,169**									**3,169**	**1,075**	**4,244**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966
Day 4 AM						**40.5**		**2,386**									**2,386**	**810**	**3,196**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966
Day 4 PM						**36.0**		**2,130**									**2,130**	**723**	**2,853**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966
Day 5 AM						**40.5**		**2,386**									**2,386**	**810**	**3,196**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966
Day 5 PM						**40.5**		**2,386**									**2,386**	**810**	**3,196**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966
Day 6 AM						**40.5**		**2,386**									**2,386**	**810**	**3,196**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966
Day 6 PM						**40.5**		**2,386**									**2,386**	**810**	**3,196**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	276	1,088
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	349	1,377
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	571	2,254
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,403**	**5,536**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	276	1,088
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	174	688
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	326	1,288
Day 7 PM						**49.5**		**2,898**									**2,898**	**983**	**3,881**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	368	1,451
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	120	473
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	262	1,032
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	490	1,932
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,326**	**5,232**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	184	726
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	87	343
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	87	344
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	245	966

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 8 PM						**31.5**		**1,776**									**1,776**	**603**	**2,379**
TP18020420 Annual Crane Maintenance						805.5		47,037									47,037	15,964	63,001
FY20 Fiscal Year 2020						**1,129.5**		**66,402**									**66,402**	**22,536**	**88,939**
FY21 Fiscal Year 2021																			
TP18020121 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,518	5,686
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,518	5,686
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	515	1,929
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	515	1,929
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	701	2,624
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	701	2,624
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**5,468**	**20,478**
TP18020121 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	5,468	20,478
TP18020221 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,586	5,941
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,586**	**5,941**
TP18020221 Annual inert gas system calibration						72.0		4,355									4,355	1,586	5,941
TP18020421 Semi Annual Below the hook lifting devices PM																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	296	1,109
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	116	436
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		4.00 ea	0 R060	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	374	1,402
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	613	2,296
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,493**	**5,592**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	395	1,478
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	116	436
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R060	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	350	1,312
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,271**	**4,759**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	395	1,478
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R060	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	350	1,312
Day 2 AM						**54.0**		**3,169**									**3,169**	**1,154**	**4,323**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	395	1,478
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R060	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	350	1,312
Day 2 PM						**54.0**		**3,169**									**3,169**	**1,154**	**4,323**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	395	1,478
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R060	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	350	1,312
Day 3 AM						**54.0**		**3,169**									**3,169**	**1,154**	**4,323**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	395	1,478
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R060	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	350	1,312
Day 3 PM						**54.0**		**3,169**									**3,169**	**1,154**	**4,323**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 4 AM						**40.5**		**2,386**									**2,386**	**869**	**3,256**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 4 PM						**36.0**		**2,130**									**2,130**	**776**	**2,906**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 5 AM						**40.5**		**2,386**									**2,386**	**869**	**3,256**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 5 PM						**40.5**		**2,386**									**2,386**	**869**	**3,256**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 6 AM						**40.5**		**2,386**									**2,386**	**869**	**3,256**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 6 PM						**40.5**		**2,386**									**2,386**	**869**	**3,256**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	296	1,109
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	374	1,402
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	613	2,296
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,505**	**5,638**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	296	1,109
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	187	701
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	350	1,312
Day 7 PM						**49.5**		**2,898**									**2,898**	**1,056**	**3,953**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	395	1,478
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	129	482
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	281	1,052
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	525	1,968
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,423**	**5,329**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	197	739
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	93	349
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	94	351
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	263	984
Day 8 PM						**31.5**		**1,776**									**1,776**	**647**	**2,423**
TP18020421 Semi Annual Below the hook lifting devices PM						**805.5**		**47,037**									**47,037**	**17,134**	**64,171**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
FY21 Fiscal Year 2021						**1,129.5**		**66,402**									**66,402**	**24,188**	**90,590**
FY22 Fiscal Year 2022																			
TP18020122 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,624	5,792
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,624	5,792
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	551	1,965
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	551	1,965
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	749	2,673
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	749	2,673
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**5,849**	**20,859**
TP18020122 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	5,849	20,859
TP18020222 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,697	6,051
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,697**	**6,051**
TP18020222 Annual inert gas system calibration						72.0		4,355									4,355	1,697	6,051
TP18020422 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	317	1,129
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	124	444
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	400	1,428
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	656	2,339
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,597**	**5,696**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	422	1,506
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	124	444
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	375	1,336
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,359**	**4,847**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	422	1,506
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	375	1,336
Day 2 AM						**54.0**		**3,169**									**3,169**	**1,235**	**4,403**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	422	1,506
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	375	1,336
Day 2 PM						**54.0**		**3,169**									**3,169**	**1,235**	**4,403**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	422	1,506
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	375	1,336
Day 3 AM						**54.0**		**3,169**									**3,169**	**1,235**	**4,403**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	422	1,506
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	375	1,336
Day 3 PM						**54.0**		**3,169**									**3,169**	**1,235**	**4,403**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 4 AM						**40.5**		**2,386**									**2,386**	**930**	**3,316**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002
Day 4 PM						**36.0**		**2,130**									**2,130**	**830**	**2,960**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002
Day 5 AM						**40.5**		**2,386**									**2,386**	**930**	**3,316**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002
Day 5 PM						**40.5**		**2,386**									**2,386**	**930**	**3,316**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002
Day 6 AM						**40.5**		**2,386**									**2,386**	**930**	**3,316**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002
Day 6 PM						**40.5**		**2,386**									**2,386**	**930**	**3,316**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	317	1,129
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	400	1,428
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	656	2,339
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,610**	**5,743**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	317	1,129
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	200	714
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	375	1,336
Day 7 PM						**49.5**		**2,898**									**2,898**	**1,129**	**4,027**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	422	1,506
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	138	491
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	300	1,071
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	562	2,005
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,522**	**5,428**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	211	753
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	100	356
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	100	357
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	281	1,002
Day 8 PM						**31.5**		**1,776**									**1,776**	**692**	**2,468**
TP18020422 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**18,327**	**65,364**
FY22 Fiscal Year 2022						**1,129.5**		**66,402**									**66,402**	**25,872**	**92,275**
FY23 Fiscal Year 2023																			
TP18020123 Semi Annual Below the hook lifting devices PM																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,732	5,900
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,732	5,900
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	587	2,001
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	587	2,001
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	799	2,723
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	799	2,723
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**6,237**	**21,247**
TP18020123 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	6,237	21,247
TP18020223 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,809	6,164
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,809**	**6,164**
TP18020223 Annual inert gas system calibration						72.0		4,355									4,355	1,809	6,164
TP18020423 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	338	1,150
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	133	452
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	427	1,455
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	699	2,382
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,703**	**5,802**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	450	1,534
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	133	452
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	400	1,361
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,449**	**4,937**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	450	1,534
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	400	1,361
Day 2 AM						**54.0**		**3,169**									**3,169**	**1,317**	**4,485**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	450	1,534
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	400	1,361
Day 2 PM						**54.0**		**3,169**									**3,169**	**1,317**	**4,485**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	450	1,534
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	400	1,361
Day 3 AM						**54.0**		**3,169**									**3,169**	**1,317**	**4,485**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	450	1,534
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	400	1,361
Day 3 PM						**54.0**		**3,169**									**3,169**	**1,317**	**4,485**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 4 AM						**40.5**		**2,386**									**2,386**	**992**	**3,378**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 4 PM						**36.0**		**2,130**									**2,130**	**885**	**3,016**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 5 AM						**40.5**		**2,386**									**2,386**	**992**	**3,378**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 5 PM						**40.5**		**2,386**									**2,386**	**992**	**3,378**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 6 AM						**40.5**		**2,386**									**2,386**	**992**	**3,378**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 6 PM						**40.5**		**2,386**									**2,386**	**992**	**3,378**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	338	1,150
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	427	1,455
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	699	2,382
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,717**	**5,850**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	338	1,150
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	214	727
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	400	1,361
Day 7 PM						**49.5**		**2,898**									**2,898**	**1,204**	**4,102**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	450	1,534
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	147	500
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	320	1,091
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	599	2,042
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,623**	**5,530**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	225	767
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	106	363
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	107	364
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	300	1,021
Day 8 PM						**31.5**		**1,776**									**1,776**	**738**	**2,514**
TP18020423 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**19,544**	**66,581**
FY23 Fiscal Year 2023						**1,129.5**		**66,402**									**66,402**	**27,590**	**93,993**
FY24 Fiscal Year 2024																			
TP18020124 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,842	6,010
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,842	6,010
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	625	2,038
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	625	2,038

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	850	2,773
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	850	2,773
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**6,633**	**21,644**
TP18020124 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	6,633	21,644
TP18020224 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	1,924	6,279
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**1,924**	**6,279**
TP18020224 Annual inert gas system calibration						72.0		4,355									4,355	1,924	6,279
TP18020424 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	359	1,172
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	141	461
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	454	1,482
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	744	2,427
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,811**	**5,910**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	479	1,562
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	141	461
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	425	1,387
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,541**	**5,029**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	479	1,562
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	425	1,387
Day 2 AM						**54.0**		**3,169**									**3,169**	**1,400**	**4,569**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	479	1,562
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	425	1,387
Day 2 PM						**54.0**		**3,169**									**3,169**	**1,400**	**4,569**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	479	1,562
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	425	1,387
Day 3 AM						**54.0**		**3,169**									**3,169**	**1,400**	**4,569**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	479	1,562
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	425	1,387
Day 3 PM						**54.0**		**3,169**									**3,169**	**1,400**	**4,569**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040
Day 4 AM						**40.5**		**2,386**									**2,386**	**1,055**	**3,441**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Day 4 PM						**36.0**		**2,130**									**2,130**	**941**	**3,072**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040
Day 5 AM						**40.5**		**2,386**									**2,386**	**1,055**	**3,441**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040
Day 5 PM						**40.5**		**2,386**									**2,386**	**1,055**	**3,441**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040
Day 6 AM						**40.5**		**2,386**									**2,386**	**1,055**	**3,441**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040
Day 6 PM						**40.5**		**2,386**									**2,386**	**1,055**	**3,441**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	359	1,172
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	454	1,482
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	744	2,427
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,826**	**5,959**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	359	1,172
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	227	741
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	425	1,387
Day 7 PM						**49.5**		**2,898**									**2,898**	**1,280**	**4,178**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	479	1,562
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	156	510
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	341	1,111
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	637	2,080
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,726**	**5,633**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	239	781
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	113	369
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	114	370
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	319	1,040
Day 8 PM						**31.5**		**1,776**									**1,776**	**785**	**2,561**
TP18020424 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**20,785**	**67,823**
FY24 Fiscal Year 2024						**1,129.5**		**66,402**									**66,402**	**29,343**	**95,745**
FY25 Fiscal Year 2025																			
TP18020125 Semi Annual Below the hook lifting devices PM																			
Structural or Metal Worker	-0	2 ea - 1st	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,954	6,122
Structural or Metal Worker	-0	2 ea - 2nd	2.00 dy	0 C090	36.000 ch/dy	72.0	57.89 /ch	4,168	-	-	-	-	-	-	-	-	4,168	1,954	6,122
First Line Supervisors	-0	1 ea - 1st	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	663	2,076
First Line Supervisors	-0	1 ea - 2nd	2.00 dy	0 M010	9.000 ch/dy	18.0	78.54 /ch	1,414	-	-	-	-	-	-	-	-	1,414	663	2,076
Health Physics Technicians	-0	2 ea - 1st	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	902	2,825
Health Physics Technicians	-0	2 ea - 2nd	2.00 dy	0 T050	18.000 ch/dy	36.0	53.43 /ch	1,923	-	-	-	-	-	-	-	-	1,923	902	2,825

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Semi Annual Below the hook lifting devices PM						**252.0**		**15,011**									**15,011**	**7,037**	**22,048**
TP18020125 Semi Annual Below the hook lifting devices PM						252.0		15,011									15,011	7,037	22,048
TP18020225 Annual inert gas system calibration																			
Instrument & Control Tech	-0	2 ea	2.00 dy	0 T070	36.000 ch/dy	72.0	60.48 /ch	4,355	-	-	-	-	-	-	-	-	4,355	2,041	6,396
Annual inert gas system calibration						**72.0**		**4,355**									**4,355**	**2,041**	**6,396**
TP18020225 Annual inert gas system calibration						72.0		4,355									4,355	2,041	6,396
TP18020425 Annual Crane Maintenance																			
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	381	1,194
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	150	469
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	482	1,510
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	789	2,472
Day 1 AM						**72.0**		**4,099**									**4,099**	**1,922**	**6,021**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	508	1,591
Safety Engineer	-0		1.00 ea	0 E120	4.500 ch/ea	4.5	71.00 /ch	320	-	-	-	-	-	-	-	-	320	150	469
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	451	1,413
Day 1 PM						**58.5**		**3,488**									**3,488**	**1,635**	**5,123**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	508	1,591
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	451	1,413
Day 2 AM						**54.0**		**3,169**									**3,169**	**1,485**	**4,654**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	508	1,591
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	451	1,413
Day 2 PM						**54.0**		**3,169**									**3,169**	**1,485**	**4,654**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	508	1,591
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	451	1,413
Day 3 AM						**54.0**		**3,169**									**3,169**	**1,485**	**4,654**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	508	1,591
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	451	1,413
Day 3 PM						**54.0**		**3,169**									**3,169**	**1,485**	**4,654**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 4 AM						**40.5**		**2,386**									**2,386**	**1,119**	**3,505**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 4 PM						**36.0**		**2,130**									**2,130**	**999**	**3,129**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 5 AM						**40.5**		**2,386**									**2,386**	**1,119**	**3,505**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 5 PM						**40.5**		**2,386**									**2,386**	**1,119**	**3,505**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 6 AM						**40.5**		**2,386**									**2,386**	**1,119**	**3,505**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 6 PM						**40.5**		**2,386**									**2,386**	**1,119**	**3,505**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	381	1,194
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		4.00 ea	0 R080	4.500 ch/ea	18.0	57.10 /ch	1,028	-	-	-	-	-	-	-	-	1,028	482	1,510
Health Physics Technicians	-0		7.00 ea	0 T050	4.500 ch/ea	31.5	53.43 /ch	1,683	-	-	-	-	-	-	-	-	1,683	789	2,472
Day 7 AM						**72.0**		**4,133**									**4,133**	**1,938**	**6,071**
Electrician	-0		3.00 ea	0 C020	4.500 ch/ea	13.5	60.19 /ch	813	-	-	-	-	-	-	-	-	813	381	1,194
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		2.00 ea	0 R080	4.500 ch/ea	9.0	57.10 /ch	514	-	-	-	-	-	-	-	-	514	241	755
Health Physics Technicians	-0		4.00 ea	0 T050	4.500 ch/ea	18.0	53.43 /ch	962	-	-	-	-	-	-	-	-	962	451	1,413
Day 7 PM						**49.5**		**2,898**									**2,898**	**1,359**	**4,256**
Electrician	-0		4.00 ea	0 C020	4.500 ch/ea	18.0	60.19 /ch	1,083	-	-	-	-	-	-	-	-	1,083	508	1,591
First Line Supervisors	-0		1.00 ea	0 M010	4.500 ch/ea	4.5	78.54 /ch	353	-	-	-	-	-	-	-	-	353	166	519
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		3.00 ea	0 R080	4.500 ch/ea	13.5	57.10 /ch	771	-	-	-	-	-	-	-	-	771	361	1,132
Health Physics Technicians	-0		6.00 ea	0 T050	4.500 ch/ea	27.0	53.43 /ch	1,443	-	-	-	-	-	-	-	-	1,443	676	2,119
Day 8 AM						**67.5**		**3,906**									**3,906**	**1,831**	**5,738**
Electrician	-0		2.00 ea	0 C020	4.500 ch/ea	9.0	60.19 /ch	542	-	-	-	-	-	-	-	-	542	254	796
Material Moving Equipment Operators	-0		1.00 ea	0 R030	4.500 ch/ea	4.5	56.91 /ch	256	-	-	-	-	-	-	-	-	256	120	376
Other Operators	-0		1.00 ea	0 R080	4.500 ch/ea	4.5	57.10 /ch	257	-	-	-	-	-	-	-	-	257	120	377
Health Physics Technicians	-0		3.00 ea	0 T050	4.500 ch/ea	13.5	53.43 /ch	721	-	-	-	-	-	-	-	-	721	338	1,059
Day 8 PM						**31.5**		**1,776**									**1,776**	**833**	**2,609**
TP18020425 Annual Crane Maintenance						**805.5**		**47,037**									**47,037**	**22,052**	**69,089**
FY25 Fiscal Year 2025						**1,129.5**		**66,402**									**66,402**	**31,130**	**97,532**
.18.02 Maintenance						**18,684.0**		**1,151,405**		**99,400**		**13,932**				**20,625**	**1,285,362**	**368,978**	**1,654,340**
.18 Operations and Maintenance						**29,952.0**		**1,880,965**		**198,800**		**27,864**				**41,250**	**2,148,879**	**601,227**	**2,750,107**
T Plant Storage						**131,158.2**		**9,528,672**		**981,345**		**1,038,744**		**238,965**		**1,020,872**	**12,808,597**	**2,890,594**	**15,699,192**

Estimate Totals

Description	Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total	
Labor	9,528,672		131,158.221 hrs				60.70%	
Material	981,345						6.25%	
Subcontract	1,038,744						6.62%	
Equipment	238,965		2,768.804 hrs				1.52%	
Other	1,020,872						6.50%	
	12,808,598	12,808,598					81.59	81.59%
Sales Tax	81,452			8.30000 %	C		0.52%	
Sales Tax on Rental Equip	19,834			8.30000 %	C		0.13%	
	101,286	12,909,884					0.65	82.23%
Construction General Req.	171,356			18.00000 %	C		1.09%	
	171,356	13,081,240					1.09	83.32%
Subcontractor Liability Ins.	23,399			2.00000 %	C		0.15%	
Subcontractor Bond	29,248			2.50000 %	C		0.19%	
	52,647	13,133,887					0.34	83.66%
Subcontractor OH&P	292,484			25.00000 %	C		1.86%	
	292,484	13,426,371					1.86	85.52%
FY2010 Escalation	11,353			2.00000 %	C		0.07%	
FY2011 Escalation	80,369			4.04000 %	C		0.51%	
FY2012 Escalation	274,288			6.12100 %	C		1.75%	
FY2013 Escalation	298,531			8.24300 %	C		1.90%	
FY2014 Escalation	122,280			10.40800 %	C		0.78%	
FY2015 Escalation	9,664			12.61600 %	C		0.06%	
FY2016 Escalation	11,390			14.86900 %	C		0.07%	
FY2017 Escalation	13,149			17.15600 %	C		0.08%	
FY2018 Escalation	14,944			19.50900 %	C		0.10%	
FY2019 Escalation	16,775			21.89900 %	C		0.11%	
FY2020 Escalation	18,643			24.33700 %	C		0.12%	
FY2021 Escalation	20,548			26.82400 %	C		0.13%	
FY2022 Escalation	22,491			29.36100 %	C		0.14%	
FY2023 Escalation	24,473			31.94800 %	C		0.16%	
FY2024 Escalation	26,494			34.58700 %	C		0.17%	
FY2025 Escalation	77,539			37.27900 %	C		0.49%	
	1,042,931	14,469,302					6.64	92.17%
Site G&A on Markups	141,160			8.50000 %	O		0.90%	
General & Administrative	1,088,731			8.50000 %	C		6.93%	
	1,229,891	15,699,193					7.83	100.00%
Risk - Zero					C			
Risk - Low					C			
Risk - Low - Medium					C			
Risk - Medium					C			
Risk - Medium - High					C			
Risk - High					C			
		15,699,193						100.00%
Total		***15,699,193***						

Alternate Storage Facility

Project name AlternateStorageFacility

Labor rate table Hanford FY09

Equipment rate table COMM2008

Notes Alternative Facility for Sludge Storage - IPS Engr %
2010 Conceptual Design - Scale Testing
2011 Preliminary Design - Full Scale Prototype
2012 Final Design - Integrated Sys. Testing
2013 Final Design & Long Lead Procurement
2014 Procure and Install- Caissons & SOG
2015 Unload and Store Operations
2016 Store, Water addition, and Maintenance
2017 Store, Water addition, and Maintenance
2018 Store, Water addition, and Maintenance
2019 Store, Water addition, and Maintenance
2020 Store, Water addition, and Maintenance
2021 Store, Water addition, and Maintenance
2022 Store, Water addition, and Maintenance
2023 Store, Water addition, and Maintenance
2024 Store, Water addition, and Maintenance
2025 Store, Water addition, and Maintenance
2026 Store, Water addition, Maintenance , Load out, and D&D

Report format Sorted by 'WBS Lvl 1/WBS Lvl 2/WBS Lvl 3/Year/Sch Acty/Class ID'
'Detail' summary

WBS Lvl 2	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
	Alternate Storage Facility									
.01	Project Management	46,156.4	3,955,044					3,955,044	670,417	4,625,461
.02	Project Support	9,972.0	822,036					822,036	53,911	875,948
.03	Environmental Doc., Permitting, & Waste Acceptance	6,135.4	509,176					509,176	31,402	540,578
.04	Nuclear Safety	18,144.0	1,712,566					1,712,566	69,565	1,782,131
.05	Radiological Control	1,108.0	105,205					105,205	6,900	112,104
.06	Industrial Safety	1,108.0	78,668					78,668	5,159	83,827
.07	Quality Assurance	2,216.0	166,754					166,754	10,936	177,690
.08	Safeguards & Security	1,280.0	72,314					72,314	2,936	75,250
.09	Technology Development	33,280.0	3,046,202			500,000		3,546,202	219,221	3,765,422
.10	Conceptual Design	5,760.0	493,747					493,747	9,875	503,622
.11	Preliminary Design	8,640.0	740,621					740,621	36,768	777,389
.12	Final Design	17,280.0	1,481,242					1,481,242	122,099	1,603,340
.13	Engineering During Construction	11,520.0	987,494					987,494	102,778	1,090,273
.14	Procurement	8,069.0	464,270	483,035	48,540	499,270		1,495,114	622,469	2,117,583
.15	Construction	16,698.4	1,062,186	334,810	60,000	44,743	5,809	1,507,547	633,135	2,140,682
.16	Start up & Testing	4,520.0	343,682					343,682	35,770	379,453
.17	Contingency						3,526,405	3,526,405	262,193	3,788,598
.18	Operations and Maintenance	23,389.6	1,437,232					1,437,232	329,325	1,766,558
.19	Deactivation & Decommissioning	24,273.3	1,644,257	6,534	40,840	126,947	1,623	1,820,201	1,188,351	3,008,553
	Alternate Storage Facility	239,550.1	19,122,696	824,379	149,380	1,170,959	3,533,837	24,801,251	4,413,211	29,214,462

Estimate Totals

Description	Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total	
Labor	19,122,696		239,550.076 hrs				64.63%	
Material	824,379						2.79%	
Subcontract	149,380						0.50%	
Equipment	1,170,959		5,637.483 hrs				3.96%	
Other	3,533,837						11.94%	
	24,801,251	**24,801,251**					**83.82**	**83.82%**
Sales Tax	68,423			8.30000 %	C		0.23%	
Sales Tax on Rental Equip	97,190			8.30000 %	C		0.33%	
	165,613	**24,966,864**					**0.56**	**84.38%**
Construction General Req.	483,883			18.00000 %	C		1.64%	
	483,883	**25,450,747**					**1.64**	**86.01%**
Subcontractor Liability Ins.	80,850			2.00000 %	C		0.27%	
Subcontractor Bond	101,062			2.50000 %	C		0.34%	
	181,912	**25,632,659**					**0.61**	**86.63%**
Fee / Profit	1,010,625			25.00000 %	C		3.42%	
	1,010,625	**26,643,284**					**3.42**	**90.04%**
FY2010 Escalation	61,546			2.00000 %	C		0.21%	
FY2011 Escalation	128,111			4.04000 %	C		0.43%	
FY2012 Escalation	210,507			6.12000 %	C		0.71%	
FY2013 Escalation	451,366			8.24300 %	C		1.53%	
FY2014 Escalation	641,696			10.40800 %	C		2.17%	
FY2015 Escalation	54,974			12.61600 %	C		0.19%	
FY2016 Escalation	32,877			14.86900 %	C		0.11%	
FY2017 Escalation	18,978			17.16600 %	C		0.06%	
FY2018 Escalation	21,568			19.50900 %	C		0.07%	
FY2019 Escalation	24,211			21.89900 %	C		0.08%	
FY2020 Escalation	26,906			24.33700 %	C		0.09%	
FY2021 Escalation	29,656			26.82400 %	C		0.10%	
FY2022 Escalation	32,460			29.36100 %	C		0.11%	
FY2023 Escalation	35,321			31.94800 %	C		0.12%	
FY2024 Escalation	38,238			34.58700 %	C		0.13%	
FY2025 Escalation	135,853			37.27900 %	C		0.46%	
FY2026 Escalation	626,910			40.02400 %	C		2.12%	
	2,571,178	**29,214,462**					**8.69**	**98.73%**
Site G&A on Markups	375,123			8.50000 %	O		1.27%	
Site G&A on Direct Costs				8.50000 %	C			
	375,123	**29,589,585**					**1.27**	**100.00%**
Risk - Zero					C			
Risk - Low					C			
Risk - Low - Medium					C			
Risk - Medium					C			
Risk - Medium - High					C			
Risk - High					C			
		29,589,585						**100.00%**
Total		***29,589,585***						

Alternate Storage Facility

CH2MHILL

WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
			Alternate Storage Facility									
.01			**Project Management**									
	.01.01		**Project Management**									
		NP01010110	Project Management	3,598.4	350,754					350,754	7,015	357,769
		NP01010111	Project Management	3,598.4	350,754					350,754	14,170	364,925
		NP01010112	Project Management	3,598.4	350,754					350,754	21,466	372,220
		NP01010113	Project Management	3,598.4	350,754					350,754	28,913	379,667
		NP01010114	Project Management	3,598.4	350,754					350,754	36,506	387,261
		NP01010115	Project Management	1,176.4	114,670					114,670	14,467	129,136
			.01.01 Project Management	**19,168.4**	**1,868,440**					**1,868,440**	**122,538**	**1,990,977**
	.01.02		**Construction Management**									
		NP01010212	Construction Management	8,996.0	695,535					695,535	167,763	863,298
		NP01010213	Construction Management	8,996.0	695,535					695,535	182,529	878,064
		NP01010214	Construction Management	8,996.0	695,535					695,535	197,588	893,122
			.01.02 Construction Management	**26,988.0**	**2,086,604**					**2,086,604**	**547,880**	**2,634,484**
			.01 Project Management	**46,156.4**	**3,955,044**					**3,955,044**	**670,417**	**4,625,461**
.02			**Project Support**									
	.02.01		**Project/Facility Support**									
		NP02010110	Project Support	1,872.0	154,317					154,317	3,086	157,404
		NP02010111	Project/Facility Support	1,872.0	154,317					154,317	6,234	160,552
		NP02010112	Project/Facility Support	1,872.0	154,317					154,317	9,444	163,762
		NP02010113	Project/Facility Support	1,872.0	154,317					154,317	12,720	167,038
		NP02010114	Project/Facility Support	1,872.0	154,317					154,317	16,061	170,379
		NP02010115	Project/Facility Support	612.0	50,450					50,450	6,365	56,815
			.02.01 Project/Facility Support	**9,972.0**	**822,036**					**822,036**	**53,911**	**875,948**
			.02 Project Support	**9,972.0**	**822,036**					**822,036**	**53,911**	**875,948**
.03			**Environmental Doc., Permitting, & Waste Acceptance**									
	.03.01		**Environmental Documentation**									
		NP03010111	CERCLA Documentation	2,015.4	167,239					167,239	6,756	173,996
		NP03010211	Review Support	520.0	43,150					43,150	1,743	44,893
		NP03010212	Review Support	520.0	43,150					43,150	2,641	45,790
		NP03010213	Review Support	520.0	43,150					43,150	3,557	46,706
		NP03010214	Review Support	1,040.0	86,299					86,299	8,982	95,281
			.03.01 Environmental Documentation	**4,615.4**	**382,987**					**382,987**	**23,679**	**406,667**
	.03.03		**Waste Acceptance**									
		NP03030112	Waste Acceptance	1,520.0	126,189					126,189	7,723	133,912
			.03.03 Waste Acceptance	**1,520.0**	**126,189**					**126,189**	**7,723**	**133,912**
			.03 Environmental Doc., Permitting, & Waste Acceptance	**6,135.4**	**509,176**					**509,176**	**31,402**	**540,578**
.04			**Nuclear Safety**									
	.04.01		**Nuclear Safety**									
		NP04010110	Hazard Analysis	760.0	72,162					72,162	1,443	73,605
		NP04010111	Hazard Analysis	532.0	50,513					50,513	2,041	52,554
		NP04010112	Hazard Analysis	304.0	28,865					28,865	1,767	30,631
		NP04010113	Hazard Analysis	228.0	21,649					21,649	1,784	23,433
		NP04010210	Accident Analysis	1,440.0	136,728					136,728	2,735	139,463
		NP04010211	Accident Analysis	1,008.0	95,710					95,710	3,867	99,576
		NP04010212	Accident Analysis	576.0	54,691					54,691	3,347	58,038
		NP04010213	Accident Analysis	432.0	41,018					41,018	3,381	44,400
		NP04010310	Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)	520.0	49,374					49,374	987	50,361
		NP04010311	Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)	364.0	34,562					34,562	1,396	35,958
		NP04010312	Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)	208.0	19,750					19,750	1,209	20,958

WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
		NP04010313	Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)	156.0	14,812					14,812	1,221	16,033
		NP04010410	GAP Analysis	320.0	26,131					26,131	523	26,654
		NP04010411	GAP Analysis	224.0	18,292					18,292	739	19,031
		NP04010412	GAP Analysis	128.0	10,452					10,452	640	11,092
		NP04010413	GAP Analysis	96.0	7,839					7,839	646	8,486
		NP04010510	Control Definitions	800.0	75,960					75,960	1,519	77,479
		NP04010511	Control Definitions	560.0	53,172					53,172	2,148	55,320
		NP04010512	Control Definitions	320.0	30,384					30,384	1,860	32,244
		NP04010513	Control Definitions	240.0	22,788					22,788	1,878	24,666
		NP04010610	Conceptual Safety Design Report	1,440.0	136,728					136,728	2,735	139,463
		NP04010611	Conceptual Safety Design Report	1,008.0	95,710					95,710	3,867	99,576
		NP04010612	Preliminary Safety Design Report	576.0	54,691					54,691	3,347	58,038
		NP04010613	Preliminary Safety Design Report	432.0	41,018					41,018	3,381	44,400
		NP04010710	Criticality Safety Analysis	480.0	45,576					45,576	912	46,488
		NP04010711	Criticality Safety Analysis	336.0	31,903					31,903	1,289	33,192
		NP04010712	Criticality Safety Analysis	192.0	18,230					18,230	1,116	19,346
		NP04010713	Criticality Safety Analysis	144.0	13,673					13,673	1,127	14,800
		NP04010910	Fire Hazard Analysis	240.0	22,788					22,788	456	23,244
		NP04010911	Fire Hazard Analysis	168.0	15,952					15,952	644	16,596
		NP04010912	Fire Hazard Analysis	96.0	9,115					9,115	558	9,673
		NP04010913	Fire Hazard Analysis	72.0	6,836					6,836	564	7,400
		NP04011010	EPHA	1,560.0	148,122					148,122	2,962	151,084
		NP04011011	EPHA	1,092.0	103,685					103,685	4,189	107,874
		NP04011012	EPHA	624.0	59,249					59,249	3,626	62,875
		NP04011013	EPHA	468.0	44,437					44,437	3,663	48,100
			.04.01 Nuclear Safety	18,144.0	1,712,566					1,712,566	69,565	1,782,131
			.04 Nuclear Safety	18,144.0	1,712,566					1,712,566	69,565	1,782,131
.05			Radiological Control									
	.05.01		Radiological Control									
		NP05050110	Nuclear Safety	208.0	19,750					19,750	395	20,145
		NP05050111		208.0	19,750					19,750	798	20,547
		NP05050112	RADCON Engineering Support	208.0	19,750					19,750	1,209	20,958
		NP05050113	RADCON Engineering Support	208.0	19,750					19,750	1,628	21,378
		NP05050114	RADCON Engineering Support	208.0	19,750					19,750	2,056	21,805
		NP05050115	RADCON Engineering Support	68.0	6,457					6,457	815	7,271
			.05.01 Radiological Control	1,108.0	105,205					105,205	6,900	112,104
			.05 Radiological Control	1,108.0	105,205					105,205	6,900	112,104
.06			Industrial Safety									
	.06.01		Industrial Safety									
		NP06060110	Industrial Safety	208.0	14,768					14,768	295	15,063
		NP06060111	Industrial Safety	208.0	14,768					14,768	597	15,365
		NP06060112	Industrial Safety	208.0	14,768					14,768	904	15,672
		NP06060113	Industrial Safety	208.0	14,768					14,768	1,217	15,985
		NP06060114	Industrial Safety	208.0	14,768					14,768	1,537	16,305
		NP06060115	Industrial Safety	68.0	4,828					4,828	609	5,437
			.06.01 Industrial Safety	1,108.0	78,668					78,668	5,159	83,827
			.06 Industrial Safety	1,108.0	78,668					78,668	5,159	83,827
.07			Quality Assurance									
	.07.01		Quality Assurance									
		NP07070110	Industrial Safety	416.0	31,304					31,304	626	31,930
		NP07070111	Quality Assurance	416.0	31,304					31,304	1,265	32,569
		NP07070112	Quality Assurance	416.0	31,304					31,304	1,916	33,220
		NP07070113	Quality Assurance	416.0	31,304					31,304	2,580	33,884
		NP07070114	Quality Assurance	416.0	31,304					31,304	3,258	34,562

WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
		NP07070115	Quality Assurance	136.0	10,234					10,234	1,291	11,525
			.07.01 Quality Assurance	2,216.0	166,754					166,754	10,936	177,690
			.07 Quality Assurance	2,216.0	166,754					166,754	10,936	177,690
.08			Safeguards & Security									
	.08.01		Safeguards & Security									
		NP08080110	Design Review Of Conceptual Design	640.0	36,157					36,157	723	36,880
		NP08080112	Vulnerability Assessment	640.0	36,157					36,157	2,213	38,370
			.08.01 Safeguards & Security	1,280.0	72,314					72,314	2,936	75,250
			.08 Safeguards & Security	1,280.0	72,314					72,314	2,936	75,250
.09			Technology Development									
	.09.01		Technology Development									
		NP09090110	Technology Development	8,320.0	761,550			100,000		861,550	25,531	887,081
		NP09090111	Technology Development	8,320.0	761,550			250,000		1,011,550	61,617	1,073,167
		NP09090112	Technology Development	8,320.0	761,550			100,000		861,550	61,027	922,577
		NP09090113	Technology Development	8,320.0	761,550			50,000		811,550	71,046	882,597
			.09.01 Technology Development	33,280.0	3,046,202			500,000		3,546,202	219,221	3,765,422
			.09 Technology Development	33,280.0	3,046,202			500,000		3,546,202	219,221	3,765,422
.10			Conceptual Design									
	.10.01		Conceptual Design									
		NP10100110	Conceptual Design	5,760.0	493,747					493,747	9,875	503,622
			.10.01 Conceptual Design	5,760.0	493,747					493,747	9,875	503,622
			.10 Conceptual Design	5,760.0	493,747					493,747	9,875	503,622
.11			Preliminary Design									
	.11.01		Preliminary Design									
		NP11110111	Preliminary Design	4,800.0	411,456					411,456	16,623	428,079
		NP11110112	Preliminary Design	3,840.0	329,165					329,165	20,145	349,310
			.11.01 Preliminary Design	8,640.0	740,621					740,621	36,768	777,389
			.11 Preliminary Design	8,640.0	740,621					740,621	36,768	777,389
.12			Final Design									
	.12.01		Final Design									
		NP12120113	Final Design	17,280.0	1,481,242					1,481,242	122,099	1,603,340
			.12.01 Final Design	17,280.0	1,481,242					1,481,242	122,099	1,603,340
			.12 Final Design	17,280.0	1,481,242					1,481,242	122,099	1,603,340
.13			Engineering During Construction									
	.13.01		Engineering During Construction									
		NP13130114	Engineering During Construction	11,520.0	987,494					987,494	102,778	1,090,273
			.13.01 Engineering During Construction	11,520.0	987,494					987,494	102,778	1,090,273
			.13 Engineering During Construction	11,520.0	987,494					987,494	102,778	1,090,273
.14			Procurement									
	.14.01		Procurement Support									
		NP14140113	Procurement Support	780.0	45,963					45,963	3,789	49,752
		NP14140114	Procurement Support	1,560.0	91,926					91,926	9,568	101,493
			.14.01 Procurement Support	2,340.0	137,888					137,888	13,356	151,245
	.14.02		Equipment Procurement									
		NP14020113	Equipment Procurement			125,900	48,540	475,000		649,440	294,993	944,433
		NP14020114	Equipment Procurement	320.0	14,660	86,025				100,685	47,322	148,007
		NP15010914	Fabricate Concrete Storage Caissons	5,409.0	311,721	271,110		24,270		607,100	266,798	873,898

WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
			.14.02 Equipment Procurement	5,729.0	326,381	483,035	48,540	499,270		1,357,226	609,113	1,966,338
			.14 Procurement	8,069.0	464,270	483,035	48,540	499,270		1,495,114	622,469	2,117,583
.15			Construction									
	.15.01		New Construction - Storage Pad									
		NP15010114	Field Staff	11,200.0	777,597					777,597	310,323	1,087,920
		NP15010214	Field Office			4,330				4,330	2,087	6,417
		NP15010314	Prepare Subgrade, Place Base, & Pavement	444.5	20,474	55,517		24,108		100,099	46,556	146,655
		NP15010414	Concrete	1,844.1	84,757	75,350		3,588	5,809	169,505	74,198	243,703
		NP15010514	Install Security Fence & Type 4 Barrier	722.8	33,420	52,969		8,203		94,591	42,827	137,418
		NP15010614	Install conduit, wire, & light pole	1,522.3	86,123	50,874		5,768		142,764	61,676	204,440
		NP15010714	Install Sensors & Controls	142.4	8,489	33,280	60,000			101,769	43,376	145,146
		NP15010814	Install Site Utilities	493.5	28,948	36,558		823		66,328	29,573	95,901
		NP15011014	Powered Ventilation	328.8	22,377	25,932		2,254		50,563	22,518	73,081
			.15.01 New Construction - Storage Pad	16,698.4	1,062,186	334,810	60,000	44,743	5,809	1,507,547	633,135	2,140,682
			.15 Construction	16,698.4	1,062,186	334,810	60,000	44,743	5,809	1,507,547	633,135	2,140,682
.16			Start up & Testing									
	.16.01		Start up & Testing									
		NP16160114	CORAMI Evalation	240.0	19,296					19,296	2,008	21,304
			.16.01 Start up & Testing	240.0	19,296					19,296	2,008	21,304
	.16.02		Procedure Development									
		NP16160214	Procedure Development	520.0	40,074					40,074	4,171	44,245
			.16.02 Procedure Development	520.0	40,074					40,074	4,171	44,245
	.16.03		Readiness Activities / Planning									
		NP16160314	Readiness Activities / Planning	720.0	58,627					58,627	6,102	64,729
			.16.03 Readiness Activities / Planning	720.0	58,627					58,627	6,102	64,729
	.16.04		System Test									
		NP16160414	System Test	1,600.0	130,970					130,970	13,631	144,601
			.16.04 System Test	1,600.0	130,970					130,970	13,631	144,601
	.16.05		Start Up									
		NP16160514	Start Up	1,440.0	94,715					94,715	9,858	104,573
			.16.05 Start Up	1,440.0	94,715					94,715	9,858	104,573
			.16 Start up & Testing	4,520.0	343,682					343,682	35,770	379,453
.17			Contingency									
	.17.01		Contingency									
		NP17170110	Contingency						401,387	401,387	8,028	409,415
		NP17170111	Contingency						467,287	467,287	18,878	486,165
		NP17170112	Contingency						491,584	491,584	30,085	521,669
		NP17170113	Contingency						963,906	963,906	79,455	1,043,361
		NP17170114	Contingency						1,174,245	1,174,245	122,215	1,296,460
		NP17170115	Contingency						27,996	27,996	3,532	31,528
			.17.01 Contingency						3,526,405	3,526,405	262,193	3,788,598
			.17 Contingency						3,526,405	3,526,405	262,193	3,788,598
.18			Operations and Maintenance									
	.18.01		Operations									
		NP18180115	Unload & Store	3,598.4	221,113					221,113	27,896	249,008
		NP18180116	Unload & Store	1,799.2	110,556					110,556	16,439	126,995
			.18.01 Operations	5,397.6	331,669					331,669	44,334	376,003
	.18.02		Maintenance									
		NP18180216	Maintenance	1,799.2	110,556					110,556	16,439	126,995

WBS Lvl 2	WBS Lvl 3	Sch Acty	Description	Labor Man Hrs	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount	Addon Amount	Grand Total
		NP18180217	Maintenance	1,799.2	110,556					110,556	18,978	129,534
		NP18180218	Maintenance	1,799.2	110,556					110,556	21,568	132,125
		NP18180219	Maintenance	1,799.2	110,556					110,556	24,211	134,767
		NP18180220	Maintenance	1,799.2	110,556					110,556	26,906	137,462
		NP18180221	Maintenance	1,799.2	110,556					110,556	29,656	140,212
		NP18180222	Maintenance	1,799.2	110,556					110,556	32,460	143,017
		NP18180223	Maintenance	1,799.2	110,556					110,556	35,321	145,877
		NP18180224	Maintenance	1,799.2	110,556					110,556	38,238	148,794
		NP18180225	Maintenance	1,799.2	110,556					110,556	41,214	151,771
			.18.02 Maintenance	17,992.0	1,105,563					1,105,563	284,991	1,390,554
			.18 Operations and Maintenance	23,389.6	1,437,232					1,437,232	329,325	1,766,558
.19			Deactivation & Decommissioning									
	.19.01		Deactivation & Decommissioning									
		NP19190125	D&D Planning	2,698.8	253,867					253,867	140,335	394,202
		NP19190126	Construction Management	4,498.0	347,767					347,767	201,789	549,556
			.19.01 Deactivation & Decommissioning	7,196.8	601,634					601,634	342,124	943,758
	.19.02		Demolition									
		NP19190226	Demollition	5,448.4	245,487		40,840	110,585		396,913	273,080	669,993
			.19.02 Demolition	5,448.4	245,487		40,840	110,585		396,913	273,080	669,993
	.19.03		Site Restoration									
		NP19190326	Site Restoration	428.1	19,538	2,204		16,362	1,623	39,727	29,161	68,888
			.19.03 Site Restoration	428.1	19,538	2,204		16,362	1,623	39,727	29,161	68,888
	.19.04		Contractor Staff & office									
		NP15010126	Field Staff	11,200.0	777,597					777,597	540,617	1,318,213
		NP15010226	Field Office			4,330				4,330	3,370	7,700
			.19.04 Contractor Staff & office	11,200.0	777,597	4,330				781,927	543,986	1,325,913
			.19 Deactivation & Decommissioning	24,273.3	1,644,257	6,534	40,840	126,947	1,623	1,820,201	1,188,351	3,008,553
			Alternate Storage Facility	239,550.1	19,122,696	824,379	149,380	1,170,959	3,533,837	24,801,251	4,413,211	29,214,462

Alternate Storage Facility

Project name AlternateStorageFacility

Labor rate table Hanford FY09

Equipment rate table COMM2008

Notes
Alternative Facility for Sludge Storage - IPS Engr %
2010 Conceptual Design - Scale Testing
2011 Preliminary Design - Full Scale Prototype
2012 Final Design - Integrated Sys. Testing
2013 Final Design & Long Lead Procurement
2014 Procure and Install- Caissons & SOG
2015 Unload and Store Operations
2016 Store, Water addition, and Maintenance
2017 Store, Water addition, and Maintenance
2018 Store, Water addition, and Maintenance
2019 Store, Water addition, and Maintenance
2020 Store, Water addition, and Maintenance
2021 Store, Water addition, and Maintenance
2022 Store, Water addition, and Maintenance
2023 Store, Water addition, and Maintenance
2024 Store, Water addition, and Maintenance
2025 Store, Water addition, and Maintenance
2026 Store, Water addition, Maintenance , Load out, and D&D

Report format Sorted by 'WBS Lvl 1/WBS Lvl 2/WBS Lvl 3/Year/Sch Acty/Class ID'
'Detail' summary

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
.01 Project Management																			
.01.01 Project Management																			
FY10 Fiscal Year 2010																			
NP01010110 Project Management																			
Civil Engineers	-1		52.00 wk	0 E020	34.600 chwk	1,799.2	92.33 /ch	166,120	-	-	-	-	-	-	-	-	166,120	3,322	169,443
Managers & Executives	-1		52.00 wk	0 M020	34.600 chwk	1,799.2	102.62 /ch	184,634	-	-	-	-	-	-	-	-	184,634	3,693	188,327
Project Management						**3,598.4**		**350,754**									**350,754**	**7,015**	**357,769**
NP01010110 Project Management						3,598.4		350,754									350,754	7,015	357,769
FY10 Fiscal Year 2010						**3,598.4**		**350,754**									**350,754**	**7,015**	**357,769**
FY11 Fiscal Year 2011																			
NP01010111 Project Management																			
Civil Engineers	-1		52.00 wk	0 E020	34.600 chwk	1,799.2	92.33 /ch	166,120	-	-	-	-	-	-	-	-	166,120	6,711	172,831
Managers & Executives	-1		52.00 wk	0 M020	34.600 chwk	1,799.2	102.62 /ch	184,634	-	-	-	-	-	-	-	-	184,634	7,459	192,093
Project Management						**3,598.4**		**350,754**									**350,754**	**14,170**	**364,925**
NP01010111 Project Management						3,598.4		350,754									350,754	14,170	364,925
FY11 Fiscal Year 2011						**3,598.4**		**350,754**									**350,754**	**14,170**	**364,925**
FY12 Fiscal Year 2012																			
NP01010112 Project Management																			
Civil Engineers	-1		52.00 wk	0 E020	34.600 chwk	1,799.2	92.33 /ch	166,120	-	-	-	-	-	-	-	-	166,120	10,167	176,287
Managers & Executives	-1		52.00 wk	0 M020	34.600 chwk	1,799.2	102.62 /ch	184,634	-	-	-	-	-	-	-	-	184,634	11,300	195,934
Project Management						**3,598.4**		**350,754**									**350,754**	**21,466**	**372,220**
NP01010112 Project Management						3,598.4		350,754									350,754	21,466	372,220
FY12 Fiscal Year 2012						**3,598.4**		**350,754**									**350,754**	**21,466**	**372,220**
FY13 Fiscal Year 2013																			
NP01010113 Project Management																			
Civil Engineers	-1		52.00 wk	0 E020	34.600 chwk	1,799.2	92.33 /ch	166,120	-	-	-	-	-	-	-	-	166,120	13,693	179,813
Managers & Executives	-1		52.00 wk	0 M020	34.600 chwk	1,799.2	102.62 /ch	184,634	-	-	-	-	-	-	-	-	184,634	15,219	199,853
Project Management						**3,598.4**		**350,754**									**350,754**	**28,913**	**379,667**
NP01010113 Project Management						3,598.4		350,754									350,754	28,913	379,667
FY13 Fiscal Year 2013						**3,598.4**		**350,754**									**350,754**	**28,913**	**379,667**
FY14 Fiscal Year 2014																			
NP01010114 Project Management																			
Civil Engineers	-1		52.00 wk	0 E020	34.600 chwk	1,799.2	92.33 /ch	166,120	-	-	-	-	-	-	-	-	166,120	17,290	183,410
Managers & Executives	-1		52.00 wk	0 M020	34.600 chwk	1,799.2	102.62 /ch	184,634	-	-	-	-	-	-	-	-	184,634	19,217	203,851
Project Management						**3,598.4**		**350,754**									**350,754**	**36,506**	**387,261**
NP01010114 Project Management						3,598.4		350,754									350,754	36,506	387,261
FY14 Fiscal Year 2014						**3,598.4**		**350,754**									**350,754**	**36,506**	**387,261**
FY15 Fiscal Year 2015																			
NP01010115 Project Management																			
Civil Engineers	-1		17.00 wk	0 E020	34.600 chwk	588.2	92.33 /ch	54,309	-	-	-	-	-	-	-	-	54,309	6,852	61,160
Managers & Executives	-1		17.00 wk	0 M020	34.600 chwk	588.2	102.62 /ch	60,361	-	-	-	-	-	-	-	-	60,361	7,615	67,976
Project Management						**1,176.4**		**114,670**									**114,670**	**14,467**	**129,136**
NP01010115 Project Management						1,176.4		114,670									114,670	14,467	129,136
FY15 Fiscal Year 2015						**1,176.4**		**114,670**									**114,670**	**14,467**	**129,136**
.01.01 Project Management						**19,168.4**		**1,868,440**									**1,868,440**	**122,538**	**1,990,977**
.01.02 Construction Management																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
FY12 Fiscal Year 2012																			
NP01010212 Construction Management																			
Other Crafts	-1		52.00 wk	0 C120	69.200 chwk	3,598.4	52.19 /ch	187,801	-	-	-	-	-	-	-	-	187,801	45,297	233,098
First Line Supervisors	-1		52.00 wk	0 M010	34.600 chwk	1,799.2	78.54 /ch	141,309	-	-	-	-	-	-	-	-	141,309	34,084	175,393
Project & Program Managers	-1		52.00 wk	0 M030	34.600 chwk	1,799.2	117.10 /ch	210,686	-	-	-	-	-	-	-	-	210,686	50,818	261,504
Planner/Scheduler/Estimators	-1		52.00 wk	0 P070	34.600 chwk	1,799.2	86.56 /ch	155,739	-	-	-	-	-	-	-	-	155,739	37,564	193,303
Construction Management						**8,996.0**		**695,535**									**695,535**	**167,763**	**863,298**
NP01010212 Construction Management						8,996.0		695,535									695,535	167,763	863,298
FY12 Fiscal Year 2012						**8,996.0**		**695,535**									**695,535**	**167,763**	**863,298**
FY13 Fiscal Year 2013																			
NP01010213 Construction Management																			
Other Crafts	-1		52.00 wk	0 C120	69.200 chwk	3,598.4	52.19 /ch	187,801	-	-	-	-	-	-	-	-	187,801	49,284	237,085
First Line Supervisors	-1		52.00 wk	0 M010	34.600 chwk	1,799.2	78.54 /ch	141,309	-	-	-	-	-	-	-	-	141,309	37,084	178,393
Project & Program Managers	-1		52.00 wk	0 M030	34.600 chwk	1,799.2	117.10 /ch	210,686	-	-	-	-	-	-	-	-	210,686	55,290	265,977
Planner/Scheduler/Estimators	-1		52.00 wk	0 P070	34.600 chwk	1,799.2	86.56 /ch	155,739	-	-	-	-	-	-	-	-	155,739	40,871	196,609
Construction Management						**8,996.0**		**695,535**									**695,535**	**182,529**	**878,064**
NP01010213 Construction Management						8,996.0		695,535									695,535	182,529	878,064
FY13 Fiscal Year 2013						**8,996.0**		**695,535**									**695,535**	**182,529**	**878,064**
FY14 Fiscal Year 2014																			
NP01010214 Construction Management																			
Other Crafts	-1		52.00 wk	0 C120	69.200 chwk	3,598.4	52.19 /ch	187,801	-	-	-	-	-	-	-	-	187,801	53,350	241,151
First Line Supervisors	-1		52.00 wk	0 M010	34.600 chwk	1,799.2	78.54 /ch	141,309	-	-	-	-	-	-	-	-	141,309	40,143	181,452
Project & Program Managers	-1		52.00 wk	0 M030	34.600 chwk	1,799.2	117.10 /ch	210,686	-	-	-	-	-	-	-	-	210,686	59,852	270,538
Planner/Scheduler/Estimators	-1		52.00 wk	0 P070	34.600 chwk	1,799.2	86.56 /ch	155,739	-	-	-	-	-	-	-	-	155,739	44,242	199,981
Construction Management						**8,996.0**		**695,535**									**695,535**	**197,588**	**893,122**
NP01010214 Construction Management						8,996.0		695,535									695,535	197,588	893,122
FY14 Fiscal Year 2014						**8,996.0**		**695,535**									**695,535**	**197,588**	**893,122**
.01.02 Construction Management						**26,988.0**		**2,086,604**									**2,086,604**	**547,880**	**2,634,484**
.01 Project Management						**46,156.4**		**3,955,044**									**3,955,044**	**670,417**	**4,625,461**
.02 Project Support																			
.02.01 Project/Facility Support																			
FY10 Fiscal Year 2010																			
NP02010110 Project Support																			
Electrical Engineers	-1	0.2 FTE	52.00 wk	0 E040	8.000 chwk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	659	33,610
Environmental Engineers	-1	0.1 FTE	52.00 wk	0 E050	4.000 chwk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	345	17,605
Mechanical Engineers	-1	0.2 FTE	52.00 wk	0 E070	8.000 chwk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	713	36,381
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 chwk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	395	20,145
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 chwk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	287	14,635
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 chwk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	327	16,663
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 chwk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	360	18,365
Facility Support to Project						**1,872.0**		**154,317**									**154,317**	**3,086**	**157,404**
NP02010110 Project Support						1,872.0		154,317									154,317	3,086	157,404
FY10 Fiscal Year 2010						**1,872.0**		**154,317**									**154,317**	**3,086**	**157,404**
FY11 Fiscal Year 2011																			
NP02010111 Project/Facility Support																			
Electrical Engineers	-1	0.2 FTE	52.00 wk	0 E040	8.000 chwk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	1,331	34,283
Environmental Engineers	-1	0.1 FTE	52.00 wk	0 E050	4.000 chwk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	697	17,957
Mechanical Engineers	-1	0.2 FTE	52.00 wk	0 E070	8.000 chwk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	1,441	37,109
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 chwk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	798	20,547
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 chwk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	580	14,927
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 chwk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	660	16,996
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 chwk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	727	18,732
Facility Support to Project						**1,872.0**		**154,317**									**154,317**	**6,234**	**160,552**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
NP02010111 Project/Facility Support						1,872.0		154,317									154,317	6,234	160,552
FY11 Fiscal Year 2011						1,872.0		154,317									154,317	6,234	160,552
FY12 Fiscal Year 2012																			
NP02010112 Project/Facility Support																			
Electrical Engineers	-1	0.2 FTE	52.00 wk	0 E040	8.000 chwk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	2,017	34,968
Environmental Engineers	-1	0.1 FTE	52.00 wk	0 E050	4.000 chwk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	1,056	18,316
Mechanical Engineers	-1	0.2 FTE	52.00 wk	0 E070	8.000 chwk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	2,183	37,851
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 chwk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	1,209	20,958
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 chwk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	878	15,226
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 chwk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	1,000	17,336
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 chwk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	1,102	19,106
Facility Support to Project						1,872.0		154,317									154,317	9,444	163,762
NP02010112 Project/Facility Support						1,872.0		154,317									154,317	9,444	163,762
FY12 Fiscal Year 2012						1,872.0		154,317									154,317	9,444	163,762
FY13 Fiscal Year 2013																			
NP02010113 Project/Facility Support																			
Electrical Engineers	-1	0.2 FTE	52.00 wk	0 E040	8.000 chwk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	2,716	35,668
Environmental Engineers	-1	0.1 FTE	52.00 wk	0 E050	4.000 chwk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	1,423	18,683
Mechanical Engineers	-1	0.2 FTE	52.00 wk	0 E070	8.000 chwk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	2,940	38,608
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 chwk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	1,628	21,378
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 chwk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	1,183	15,531
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 chwk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	1,347	17,683
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 chwk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	1,484	19,489
Facility Support to Project						1,872.0		154,317									154,317	12,720	167,038
NP02010113 Project/Facility Support						1,872.0		154,317									154,317	12,720	167,038
FY13 Fiscal Year 2013						1,872.0		154,317									154,317	12,720	167,038
FY14 Fiscal Year 2014																			
NP02010114 Project/Facility Support																			
Electrical Engineers	-1	0.2 FTE	52.00 wk	0 E040	8.000 chwk	416.0	79.21 /ch	32,951	-	-	-	-	-	-	-	-	32,951	3,430	36,381
Environmental Engineers	-1	0.1 FTE	52.00 wk	0 E050	4.000 chwk	208.0	82.98 /ch	17,260	-	-	-	-	-	-	-	-	17,260	1,796	19,056
Mechanical Engineers	-1	0.1 FTE	52.00 wk	0 E070	8.000 chwk	416.0	85.74 /ch	35,668	-	-	-	-	-	-	-	-	35,668	3,712	39,380
Nuclear Engineers	-1	0.1 FTE	52.00 wk	0 E080	4.000 chwk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	2,056	21,805
RAD Engineers	-1	0.1 FTE	52.00 wk	0 E100	4.000 chwk	208.0	68.98 /ch	14,348	-	-	-	-	-	-	-	-	14,348	1,493	15,841
First Line Supervisors	-1	0.1 FTE	52.00 wk	0 M010	4.000 chwk	208.0	78.54 /ch	16,336	-	-	-	-	-	-	-	-	16,336	1,700	18,037
Planner/Scheduler/Estimators	-1	0.1 FTE	52.00 wk	0 P070	4.000 chwk	208.0	86.56 /ch	18,004	-	-	-	-	-	-	-	-	18,004	1,874	19,878
Facility Support to Project						1,872.0		154,317									154,317	16,061	170,379
NP02010114 Project/Facility Support						1,872.0		154,317									154,317	16,061	170,379
FY14 Fiscal Year 2014						1,872.0		154,317									154,317	16,061	170,379
FY15 Fiscal Year 2015																			
NP02010115 Project/Facility Support																			
Electrical Engineers	-1	0.2 FTE	17.00 wk	0 E040	8.000 chwk	136.0	79.21 /ch	10,773	-	-	-	-	-	-	-	-	10,773	1,359	12,132
Environmental Engineers	-1	0.1 FTE	17.00 wk	0 E050	4.000 chwk	68.0	82.98 /ch	5,643	-	-	-	-	-	-	-	-	5,643	712	6,355
Mechanical Engineers	-1	0.2 FTE	17.00 wk	0 E070	8.000 chwk	136.0	85.74 /ch	11,661	-	-	-	-	-	-	-	-	11,661	1,471	13,132
Nuclear Engineers	-1	0.1 FTE	17.00 wk	0 E080	4.000 chwk	68.0	94.95 /ch	6,457	-	-	-	-	-	-	-	-	6,457	815	7,271
RAD Engineers	-1	0.1 FTE	17.00 wk	0 E100	4.000 chwk	68.0	68.98 /ch	4,691	-	-	-	-	-	-	-	-	4,691	592	5,282
First Line Supervisors	-1	0.1 FTE	17.00 wk	0 M010	4.000 chwk	68.0	78.54 /ch	5,341	-	-	-	-	-	-	-	-	5,341	674	6,015
Planner/Scheduler/Estimators	-1	0.1 FTE	17.00 wk	0 P070	4.000 chwk	68.0	86.56 /ch	5,886	-	-	-	-	-	-	-	-	5,886	743	6,629
Facility Support to Project						612.0		50,450									50,450	6,365	56,815
NP02010115 Project/Facility Support						612.0		50,450									50,450	6,365	56,815
FY15 Fiscal Year 2015						612.0		50,450									50,450	6,365	56,815
.02.01 Project/Facility Support						9,972.0		822,036									822,036	53,911	875,948
.02 Project Support						9,972.0		822,036									822,036	53,911	875,948
.03 Environmental Doc., Permitting, & Waste Acceptance																			
.03.01 Environmental Documentation																			
FY11 Fiscal Year 2011																			
NP03010111 CERCLA Documentation																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Environmental Engineers	-1	NEPA Values (in FFS)	8.66 wk	0 E050	34.600 ch/wk	299.6	82.98 /ch	24,864	-	-	-	-	-	-	-	-	24,864	1,005	25,868
Environmental Engineers	-1	ESD or ROD Amendment	6.50 wk	0 E050	34.600 ch/wk	224.7	82.98 /ch	18,648	-	-	-	-	-	-	-	-	18,648	753	19,401
Environmental Engineers	-1	Proposed Plan to Amend the ROD**	4.33 wk	0 E050	34.600 ch/wk	149.8	82.98 /ch	12,432	-	-	-	-	-	-	-	-	12,432	502	12,934
Environmental Engineers	-1	Fact Sheet (RD - Completion)	2.17 wk	0 E050	40.000 ch/wk	86.6	82.98 /ch	7,186	-	-	-	-	-	-	-	-	7,186	290	7,476
Environmental Engineers	-1	Fact Sheet (ESD or ROD Amendment)	2.17 wk	0 E050	40.000 ch/wk	86.6	82.98 /ch	7,186	-	-	-	-	-	-	-	-	7,186	290	7,476
Environmental Engineers	-1	RD for 200 Area Storage (90% design)	6.50 wk	0 E050	34.600 ch/wk	224.7	82.98 /ch	18,648	-	-	-	-	-	-	-	-	18,648	753	19,401
Environmental Engineers	-1	Rad Air NOC Evaluation (T Plant) ARAR (New)	3.25 wk	0 E050	34.600 ch/wk	112.4	82.98 /ch	9,325	-	-	-	-	-	-	-	-	9,325	377	9,702
Environmental Engineers	-1	DOE O 435.1 Compliance	8.66 wk	0 E050	40.000 ch/wk	346.4	82.98 /ch	28,744	-	-	-	-	-	-	-	-	28,744	1,161	29,906
Environmental Engineers	-1	Focused Feasibility Study	6.50 wk	0 E050	34.600 ch/wk	224.7	82.98 /ch	18,648	-	-	-	-	-	-	-	-	18,648	753	19,401
Environmental Engineers	-1	RD / RA Work Plan (interim storage only)	2.17 wk	0 E050	40.000 ch/wk	86.6	82.98 /ch	7,186	-	-	-	-	-	-	-	-	7,186	290	7,476
Environmental Engineers	-1	Significance Evaluation / RL Interface	4.33 wk	0 E050	40.000 ch/wk	173.2	82.98 /ch	14,372	-	-	-	-	-	-	-	-	14,372	581	14,953
CERCLA Documentation(Includes NEPA)						**2,015.4**		**167,239**									**167,239**	**6,756**	**173,996**
NP03010111 CERCLA Documentation						2,015.4		167,239									167,239	6,756	173,996
NP03010211 Review Support																			
Environmental Engineers	-1	3FTEs/mo Hcz Analysis EMS	13.00 wk	0 E050	40.000 ch/wk	520.0	82.98 /ch	43,150	-	-	-	-	-	-	-	-	43,150	1,743	44,893
Review Support						**520.0**		**43,150**									**43,150**	**1,743**	**44,893**
NP03010211 Review Support						520.0		43,150									43,150	1,743	44,893
FY11 Fiscal Year 2011						**2,535.4**		**210,389**									**210,389**	**8,500**	**218,889**
FY12 Fiscal Year 2012																			
NP03010212 Review Support																			
Environmental Engineers	-1	3FTEs/mo Design	13.00 wk	0 E050	40.000 ch/wk	520.0	82.98 /ch	43,150	-	-	-	-	-	-	-	-	43,150	2,641	45,790
Review Support						**520.0**		**43,150**									**43,150**	**2,641**	**45,790**
NP03010212 Review Support						520.0		43,150									43,150	2,641	45,790
FY12 Fiscal Year 2012						**520.0**		**43,150**									**43,150**	**2,641**	**45,790**
FY13 Fiscal Year 2013																			
NP03010213 Review Support																			
Environmental Engineers	-1	3FTEs/mo Design	13.00 wk	0 E050	40.000 ch/wk	520.0	82.98 /ch	43,150	-	-	-	-	-	-	-	-	43,150	3,557	46,706
Review Support						**520.0**		**43,150**									**43,150**	**3,557**	**46,706**
NP03010213 Review Support						520.0		43,150									43,150	3,557	46,706
FY13 Fiscal Year 2013						**520.0**		**43,150**									**43,150**	**3,557**	**46,706**
FY14 Fiscal Year 2014																			
NP03010214 Review Support																			
Environmental Engineers	-1	3FTEs/mo Construction	13.00 wk	0 E050	40.000 ch/wk	520.0	82.98 /ch	43,150	-	-	-	-	-	-	-	-	43,150	4,491	47,641
Environmental Engineers	-1	3FTEs/mo Start Up 9SU)	13.00 wk	0 E050	40.000 ch/wk	520.0	82.98 /ch	43,150	-	-	-	-	-	-	-	-	43,150	4,491	47,641
Review Support						**1,040.0**		**86,299**									**86,299**	**8,982**	**95,281**
NP03010214 Review Support						1,040.0		86,299									86,299	8,982	95,281
FY14 Fiscal Year 2014						**1,040.0**		**86,299**									**86,299**	**8,982**	**95,281**
.03.01 Environmental Documentation						**4,615.4**		**382,987**									**382,987**	**23,679**	**406,667**
.03.03 Waste Acceptance																			
FY12 Fiscal Year 2012																			
NP03030112 Waste Acceptance																			
Environmental Engineers	-1	2eng -Waste Acceptance Criteria (WAC)	22.50 wk	0 E050	40.000 ch/wk	900.0	82.98 /ch	74,682	-	-	-	-	-	-	-	-	74,682	4,571	79,253
Environmental Engineers	-1	2 eng -Waste Profile	22.50 wk	0 E050	20.000 ch/wk	450.0	82.98 /ch	37,341	-	-	-	-	-	-	-	-	37,341	2,285	39,626
Managers & Executives	-1		2.00 wk	0 M020	40.000 ch/wk	80.0	102.62 /ch	8,210	-	-	-	-	-	-	-	-	8,210	502	8,712
Technical Writers & Editors	-1		2.25 wk	0 P160	40.000 ch/wk	90.0	66.18 /ch	5,956	-	-	-	-	-	-	-	-	5,956	365	6,321
Waste Acceptance						**1,520.0**		**126,189**									**126,189**	**7,723**	**133,912**
NP03030112 Waste Acceptance						1,520.0		126,189									126,189	7,723	133,912
FY12 Fiscal Year 2012						**1,520.0**		**126,189**									**126,189**	**7,723**	**133,912**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
.03.03 Waste Acceptance						1,520.0		126,189									126,189	7,723	133,912
.03 Environmental Doc., Permitting, & Waste Acceptance						**6,135.4**		**509,176**									**509,176**	**31,402**	**540,578**
.04 Nuclear Safety																			
.04.01 Nuclear Safety																			
FY10 Fiscal Year 2010																			
NP04010110 Hazard Analysis																			
Nuclear Engineers	-1		19.00 wk	0 E080	40.000 ch/wk	760.0	94.95 /ch	72,162	-	-	-	-	-	-	-	-	72,162	1,443	73,605
Hazard Analysis						**760.0**		**72,162**									**72,162**	**1,443**	**73,605**
NP04010110 Hazard Analysis						760.0		72,162									72,162	1,443	73,605
NP04010210 Accident Analysis																			
Nuclear Engineers	-1		18.00 wk	0 E080	80.000 ch/wk	1,440.0	94.95 /ch	136,728	-	-	-	-	-	-	-	-	136,728	2,735	139,463
Accident Analysis						**1,440.0**		**136,728**									**136,728**	**2,735**	**139,463**
NP04010210 Accident Analysis						1,440.0		136,728									136,728	2,735	139,463
NP04010310 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)																			
Nuclear Engineers	-1		13.00 wk	0 E080	40.000 ch/wk	520.0	94.95 /ch	49,374	-	-	-	-	-	-	-	-	49,374	987	50,361
Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						**520.0**		**49,374**									**49,374**	**987**	**50,361**
NP04010310 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						520.0		49,374									49,374	987	50,361
NP04010410 GAP Analysis																			
Chemical Engineers- E010	-1		8.00 wk	0 E010	40.000 ch/wk	320.0	81.66 /ch	26,131	-	-	-	-	-	-	-	-	26,131	523	26,654
GAP Analysis						**320.0**		**26,131**									**26,131**	**523**	**26,654**
NP04010410 GAP Analysis						320.0		26,131									26,131	523	26,654
NP04010510 Control Definitions																			
Nuclear Engineers	-1	2 ea	10.00 wk	0 E080	80.000 ch/wk	800.0	94.95 /ch	75,960	-	-	-	-	-	-	-	-	75,960	1,519	77,479
Control Definitions						**800.0**		**75,960**									**75,960**	**1,519**	**77,479**
NP04010510 Control Definitions						800.0		75,960									75,960	1,519	77,479
NP04010610 Conceptual Safety Design Report																			
Nuclear Engineers	-1	6FTE mo	36.00 wk	0 E080	40.000 ch/wk	1,440.0	94.95 /ch	136,728	-	-	-	-	-	-	-	-	136,728	2,735	139,463
Conceptual Safety Design Report						**1,440.0**		**136,728**									**136,728**	**2,735**	**139,463**
NP04010610 Conceptual Safety Design Report						1,440.0		136,728									136,728	2,735	139,463
NP04010710 Criticality Safety Analysis																			
Nuclear Engineers	-1		6.00 wk	0 E080	80.000 ch/wk	480.0	94.95 /ch	45,576	-	-	-	-	-	-	-	-	45,576	912	46,488
Criticality Safety Analysis						**480.0**		**45,576**									**45,576**	**912**	**46,488**
NP04010710 Criticality Safety Analysis						480.0		45,576									45,576	912	46,488
NP04010910 Fire Hazard Analysis																			
Nuclear Engineers	-1		6.00 wk	0 E080	40.000 ch/wk	240.0	94.95 /ch	22,788	-	-	-	-	-	-	-	-	22,788	456	23,244
Fire Hazard Analysis						**240.0**		**22,788**									**22,788**	**456**	**23,244**
NP04010910 Fire Hazard Analysis						240.0		22,788									22,788	456	23,244
NP04011010 EPHA																			
Nuclear Engineers	-1		39.00 wk	0 E080	40.000 ch/wk	1,560.0	94.95 /ch	148,122	-	-	-	-	-	-	-	-	148,122	2,962	151,084

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
EPHA						**1,560.0**		**148,122**									**148,122**	**2,962**	**151,084**
NP04011010 EPHA						1,560.0		148,122									148,122	2,962	151,084
FY10 Fiscal Year 2010						**7,560.0**		**713,569**									**713,569**	**14,271**	**727,841**
FY11 Fiscal Year 2011																			
NP04010111 Hazard Analysis																			
Nuclear Engineers	-1		13.30 wk	0 E080	40.000 ch/wk	532.0	94.95 /ch	50,513	-	-	-	-	-	-	-	-	50,513	2,041	52,554
Hazard Analysis						**532.0**		**50,513**									**50,513**	**2,041**	**52,554**
NP04010111 Hazard Analysis						532.0		50,513									50,513	2,041	52,554
NP04010211 Accident Analysis																			
Nuclear Engineers	-1		12.60 wk	0 E080	80.000 ch/wk	1,008.0	94.95 /ch	95,710	-	-	-	-	-	-	-	-	95,710	3,867	99,576
Accident Analysis						**1,008.0**		**95,710**									**95,710**	**3,867**	**99,576**
NP04010211 Accident Analysis						1,008.0		95,710									95,710	3,867	99,576
NP04010311 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)																			
Nuclear Engineers	-1		9.10 wk	0 E080	40.000 ch/wk	364.0	94.95 /ch	34,562	-	-	-	-	-	-	-	-	34,562	1,396	35,958
Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						**364.0**		**34,562**									**34,562**	**1,396**	**35,958**
NP04010311 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						364.0		34,562									34,562	1,396	35,958
NP04010411 GAP Analysis																			
Chemical Engineers- E010	-1		5.60 wk	0 E010	40.000 ch/wk	224.0	81.66 /ch	18,292	-	-	-	-	-	-	-	-	18,292	739	19,031
GAP Analysis						**224.0**		**18,292**									**18,292**	**739**	**19,031**
NP04010411 GAP Analysis						224.0		18,292									18,292	739	19,031
NP04010511 Control Definitions																			
Nuclear Engineers	-1	2 ea	7.00 wk	0 E080	80.000 ch/wk	560.0	94.95 /ch	53,172	-	-	-	-	-	-	-	-	53,172	2,148	55,320
Control Definitions						**560.0**		**53,172**									**53,172**	**2,148**	**55,320**
NP04010511 Control Definitions						560.0		53,172									53,172	2,148	55,320
NP04010611 Conceptual Safety Design Report																			
Nuclear Engineers	-1	6FTE mo	25.20 wk	0 E080	40.000 ch/wk	1,008.0	94.95 /ch	95,710	-	-	-	-	-	-	-	-	95,710	3,867	99,576
Preliminary Safety Design Report						**1,008.0**		**95,710**									**95,710**	**3,867**	**99,576**
NP04010611 Conceptual Safety Design Report						1,008.0		95,710									95,710	3,867	99,576
NP04010711 Criticality Safety Analysis																			
Nuclear Engineers	-1		4.20 wk	0 E080	80.000 ch/wk	336.0	94.95 /ch	31,903	-	-	-	-	-	-	-	-	31,903	1,289	33,192
Criticality Safety Analysis						**336.0**		**31,903**									**31,903**	**1,289**	**33,192**
NP04010711 Criticality Safety Analysis						336.0		31,903									31,903	1,289	33,192
NP04010911 Fire Hazard Analysis																			
Nuclear Engineers	-1		4.20 wk	0 E080	40.000 ch/wk	168.0	94.95 /ch	15,952	-	-	-	-	-	-	-	-	15,952	644	16,596
Fire Hazard Analysis						**168.0**		**15,952**									**15,952**	**644**	**16,596**
NP04010911 Fire Hazard Analysis						168.0		15,952									15,952	644	16,596
NP04011011 EPHA																			
Nuclear Engineers	-1		27.30 wk	0 E080	40.000 ch/wk	1,092.0	94.95 /ch	103,685	-	-	-	-	-	-	-	-	103,685	4,189	107,874
EPHA						**1,092.0**		**103,685**									**103,685**	**4,189**	**107,874**
NP04011011 EPHA						1,092.0		103,685									103,685	4,189	107,874

Alternate Storage Facility

CH2MHILL

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
FY11 Fiscal Year 2011						5,292.0		499,498									499,498	20,180	519,678
FY12 Fiscal Year 2012																			
NP04010112 Hazard Analysis																			
Nuclear Engineers	-1		7.60 wk	0 E080	40.000 ch/wk	304.0	94.95 /ch	28,865	-	-	-	-	-	-	-	-	28,865	1,767	30,631
Hazard Analysis						**304.0**		**28,865**									**28,865**	**1,767**	**30,631**
NP04010112 Hazard Analysis						304.0		28,865									28,865	1,767	30,631
NP04010212 Accident Analysis																			
Nuclear Engineers	-1		7.20 wk	0 E080	80.000 ch/wk	576.0	94.95 /ch	54,691	-	-	-	-	-	-	-	-	54,691	3,347	58,038
Accident Analysis						**576.0**		**54,691**									**54,691**	**3,347**	**58,038**
NP04010212 Accident Analysis						576.0		54,691									54,691	3,347	58,038
NP04010312 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)																			
Nuclear Engineers	-1		5.20 wk	0 E080	40.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	1,209	20,958
Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						**208.0**		**19,750**									**19,750**	**1,209**	**20,958**
NP04010312 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						208.0		19,750									19,750	1,209	20,958
NP04010412 GAP Analysis																			
Chemical Engineers- E010	-1		3.20 wk	0 E010	40.000 ch/wk	128.0	81.66 /ch	10,452	-	-	-	-	-	-	-	-	10,452	640	11,092
GAP Analysis						**128.0**		**10,452**									**10,452**	**640**	**11,092**
NP04010412 GAP Analysis						128.0		10,452									10,452	640	11,092
NP04010512 Control Definitions																			
Nuclear Engineers	-1	2 ea	4.00 wk	0 E080	80.000 ch/wk	320.0	94.95 /ch	30,384	-	-	-	-	-	-	-	-	30,384	1,860	32,244
Control Definitions						**320.0**		**30,384**									**30,384**	**1,860**	**32,244**
NP04010512 Control Definitions						320.0		30,384									30,384	1,860	32,244
NP04010612 Preliminary Safety Design Report																			
Nuclear Engineers	-1	6FTE mo	14.40 wk	0 E080	40.000 ch/wk	576.0	94.95 /ch	54,691	-	-	-	-	-	-	-	-	54,691	3,347	58,038
Preliminary Safety Design Report						**576.0**		**54,691**									**54,691**	**3,347**	**58,038**
NP04010612 Preliminary Safety Design Report						576.0		54,691									54,691	3,347	58,038
NP04010712 Criticality Safety Analysis																			
Nuclear Engineers	-1		2.40 wk	0 E080	80.000 ch/wk	192.0	94.95 /ch	18,230	-	-	-	-	-	-	-	-	18,230	1,116	19,346
Criticality Safety Analysis						**192.0**		**18,230**									**18,230**	**1,116**	**19,346**
NP04010712 Criticality Safety Analysis						192.0		18,230									18,230	1,116	19,346
NP04010912 Fire Hazard Analysis																			
Nuclear Engineers	-1		2.40 wk	0 E080	40.000 ch/wk	96.0	94.95 /ch	9,115	-	-	-	-	-	-	-	-	9,115	558	9,673
Fire Hazard Analysis						**96.0**		**9,115**									**9,115**	**558**	**9,673**
NP04010912 Fire Hazard Analysis						96.0		9,115									9,115	558	9,673
NP04011012 EPHA																			
Nuclear Engineers	-1		15.60 wk	0 E080	40.000 ch/wk	624.0	94.95 /ch	59,249	-	-	-	-	-	-	-	-	59,249	3,626	62,875
EPHA						**624.0**		**59,249**									**59,249**	**3,626**	**62,875**
NP04011012 EPHA						624.0		59,249									59,249	3,626	62,875
FY12 Fiscal Year 2012						**3,024.0**		**285,428**									**285,428**	**17,468**	**302,896**
FY13 Fiscal Year 2013																			
NP04010113 Hazard Analysis																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Nuclear Engineers	-1		5.70 wk	0 E080	40.000 ch/wk	228.0	94.95 /ch	21,649	-	-	-	-	-	-	-	-	21,649	1,784	23,433
Hazard Analysis						**228.0**		**21,649**									**21,649**	**1,784**	**23,433**
NP04010113 Hazard Analysis						228.0		21,649									21,649	1,784	23,433
NP04010213 Accident Analysis																			
Nuclear Engineers	-1		5.40 wk	0 E080	80.000 ch/wk	432.0	94.95 /ch	41,018	-	-	-	-	-	-	-	-	41,018	3,381	44,400
Accident Analysis						**432.0**		**41,018**									**41,018**	**3,381**	**44,400**
NP04010213 Accident Analysis						432.0		41,018									41,018	3,381	44,400
NP04010313 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)																			
Nuclear Engineers	-1		3.90 wk	0 E080	40.000 ch/wk	156.0	94.95 /ch	14,812	-	-	-	-	-	-	-	-	14,812	1,221	16,033
Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						**156.0**		**14,812**									**14,812**	**1,221**	**16,033**
NP04010313 Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563)						156.0		14,812									14,812	1,221	16,033
NP04010413 GAP Analysis																			
Chemical Engineers- E010	-1		2.40 wk	0 E010	40.000 ch/wk	96.0	81.66 /ch	7,839	-	-	-	-	-	-	-	-	7,839	646	8,486
GAP Analysis						**96.0**		**7,839**									**7,839**	**646**	**8,486**
NP04010413 GAP Analysis						96.0		7,839									7,839	646	8,486
NP04010513 Control Definitions																			
Nuclear Engineers	-1	2 ea	3.00 wk	0 E080	80.000 ch/wk	240.0	94.95 /ch	22,788	-	-	-	-	-	-	-	-	22,788	1,878	24,666
Control Definitions						**240.0**		**22,788**									**22,788**	**1,878**	**24,666**
NP04010513 Control Definitions						240.0		22,788									22,788	1,878	24,666
NP04010613 Preliminary Safety Design Report																			
Nuclear Engineers	-1	6FTE mo	10.80 wk	0 E080	40.000 ch/wk	432.0	94.95 /ch	41,018	-	-	-	-	-	-	-	-	41,018	3,381	44,400
Design Safety Analysis						**432.0**		**41,018**									**41,018**	**3,381**	**44,400**
NP04010613 Preliminary Safety Design Report						432.0		41,018									41,018	3,381	44,400
NP04010713 Criticality Safety Analysis																			
Nuclear Engineers	-1		1.80 wk	0 E080	80.000 ch/wk	144.0	94.95 /ch	13,673	-	-	-	-	-	-	-	-	13,673	1,127	14,800
Criticality Safety Analysis						**144.0**		**13,673**									**13,673**	**1,127**	**14,800**
NP04010713 Criticality Safety Analysis						144.0		13,673									13,673	1,127	14,800
NP04010913 Fire Hazard Analysis																			
Nuclear Engineers	-1		1.80 wk	0 E080	40.000 ch/wk	72.0	94.95 /ch	6,836	-	-	-	-	-	-	-	-	6,836	564	7,400
Fire Hazard Analysis						**72.0**		**6,836**									**6,836**	**564**	**7,400**
NP04010913 Fire Hazard Analysis						72.0		6,836									6,836	564	7,400
NP04011013 EPHA																			
Nuclear Engineers	-1		11.70 wk	0 E080	40.000 ch/wk	468.0	94.95 /ch	44,437	-	-	-	-	-	-	-	-	44,437	3,663	48,100
EPHA						**468.0**		**44,437**									**44,437**	**3,663**	**48,100**
NP04011013 EPHA						468.0		44,437									44,437	3,663	48,100
FY13 Fiscal Year 2013						**2,268.0**		**214,071**									**214,071**	**17,646**	**231,717**
.04.01 Nuclear Safety						**18,144.0**		**1,712,566**									**1,712,566**	**69,565**	**1,782,131**
.04 Nuclear Safety						**18,144.0**		**1,712,566**									**1,712,566**	**69,565**	**1,782,131**
.05 Radiological Control																			
.05.01 Radiological Control																			
FY10 Fiscal Year 2010																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
NP05050110 Nuclear Safety																			
Nuclear Engineers	-1	.1FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	395	20,145
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**395**	**20,145**
NP05050110 Nuclear Safety						208.0		19,750									19,750	395	20,145
FY10 Fiscal Year 2010						**208.0**		**19,750**									**19,750**	**395**	**20,145**
FY11 Fiscal Year 2011																			
NP05050111																			
Nuclear Engineers	-1	.1FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	798	20,547
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**798**	**20,547**
NP05050111						208.0		19,750									19,750	798	20,547
FY11 Fiscal Year 2011						**208.0**		**19,750**									**19,750**	**798**	**20,547**
FY12 Fiscal Year 2012																			
NP05050112 RADCON Engineering Support																			
Nuclear Engineers	-1	.1FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	1,209	20,958
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**1,209**	**20,958**
NP05050112 RADCON Engineering Support						208.0		19,750									19,750	1,209	20,958
FY12 Fiscal Year 2012						**208.0**		**19,750**									**19,750**	**1,209**	**20,958**
FY13 Fiscal Year 2013																			
NP05050113 RADCON Engineering Support																			
Nuclear Engineers	-1	.1FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	1,628	21,378
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**1,628**	**21,378**
NP05050113 RADCON Engineering Support						208.0		19,750									19,750	1,628	21,378
FY13 Fiscal Year 2013						**208.0**		**19,750**									**19,750**	**1,628**	**21,378**
FY14 Fiscal Year 2014																			
NP05050114 RADCON Engineering Support																			
Nuclear Engineers	-1	.1FTE	52.00 wk	0 E080	4.000 ch/wk	208.0	94.95 /ch	19,750	-	-	-	-	-	-	-	-	19,750	2,056	21,805
RADCON Engineering Support						**208.0**		**19,750**									**19,750**	**2,056**	**21,805**
NP05050114 RADCON Engineering Support						208.0		19,750									19,750	2,056	21,805
FY14 Fiscal Year 2014						**208.0**		**19,750**									**19,750**	**2,056**	**21,805**
FY15 Fiscal Year 2015																			
NP05050115 RADCON Engineering Support																			
Nuclear Engineers	-1	.1FTE	17.00 wk	0 E080	4.000 ch/wk	68.0	94.95 /ch	6,457	-	-	-	-	-	-	-	-	6,457	815	7,271
RADCON Engineering Support						**68.0**		**6,457**									**6,457**	**815**	**7,271**
NP05050115 RADCON Engineering Support						68.0		6,457									6,457	815	7,271
FY15 Fiscal Year 2015						**68.0**		**6,457**									**6,457**	**815**	**7,271**
.05.01 Radiological Control						**1,108.0**		**105,205**									**105,205**	**6,900**	**112,104**
.05 Radiological Control						**1,108.0**		**105,205**									**105,205**	**6,900**	**112,104**
.06 Industrial Safety																			
.06.01 Industrial Safety																			
FY10 Fiscal Year 2010																			
NP06060110 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	295	15,063
Industrial Safety						**208.0**		**14,768**									**14,768**	**295**	**15,063**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
NP06060110 Industrial Safety						208.0		14,768									14,768	295	15,063
FY10 Fiscal Year 2010						208.0		14,768									14,768	295	15,063
FY11 Fiscal Year 2011																			
NP06060111 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	597	15,365
Industrial Safety						208.0		14,768									14,768	597	15,365
NP06060111 Industrial Safety						208.0		14,768									14,768	597	15,365
FY11 Fiscal Year 2011						208.0		14,768									14,768	597	15,365
FY12 Fiscal Year 2012																			
NP06060112 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	904	15,672
Industrial Safety						208.0		14,768									14,768	904	15,672
NP06060112 Industrial Safety						208.0		14,768									14,768	904	15,672
FY12 Fiscal Year 2012						208.0		14,768									14,768	904	15,672
FY13 Fiscal Year 2013																			
NP06060113 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	1,217	15,985
Industrial Safety						208.0		14,768									14,768	1,217	15,985
NP06060113 Industrial Safety						208.0		14,768									14,768	1,217	15,985
FY13 Fiscal Year 2013						208.0		14,768									14,768	1,217	15,985
FY14 Fiscal Year 2014																			
NP06060114 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	52.00 wk	0 E120	4.000 ch/wk	208.0	71.00 /ch	14,768	-	-	-	-	-	-	-	-	14,768	1,537	16,305
Industrial Safety						208.0		14,768									14,768	1,537	16,305
NP06060114 Industrial Safety						208.0		14,768									14,768	1,537	16,305
FY14 Fiscal Year 2014						208.0		14,768									14,768	1,537	16,305
FY15 Fiscal Year 2015																			
NP06060115 Industrial Safety																			
Safety Engineer	-1	0.1 FTE	17.00 wk	0 E120	4.000 ch/wk	68.0	71.00 /ch	4,828	-	-	-	-	-	-	-	-	4,828	609	5,437
Industrial Safety						68.0		4,828									4,828	609	5,437
NP06060115 Industrial Safety						68.0		4,828									4,828	609	5,437
FY15 Fiscal Year 2015						68.0		4,828									4,828	609	5,437
.06.01 Industrial Safety						1,108.0		78,668									78,668	5,159	83,827
.06 Industrial Safety						1,108.0		78,668									78,668	5,159	83,827
.07 Quality Assurance																			
.07.01 Quality Assurance																			
FY10 Fiscal Year 2010																			
NP07070110 Industrial Safety																			
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 ch/wk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	626	31,930
Quality Assurance						416.0		31,304									31,304	626	31,930
NP07070110 Industrial Safety						416.0		31,304									31,304	626	31,930
FY10 Fiscal Year 2010						416.0		31,304									31,304	626	31,930
FY11 Fiscal Year 2011																			
NP07070111 Quality Assurance																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 chwk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	1,265	32,569
Quality Assurance						**416.0**		**31,304**									**31,304**	**1,265**	**32,569**
NP07070111 Quality Assurance						416.0		31,304									31,304	1,265	32,569
FY11 Fiscal Year 2011						**416.0**		**31,304**									**31,304**	**1,265**	**32,569**
FY12 Fiscal Year 2012																			
NP07070112 Quality Assurance																			
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 chwk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	1,916	33,220
Quality Assurance						**416.0**		**31,304**									**31,304**	**1,916**	**33,220**
NP07070112 Quality Assurance						416.0		31,304									31,304	1,916	33,220
FY12 Fiscal Year 2012						**416.0**		**31,304**									**31,304**	**1,916**	**33,220**
FY13 Fiscal Year 2013																			
NP07070113 Quality Assurance																			
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 chwk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	2,580	33,884
Quality Assurance						**416.0**		**31,304**									**31,304**	**2,580**	**33,884**
NP07070113 Quality Assurance						416.0		31,304									31,304	2,580	33,884
FY13 Fiscal Year 2013						**416.0**		**31,304**									**31,304**	**2,580**	**33,884**
FY14 Fiscal Year 2014																			
NP07070114 Quality Assurance																			
Quality Control Engineers	-1	0.2 FTE	52.00 wk	0 E110	8.000 chwk	416.0	75.25 /ch	31,304	-	-	-	-	-	-	-	-	31,304	3,258	34,562
Quality Assurance						**416.0**		**31,304**									**31,304**	**3,258**	**34,562**
NP07070114 Quality Assurance						416.0		31,304									31,304	3,258	34,562
FY14 Fiscal Year 2014						**416.0**		**31,304**									**31,304**	**3,258**	**34,562**
FY15 Fiscal Year 2015																			
NP07070115 Quality Assurance																			
Quality Control Engineers	-1	0.2 FTE	17.00 wk	0 E110	8.000 chwk	136.0	75.25 /ch	10,234	-	-	-	-	-	-	-	-	10,234	1,291	11,525
Quality Assurance						**136.0**		**10,234**									**10,234**	**1,291**	**11,525**
NP07070115 Quality Assurance						136.0		10,234									10,234	1,291	11,525
FY15 Fiscal Year 2015						**136.0**		**10,234**									**10,234**	**1,291**	**11,525**
.07.01 Quality Assurance						**2,216.0**		**166,754**									**166,754**	**10,936**	**177,690**
.07 Quality Assurance						**2,216.0**		**166,754**									**166,754**	**10,936**	**177,690**
.08 Safeguards & Security																			
.08.01 Safeguards & Security																			
FY10 Fiscal Year 2010																			
NP08080110 Design Review Of Conceptual Design																			
Administrative Assistants	-1		8.00 wk	0 G010	40.000 chwk	320.0	47.45 /ch	15,184	-	-	-	-	-	-	-	-	15,184	304	15,488
Safeguard & Security	-1		8.00 wk	0 P140	40.000 chwk	320.0	65.54 /ch	20,973	-	-	-	-	-	-	-	-	20,973	419	21,392
Safeguards & Security						**640.0**		**36,157**									**36,157**	**723**	**36,880**
NP08080110 Design Review Of Conceptual Design						640.0		36,157									36,157	723	36,880
FY10 Fiscal Year 2010						**640.0**		**36,157**									**36,157**	**723**	**36,880**
FY12 Fiscal Year 2012																			
NP08080112 Vulnerability Assessment																			
Administrative Assistants	-1		8.00 wk	0 G010	40.000 chwk	320.0	47.45 /ch	15,184	-	-	-	-	-	-	-	-	15,184	929	16,113
Safeguard & Security	-1		8.00 wk	0 P140	40.000 chwk	320.0	65.54 /ch	20,973	-	-	-	-	-	-	-	-	20,973	1,284	22,256
Safeguards & Security						**640.0**		**36,157**									**36,157**	**2,213**	**38,370**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
NP08080112 Vulnerability Assessment						640.0		36,157									36,157	2,213	38,370
FY12 Fiscal Year 2012						640.0		36,157									36,157	2,213	38,370
.08.01 Safeguards & Security						1,280.0		72,314									72,314	2,936	75,250
.08 Safeguards & Security						1,280.0		72,314									72,314	2,936	75,250
.09 Technology Development																			
.09.01 Technology Development																			
FY10 Fiscal Year 2010																			
NP09090110 Technology Development																			
Electrical Engineers	-1		52.00 wk	0 E040	40.000 chwk	2,080.0	79.21 /ch	164,757	-		-	-	-	-	-	-	164,757	3,295	168,052
Mechanical Engineers	-1		52.00 wk	0 E070	40.000 chwk	2,080.0	85.74 /ch	178,339	-		-	-	-	-	-	-	178,339	3,567	181,906
Nuclear Engineers	-1		52.00 wk	0 E080	40.000 chwk	2,080.0	94.95 /ch	197,496	-		-	-	-	-	-	-	197,496	3,950	201,448
Other Engineers	-1		52.00 wk	0 E130	40.000 chwk	2,080.0	106.23 /ch	220,958	-		-	-	-	-	-	-	220,958	4,419	225,378
Component / Scale Testing Materials	-1		1.00 ls				-	-	-		-	-	100,000.00 /s	100,000	-	-	100,000	10,300	110,300
Technology Development						**8,320.0**		**761,550**						**100,000**			**861,550**	**25,531**	**887,081**
NP09090110 Technology Development		Componet/Scale Testing				8,320.0		761,550						100,000			861,550	25,531	887,081
FY10 Fiscal Year 2010						**8,320.0**		**761,550**						**100,000**			**861,550**	**25,531**	**887,081**
FY11 Fiscal Year 2011																			
NP09090111 Technology Development																			
Electrical Engineers	-1		52.00 wk	0 E040	40.000 chwk	2,080.0	79.21 /ch	164,757	-		-	-	-	-	-	-	164,757	6,656	171,413
Mechanical Engineers	-1		52.00 wk	0 E070	40.000 chwk	2,080.0	85.74 /ch	178,339	-		-	-	-	-	-	-	178,339	7,205	185,544
Nuclear Engineers	-1		52.00 wk	0 E080	40.000 chwk	2,080.0	94.95 /ch	197,496	-		-	-	-	-	-	-	197,496	7,979	205,475
Other Engineers	-1		52.00 wk	0 E130	40.000 chwk	2,080.0	106.23 /ch	220,958	-		-	-	-	-	-	-	220,958	8,927	229,885
Full Scale Prototype Construction	-1		1.00 ls				-	-	-		-	-	250,000.00 /s	250,000	-	-	250,000	30,850	280,850
Technology Development						**8,320.0**		**761,550**						**250,000**			**1,011,550**	**61,617**	**1,073,167**
NP09090111 Technology Development		Full Scale Prototype Construction				8,320.0		761,550						250,000			1,011,550	61,617	1,073,167
FY11 Fiscal Year 2011						**8,320.0**		**761,550**						**250,000**			**1,011,550**	**61,617**	**1,073,167**
FY12 Fiscal Year 2012																			
NP09090112 Technology Development																			
Electrical Engineers	-1		52.00 wk	0 E040	40.000 chwk	2,080.0	79.21 /ch	164,757	-		-	-	-	-	-	-	164,757	10,083	174,840
Mechanical Engineers	-1		52.00 wk	0 E070	40.000 chwk	2,080.0	85.74 /ch	178,339	-		-	-	-	-	-	-	178,339	10,914	189,254
Nuclear Engineers	-1		52.00 wk	0 E080	40.000 chwk	2,080.0	94.95 /ch	197,496	-		-	-	-	-	-	-	197,496	12,087	209,583
Other Engineers	-1		52.00 wk	0 E130	40.000 chwk	2,080.0	106.23 /ch	220,958	-		-	-	-	-	-	-	220,958	13,523	234,481
Full Scale Integrated System Testing	-1		1.00 ls				-	-	-		-	-	100,000.00 /s	100,000	-	-	100,000	14,420	114,420
Technology Development						**8,320.0**		**761,550**						**100,000**			**861,550**	**61,027**	**922,577**
NP09090112 Technology Development		Full Scale Integrated System Testing				8,320.0		761,550						100,000			861,550	61,027	922,577
FY12 Fiscal Year 2012						**8,320.0**		**761,550**						**100,000**			**861,550**	**61,027**	**922,577**
FY13 Fiscal Year 2013																			
NP09090113 Technology Development																			
Electrical Engineers	-1		52.00 wk	0 E040	40.000 chwk	2,080.0	79.21 /ch	164,757	-		-	-	-	-	-	-	164,757	13,581	178,338
Mechanical Engineers	-1		52.00 wk	0 E070	40.000 chwk	2,080.0	85.74 /ch	178,339	-		-	-	-	-	-	-	178,339	14,701	193,040
Nuclear Engineers	-1		52.00 wk	0 E080	40.000 chwk	2,080.0	94.95 /ch	197,496	-		-	-	-	-	-	-	197,496	16,280	213,776
Other Engineers	-1		52.00 wk	0 E130	40.000 chwk	2,080.0	106.23 /ch	220,958	-		-	-	-	-	-	-	220,958	18,214	239,172
Full Scale Integrated System Testing	-1		1.00 ls				-	-	-		-	-	50,000.00 /s	50,000	-	-	50,000	8,272	58,272
Technology Development						**8,320.0**		**761,550**						**50,000**			**811,550**	**71,046**	**882,597**
NP09090113 Technology Development						8,320.0		761,550						50,000			811,550	71,046	882,597
FY13 Fiscal Year 2013						**8,320.0**		**761,550**						**50,000**			**811,550**	**71,046**	**882,597**
.09.01 Technology Development						33,280.0		3,046,202						500,000			3,546,202	219,221	3,765,422
.09 Technology Development						33,280.0		3,046,202						500,000			3,546,202	219,221	3,765,422
.10 Conceptual Design																			
.10.01 Conceptual Design																			
FY10 Fiscal Year 2010																			

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
NP10100110 Conceptual Design																			
Electrical Engineers	-1		36.00 wk	0 E040	40.000 ch/wk	1,440.0	79.21 /ch	114,062	-	-	-	-	-	-	-	-	114,062	2,281	116,344
Environmental Engineers	-1		36.00 wk	0 E050	40.000 ch/wk	1,440.0	82.98 /ch	119,491	-	-	-	-	-	-	-	-	119,491	2,390	121,881
Mechanical Engineers	-1		36.00 wk	0 E070	40.000 ch/wk	1,440.0	85.74 /ch	123,466	-	-	-	-	-	-	-	-	123,466	2,469	125,935
Nuclear Engineers	-1		36.00 wk	0 E080	40.000 ch/wk	1,440.0	94.95 /ch	136,728	-	-	-	-	-	-	-	-	136,728	2,735	139,463
Conceptual Design						**5,760.0**		**493,747**									**493,747**	**9,875**	**503,622**
NP10100110 Conceptual Design						5,760.0		493,747									493,747	9,875	503,622
FY10 Fiscal Year 2010						**5,760.0**		**493,747**									**493,747**	**9,875**	**503,622**
.10.01 Conceptual Design						**5,760.0**		**493,747**									**493,747**	**9,875**	**503,622**
.10 Conceptual Design						**5,760.0**		**493,747**									**493,747**	**9,875**	**503,622**
.11 Preliminary Design																			
.11.01 Preliminary Design																			
FY11 Fiscal Year 2011																			
NP11110111 Preliminary Design																			
Electrical Engineers	-4		30.00 wk	0 E040	40.000 ch/wk	1,200.0	79.21 /ch	95,052	-	-	-	-	-	-	-	-	95,052	3,840	98,892
Environmental Engineers	-4		30.00 wk	0 E050	40.000 ch/wk	1,200.0	82.98 /ch	99,576	-	-	-	-	-	-	-	-	99,576	4,023	103,599
Mechanical Engineers	-4		30.00 wk	0 E070	40.000 ch/wk	1,200.0	85.74 /ch	102,888	-	-	-	-	-	-	-	-	102,888	4,157	107,045
Nuclear Engineers	-4		30.00 wk	0 E080	40.000 ch/wk	1,200.0	94.95 /ch	113,940	-	-	-	-	-	-	-	-	113,940	4,603	118,543
Preliminary Design						**4,800.0**		**411,456**									**411,456**	**16,623**	**428,079**
NP11110111 Preliminary Design						4,800.0		411,456									411,456	16,623	428,079
FY11 Fiscal Year 2011						**4,800.0**		**411,456**									**411,456**	**16,623**	**428,079**
FY12 Fiscal Year 2012																			
NP11110112 Preliminary Design																			
Electrical Engineers	-4		24.00 wk	0 E040	40.000 ch/wk	960.0	79.21 /ch	76,042	-	-	-	-	-	-	-	-	76,042	4,654	80,695
Environmental Engineers	-4		24.00 wk	0 E050	40.000 ch/wk	960.0	82.98 /ch	79,661	-	-	-	-	-	-	-	-	79,661	4,875	84,536
Mechanical Engineers	-4		24.00 wk	0 E070	40.000 ch/wk	960.0	85.74 /ch	82,310	-	-	-	-	-	-	-	-	82,310	5,037	87,348
Nuclear Engineers	-4		24.00 wk	0 E080	40.000 ch/wk	960.0	94.95 /ch	91,152	-	-	-	-	-	-	-	-	91,152	5,579	96,731
Preliminary Design						**3,840.0**		**329,165**									**329,165**	**20,145**	**349,310**
NP11110112 Preliminary Design						3,840.0		329,165									329,165	20,145	349,310
FY12 Fiscal Year 2012						**3,840.0**		**329,165**									**329,165**	**20,145**	**349,310**
.11.01 Preliminary Design						**8,640.0**		**740,621**									**740,621**	**36,768**	**777,389**
.11 Preliminary Design						**8,640.0**		**740,621**									**740,621**	**36,768**	**777,389**
.12 Final Design																			
.12.01 Final Design																			
FY13 Fiscal Year 2013																			
NP12120113 Final Design																			
Electrical Engineers	-4		108.00 wk	0 E040	40.000 ch/wk	4,320.0	79.21 /ch	342,187	-	-	-	-	-	-	-	-	342,187	28,206	370,394
Environmental Engineers	-4		108.00 wk	0 E050	40.000 ch/wk	4,320.0	82.98 /ch	358,474	-	-	-	-	-	-	-	-	358,474	29,549	388,023
Mechanical Engineers	-4		108.00 wk	0 E070	40.000 ch/wk	4,320.0	85.74 /ch	370,397	-	-	-	-	-	-	-	-	370,397	30,532	400,929
Nuclear Engineers	-4		108.00 wk	0 E080	40.000 ch/wk	4,320.0	94.95 /ch	410,184	-	-	-	-	-	-	-	-	410,184	33,811	443,995
Final Design						**17,280.0**		**1,481,242**									**1,481,242**	**122,099**	**1,603,340**
NP12120113 Final Design						17,280.0		1,481,242									1,481,242	122,099	1,603,340
FY13 Fiscal Year 2013						**17,280.0**		**1,481,242**									**1,481,242**	**122,099**	**1,603,340**
.12.01 Final Design						**17,280.0**		**1,481,242**									**1,481,242**	**122,099**	**1,603,340**
.12 Final Design						**17,280.0**		**1,481,242**									**1,481,242**	**122,099**	**1,603,340**
.13 Engineering During Construction																			
.13.01 Engineering During Construction																			
FY14 Fiscal Year 2014																			
NP13130114 Engineering During Construction																			
Electrical Engineers	-4		72.00 wk	0 E040	40.000 ch/wk	2,880.0	79.21 /ch	228,125	-	-	-	-	-	-	-	-	228,125	23,743	251,868
Environmental Engineers	-4		72.00 wk	0 E050	40.000 ch/wk	2,880.0	82.98 /ch	238,982	-	-	-	-	-	-	-	-	238,982	24,873	263,856

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Mechanical Engineers	-4		72.00 wk	0 E070	40.000 chwk	2,880.0	85.74 /ch	246,931	-	-	-	-	-	-	-	-	246,931	25,701	272,632
Nuclear Engineers	-4		72.00 wk	0 E080	40.000 chwk	2,880.0	94.95 /ch	273,456	-	-	-	-	-	-	-	-	273,456	28,461	301,917
Engineering During Construction						**11,520.0**		**987,494**									**987,494**	**102,778**	**1,090,273**
NP13130114 Engineering During Construction						11,520.0		987,494									987,494	102,778	1,090,273
FY14 Fiscal Year 2014						**11,520.0**		**987,494**									**987,494**	**102,778**	**1,090,273**
.13.01 Engineering During Construction						**11,520.0**		**987,494**									**987,494**	**102,778**	**1,090,273**
.13 Engineering During Construction						**11,520.0**		**987,494**									**987,494**	**102,778**	**1,090,273**
.14 Procurement																			
.14.01 Procurement Support																			
FY13 Fiscal Year 2013																			
NP14140113 Procurement Support																			
Secretaries	-1		26.00 wk	0 G040	10.000 chwk	260.0	36.30 /ch	9,438	-	-	-	-	-	-	-	-	9,438	778	10,216
Buyers/Procurement/Contracting	-1		26.00 wk	0 P030	20.000 chwk	520.0	70.24 /ch	36,525	-	-	-	-	-	-	-	-	36,525	3,011	39,536
Procurement Support						**780.0**		**45,963**									**45,963**	**3,789**	**49,752**
NP14140113 Procurement Support						780.0		45,963									45,963	3,789	49,752
FY13 Fiscal Year 2013						**780.0**		**45,963**									**45,963**	**3,789**	**49,752**
FY14 Fiscal Year 2014																			
NP14140114 Procurement Support																			
Secretaries	-1		52.00 wk	0 G040	10.000 chwk	520.0	36.30 /ch	18,876	-	-	-	-	-	-	-	-	18,876	1,965	20,841
Buyers/Procurement/Contracting	-1		52.00 wk	0 P030	20.000 chwk	1,040.0	70.24 /ch	73,050	-	-	-	-	-	-	-	-	73,050	7,603	80,653
Procurement Support						**1,560.0**		**91,926**									**91,926**	**9,568**	**101,493**
NP14140114 Procurement Support						1,560.0		91,926									91,926	9,568	101,493
FY14 Fiscal Year 2014						**1,560.0**		**91,926**									**91,926**	**9,568**	**101,493**
.14.01 Procurement Support						**2,340.0**		**137,888**									**137,888**	**13,356**	**151,245**
.14.02 Equipment Procurement																			
FY13 Fiscal Year 2013																			
NP14020113 Equipment Procurement																			
Material Handling Heavy Duty Forklift , 92,000 lb capacity (42,000kg) Kalmar DRF 420-60S5	-3		1.00 ea			-	-	-	-	-	-	-	300,000.00 /ea	300,000	-	-	300,000	138,129	438,129
Heavy Duty Fork Lift														**300,000**			**300,000**	**138,129**	**438,129**
Steel plate, structural, for connections & stiffenners, 1" T, shop fabricated, incl shop primer	-3	Carbon steel Sheilding plate	370.00 sf					45.00 /sf	16,650								16,650	7,666	24,316
Steel plate, structural, for connections & stiffenners, 1" T, shop fabricated, incl shop primer	-3	Carbon steel Sheilding plate	370.00 sf			-	-	45.00 /sf	16,650	-	-	-	-	-	-	-	16,650	7,666	24,316
Steel plate, structural, for connections & stiffenners, 1" T, shop fabricated, incl shop primer	-3	Carbon steel Sheilding plate	370.00 sf			-	-	45.00 /sf	16,650	-	-	-	-	-	-	-	16,650	7,666	24,316
Steel plate, structural, for connections & stiffenners, 1" T, shop fabricated, incl shop primer	-3	Carbon steel Sheilding plate	370.00 sf			-	-	45.00 /sf	16,650	-	-	-	-	-	-	-	16,650	7,666	24,316
Steel plate, structural, for connections & stiffenners, 1" T, shop fabricated, incl shop primer	-3	Carbon steel Sheilding plate	370.00 sf			-	-	45.00 /sf	16,650	-	-	-	-	-	-	-	16,650	7,666	24,316
Steel plate, structural, for connections & stiffenners, 1" T, shop fabricated, incl shop primer	-3	Carbon steel Sheilding plate	370.00 sf			-	-	45.00 /sf	16,650	-	-	-	-	-	-	-	16,650	7,666	24,316
Gantry Cranes, movable , 80,000 lb capacity, 35' height range	-3	North American Industries George Wheelwright, Sales Manager Email February 20, 2009n 40 ton gantry crane, track, delivered & installed $240,000	1.00 ea										175,000.00 /ea	175,000			175,000	80,575	255,575
Gantry Cranes, track	-3	North American Industries George Wheelwright, Sales Manager Email February 20, 2009n 40 ton gantry crane, track, delivered & installed $240,000	1.00 ea			-	-	26,000.00 /ea	26,000	-	-	-	-	-	-	-	26,000	11,971	37,971
Gantry Cranes, 40tn Turn key Installation	-3	North American Industries George Wheelwright, Sales Manager Email February 20, 2009n 40 ton gantry crane, track, delivered & installed $240,000	1.00 ea				/ea	-	-	31,260.00 /ea	31,260	-	-	-	-	-	31,260	11,798	43,058
Gantry Cranes, Freight	-3	North American Industries George Wheelwright, Sales Manager Email February 20, 2009n	1.00 ea				/ea	-	-	17,280.00 /ea	17,280	-	-	-	-	-	17,280	6,522	23,802

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Gantry Cranes, Freight	-3	40 ton gantry crane, track, delivered & installed $240,000.	1.00 ea				/ea		-	-	17,280.00 /ea	17,280	-	-	-	-	17,280	6,522	23,802
Gantry Crane 40 ton										**125,900**		**48,540**		**175,000**			**349,440**	**156,864**	**506,304**
NP14020113 Equipment Procurement										125,900		48,540		475,000			649,440	294,993	944,433
FY13 Fiscal Year 2013										**125,900**		**48,540**		**475,000**			**649,440**	**294,993**	**944,433**
FY14 Fiscal Year 2014																			
NP14020114 Equipment Procurement																			
Welders- Shop Fab Transfer Bell	-3		4.00 wk	RODM2	40.000 ch/wk	320.0	91.63 /ch	14,660	-	-	-	-	-	-	-	-	14,660	5,851	20,511
Steel plate, structural, for connections & stiffenners, 5" T, shop fabricated, incl shop primer	-3		325.00 sf				-	-	225.00 /sf	73,125	-	-	-	-	-	-	73,125	35,252	108,377
Material Handling Hoists, electric overhead, chain, hook hung, 15' lift, 1 ton capacity	-3		1.00 ea				-	-	1,850.00 /ea	1,850	-	-	-	-	-	-	1,850	892	2,742
Material Handling Hoists, electric overhead, chain, hook hung, 15' lift, 5 ton capacity	-3		1.00 ea				-	-	5,525.00 /ea	5,525	-	-	-	-	-	-	5,525	2,663	8,188
Material Handling Hoists, electric overhead, chain, hook hung, 15' lift, 5 ton capacity	-3		1.00 ea				-	-	5,525.00 /ea	5,525	-	-	-	-	-	-	5,525	2,663	8,188
STSC TRansfer Bell						**320.0**		**14,660**		**86,025**							**100,685**	**47,322**	**148,007**
NP14020114 Equipment Procurement						320.0		14,660		86,025							100,685	47,322	148,007
NP15010914 Fabricate Concrete Storage Caissons																			
C.I.P. concrete forms, pile cap, triangular or hexogonal plywood, 1 use, includes erecting, bracing, stripping and cleaning	-5		38.33 sfca	C1	0.036 ch/sfca	5.2	192.00 /ch	248	3.11 /sfca	113	-	-	-	-	-	-	361	153	514
C.I.P. concrete forms, slab on grade, slab blockouts, wood, to 12" high, 1 use, includes erecting, bracing, stripping and cleaning	-5		18.50 lf	C1	0.040 ch/lf	3.0	192.00 /ch	142	0.60 /lf	11	-	-	-	-	-	-	153	62	215
High chairs, for reinforcing steel, individual, no plates, plastic, 12" high, includes material only	-5		0.10 c				-	-	610.00 /c	61	-	-	-	-	-	-	61	29	90
Reinforcing steel, in place, slab on grade, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	-5		0.23 ton	RODM4	3.478 ch/ton	3.2	183.26 /ch	145	890.00 /ton	202	-	-	-	-	-	-	347	155	502
Reinforcing steel, unload and sort, add to base	-5		0.23 ton	C5	0.080 ch/ton	0.1	323.16 /ch	6	-	-	-	-	98.25 /ch	2	-	-	8	3	11
Reinforcing steel, crane cost for handling, average, add	-5		0.23 ton	C5	0.087 ch/ton	0.1	323.16 /ch	6	-	-	-	-	98.25 /ch	2	-	-	8	3	12
Reinforcing steel, in place, dowels, deformed, 2' long, #6, A615, grade 60	-5		120.00 ea	RODM2	0.022 ch/ea	5.3	91.63 /ch	244	1.54 /ea	185	-	-	-	-	-	-	429	187	616
Structural concrete,ready mix,normal weight,4000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-5	Structural concrete, ready mix, normal weight, 4000 PSI, includes local aggregate, sand, portland cement and water, excludes all additives and treatments	3.10 cy				-	-	106.00 /cy	329	-	-	-	-	-	-	329	158	487
Structural concrete, placing, spread footing, direct chute, over 5 C.Y., includes vibrating, excludes material	-5		3.10 cy	C6	0.067 ch/cy	1.2	262.19 /ch	54	-	-	-	-	6.20 /ch	1	-	-	55	22	78
Concrete finishing, floors, monolithic, screed, float and hand trowel finish	-5		21.64 sf	C10	0.006 ch/sf	0.4	137.99 /ch	19	-	-	-	-	-	-	-	-	19	8	26
Concrete surface treatment, curing, sprayed membrane compound	-5		0.22 csf	CLAB2	0.084 ch/csf	0.0	85.86 /ch	2	4.79 /csf	1	-	-	-	-	-	-	3	1	4
Cutting, steel, to 1/2" thick, by hand, incl prep, torch cutting & grinding, excl staging	-5		2.00 lf	E25	0.025 ch/lf	0.1	57.15 /ch	3	-	-	-	-	11.13 /ch	1	-	-	3	1	5
Welding structural steel in field, single pass, 0.2 Lbs/L.F, 3/16" thick, continuous fillet, type 6011	-5		18.50 lf	E14	0.107 ch/lf	2.0	57.15 /ch	113	0.42 /lf	8	-	-	16.53 /ch	33	-	-	153	64	218
Weld stud, 5/8" dia x 8-3/16" L	-5		36.00 ea	E10	0.008 ch/ea	0.6	114.31 /ch	34	1.13 /ea	41	-	-	44.53 /ch	13	-	-	88	40	128
Weld rod, steel, 1/8" dia, less than 500#, type 7018 Low Hydrogen	-5		3.60 lb				-	-	1.99 /lb	7	-	-	-	-	-	-	7	3	11
Angle framing, structural steel, 3"x3"x3/8", field fabricated, incl cutting & welding	-5		37.00 lf	E3	0.140 ch/lf	15.6	171.46 /ch	890	4.75 /lf	176	-	-	16.53 /ch	86	-	-	1,152	481	1,633
Louver, aluminum, extruded, with screen, mill finish, brick vent, standard, 4" deep, 8" wide, 5" high	-5		2.00 ea	SHEE1	0.333 ch/ea	0.7	59.25 /ch	40	31.00 /ea	62	-	-	-	-	-	-	102	46	147
Air filter, HEPA filter complete w/particle board, kraft paper frame, separator material, 95% DOP efficiency, 150 CFM, 12" x 12" x 6"	-5		2.00 ea	SHEE1	2.162 ch/ea	4.3	59.25 /ch	256	42.00 /ea	84	-	-	-	-	-	-	340	143	483
Base Storage Caisson		**1 ea**				**41.8**		**2,202**		**1,279**				**137**			**3,618**	**1,561**	**5,180**
C.I.P. concrete forms, slab on grade, slab blockouts, wood, to 24" high, 1 use, includes erecting, bracing, stripping and cleaning	-5		4.00 lf	C1	0.067 ch/lf	1.1	192.00 /ch	51	0.75 /lf	3	-	-	-	-	-	-	54	22	76
Beam bolsters, for reinforcing steel, standard, lower, plain steel, 2-1/2" to 3" high, includes material only	-5		0.20 clf				-	-	82.50 /clf	17	-	-	-	-	-	-	17	8	24
Slab lifting inserts, double , galvanized, for CIP concrete, 1-1/4" diameter x 5" high, includes material only	-5		0.02 c				-	-	4,025.00 /c	81	-	-	-	-	-	-	81	39	119
Reinforcing steel, in place, slab on grade, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	-5		0.15 ton	RODM4	3.478 ch/ton	2.1	183.26 /ch	98	890.00 /ton	137	-	-	-	-	-	-	235	105	340
Reinforcing steel, unload and sort, add to base	-5		0.15 ton	C5	0.080 ch/ton	0.1	323.16 /ch	4	-	-	-	-	98.25 /ch	1	-	-	5	2	7
Reinforcing steel, crane cost for handling, average, add	-5		0.15 ton	C5	0.087 ch/ton	0.1	323.16 /ch	4	-	-	-	-	98.25 /ch	1	-	-	6	2	8
Structural concrete,ready mix,normal weight,4000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-5	Structural concrete, ready mix, normal weight, 4000 PSI, includes local aggregate, sand, portland cement and water, excludes all additives and treatments	3.05 cy				-	-	106.00 /cy	323	-	-	-	-	-	-	323	156	479
Structural concrete, placing, spread footing, direct chute, over 5 C.Y., includes vibrating, excludes material	-5		3.05 cy	C6	0.067 ch/cy	1.2	262.19 /ch	53					6.20 /ch	1			55	22	76
Concrete finishing, floors, monolithic, screed, float and hand trowel finish	-5		41.28 sf	C10	0.006 ch/sf	0.8	137.99 /ch	36	-	-	-	-	-	-	-	-	36	14	50
Concrete surface treatment, curing, sprayed membrane compound	-5		0.22 csf	CLAB2	0.084 ch/csf	0.0	85.86 /ch	2	4.79 /csf	1	-	-	-	-	-	-	3	1	4
Weld stud, 3/8" dia x 6-1/8" L	-5		46.00 ea	E10	0.008 ch/ea	0.7	114.31 /ch	40	0.42 /ea	19	-	-	44.53 /ch	16	-	-	76	33	109
Angle framing, structural steel, 2"x2"x1/4", field fabricated, incl cutting & welding	-5		91.00 lf	E3	0.089 ch/lf	24.3	171.46 /ch	1,387	2.11 /lf	192	-	-	16.53 /ch	134	-	-	1,713	711	2,423
Pipe, stainless steel, welded, 4" pipe size, schedule 40, type 304, includes weld joint and clevis type hangers 10' OC	-5	pipe sleeves	4.00 lf	Q15	0.205 ch/lf	1.6	143.94 /ch	118	37.00 /lf	148	-	-	7.03 /ch	8	-	-	272	121	393
Pipe, stainless steel, welded, 6" pipe size, schedule 40, type 304, includes weld joint and clevis type hangers 10' OC	-5	pipe sleeves	4.00 lf	Q16	0.216 ch/lf	2.6	215.91 /ch	187	65.00 /lf	260	-	-	7.03 /ch	6	-	-	453	203	656

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Top Storage Caisson		**1 ea**				**34.6**		**1,981**		**1,181**				**165**			**3,327**	**1,439**	**4,766**
High chair, for reinforcing steel, continous, plain steel, 4" high, legs 8" O.C., includes material only	-5		1.30 clf				-	-	104.00 /clf	135	-	-	-	-	-	-	135	65	200
Reinforcing steel, in place, walls, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	-5		1.64 ton	RODM4	2.667 ch/ton	17.5	183.26 /ch	802	890.00 /ton	1,461	-	-	-	-	-	-	2,264	1,025	3,289
Reinforcing steel, unload and sort, add to base	-5		1.64 ton	C5	0.080 ch/ton	0.9	323.16 /ch	42	-	-	-	-	98.25 /ch	13	-	-	55	23	79
Reinforcing steel, crane cost for handling, average, add	-5		1.64 ton	C5	0.087 ch/ton	1.0	323.16 /ch	46	-	-	-	-	98.25 /ch	14	-	-	60	25	85
Structural concrete,ready mix,normal weight,4000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-5	Structural concrete, ready mix, normal weight, 4000 PSI, includes local aggregate, sand, portland cement and water, excludes all additives and treatments	18.49 cy				-	-	106.00 /cy	1,960	-	-	-	-	-	-	1,960	945	2,905
Structural concrete, placing, walls, pumped, 12" thick, includes vibrating, excludes material	-5		18.49 cy	C20	0.073 ch/cy	10.8	352.16 /ch	474	-	-	-	-	97.23 /ch	131	-	-	604	252	856
Welding sainless steel in field, single pass, 0.1 Lb/LF, 1/8" thick, continuous fillet,	-5		50.00 lf	E14	0.085 ch/lf	4.3	57.15 /ch	244	0.84 /lf	42	-	-	16.53 /ch	70	-	-	356	151	508
Weld stud, 3/8" dia x 6-1/8" L	-5	top inside angle	32.00 ea	E10	0.008 ch/ea	0.5	114.31 /ch	28	0.42 /ea	13	-	-	44.53 /ch	11	-	-	53	23	76
Weld stud, 3/8" dia x 6-1/8" L	-5	center of wall angles kl receipt	88.00 ea	E10	0.008 ch/ea	1.4	114.31 /ch	77	0.42 /ea	37	-	-	44.53 /ch	30	-	-	144	63	208
Weld rod, stainless steel, 1/8" dia, less than 500#, type 316/316L	-5		5.00 lb				-	-	11.40 /lb	57	-	-	-	-	-	-	57	27	84
Angle framing, structural steel, 2"x2"x1/4", field fabricated, incl cutting & welding	-5	top inside angle & 2 middle angles	49.48 lf	E3	0.089 ch/lf	13.2	171.46 /ch	754	8.44 /lf	418	-	-	16.53 /ch	73	-	-	1,244	537	1,782
Angle framing, structural steel, 2"x2"x1/4", field fabricated, incl cutting & welding	-5	center of wall angles kl receipt	44.00 lf	E3	0.089 ch/lf	11.7	171.46 /ch	671	2.11 /lf	93	-	-	16.53 /ch	65	-	-	828	344	1,172
Stainless Steel plate, 1/4" T, warehouse price, no shop fabrication	-5	October 27 ENR - Atlanta	183.00 lb				-	-	2.19 /lb	401	-	-	-	-	-	-	401	193	594
Pipe, stainless steel, welded, 6" pipe size, schedule 40, type 304, includes weld joint and clevis type hangers 10' OC	-5	pipe sleeves	14.00 lf	Q16	0.216 ch/lf	9.1	215.91 /ch	654	65.00 /lf	910	-	-	7.03 /ch	21	-	-	1,585	710	2,295
Elbow, 90 Deg., stainless steel, long, butt weld, 6", schedule 5, type 304, includes the weld machine	-5		6.00 ea	Q16	1.865 ch/ea	33.6	215.91 /ch	2,416	175.00 /ea	1,050	-	-	7.03 /ch	79	-	-	3,544	1,508	5,053
Wall Storage Caisson		**1 ea**				**103.9**		**6,208**		**6,577**				**506**			**13,291**	**5,892**	**19,184**
Fabricate Concrete Storage Caisson	-5	29 ea	29.00 ea		180.300 ch/ea	5,228.7	57.63 /ch	301,330	9,037.00 /ea	262,073	-	-	809.00 /ea	23,461	-	-	586,864	257,905	844,769
Storage Caisson		**29 ea**				**5,228.7**		**301,330**		**262,073**				**23,461**			**586,864**	**257,905**	**844,769**
NP15010914 Fabricate Concrete Storage Caissons						5,409.0		311,721		271,110				24,270			607,100	266,798	873,898
FY14 Fiscal Year 2014						**5,729.0**		**326,381**		**357,135**				**24,270**			**707,786**	**314,120**	**1,021,905**
.14.02 Equipment Procurement						**5,729.0**		**326,381**		**483,035**		**48,540**		**499,270**			**1,357,226**	**609,113**	**1,966,338**
.14 Procurement						**8,069.0**		**464,270**		**483,035**		**48,540**		**499,270**			**1,495,114**	**622,469**	**2,117,583**
.15 Construction																			
.15.01 New Construction - Storage Pad																			
FY14 Fiscal Year 2014																			
NP15010114 Field Staff																			
Project Manager	-2		28.00 wk	zPM	40.000 ch/wk	1,120.0	101.69 /ch	113,889	-	-	-	-	-	-	-	-	113,889	45,451	159,340
Project Project Engineer	-2		28.00 wk	zPE	40.000 mh/wk	1,120.0	91.36 /mh	102,322	-	-	-	-	-	-	-	-	102,322	40,835	143,157
Superintendent	-2		28.00 wk	zSupt	40.000 mh/wk	1,120.0	96.30 /mh	107,853	-	-	-	-	-	-	-	-	107,853	43,042	150,894
Field Engineer	-2		28.00 wk	zFE	40.000 mh/wk	1,120.0	64.20 /mh	71,901	-	-	-	-	-	-	-	-	71,901	28,694	100,595
Health & Safety	-2		28.00 wk	zH&S	40.000 mh/wk	1,120.0	83.95 /mh	94,024	-	-	-	-	-	-	-	-	94,024	37,523	131,547
Quality Assurance / Quality Control	-2		28.00 wk	zQC	40.000 mh/wk	1,120.0	83.95 /mh	94,024	-	-	-	-	-	-	-	-	94,024	37,523	131,547
Radiation Control Technician	-2		28.00 wk	zRCT	40.000 mh/wk	1,120.0	64.20 /mh	71,901	-	-	-	-	-	-	-	-	71,901	28,694	100,595
Project Controls - Estimating, Scheduling	-2		28.00 wk	zPC	40.000 mh/wk	1,120.0	54.49 /mh	61,023	-	-	-	-	-	-	-	-	61,023	24,353	85,376
Time Keeper	-2		28.00 wk	zTime	40.000 mh/wk	1,120.0	39.73 /mh	44,495	-	-	-	-	-	-	-	-	44,495	17,757	62,253
Clerk	-2		28.00 wk	zClerk	40.000 mh/wk	1,120.0	14.43 /mh	16,165	-	-	-	-	-	-	-	-	16,165	6,451	22,616
Field Staff						**11,200.0**		**777,597**									**777,597**	**310,323**	**1,087,920**
NP15010114 Field Staff						11,200.0		777,597									777,597	310,323	1,087,920
NP15010214 Field Office																			
Office Trailer, furnished, rent per month, 50' x 12', excl. hookups	-3		1.00 ea				-	-	375.00 /ea	375	-	-	-	-	-	-	375	181	556
Field Office Expense, office equipment rental, average	-3		7.00 mo				-	-	150.00 /mo	1,050	-	-	-	-	-	-	1,050	506	1,556
Field Office Expense, office supplies, average	-3		7.00 mo				-	-	95.00 /mo	665	-	-	-	-	-	-	665	321	986
Field Office Expense, telephone bill, avg. bill/month, incl. long dist.	-3		7.00 mo				-	-	210.00 /mo	1,470	-	-	-	-	-	-	1,470	709	2,179
Field Office Expense, field office lights & HVAC	-3		7.00 mo				-	-	110.00 /mo	770	-	-	-	-	-	-	770	371	1,141
Field Office										**4,330**							**4,330**	**2,087**	**6,417**
NP15010214 Field Office										4,330							4,330	2,087	6,417
NP15010314 Prepare Subgrade, Place Base, & Pavement																			
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul	-4	Storage Area Pad	158.00 cy	B10B	0.020 ch/cy	4.8	68.51 /ch	219	-	-	-	-	133.88 /ch	427	-	-	646	293	939
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul	-4	Paved Roadway	232.40 cy	B10B	0.020 ch/cy	7.0	68.51 /ch	322	-	-	-	-	133.88 /ch	628	-	-	950	431	1,381
Strip Top Soil		**280' x 130' x 0.5'**				**11.8**		**540**						**1,056**			**1,596**	**725**	**2,321**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Fine grading, fine grade for slab on grade, machine	-4		948.00 sy	B11L	0.017 ch/sy	31.8	89.98 /ch	1,432	-	-	-	-	66.80 /ch	1,063	-	-	2,495	1,084	3,579
Excavating, bulk bank measure, backhoe, hyd, 3.5 CY cap = 300 CY/hr	-4	gravel area	765.00 bcy	B12D	0.007 ch/bcy	11.1	89.98 /ch	500	-	-	-	-	292.13 /ch	1,625	-	-	2,125	983	3,108
Hauling, excavated or borrow material, loose cubic yards, 1/4 mile round trip, 3.7 loads/hour, 12 C.Y. dump truck, highway haulers, excludes loading	-4	gravel area	879.00 lcy	B34B	0.061 ch/cy	53.3	48.02 /ch	2,560	-	-	-	-	62.85 /ch	3,351	-	-	5,911	2,637	8,549
Excavation		**270' x 130' x .5'**				**96.3**		**4,493**						**6,039**			**10,532**	**4,704**	**15,236**
Aggregate for earthwork,crushed stone,1.40 tons per cy, 3/4",spread with 200 hp dozer,includes load pit and haul,2 miles rnd trip,excludes compaction	-4	Aggregate for earthwork, crushed stone, 1.40 tons per C.Y., 3/4", spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction	374.00 cy	B15	0.029 ch/cy	38.1	164.55 /ch	1,791	46.50 /cy	17,391	-	-	259.58 /ch	2,825	-	-	22,007	10,460	32,467
Hauling, excavated or borrow material, loose cubic yards, 20 mile round trip, 0.5 loads/hour, 20 C.Y. dump trailer, highway haulers, excludes loading	-4		430.00 lcy	B34D	0.224 ch/cy	96.3	48.02 /ch	4,624	-	-	-	-	72.18 /ch	6,950	-	-	11,573	5,195	16,769
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	-4		430.00 ecy	B10G	0.013 ch/ecy	8.7	68.51 /ch	596	-	-	-	-	125.75 /ch	726	-	-	1,122	508	1,630
Backfill						**143.0**		**6,810**		**17,391**				**10,501**			**34,702**	**16,164**	**50,866**
Fine grading, fine grade for slab on grade, machine	-4		1,394.00 sy	B11L	0.017 ch/sy	46.8	89.98 /ch	2,106	-	-	-	-	66.80 /ch	1,563	-	-	3,669	1,594	5,264
Base course drainage layers,aggregate base course for roadways and large paved areas,crushed stone base,compacted,crushed 1-1/2"stone base,6"deep	-4	Base course drainage layers, aggregate base course for roadways and large paved areas, crushed stone base, compacted, crushed 1-1/2" stone base, to 6" deep	1,394.00 sy	B36B	0.003 ch/sy	36.0	364.99 /ch	1,643	9.70 /sy	13,522	-	-	439.03 /ch	1,977	-	-	17,142	8,127	25,269
Plant-mix asphalt paving, for highways and large paved areas, binder course, 4" thick	-4		1,394.00 sy	B25	0.004 ch/sy	64.6	484.58 /ch	2,844	11.30 /sy	15,752	-	-	295.48 /ch	1,734	-	-	20,330	9,565	29,895
Plant-mix asphalt paving, for highways and large paved areas, wearing course, 2" thick	-4		1,394.00 sy	B25B	0.003 ch/sy	46.0	531.63 /ch	2,038	6.35 /sy	8,852	-	-	322.85 /ch	1,238	-	-	12,128	5,677	17,805
Base & Pavement		**Drive Ways**				**193.4**		**8,631**		**38,126**				**6,512**			**53,269**	**24,964**	**78,233**
NP15010314 Prepare Subgrade, Place Base, & Pavement						**444.5**		**20,474**		**55,517**				**24,108**			**100,099**	**46,556**	**146,655**
NP15010414 Concrete																			
Concrete testing, cement, physical tests	-4		14.88 ea				-	-	-	-	-	-	-	-	318.00 /ea	4,732	4,732	1,888	6,620
Concrete testing, compressive strength test, incl. delivery to lab per cylinder	-4		4.96 ea				-	-	-	-	-	-	-	-	12.00 /ea	60	60	24	83
C.I.P. concrete forms, slab on grade, edge, wood, 7" to 12" high, 4 use, includes erecting, bracing, stripping and cleaning	-4		444.00 sfca	C1	0.040 ch/sfca	71.3	192.00 /ch	3,423	0.70 /sfca	311	-	-	-	-	-	-	3,734	1,516	5,249
Slab bolsters, for reinforcing steel, continuous, plain steel, 3/4" to 1" high, includes material only	-4		22.32 clf				-	-	55.00 /clf	1,228	-	-	-	-	-	-	1,228	592	1,819
Reinforcing steel, in place, slab on grade, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	-4		18.49 ton	RODM4	7.594 ch/ton	561.6	183.26 /ch	25,729	890.00 /ton	16,453	-	-	-	-	-	-	42,182	18,200	60,382
Structural concrete,ready mix,normal weight,4000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-4	Structural concrete, ready mix, normal weight, 4000 PSI, includes local aggregate, sand, portland cement and water, excludes all additives and treatments	248.00 cy				-	-	106.00 /cy	26,288	-	-	-	-	-	-	26,288	12,673	38,961
Structural concrete, placing, slab on grade, pumped, over 6" thick, includes vibrating, excludes material	-4		248.00 cy	C20	0.094 ch/cy	187.3	352.16 /ch	8,245	-	-	-	-	97.23 /ch	2,276	-	-	10,522	4,388	14,910
Concrete finishing, floors, monolithic, screed and bull float(darby) finish	-4		6,696.00 sf	C10	0.004 ch/sf	87.8	137.99 /ch	4,038	-	-	-	-	-	-	-	-	4,038	1,611	5,649
Concrete finishing, floors, monolithic, machine trowel finish	-4		6,696.00 sf	C10C	0.010 ch/sf	204.3	137.99 /ch	9,397	-	-	-	-	4.98 /ch	339	-	-	9,736	3,913	13,649
Concrete surface treatment, curing, sprayed membrane compound	-4		66.96 csf	CLAB2	0.184 ch/csf	24.8	85.86 /ch	1,057	4.79 /csf	321	-	-	-	-	-	-	1,378	576	1,954
Fine grading, fine grade for slab on grade, machine	-4		744.00 sy	B11L	0.017 ch/sy	25.0	89.98 /ch	1,124	-	-	-	-	66.80 /ch	834	-	-	1,958	851	2,809
Fine grading, fine grade for slab on grade, hand grading	-4		74.40 sy	B18	0.025 ch/sy	5.6	128.79 /ch	239	-	-	-	-	4.80 /ch	9	-	-	248	100	348
SOGn		**186'x36'x1' for 30 caissons**				**1,167.5**		**53,252**		**44,601**				**3,459**		**4,791**	**106,102**	**46,332**	**152,435**
Concrete testing, cement, physical tests	-4		2.87 ea				-	-	-	-	-	-	-	-	318.00 /ea	914	914	365	1,279
Concrete testing, compressive strength test, incl. delivery to lab per cylinder	-4		8.62 ea				-	-	-	-	-	-	-	-	12.00 /ea	103	103	41	145
C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning	-4		1,940.00 sfca	C1	0.047 ch/sfca	361.4	192.00 /ch	17,346	5.25 /sfca	10,185	-	-	-	-	-	-	27,531	11,833	39,364
Beam bolsters, for reinforcing steel, standard, lower, plain steel, up to 1-1/2" high, includes material only	-4		5.17 clf				-	-	65.00 /clf	336	-	-	-	-	-	-	336	162	498
Reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	-4		5.53 ton	RODM4	8.318 ch/ton	184.0	183.26 /ch	8,429	890.00 /ton	4,922	-	-	-	-	-	-	13,351	5,737	19,088
Structural concrete,ready mix,normal weight,4000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-4	Structural concrete, ready mix, normal weight, 4000 PSI, includes local aggregate, sand, portland cement and water, excludes all additives and treatments	143.70 cy				-	-	106.00 /cy	15,233	-	-	-	-	-	-	15,233	7,343	22,576
Structural concrete, placing, continuous footing, shallow, direct chute, includes vibrating, excludes material	-4		143.70 cy	C6	0.146 ch/cy	125.5	262.19 /ch	5,485	-	-	-	-	6.20 /ch	130	-	-	5,614	2,251	7,866
Concrete surface treatment, curing, sprayed membrane compound	-4		15.52 csf	CLAB2	0.184 ch/csf	5.7	85.86 /ch	245	4.79 /csf	74	-	-	-	-	-	-	319	134	453
Rail Footing						**676.6**		**31,505**		**30,750**				**130**		**1,017**	**63,402**	**27,866**	**91,268**
NP15010414 Concrete						**1,844.1**		**84,757**		**75,350**				**3,588**		**5,809**	**169,505**	**74,198**	**243,703**
NP15010514 Install Security Fence & Type 4 Barrier																			
Parking gates, barrier gate with programmable controller, industrial	-4		2.00 ea	ELEC2	5.822 ch/ea	23.3	119.21 /ch	1,388	4,425.00 /ea	8,850	-	-	-	-	-	-	10,238	4,820	15,059
Grounding rod, copper clad, 8' long, 3/4" diameter	-4		8.00 ea	ELEC1	3.296 ch/ea	19.8	57.13 /ch	1,130	27.00 /ea	162	-	-	-	-	-	-	1,292	529	1,821
Ground clamp, bronze, 3/4" diameter	-4		12.00 ea	ELEC1	0.546 ch/ea	6.6	57.13 /ch	374	6.60 /ea	79	-	-	-	-	-	-	453	188	641
Ground wire, ground bare armored, #6-1 conductor	-4		8.60 clf	ELEC1	9.704 ch/clf	83.5	57.13 /ch	4,767	131.00 /clf	1,127	-	-	-	-	-	-	5,894	2,446	8,340

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Excavating, chain trencher, utility trench, common earth, 12 H.P., 4" wide, 24" deep, chain trencher, operator walking	-4		860.00 lf	B53	0.025 ch/lf	21.5	42.79 /ch	918	-	-	-	-	7.05 /ch	151	-	-	1,070	439	1,509
Excavating, chain trencher, utility trench, common earth, 4" wide, 24" deep, backfill by hand, includes backfill & compaction, add	-4		860.00 lf	A1G	0.044 ch/lf	37.6	38.51 /ch	1,446	-	-	-	-	5.38 /ch	202	-	-	1,648	674	2,322
Fence,chain link industrial,galvanized steel,3 strands barb wire,2"posts @ 10'oc,9ga wire,6'high,schedule 40,includes excavation,& concrete	-4	Fence, chain link industrial, galvanized steel, 3 strands barb wire, 2" posts @ 10' OC, 9 ga. wire, 6' high, schedule 40, includes excavation, & concrete	860.00 lf	B80C	0.073 ch/lf	187.7	133.88 /ch	8,378	14.60 /lf	12,556	-	-	23.25 /ch	1,455	-	-	22,389	10,098	32,488
Fence, chain link industrial, double swing gates, 5' high, 12' opening, includes excavation, in concrete	-4		1.00 opng	B80C	5.137 ch/opng	15.4	133.88 /ch	688	495.00 /opng	495	-	-	23.25 /ch	119	-	-	1,302	571	1,873
Security vehicle barriers, concrete barrier, jersey, 10' L x 2' by 0.5' W x 30" H, 10 or more same site	-4		90.00 ea	B21B	0.728 ch/ea	327.5	218.77 /ch	14,330	330.00 /ea	29,700	-	-	95.80 /ch	6,275	-	-	50,305	23,061	73,366
Install Security Fence						**722.8**		**33,420**		**52,969**				**8,203**			**94,591**	**42,827**	**137,418**
NP15010514 Install Security Fence & Type 4 Barrier						722.8		33,420		52,969				8,203			94,591	42,827	137,418
NP15010614 Install conduit, wire, & light pole																			
Structural concrete,ready mix,normal weight,2000 psi,includes local aggregate,sand,portland cement and water,excludes all additives and treatments	-4	Structural concrete, ready mix, normal weight, 2000 psi, includes local aggregate, sand, portland cement and water, excludes all additives and treatments	7.00 cy			-	-	-	97.00 /cy	679	-	-	-	-	-	-	679	327	1,006
Structural concrete, placing, continuous footing, shallow, direct chute, includes vibrating, excludes material	-4		7.00 cy	C6	0.146 ch/cy	6.1	262.19 /ch	267	-	-	-	-	6.20 /ch	6	-	-	273	110	383
PVC conduit elbows, 1" diameter, to 15' H	-4		8.00 ea	ELEC1	0.499 ch/ea	4.0	59.61 /ch	238	2.69 /ea	22	-	-	-	-	-	-	260	105	365
Elctrcl undrgrn ducts and manholes,undrgrn duct banks ready for concrete fill,pvc,type eb,4 @ 2"dm,excludes excavation,backfill and cast place concrete	-4	Electrical Underground Ducts and Manholes, underground duct banks ready for concrete fill, PVC, type EB, 4 @ 2" diameter, excludes excavation, backfill and cast in place concrete	150.00 lf	ELEC2	0.146 ch/lf	43.7	119.21 /ch	2,603	3.43 /lf	515	-	-	-	-	-	-	3,118	1,287	4,404
Elctrcl undrgrn ducts and manholes,undrgrn duct banks ready for concrete fill,pvc,type eb,4 @ 2"dm,excludes excavation,backfill and cast place concrete	-4	Electrical Underground Ducts and Manholes, underground duct banks ready for concrete fill, PVC, type EB, 4 @ 2" diameter, excludes excavation, backfill and cast in place concrete	150.00 lf	ELEC2	0.146 ch/lf	43.7	119.21 /ch	2,603	3.43 /lf	515	-	-	-	-	-	-	3,118	1,287	4,404
Electrical underground ducts and manholes,underground duct banks,for reinforcing rods,#4 - #7,excludes excavation,backfill and cast place concrete,add	-4	Electrical Underground Ducts and Manholes, underground duct banks, for reinforcing rods, #4 - #7, excludes excavation, backfill and cast in place concrete, add	0.63 ton	RODM2	15.879 ch/ton	19.9	91.63 /ch	914	935.00 /ton	587	-	-	-	-	-	-	1,501	648	2,149
Electrical Underground Ducts and Manholes, underground duct banks, PVC, cement, quart	-4		2.00 ea				-	-	25.00 /ea	50	-	-	-	-	-	-	50	24	74
Electrical Underground Ducts and Manholes, nylon polyethylene pull rope, 1/4"	-4		1,200.00 lf	ELEC2	0.009 ch/lf	21.0	119.21 /ch	1,249	0.10 /lf	120	-	-	-	-	-	-	1,369	556	1,925
Duct bank		**18" x 10" - 8 ea 2"dia conduit**				**138.3**		**7,874**		**2,487**				**6**			**10,367**	**4,344**	**14,711**
Anchor bolts, J-type, 3/4" diameter x 24" long, includes nut and washer	-4	Site lighting - 4 per light pole	24.00 ea	CARP1	0.349 ch/ea	8.4	45.93 /ch	385	3.59 /ea	86	-	-	-	-	-	-	471	195	666
Structural concrete, in place, column, round, max reinforcing, 24" diameter, includes forms(4 uses), reinforcing steel, and finishing	-4	Site lighting	2.25 cy	C14A	0.955 ch/cy	53.7	1,169.96 /ch	2,514	685.00 /cy	1,541	-	-	94.13 /ch	202	-	-	4,258	1,844	6,101
Mineral insulated cable, 3 conductor, 600 volt, #6	-4	direct burial	9.00 clf	ELEC1	17.467 ch/clf	157.2	59.61 /ch	9,370	1,375.00 /clf	12,375	-	-	-	-	-	-	21,745	9,705	31,451
Grounding rod, copper clad, 8' long, 3/4" diameter	-4		6.00 ea	ELEC1	3.296 ch/ea	19.8	57.13 /ch	1,130	27.00 /ea	162	-	-	-	-	-	-	1,292	529	1,821
Ground clamp, bronze, 3/4" diameter	-4		12.00 ea	ELEC1	0.546 ch/ea	6.6	57.13 /ch	374	6.60 /ea	79	-	-	-	-	-	-	453	188	641
Ground wire, ground bare armored, #6-1 conductor	-4		1.00 clf	ELEC1	9.704 ch/clf	9.7	57.13 /ch	554	131.00 /clf	131	-	-	-	-	-	-	685	284	970
Light poles, aluminum, bracket arms, 1 arm	-4	Site lighting	6.00 ea	ELEC1	2.183 ch/ea	13.1	57.13 /ch	748	109.00 /ea	654	-	-	-	-	-	-	1,402	614	2,016
Light poles, anchor base, galvanized steel, 40' high, excl concrete bases	-4		6.00 ea	R3	10.275 ch/ea	154.1	142.74 /ch	8,799	1,575.00 /ea	9,450	-	-	16.18 /ch	997	-	-	19,247	8,548	27,795
Floodlights, exterior, metal halide, 1500 watt, incl ballast and lamp, excl pole	-4	Site lighting	6.00 ea	ELEC2	4.721 ch/ea	56.7	114.25 /ch	3,238	580.00 /ea	3,480	-	-	-	-	-	-	6,716	2,969	9,685
Excavating, chain trencher, utility trench, common earth, 12 H.P., 4" wide, 24" deep, chain trencher, operator walking	-4		60.00 lf	B53	0.025 ch/lf	1.5	42.79 /ch	64	-	-	-	-	7.05 /ch	11	-	-	75	31	105
Excavating, chain trencher, utility trench, common earth, 4" wide, 24" deep, backfill by hand, includes backfill & compaction, add	-4		60.00 lf	A1G	0.044 ch/lf	2.6	38.51 /ch	101	-	-	-	-	5.38 /ch	14	-	-	115	47	162
Excavating, utility trench, plow, single cable, plowed into coarse material	-4		860.00 lf	B54C	0.009 ch/lf	15.0	89.98 /ch	676	-	-	-	-	120.93 /ch	908	-	-	1,583	707	2,291
Utility Line Signs, Markers, and Flags, vinyl, aluminum foil core, detectable, 6", excludes excavation and backfill	-4	Site lighting	8.60 clf	CLAB1	0.125 ch/clf	1.1	38.51 /ch	41	5.00 /clf	43	-	-	-	-	-	-	84	37	122
Electrical Utility Poles, digging holes in rock, average	-4	Site lighting	6.00 ea	R5	3.873 ch/ea	255.6	549.35 /ch	12,766	-	-	-	-	156.18 /ch	3,629	-	-	16,395	6,844	23,239
Light Pole						**755.0**		**40,759**		**28,002**				**5,761**			**74,522**	**32,543**	**107,065**
Wire connectors, screw type, #22 to #14	-4		360.00 ea	ELEC1	0.031 ch/ea	11.1	59.61 /ch	660	0.08 /ea	29	-	-	-	-	-	-	689	277	966
Control cable, copper, THHN wire with PVC jacket, 600 V, 3 wires, #14	-4		549.00 clf	ELEC1	1.000 ch/clf	549.0	59.61 /ch	32,724	31.50 /clf	17,294	-	-	-	-	-	-	50,017	21,396	71,413
Rigid galvanized steel conduit, 2" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	-4		300.00 lf	ELEC1	0.178 ch/lf	53.3	59.61 /ch	3,179	7.55 /lf	2,265	-	-	-	-	-	-	5,444	2,361	7,805
Pull boxes, sheet metal, type SC, raintight & weatherproof, 20" L x 20" W x 6" D, NEMA 3R	-4		6.00 ea	ELEC1	2.000 ch/ea	12.0	59.61 /ch	715	133.00 /ea	798	-	-	-	-	-	-	1,513	670	2,183
Knockouts, metal boxes & enclosures, with hole saw, 2" pipe size, to 8' high	-4		12.00 ea	ELEC1	0.296 ch/ea	3.6	59.61 /ch	212	-	-	-	-	-	-	-	-	212	85	297
Control Conduit & Wire						**629.0**		**37,490**		**20,385**							**57,676**	**24,789**	**82,664**
NP15010614 Install conduit, wire, & light pole						1,522.3		86,123		50,874				5,768			142,764	61,676	204,440
NP15010714 Install Sensors & Controls																			
Closed circuit television system (CCTV), surveillance, one station (camera & monitor)	-4		2.00 toll	ELEC2	6.718 ch/toll	26.9	119.21 /ch	1,602	1,200.00 /toll	2,400	-	-	-	-	-	-	4,002	1,796	5,798

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Closed circuit television system (CCTV), industrial quality, one station (camera & monitor)	-4		2.00 tot	ELEC2	6.718 ch/tot	26.9	119.21 /ch	1,602	2,500.00 /tot	5,000	-	-	-	-	-	-	6,602	3,050	9,651
Closed circuit television system (CCTV), industrial quality, for weatherproof camera station, add	-4		2.00 ea	ELEC1	13.436 ch/ea	26.9	59.61 /ch	1,602	940.00 /ea	1,880	-	-	-	-	-	-	3,482	1,546	5,027
Closed circuit television system (CCTV), industrial quality, for pan and tilt, add	-4		2.00 ea	ELEC1	13.436 ch/ea	26.9	59.61 /ch	1,602	2,425.00 /ea	4,850	-	-	-	-	-	-	6,452	2,977	9,429
Closed circuit television system (CCTV), industrial quality, for zoom lens - remote cont, add, max	-4		2.00 ea	ELEC1	8.734 ch/ea	17.5	59.61 /ch	1,041	8,175.00 /ea	16,350	-	-	-	-	-	-	17,391	8,298	25,689
Closed circuit television system (CCTV), educational TV studio, for video tape recorders, add, min.	-4		1.00 ea	ELEC1	17.467 ch/ea	17.5	59.61 /ch	1,041	2,800.00 /ea	2,800	-	-	-	-	-	-	3,841	1,765	5,606
Video Surveillance Gantry Crane		**Cameras for Gantry Crane**				**142.4**		**8,489**		**33,280**							**41,769**	**19,432**	**61,201**
Wireless Remote Monitoring Camera System	-4	Remote Mobile Camera Platform System Ron Nelson, Email to Beth Conrad Feb. 17, 2009	1.00 tot				/tot		/tot		60,000.00 /tot	60,000	-	-	-	-	60,000	23,945	83,945
Remote Camera Platform		**HISC - Remote camera system**										**60,000**					**60,000**	**23,945**	**83,945**
NP15010714 Install Sensors & Controls						142.4		8,489		33,280		**60,000**					**101,769**	**43,376**	**145,146**
NP15010814 Install Site Utilities																			
Structural concrete, in place, equipment pad, 4' x 4' x 6", includes forms, reinforcing steel, concrete, and finishing	-4		1.00 ea	C14H	0.582 ch/ea	3.5	285.35 /ch	166	67.00 /ea	67	-	-	3.10 /ch	2	-	-	235	99	334
Mineral insulated cable, 1 conductor, 600 volt, 4/0	-4	direct burial	16.50 clf	ELEC2	10.917 ch/clf	360.3	119.21 /ch	21,474	1,975.00 /clf	32,588	-	-	-	-	-	-	54,061	24,280	78,341
Mineral insulated cable terminations, 1 conductor, 600 volt, 4/0	-4		6.00 ea	ELEC1	4.367 ch/ea	26.2	59.61 /ch	1,562	42.50 /ea	255	-	-	-	-	-	-	1,817	746	2,563
Grounding rod, copper clad, 8' long, 3/4" diameter	-4		1.00 ea	ELEC1	3.296 ch/ea	3.3	57.13 /ch	188	27.00 /ea	27	-	-	-	-	-	-	215	88	303
Ground clamp, bronze, 3/4" diameter	-4		1.00 ea	ELEC1	0.546 ch/ea	0.5	57.13 /ch	31	6.60 /ea	7	-	-	-	-	-	-	38	16	53
Ground wire, ground bare armored, #6-1 conductor	-4		0.10 clf	ELEC1	9.704 ch/clf	1.0	57.13 /ch	55	131.00 /clf	13	-	-	-	-	-	-	69	28	97
PVC conduit, field bends, 45 Deg. to 90 Deg., 4" diameter	-4		2.00 ea	ELEC1	1.747 ch/ea	3.5	59.61 /ch	208	-	-	-	-	-	-	-	-	208	83	291
Dry type transformer, single phase 240/480 V primary 120/240 V secondary, 5 kVA	-4		1.00 ea	ELEC1	14.556 ch/ea	14.6	59.61 /ch	868	620.00 /ea	620	-	-	-	-	-	-	1,488	645	2,133
Load centers, 1 phase, 3 wire, main breaker, rainproof, 120/240 V, 200 amp, 40 circuits, incl 20 A 1 pole plug-in breakers	-4		1.00 ea	R1A	19.408 ch/ea	38.8	102.54 /ch	1,990	1,075.00 /ea	1,075	-	-	-	-	-	-	3,065	1,312	4,377
Excavating, utility trench, plow, single cable, plowed into coarse material	-4		550.00 lf	B54C	0.009 ch/lf	9.6	89.98 /ch	432	-	-	-	-	120.93 /ch	581	-	-	1,013	452	1,465
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	-4	550' x 0.5' x 3'/27	30.00 ecy	B10G	0.013 ch/ecy	0.6	68.51 /ch	28	-	-	-	-	125.75 /ch	51	-	-	78	35	114
Utility Line Signs, Markers, and Flags, vinyl, aluminum foil core, detectable, 6", excludes excavation and backfill	-4	Site lighting	5.50 clf	CLAB1	0.125 ch/clf	0.7	38.51 /ch	26	5.00 /clf	28	-	-	-	-	-	-	54	24	78
Underground Power Cable & Panel						**462.5**		**27,028**		**34,678**				**633**			**62,340**	**27,810**	**90,150**
Structural concrete, in place, equipment pad, 4' x 4' x 6", includes forms, reinforcing steel, concrete, and finishing	-4		1.00 ea	C14H	0.582 ch/ea	3.5	285.35 /ch	166	67.00 /ea	67	-	-	3.10 /ch	2	-	-	235	99	334
Valves, cast iron, lined, corrosion resistant, high purity, diaphragm type, PtFE or VitON lined, flanged, 125 lb., 4" size	-4		1.00 ea	Q1	5.822 ch/ea	11.6	143.94 /ch	838	1,200.00 /ea	1,200	-	-	-	-	-	-	2,038	913	2,951
Valves, plastic, PVC, angle, threaded, 1"	-4		1.00 ea	PLUM1	0.759 ch/ea	0.8	71.97 /ch	55	82.00 /ea	82	-	-	-	-	-	-	137	61	198
Backflow preventer,double check principle,corrosion resistant,automatic operation,ball valves,threaded,1"pipe size,includes valves and four test cocks	-4	Backflow preventer, double check principle, corrosion resistant, automatic operation, ball valves, threaded, 1" pipe size, includes valves and four test cocks	1.00 ea	PLUM1	1.248 ch/ea	1.2	71.97 /ch	90	208.00 /ea	208	-	-	-	-	-	-	298	136	434
Excavating, trench or continuous footing, common earth, 3/4 C.Y. excavator, 1' to 4' deep, excludes sheeting or dewatering	-4	190' x1' x3'	21.10 bcy	B12F	0.065 ch/bcy	2.7	89.98 /ch	123	-	-	-	-	68.68 /ch	94	-	-	217	94	311
Backfill, structural, common earth, 80 H.P. dozer, 50' haul, excludes compaction	-4	1.15 swell	16.10 lcy	B10L	0.018 ch/lcy	0.4	68.51 /ch	20	-	-	-	-	47.43 /ch	14	-	-	33	14	48
Fill by borrow and utility bedding, for pipe and conduit, crushed or screened bank run gravel, excludes compaction	-4	1.15 swell	8.05 lcy	B6	0.116 ch/lcy	2.8	132.91 /ch	125	29.50 /lcy	237	-	-	35.68 /ch	33	-	-	396	180	576
Fill by borrow and utility bedding, for pipe and conduit, compacting bedding in trench	-4		8.05 ecy	A1D	0.194 ch/ecy	1.6	42.93 /ch	67	-	-	-	-	3.88 /ch	6	-	-	73	30	103
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	-4		24.26 ecy	B10G	0.013 ch/ecy	0.5	68.51 /ch	22	-	-	-	-	125.75 /ch	41	-	-	63	29	92
Public water utility distribution piping,piping polyvinyl chloride,1-1/2"diam,awwa c900,class 160,sdr 26,excludes excavation backfill,unless specified	-4	Public Water Utility Distribution Piping, piping Polyvinyl Chloride, 1-1/2" diameter, AWWA C900, Class 160, SDR 26, excludes excavation or backfill, unless specified	190.00 lf	Q1A	0.023 ch/lf	5.5	89.96 /ch	398	0.44 /lf	84	-	-	-	-	-	-	482	199	681
Public Water Utility Distribution Piping, fitting, 90 degree elbow, class 200 polyvinyl chloride, pressure pipe, 1", includes gaskets	-4		1.00 ea	Q1A	0.175 ch/ea	0.2	89.96 /ch	16	1.10 /ea	1	-	-	-	-	-	-	17	7	24
New Sanitary Water						**30.9**		**1,919**		**1,879**				**190**			**3,988**	**1,763**	**5,751**
NP15010814 Install Site Utilities						**493.5**		**28,948**		**36,558**				**823**			**66,328**	**29,573**	**95,901**
NP15011014 Powered Ventilation																			
Small Metal Building for compressor - colocated on pad		McMaster-Carr Galvanized Steel Outdoor storage building #6896T13	1.00 ea	CARP2	10.000 ch/ea	20.0	99.38 /ch	994	100.55 /ea	101	-	-	-	-	-	-	1,094	445	1,539
Air compressor, 22.6 CFM, electric		McMaster-Carr Three phase motor #41905K3	1.00 ea				-	-	-	-	-	-	2,253.53 /ea	2,254	-	-	2,254	1,086	3,340
Wedge anchor, carbon steel, 1/4" dia x 1-3/4" L, in concrete, brick or stone, excl layout & drilling	-4		80.00 ea	CARP1	0.116 ch/ea	7.0	49.69 /ch	347	0.51 /ea	31	-	-	-	-	-	-	378	153	531
Continuous slotted channel framing system, field fabricated, incl cutting & welding, maximum	-4		50.00 lb	SSWK2	0.083 ch/lb	8.3	114.31 /ch	475	3.85 /lb	193	-	-	-	-	-	-	668	283	951
Drilling, for anchors, 1/4" dia, in drywall or plaster walls, incl bit & layout, excl anchor	-4		60.00 ea	CARP1	0.116 ch/ea	7.0	49.69 /ch	347	0.01 /ea	1	-	-	-	-	-	-	348	139	487
Pipe, stainless steel, tubing, .049 wall, 1/4", type 304, excludes joints and hangers	-4	piping to caissons	400.00 lf	PLUM1	0.109 ch/lf	43.7	71.97 /ch	3,143	3.77 /lf	1,508							4,651	1,981	6,632
Elbow, 90 Deg., stainless steel, tube fittings, compression type, 1/4", type 316	-4		30.00 ea	PLUM1	0.728 ch/ea	21.8	71.97 /ch	1,571	13.50 /ea	405							1,976	822	2,799
Union tee, stainless steel, tube fittings, compression type, 1/4", type 316	-4		28.00 ea	PLUM1	1.164 ch/ea	32.6	71.97 /ch	2,347	19.00 /ea	532							2,879	1,193	4,072
Compressor accessory, dryer, air, refrigerated, 10 CFM, includes ambient air filters			2.00 ea	Q5	1.000 ch/ea	4.0	143.94 /ch	288	650.00 /ea	1,300	-	-	-	-	-	-	1,588	742	2,329
Valves, stainless steel, ball, threaded, 1/4"	-4		61.00 ea	STPI1	0.333 ch/ea	20.3	71.97 /ch	1,463	37.00 /ea	2,257	-	-	-	-	-	-	3,720	1,672	5,392

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Control Components, flow meters, gas	-4	King Instrument 7100 Series Rotameter	30.00 ea	STPI1	4.367 ch/ea	131.0	71.97 /ch	9,429	639.64 /ea	19,189	-	-	-	-	-	-	28,618	13,013	41,631
Wire connector, screw type, insulated, #12 to #6			8.00 ea	ELEC1	0.097 ch/ea	0.8	59.61 /ch	46	0.49 /ea	4	-	-	-	-	-	-	50	20	71
Wire, copper, solid, 600 volt, #10, type THWN-THHN, in raceway		3phase power to compressor	3.40 clf	ELEC1	1.747 ch/clf	5.9	59.61 /ch	354	23.00 /clf	78	-	-	-	-	-	-	432	179	611
Rigid galvanized steel conduit, 1" diameter, to 15' H, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF			80.00 lf	ELEC1	0.269 ch/lf	21.5	59.61 /ch	1,281	3.66 /lf	293	-	-	-	-	-	-	1,574	653	2,227
Pull boxes, sheet metal, type SC, raintight & weatherproof, 8" L x 6" W x 6" D, NEMA 3R			1.60 ea	ELEC1	2.183 ch/ea	3.5	59.61 /ch	208	26.00 /ea	42	-	-	-	-	-	-	250	103	353
Knockouts, metal boxes & enclosures, with hole saw, 1" pipe size, to 5" high			3.20 ea	ELEC1	0.437 ch/ea	1.4	59.61 /ch	83	-	-	-	-	-	-	-	-	83	33	117
Powered Ventilation for 30 caissons						**328.8**		**22,377**		**25,932**				**2,254**			**50,563**	**22,518**	**73,081**
NP15011014 Powered Ventilation						328.8		22,377		25,932				2,254			50,563	22,518	73,081
FY14 Fiscal Year 2014						**16,698.4**		**1,062,186**		**334,810**		**60,000**		**44,743**		**5,809**	**1,507,547**	**633,135**	**2,140,682**
.15.01 New Construction - Storage Pad						**16,698.4**		**1,062,186**		**334,810**		**60,000**		**44,743**		**5,809**	**1,507,547**	**633,135**	**2,140,682**
.15 Construction						**16,698.4**		**1,062,186**		**334,810**		**60,000**		**44,743**		**5,809**	**1,507,547**	**633,135**	**2,140,682**
.16 Start up & Testing																			
.16.01 Start up & Testing																			
FY14 Fiscal Year 2014																			
NP16160114 CORAMI Evalation																			
Nuclear Engineers	-1		2.00 wk	0 E080	40.000 ch/wk	80.0	94.95 /ch	7,596	-	-	-	-	-	-	-	-	7,596	791	8,387
Quality Control Engineers	-1		2.00 wk	0 E110	40.000 ch/wk	80.0	75.25 /ch	6,020	-	-	-	-	-	-	-	-	6,020	627	6,647
Safety Engineer	-1		2.00 wk	0 E120	40.000 ch/wk	80.0	71.00 /ch	5,680	-	-	-	-	-	-	-	-	5,680	591	6,271
CORAMI evaluation						**240.0**		**19,296**									**19,296**	**2,008**	**21,304**
NP16160114 CORAMI Evalation						240.0		19,296									19,296	2,008	21,304
FY14 Fiscal Year 2014						**240.0**		**19,296**									**19,296**	**2,008**	**21,304**
.16.01 Start up & Testing						**240.0**		**19,296**									**19,296**	**2,008**	**21,304**
.16.02 Procedure Development																			
FY14 Fiscal Year 2014																			
NP16160214 Procedure Development																			
Nuclear Engineers	-1		3.00 wk	0 E080	40.000 ch/wk	120.0	94.95 /ch	11,394	-	-	-	-	-	-	-	-	11,394	1,186	12,580
Quality Control Engineers	-1		3.00 wk	0 E110	40.000 ch/wk	120.0	75.25 /ch	9,030	-	-	-	-	-	-	-	-	9,030	940	9,970
Safety Engineer	-1		3.00 wk	0 E120	40.000 ch/wk	120.0	71.00 /ch	8,520	-	-	-	-	-	-	-	-	8,520	887	9,407
Industrial Hygienists	-1		2.00 wk	0 P090	40.000 ch/wk	80.0	72.95 /ch	5,836	-	-	-	-	-	-	-	-	5,836	607	6,443
Technical Writers & Editors	-1		2.00 wk	0 P160	40.000 ch/wk	80.0	66.18 /ch	5,294	-	-	-	-	-	-	-	-	5,294	551	5,845
Procedure development						**520.0**		**40,074**									**40,074**	**4,171**	**44,245**
NP16160214 Procedure Development						520.0		40,074									40,074	4,171	44,245
FY14 Fiscal Year 2014						**520.0**		**40,074**									**40,074**	**4,171**	**44,245**
.16.02 Procedure Development						**520.0**		**40,074**									**40,074**	**4,171**	**44,245**
.16.03 Readiness Activities / Planning																			
FY14 Fiscal Year 2014																			
NP16160314 Readiness Activities / Planning																			
Nuclear Engineers	-1		5.00 wk	0 E080	40.000 ch/wk	200.0	94.95 /ch	18,990	-	-	-	-	-	-	-	-	18,990	1,976	20,966
Quality Control Engineers	-1		5.00 wk	0 E110	40.000 ch/wk	200.0	75.25 /ch	15,050	-	-	-	-	-	-	-	-	15,050	1,566	16,616
Safety Engineer	-1		5.00 wk	0 E120	40.000 ch/wk	200.0	71.00 /ch	14,200	-	-	-	-	-	-	-	-	14,200	1,478	15,678
Planner/Scheduler/Estimators	-1		3.00 wk	0 P070	40.000 ch/wk	120.0	86.56 /ch	10,387	-	-	-	-	-	-	-	-	10,387	1,081	11,468
Readiness Activities/Planning						**720.0**		**58,627**									**58,627**	**6,102**	**64,729**
NP16160314 Readiness Activities / Planning						720.0		58,627									58,627	6,102	64,729
FY14 Fiscal Year 2014						**720.0**		**58,627**									**58,627**	**6,102**	**64,729**
.16.03 Readiness Activities / Planning						**720.0**		**58,627**									**58,627**	**6,102**	**64,729**
.16.04 System Test																			
FY14 Fiscal Year 2014																			
NP16160414 System Test																			
Electrical Engineers	-1		8.00 wk	0 E040	40.000 ch/wk	320.0	79.21 /ch	25,347	-	-	-	-	-	-	-	-	25,347	2,638	27,985
Mechanical Engineers	-1		8.00 wk	0 E070	40.000 ch/wk	320.0	85.74 /ch	27,437	-	-	-	-	-	-	-	-	27,437	2,856	30,292
Plant Engineers	-1		8.00 wk	0 E100	40.000 ch/wk	320.0	68.98 /ch	22,074	-	-	-	-	-	-	-	-	22,074	2,297	24,371
Quality Control Engineers	-1		8.00 wk	0 E110	40.000 ch/wk	320.0	75.25 /ch	24,080	-	-	-	-	-	-	-	-	24,080	2,506	26,586

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Construction Engineers	-1		8.00 wk	0 E140	40.000 ch/wk	320.0	100.10 /ch	32,032	-	-	-	-	-	-	-	-	32,032	3,334	35,366
System Tests						**1,600.0**		**130,970**									**130,970**	**13,631**	**144,601**
NP16160414 System Test						1,600.0		130,970									130,970	13,631	144,601
FY14 Fiscal Year 2014						1,600.0		130,970									130,970	13,631	144,601
.16.04 System Test						1,600.0		130,970									130,970	13,631	144,601
.16.05 Start Up																			
FY14 Fiscal Year 2014																			
NP16160514 Start Up																			
Electrician	-1		4.00 wk	0 C020	40.000 ch/wk	160.0	60.19 /ch	9,630	-	-	-	-	-	-	-	-	9,630	1,002	10,633
Nuclear Engineers	-1		4.00 wk	0 E080	40.000 ch/wk	160.0	94.95 /ch	15,192	-	-	-	-	-	-	-	-	15,192	1,581	16,773
Plant Engineers	-1		4.00 wk	0 E100	40.000 ch/wk	160.0	68.98 /ch	11,037	-	-	-	-	-	-	-	-	11,037	1,149	12,186
Quality Control Engineers	-1		4.00 wk	0 E110	40.000 ch/wk	160.0	75.25 /ch	12,040	-	-	-	-	-	-	-	-	12,040	1,253	13,293
Safety Engineer	-1		4.00 wk	0 E120	40.000 ch/wk	160.0	71.00 /ch	11,360	-	-	-	-	-	-	-	-	11,360	1,182	12,542
Material Moving Equipment Operators	-1		4.00 wk	0 R030	40.000 ch/wk	160.0	56.91 /ch	9,106	-	-	-	-	-	-	-	-	9,106	948	10,053
Nuclear Waste Process Operator	-1		4.00 wk	0 R050	40.000 ch/wk	160.0	58.05 /ch	9,288	-	-	-	-	-	-	-	-	9,288	967	10,255
Utilities System Operators	-1		4.00 wk	0 R070	40.000 ch/wk	160.0	49.54 /ch	7,926	-	-	-	-	-	-	-	-	7,926	825	8,751
Other Operators	-1		4.00 wk	0 R080	40.000 ch/wk	160.0	57.10 /ch	9,136	-	-	-	-	-	-	-	-	9,136	951	10,087
Startup						**1,440.0**		**94,715**									**94,715**	**9,858**	**104,573**
NP16160514 Start Up						1,440.0		94,715									94,715	9,858	104,573
FY14 Fiscal Year 2014						1,440.0		94,715									94,715	9,858	104,573
.16.05 Start Up						1,440.0		94,715									94,715	9,858	104,573
.16 Start up & Testing						4,520.0		343,682									343,682	35,770	379,453
.17 Contingency																			
.17.01 Contingency																			
FY10 Fiscal Year 2010																			
NP17170110 Contingency																			
Contingency	-0		1.00 ls			0.00 /ls	0	0.00 /ls	0	-	-	-	-	401,387.00 /ls	401,387	401,387	8,028	409,415	
Contingency																	**401,387**	**401,387**	**8,028**	**409,415**
NP17170110 Contingency																	401,387	401,387	8,028	409,415
FY10 Fiscal Year 2010																	**401,387**	**401,387**	**8,028**	**409,415**
FY11 Fiscal Year 2011																			
NP17170111 Contingency																			
Contingency	-0		1.00 ls			0.00 /ls	0	0.00 /ls	0	-	-	-	-	467,287.00 /ls	467,287	467,287	18,878	486,165	
Contingency																	**467,287**	**467,287**	**18,878**	**486,165**
NP17170111 Contingency																	467,287	467,287	18,878	486,165
FY11 Fiscal Year 2011																	**467,287**	**467,287**	**18,878**	**486,165**
FY12 Fiscal Year 2012																			
NP17170112 Contingency																			
Contingency	-0		1.00 ls			0.00 /ls	0	0.00 /ls	0	-	-	-	-	491,584.00 /ls	491,584	491,584	30,085	521,669	
Contingency																	**491,584**	**491,584**	**30,085**	**521,669**
NP17170112 Contingency																	491,584	491,584	30,085	521,669
FY12 Fiscal Year 2012																	**491,584**	**491,584**	**30,085**	**521,669**
FY13 Fiscal Year 2013																			
NP17170113 Contingency																			
Contingency	-0		1.00 ls			0.00 /ls	0	0.00 /ls	0	-	-	-	-	963,906.00 /ls	963,906	963,906	79,455	1,043,361	
Contingency																	**963,906**	**963,906**	**79,455**	**1,043,361**
NP17170113 Contingency																	963,906	963,906	79,455	1,043,361

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
FY13 Fiscal Year 2013																963,906	963,906	79,455	1,043,361
FY14 Fiscal Year 2014																			
NP17170114 Contingency																			
Contingency	-0		1.00 ls				0.00 /ls	0	0.00 /ls	0	-	-	-	-	1,174,245.00 /ls	1,174,245	1,174,245	122,215	1,296,460
Contingency																1,174,245	1,174,245	122,215	1,296,460
NP17170114 Contingency																1,174,245	1,174,245	122,215	1,296,460
FY14 Fiscal Year 2014																1,174,245	1,174,245	122,215	1,296,460
FY15 Fiscal Year 2015																			
NP17170115 Contingency																			
Contingency	-0		1.00 ls				0.00 /ls	0	0.00 /ls	0	-	-	-	-	27,996.00 /ls	27,996	27,996	3,532	31,528
Contingency																27,996	27,996	3,532	31,528
NP17170115 Contingency																27,996	27,996	3,532	31,528
FY15 Fiscal Year 2015																27,996	27,996	3,532	31,528
.17.01 Contingency																3,526,405	3,526,405	262,193	3,788,598
.17 Contingency																3,526,405	3,526,405	262,193	3,788,598
.18 Operations and Maintenance																			
.18.01 Operations																			
FY15 Fiscal Year 2015																			
NP18180115 Unload & Store																			
First Line Supervisors	-0		26.00 wk	0 M010	34.600 chwk	899.6	78.54 /ch	70,655	-	-	-	-	-	-	-	70,655	70,655	8,914	79,568
Material Moving Equipment Operators	-0	2ea	26.00 wk	0 R030	69.200 chwk	1,799.2	56.91 /ch	102,392	-	-	-	-	-	-	-	102,392	102,392	12,918	115,310
Health Physics Technicians	-0		26.00 wk	0 T050	34.600 chwk	899.6	53.43 /ch	48,066	-	-	-	-	-	-	-	48,066	48,066	6,064	54,130
Pad - Unload & Store						3,598.4		221,113									221,113	27,896	249,008
NP18180115 Unload & Store		Deliveries every other week				3,598.4		221,113									221,113	27,896	249,008
FY15 Fiscal Year 2015						3,598.4		221,113									221,113	27,896	249,008
FY16 Fiscal Year 2016																			
NP18180116 Unload & Store																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 chwk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	35,327	35,327	5,253	40,580
Material Moving Equipment Operators	-0	2ea	13.00 wk	0 R030	69.200 chwk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	51,196	51,196	7,612	58,809
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 chwk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	24,033	24,033	3,573	27,606
Pad - Unload & Store						1,799.2		110,556									110,556	16,439	126,995
NP18180116 Unload & Store						1,799.2		110,556									110,556	16,439	126,995
FY16 Fiscal Year 2016						1,799.2		110,556									110,556	16,439	126,995
.18.01 Operations						5,397.6		331,669									331,669	44,334	376,003
.18.02 Maintenance																			
FY16 Fiscal Year 2016																			
NP18180216 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 chwk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	35,327	35,327	5,253	40,580
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 chwk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	51,196	51,196	7,612	58,809
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 chwk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	24,033	24,033	3,573	27,606
Pad - Maintenance- Add Water						1,799.2		110,556									110,556	16,439	126,995
NP18180216 Maintenance		Deliveries every other week				1,799.2		110,556									110,556	16,439	126,995
FY16 Fiscal Year 2016						1,799.2		110,556									110,556	16,439	126,995
FY17 Fiscal Year 2017																			
NP18180217 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 chwk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	35,327	35,327	6,064	41,392
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 chwk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	51,196	51,196	8,788	59,985
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 chwk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	24,033	24,033	4,125	28,158

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**18,978**	**129,534**
NP18180217 Maintenance						1,799.2		110,556									110,556	18,978	129,534
FY17 Fiscal Year 2017						**1,799.2**		**110,556**									**110,556**	**18,978**	**129,534**
FY18 Fiscal Year 2018																			
NP18180218 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	6,892	42,219
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	9,988	61,184
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	4,689	28,721
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**21,568**	**132,125**
NP18180218 Maintenance						1,799.2		110,556									110,556	21,568	132,125
FY18 Fiscal Year 2018						**1,799.2**		**110,556**									**110,556**	**21,568**	**132,125**
FY19 Fiscal Year 2019																			
NP18180219 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	7,736	43,064
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	11,211	62,408
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	5,263	29,296
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**24,211**	**134,767**
NP18180219 Maintenance						1,799.2		110,556									110,556	24,211	134,767
FY19 Fiscal Year 2019						**1,799.2**		**110,556**									**110,556**	**24,211**	**134,767**
FY20 Fiscal Year 2020																			
NP18180220 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	8,598	43,925
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	12,460	63,656
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	5,849	29,882
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**26,906**	**137,462**
NP18180220 Maintenance						1,799.2		110,556									110,556	26,906	137,462
FY20 Fiscal Year 2020						**1,799.2**		**110,556**									**110,556**	**26,906**	**137,462**
FY21 Fiscal Year 2021																			
NP18180221 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	9,476	44,803
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	13,733	64,929
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	6,447	30,479
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**29,656**	**140,212**
NP18180221 Maintenance						1,799.2		110,556									110,556	29,656	140,212
FY21 Fiscal Year 2021						**1,799.2**		**110,556**									**110,556**	**29,656**	**140,212**
FY22 Fiscal Year 2022																			
NP18180222 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	10,372	45,700
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	15,032	66,228
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	7,056	31,089
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**32,460**	**143,017**
NP18180222 Maintenance						1,799.2		110,556									110,556	32,460	143,017
FY22 Fiscal Year 2022						**1,799.2**		**110,556**									**110,556**	**32,460**	**143,017**
FY23 Fiscal Year 2023																			
NP18180223 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	11,286	46,614
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	16,356	67,552
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	7,678	31,711
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**35,321**	**145,877**

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
NP18180223 Maintenance						1,799.2		110,556									110,556	35,321	145,877
FY23 Fiscal Year 2023						**1,799.2**		**110,556**									**110,556**	**35,321**	**145,877**
FY24 Fiscal Year 2024																			
NP18180224 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	12,219	47,546
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	17,707	68,903
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	8,312	32,345
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**38,238**	**148,794**
NP18180224 Maintenance						1,799.2		110,556									110,556	38,238	148,794
FY24 Fiscal Year 2024						**1,799.2**		**110,556**									**110,556**	**38,238**	**148,794**
FY25 Fiscal Year 2025																			
NP18180225 Maintenance																			
First Line Supervisors	-0		13.00 wk	0 M010	34.600 ch/wk	449.8	78.54 /ch	35,327	-	-	-	-	-	-	-	-	35,327	13,170	48,497
Material Moving Equipment Operators	-0		13.00 wk	0 R030	69.200 ch/wk	899.6	56.91 /ch	51,196	-	-	-	-	-	-	-	-	51,196	19,085	70,282
Health Physics Technicians	-0		13.00 wk	0 T050	34.600 ch/wk	449.8	53.43 /ch	24,033	-	-	-	-	-	-	-	-	24,033	8,959	32,992
Pad - Maintenance- Add Water						**1,799.2**		**110,556**									**110,556**	**41,214**	**151,771**
NP18180225 Maintenance						1,799.2		110,556									110,556	41,214	151,771
FY25 Fiscal Year 2025						**1,799.2**		**110,556**									**110,556**	**41,214**	**151,771**
.18.02 Maintenance						**17,992.0**		**1,105,563**									**1,105,563**	**284,991**	**1,390,554**
.18 Operations and Maintenance						**23,389.6**		**1,437,232**									**1,437,232**	**329,325**	**1,766,558**
.19 Deactivation & Decommissioning																			
.19.01 Deactivation & Decommissioning																			
FY25 Fiscal Year 2025																			
NP19190125 D&D Planning																			
First Line Supervisors	-0		26.00 wk	0 M010	34.600 ch/wk	899.6	78.54 /ch	70,655	-	-	-	-	-	-	-	-	70,655	39,057	109,712
Project & Program Managers	-0		26.00 wk	0 M030	34.600 ch/wk	899.6	117.10 /ch	105,343	-	-	-	-	-	-	-	-	105,343	58,233	163,576
Planner/Scheduler/Estimators	-0		26.00 wk	0 P070	34.600 ch/wk	899.6	86.56 /ch	77,869	-	-	-	-	-	-	-	-	77,869	43,045	120,915
Construction Management						**2,698.8**		**253,867**									**253,867**	**140,335**	**394,202**
NP19190125 D&D Planning						2,698.8		253,867									253,867	140,335	394,202
FY25 Fiscal Year 2025						**2,698.8**		**253,867**									**253,867**	**140,335**	**394,202**
FY26 Fiscal Year 2026																			
NP19190126 Construction Management																			
Other Crafts	-0		26.00 wk	0 C120	69.200 ch/wk	1,799.2	52.19 /ch	93,900	-	-	-	-	-	-	-	-	93,900	54,485	148,385
First Line Supervisors	-0		26.00 wk	0 M010	34.600 ch/wk	899.6	78.54 /ch	70,655	-	-	-	-	-	-	-	-	70,655	40,997	111,651
Project & Program Managers	-0		26.00 wk	0 M030	34.600 ch/wk	899.6	117.10 /ch	105,343	-	-	-	-	-	-	-	-	105,343	61,124	166,467
Planner/Scheduler/Estimators	-0		26.00 wk	0 P070	34.600 ch/wk	899.6	86.56 /ch	77,869	-	-	-	-	-	-	-	-	77,869	45,183	123,052
Construction Management						**4,498.0**		**347,767**									**347,767**	**201,789**	**549,556**
NP19190126 Construction Management						4,498.0		347,767									347,767	201,789	549,556
FY26 Fiscal Year 2026						**4,498.0**		**347,767**									**347,767**	**201,789**	**549,556**
.19.01 Deactivation & Decommissioning						**7,196.8**		**601,634**									**601,634**	**342,124**	**943,758**
.19.02 Demolition																			
FY26 Fiscal Year 2026																			
NP19190226 Demolition																			
LLMW - Disposal @ Hanford ERDIFF	-0	1.296 tons per cy concrete rubble	991.00 ton				-	-	-	-	40.00 /ton	39,640	-	-	-	-	39,640	15,866	55,506
LLMW - Disposal @ Hanford ERDIFF	-0	gantry crane, track, & Misc. items	30.00 ton				-	-	-	-	40.00 /ton	1,200	-	-	-	-	1,200	480	1,680
Electrical Demolition	-0	Light poles, power panels, transformers, ect.	1.00 wk	ELEC2	40.000 ch/wk	80.0	119.21 /ch	4,768	-	-	-	-	-	-	-	-	4,768	3,315	8,084
Disassemble gantry crane	-0		1.00 wk	E20	40.000 ch/wk	320.0	437.01 /ch	17,481	-	-	-	-	153.13 /ch	6,125	-	-	23,606	16,920	40,525
Selective site demolition, hydrodemolition, concrete pavement, 4000 PSI, 12" depth	-0		6,696.00 sf	B5	0.087 ch/sf	4,093.8	308.75 /ch	180,563	-	-	-	-	135.63 /ch	79,317	-	-	259,880	187,263	447,143
Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees	-0		1,394.00 sy	B38	0.042 ch/sy	289.9	222.88 /ch	12,922	-	-	-	-	125.28 /ch	7,263	-	-	20,185	14,636	34,821
Fencing demolition, remove chain link posts & fabric, 8' to 10' high	-0		860.00 lf	B6	0.039 ch/lf	101.3	132.91 /ch	4,487	-	-	-	-	35.68 /ch	1,205	-	-	5,692	4,057	9,749
Footings and foundations demolition, remove concrete footing, 2' thick, 3' wide, excludes disposal costs and dump fees	-0		388.00 lf	B5	0.166 ch/lf	451.4	308.75 /ch	19,910	-	-	-	-	135.63 /ch	8,746	-	-	28,655	20,648	49,304

Spreadsheet Level	Risk	Notes	Takeoff Quantity	Crew	Labor Productivity	Labor Man Hrs	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total
Footings and foundations demolition, add for disposal, up to 5 miles, excludes disposal costs and dump fees	-0		391.70 cy	B30	0.079 ch/cy	93.3	143.08 /ch	4,449	-	-	-	-	229.45 /ch	7,135	-	-	11,585	8,646	20,231
Selectv metals demoltn,strt framing members,5 - 10 tons,remove whole cut into smaller pieces,incl loading,excl shoring,bracing,cutting,hauling,dumping	-0	Selective metals demolition, structural framing members, 5 - 10 tons, remove whole or cut up into smaller pieces, incl loading, excl shoring, bracing, cutting, hauling, dumping	1.00 ea	E20	0.728 ch/ea	5.8	437.01 /ch	318	-	-	-	-	153.13 /ch	111	-	-	429	308	737
Excavating, bulk bank measure, 2-1/2 C.Y. capacity = 95 C.Y./hour, front end loader, track mounted	-0	Remove Rock base	374.00 bcy	B10O	0.023 ch/bcy	12.9	68.51 /ch	589	-	-	-	-	79.40 /ch	683	-	-	1,272	941	2,213
Demolition						**5,448.4**		**245,487**				**40,840**		**110,585**			**396,913**	**273,080**	**669,993**
NP19190226 Demolition						5,448.4		245,487				40,840		110,585			396,913	273,080	669,993
FY26 Fiscal Year 2026						**5,448.4**		**245,487**				**40,840**		**110,585**			**396,913**	**273,080**	**669,993**
.19.02 Demolition						**5,448.4**		**245,487**				**40,840**		**110,585**			**396,913**	**273,080**	**669,993**
.19.03 Site Restoration																			
FY26 Fiscal Year 2026																			
NP19190326 Site Restoration																			
Soil testing, soil density, nuclear method, ASTM D2922	-0		25.39 ea				-	-	-	-	-	-	-	-	35.00 /ea	889	889	618	1,506
Soil testing, Proctor compaction, 6" modified mold	-0		1.00 ea				-	-	-	-	-	-	-	-	68.00 /ea	68	68	47	115
Earthwork inspection technician, per day	-0		3.17 ea				-	-	-	-	-	-	-	-	210.00 /ea	666	666	463	1,130
Fine grading, for roadway, base or leveling course, large area, 6,000 S.Y. or more	-0		13,777.00 sy	B11L	0.009 ch/sy	240.5	89.98 /ch	10,822	-	-	-	-	66.80 /ch	8,034	-	-	18,856	13,776	32,632
Excavating, bulk bank measure, 5 C.Y. capacity = 185 C.Y./hour, wheel mounted	-0		765.00 bcy	B10U	0.012 ch/bcy	13.6	68.51 /ch	619	-	-	-	-	103.35 /ch	934	-	-	1,553	1,157	2,710
Backfill, structural, sandy clay & loam, 80 H.P. dozer, 50' haul, excluces compaction	-0		879.00 lcy	B10L	0.016 ch/lcy	21.5	68.51 /ch	983	-	-	-	-	47.43 /ch	681	-	-	1,664	1,213	2,878
Hauling, excavated or borrow material, loose cubic yards, 1/4 mile round trip, 3.7 loads/hour, 12 C.Y. dump truck, highway haulers, excludes loading	-0		879.00 lcy	B34B	0.061 ch/lcy	53.3	48.02 /ch	2,560	-	-	-	-	62.85 /ch	3,351	-	-	5,911	4,388	10,299
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	-0		879.00 ecy	B10G	0.013 ch/ecy	17.7	68.51 /ch	809	-	-	-	-	125.75 /ch	1,484	-	-	2,293	1,718	4,011
Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed	-0		13,777.00 sy	B81	0.002 ch/sy	81.4	137.99 /ch	3,745	0.16 /sy	2,204	-	-	69.18 /ch	1,877	-	-	7,827	5,780	13,607
Site Restoration						**428.1**		**19,538**		**2,204**				**16,362**		**1,623**	**39,727**	**29,161**	**68,888**
NP19190326 Site Restoration						428.1		19,538		2,204				16,362		1,623	39,727	29,161	68,888
FY26 Fiscal Year 2026						**428.1**		**19,538**		**2,204**				**16,362**		**1,623**	**39,727**	**29,161**	**68,888**
.19.03 Site Restoration						428.1		19,538		2,204				16,362		1,623	39,727	29,161	68,888
.19.04 Contractor Staff & office																			
FY26 Fiscal Year 2026																			
NP15010126 Field Staff																			
Project Manager	-0		28.00 wk	zPM	40.000 ch/wk	1,120.0	101.69 /ch	113,889	-	-	-	-	-	-	-	-	113,889	79,180	193,070
Project Project Engineer	-0		28.00 wk	zPE	40.000 mh/wk	1,120.0	91.36 /mh	102,322	-	-	-	-	-	-	-	-	102,322	71,138	173,460
Superintendent	-0		28.00 wk	zSupt	40.000 mh/wk	1,120.0	96.30 /mh	107,853	-	-	-	-	-	-	-	-	107,853	74,983	182,836
Field Engineer	-0		28.00 wk	zFE	40.000 mh/wk	1,120.0	64.20 /mh	71,901	-	-	-	-	-	-	-	-	71,901	49,988	121,889
Health & Safety	-0		28.00 wk	zH&S	40.000 mh/wk	1,120.0	83.95 /mh	94,024	-	-	-	-	-	-	-	-	94,024	65,369	159,393
Quality Assurance / Quality Control	-0		28.00 wk	zQC	40.000 mh/wk	1,120.0	83.95 /mh	94,024	-	-	-	-	-	-	-	-	94,024	65,369	159,393
Radiation Control Technician	-0		28.00 wk	zRCT	40.000 mh/wk	1,120.0	64.20 /mh	71,901	-	-	-	-	-	-	-	-	71,901	49,988	121,889
Project Controls - Estimating, Scheduling	-0		28.00 wk	zPC	40.000 mh/wk	1,120.0	54.49 /mh	61,023	-	-	-	-	-	-	-	-	61,023	42,426	103,449
Time Keeper	-0		28.00 wk	zTime	40.000 mh/wk	1,120.0	39.73 /mh	44,495	-	-	-	-	-	-	-	-	44,495	30,935	75,430
Clerk	-0		28.00 wk	zClerk	40.000 mh/wk	1,120.0	14.43 /mh	16,165	-	-	-	-	-	-	-	-	16,165	11,239	27,403
Field Staff						**11,200.0**		**777,597**									**777,597**	**540,617**	**1,318,213**
NP15010126 Field Staff						11,200.0		777,597									777,597	540,617	1,318,213
NP15010226 Field Office																			
Office Trailer, furnished, rent per month, 50' x 12', excl. hookups	-0		1.00 ea				-	-	375.00 /ea	375	-	-	-	-	-	-	375	292	667
Field Office Expense, office equipment rental, average	-0		7.00 mo				-	-	150.00 /mo	1,050	-	-	-	-	-	-	1,050	817	1,867
Field Office Expense, office supplies, average	-0		7.00 mo				-	-	95.00 /mo	665	-	-	-	-	-	-	665	518	1,183
Field Office Expense, telephone bill; avg. bill/month, incl. long dist.	-0		7.00 mo				-	-	210.00 /mo	1,470	-	-	-	-	-	-	1,470	1,144	2,614
Field Office Expense, field office lights & HVAC	-0		7.00 mo				-	-	110.00 /mo	770	-	-	-	-	-	-	770	599	1,369
Field Office										**4,330**							**4,330**	**3,370**	**7,700**
NP15010226 Field Office										4,330							4,330	3,370	7,700
FY26 Fiscal Year 2026						**11,200.0**		**777,597**		**4,330**							**781,927**	**543,986**	**1,325,913**
.19.04 Contractor Staff & office						**11,200.0**		**777,597**		**4,330**							**781,927**	**543,986**	**1,325,913**
.19 Deactivation & Decommissioning						**24,273.3**		**1,644,257**		**6,534**		**40,840**		**126,947**		**1,623**	**1,820,201**	**1,188,351**	**3,008,553**
Alternate Storage Facility						**239,550.1**		**19,122,696**		**824,379**		**149,380**		**1,170,959**		**3,533,837**	**24,801,251**	**4,413,211**	**29,214,462**

Estimate Totals

Description	Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total	
Labor	19,122,696		239,550.076 hrs				64.63%	
Material	824,379						2.79%	
Subcontract	149,380						0.50%	
Equipment	1,170,959		5,637.483 hrs				3.96%	
Other	3,533,837						11.94%	
	24,801,251	24,801,251					83.82	83.82%
Sales Tax	68,423			8.30000 %	C		0.23%	
Sales Tax on Rental Equip	97,190			8.30000 %	C		0.33%	
	165,613	24,966,864					0.56	84.38%
Construction General Req	483,883			18.00000 %	C		1.64%	
	483,883	25,450,747					1.64	86.01%
Subcontractor Liability Ins.	80,850			2.00000 %	C		0.27%	
Subcontractor Bond	101,062			2.50000 %	C		0.34%	
	181,912	25,632,659					0.61	86.63%
Fee / Profit	1,010,625			25.00000 %	C		3.42%	
	1,010,625	26,643,284					3.42	90.04%
FY2010 Escalation	61,546			2.00000 %	C		0.21%	
FY2011 Escalation	128,111			4.04000 %	C		0.43%	
FY2012 Escalation	210,507			6.12000 %	C		0.71%	
FY2013 Escalation	451,356			8.24300 %	C		1.53%	
FY2014 Escalation	641,696			10.40800 %	C		2.17%	
FY2015 Escalation	54,974			12.61600 %	C		0.19%	
FY2016 Escalation	32,877			14.86900 %	C		0.11%	
FY2017 Escalation	18,978			17.16600 %	C		0.06%	
FY2018 Escalation	21,568			19.50900 %	C		0.07%	
FY2019 Escalation	24,211			21.89900 %	C		0.08%	
FY2020 Escalation	26,906			24.33700 %	C		0.09%	
FY2021 Escalation	29,656			26.82400 %	C		0.10%	
FY2022 Escalation	32,460			29.36100 %	C		0.11%	
FY2023 Escalation	35,321			31.94800 %	C		0.12%	
FY2024 Escalation	38,238			34.58700 %	C		0.13%	
FY2025 Escalation	135,853			37.27900 %	C		0.46%	
FY2026 Escalation	626,910			40.02400 %	C		2.12%	
	2,571,178	29,214,462					8.69	98.73%
Site G&A on Markups	375,123			8.50000 %	O		1.27%	
Site G&A on Direct Costs				8.50000 %	C			
	375,123	29,589,585					1.27	100.00%
Risk - Zero					C			
Risk - Low					C			
Risk - Low - Medium					C			
Risk - Medium					C			
Risk - Medium - High					C			
Risk - High					C			
		29,589,585						100.00%
Total		***29,589,585***					100.00%	

Timberline Productivity Factor **-54.2**
(negative %)
Crews work 8 hrs/day, 5 days/wk

Productivity Factor Evaluation

Project Location: Site work

Productivity Adjustment % (D F + B F)	118.21%
Difficulty Factor (DF)	60.00%
Building Factor (BF)	58.21%
Work Factor Constraints	1.5435
x Additional Factors	1.0250 Equals Building Factor

Note to calculate an accurate productivity factor one must:

1 Have a thorough understanding of the basis of the database or work standards being used.
2 Have a working knowledge of the procedures the work crews will follow.
3 Be familiar with the work site where the work will be executed.
4 A different productivity factor may be require for each work area in one project.

Degree of Difficulty

Enter your percentage factor for each item in column M

		% Possible	Subtotal	Total 60.00%
				25.00%
I	Location			
	Labor Productivity difference from data base standard	-100 to +100	25.00%	
	Badging, Training			
II	Height of Work			
	Work < 8 feet above floor level (a.f.l.)	0		
	Work between 8 feet and 16 feet (a.f.l.)	15-20		
	Work higher than 16 feet (a.f.l.)	25-35		
	Work higher than 16 feet (a.f.l.)(Mech./Elec.)	20-125		
III	Accessibility/Obstructions			0.00%
	Good accessibility/No obstructions	0		
	Limited accessibility/Minor obstructions	10-15		
	Poor accessibility/Substantial obstructions	20-25		
IV	Quanity Installed			0.00%
	Standard quantity *	0		
	Less than standard quanity **	100-300		
	* Estimator must determine the standard quantity based on the estimating standards used.			
	** Adder increases proportonally as the quantity decreases from the standard.			
V	Quality Assurance			35.00%
	Non-vital Safety System (VSS)/Non-Safety Class Item	0		
	Vital Safety System/Safety Class Item	30-35	35.00%	
	Vital Safety System/Safety Class Item (Mech./Elec.)	87-92		

Work Factor Constraints Total 54.35%

			Possible	Subtotal	Total
I	Personal	DOD 5010.15.1-M	0		0.00%
	A	Basic(go to rest room, get drink of water, phone,etc.)	4		
	B	Slightly disagreeable conditions-poor heating.	3		
	C	Extremely disagreeable most of the time -hot objects, ordors, & fumes, or excessive temperatures and or humidity.	6		
II	Fatigue	DOD 5010.15.1-M & Rad. Protection Mgt. July/Aug 94	0		0.00%
	A	Position: Class			
		Working in close, cramped positions	0-7		
	B	Mental:			
		Routine work committed to habit	0		
		Full attention: copying, checking or calculating	2		
		Concentrated attention, nonroutine	4		
		Deep concentration: inspection work requiring interpretation and discretion of unfamiliar nature	8		
	C	Lighting			
		Normal light at least 75' candle power	0		
		Looking through drybox windows	1		
		Less than 75' candle for normal work or 125' candle for close work	2		
	D	Noise:			
		Normal <60 dec.	0		
		Constant noise such as machine shop > 60 dec.	1		
		Average constant noise with loud, sharp, intermittent noise such as punch press, sheetmetal shop, etc.	2		
	E	Restrictive safety devices:			
		1 Safety glasses	0		
		2 Protective clothing			
		Greens	0		
		Yellows	1		
		Anti-C's	2		
		Fully-encapsulating suits	3		
		Lead apron	3		
		3 Face shield	2		
		4 Heavy, tight fireproof coat and shield	1-5		
		5 Filter mask	5		
		6 Respirator			
		Half face	18		
		Full face	25		
		Supplied air	31		
		7 Glove box	1-5		
III	Delay	DOD 5010.15.1-M	0		46.00%
	A	Isolated job. Little coordination with adjacent jobs	1		
	B	Fairly close coordination with adjacent job	2	1.00%	
	C	Work in close proximity of building operations	1-50	25.00%	
	D	Weather	1-80	20.00%	
IV	Production Efficiency	Mean's & Richardsons's	0		0.00%

A	Average 10 Hour work days	50 hrs/wk	91.25% efficient	8.75		
B	Average 11 Hour work days	55 hrs/wk	81.25% efficient	18.25		
C	Average 12 Hour work days	60 hrs/wk	76.25% efficient	23.75		
D	Deferred Break	Work 4hrs off 1 hr	80.00% efficient	25.00		
	"5-8's" Clothing changes, shower time, & travel inclusive					
V	Procedural Requirements	Construction Management		0		8.35%
A	Work Package sign offs			0		
	1 A Package		45min/day	9.3		
	2 B Package		15-30min/day	3.13-6.25	6.25%	
	3 C Package			0		
B	Hot-welding *		10min.	2.1	2.10%	
C	Confined space *		10min.	2.1		
	* Varies with job					

Additional Factors

				Possible	Total Subtotal	Total 2.50% Total
I	Personal Access Control	Time Study		0		0.00%
A	Security Check			0-1		
B	MAA Security Check .729 x4 =2.9min		2 trips-in/out	.6		
	.729 x 8 =5.8 min		4 trips-in/out	1.2		
II	Building Access Control	Construction Management		0		0.00%
A	No overnight material storage-multiple material deliveries			1		
B	No overnight material storage-multiple material deliveries			3.25		
III	Building Layout	Time Study & RI internal letter June 3,1987		0		0.00%
A	Distance from Locker Room to MAA Security Check					
	1.1366 x 4 =4.5 min.		2 trips-in/out	0.9		
	1.1366 x 8 =9 min.		4 trips-in/out	1.8		
B	Distance from MAA Security Check to Work Area					
	1.1366 x 4 =6 min.		2 trips-in/out	1.2		
	1.1366 x 8 =12 min.		4 trips-in/out	2.5		
C	Distance from Cafeteria to locker					
	1.35 x 4 =5.4min.		2 trips-in/out	1.1		
	(for use with breaks)					
D	Inordinate circumstances					
	2.5 x 4 =10 min.		2 trips-in/out	2		
	2.5 x 8 =20 min.		4 trips-in/out	4		
IV	Contamination			0		0.00%
A	Category's 1-4			0		
B	Category 5			1		
C	Category 6			2		
V	Monitoring	Time Study& Prove Study August 15, 1989		0		0.00%
A	Self monitoring at combo***	1 min. each	0.8	0.8		
B	Monitor out for 2 Breaks *	7.9 min. each	1.6	3.2		
C	Monitor out at lunch*	7.9 min. each	1.6	1.6		
D	Monitor out at end of day*	7.9 min. each	1.6	1.6		

E	Body Scanner***	3 min. each		0.6	2.5	
	*Assume 2 step off pads, **assume 2 ea., ***assume 4 ea.					
VI Procedural Requirements		Construction Management			0	2.50%
A	Pre-evolution Meetings					
1	One meeting per week		30min/wk/man		1.25	
2	One meeting per week		60min/wk/man		2.5	2.50%
3	One meeting per day	30 min.	30min/dy/man		6.25	
4	One meeting per day	45 min.	45min/dy/man		9.38	
5	One meeting per day	60 min.	60min/dy/man		12.5	
VII Shower		RI internal letter June 3,1987			0	0.00%
A	N/A				0	
B	End of day		9 min.		1.9	
C	Deferred Break		N/A	0	0	
D	Breaks,Lunch, End of day	9min x 4=	36 min		7.5	
VIII Clothing change		RI internal letter June 3,1987			0	0.00%
	6 minutes allowable	Time Study	2.59 min.			
A	One change out		6 min x 2 =	6	1.25	
B	0 breaks, lunch & home		6 min x 2 =	12	2.5	
C	Yellows		10 min. x 2 =	20	4.2	
D	Anti-C's		15 min. x 2 =	30	6.3	
E	Fully-encapsulating suits		20 min x 2 =	40	8.3	
F	2 breaks,lunch,&home		6 min. x 4 =	24	5.0	
G	Yellows		10 min. x 4 =	40	8.3	
H	Anti-C's		15 min. x 4 =	60	12.5	
I	Fully-encapsulating suits		20 min. x 4 =	80	16.7	

Timberline Productivity Factor **-68.6**

Productivity Factor Evaluation (negative %)

Crews work 8 hrs/day, 5 days/wk

Project Location: Cell work

Productivity Adjustment % (D F + B F)	218.21%
Difficulty Factor (DF)	160.00%
Building Factor (BF)	58.21%
Work Factor Constraints	1.5435
x Additional Factors	1.0250 Equals Building Factor

Note to calculate an accurate productivity factor one must:

1 Have a thorough understanding of the basis of the database or work standards being used.
2 Have a working knowledge of the procedures the work crews will follow.
3 Be familiar with the work site where the work will be executed.
4 A different productivity factor may be require for each work area in one project.

Degree of Difficulty Enter your percentage factor for each item in column M

		% Possible	Subtotal	Total 160.00% / 100.00%
I	Location			
	Labor Productivity difference from data base standard	-100 to +100	100.00%	
	Mask Mark up			
II	Height of Work			
	Work < 8 feet above floor level (a.f.l.)	0		
	Work between 8 feet and 16 feet (a.f.l.)	15-20		
	Work higher than 16 feet (a.f.l.)	25-35		
	Work higher than 16 feet (a.f.l.)(Mech./Elec.)	20-125		
III	Accessibility/Obstructions			25.00%
	Good accessibility/No obstructions	0		
	Limited accessibility/Minor obstructions	10-15		
	Poor accessibility/Substantial obstructions	20-25	25.00%	
	Remote work			
IV	Quanity Installed			0.00%
	Standard quantity *	0		
	Less than standard quanity **	100-300		
	* Estimator must determine the standard quantity based on the estimating standards used.			
	** Adder increases proportonally as the quantity decreases from the standard.			
V	Quality Assurance			35.00%
	Non-vital Safety System (VSS)/Non-Safety Class Item	0		
	Vital Safety System/Safety Class Item	30-35	35.00%	
	Vital Safety System/Safety Class Item (Mech./Elec.)	87-92		

Work Factor Constraints Total 54.35%

			Possible	Subtotal	Total
I	Personal	DOD 5010.15.1-M	0		0.00%
	A	Basic(go to rest room, get drink of water, phone,etc.)	4		
	B	Slightly disagreeable conditions-poor heating.	3		
	C	Extremely disagreeable most of the time -hot objects, ordors, & fumes, or excessive temperatures and or humidity.	6		
II	Fatigue	DOD 5010.15.1-M & Rad. Protection Mgt. July/Aug 94	0		0.00%
	A	Position: Class			
		Working in close, cramped positions	0-7		
	B	Mental:			
		Routine work committed to habit	0		
		Full attention: copying, checking or calculating	2		
		Concentrated attention, nonroutine	4		
		Deep concentration: inspection work requiring interpretation and discretion of unfamiliar nature	8		
	C	Lighting			
		Normal light at least 75' candle power	0		
		Looking through drybox windows	1		
		Less than 75' candle for normal work or 125' candle for close work	2		
	D	Noise:			
		Normal <60 dec.	0		
		Constant noise such as machine shop > 60 dec.	1		
		Average constant noise with loud, sharp, intermittent noise such as punch press, sheetmetal shop, etc.	2		
	E	Restrictive safety devices:			
		1 Safety glasses	0		
		2 Protective clothing			
		Greens	0		
		Yellows	1		
		Anti-C's	2		
		Fully-encapsulating suits	3		
		Lead apron	3		
		3 Face shield	2		
		4 Heavy, tight fireproof coat and shield	1-5		
		5 Filter mask	5		
		6 Respirator			
		Half face	18		
		Full face	25		
		Supplied air	31		
		7 Glove box	1-5		
III	Delay	DOD 5010.15.1-M	0		46.00%
	A	Isolated job. Little coordination with adjacent jobs	1		
	B	Fairly close coordination with adjacent job	2	1.00%	
	C	Work in close proximity of building operations	1-50	45.00%	
	D	Weather	1-80		
IV	Production Efficiency	Mean's & Richardsons's	0		0.00%

A	Average 10 Hour work days	50 hrs/wk	91.25% efficient	8.75		
B	Average 11 Hour work days	55 hrs/wk	81.25% efficient	18.25		
C	Average 12 Hour work days	60 hrs/wk	76.25% efficient	23.75		
D	Deferred Break	Work 4hrs off 1 hr	80.00% efficient	25.00		
	"5-8's" Clothing changes, shower time, & travel inclusive					
V	Procedural Requirements	Construction Management		0		8.35%
A	Work Package sign offs			0		
	1 A Package		45min/day	9.3		
	2 B Package		15-30min/day	3.13-6.25	6.25%	
	3 C Package			0		
B	Hot-welding *		10min.	2.1	2.10%	
C	Confined space *		10min.	2.1		
	* Varies with job					

Additional Factors

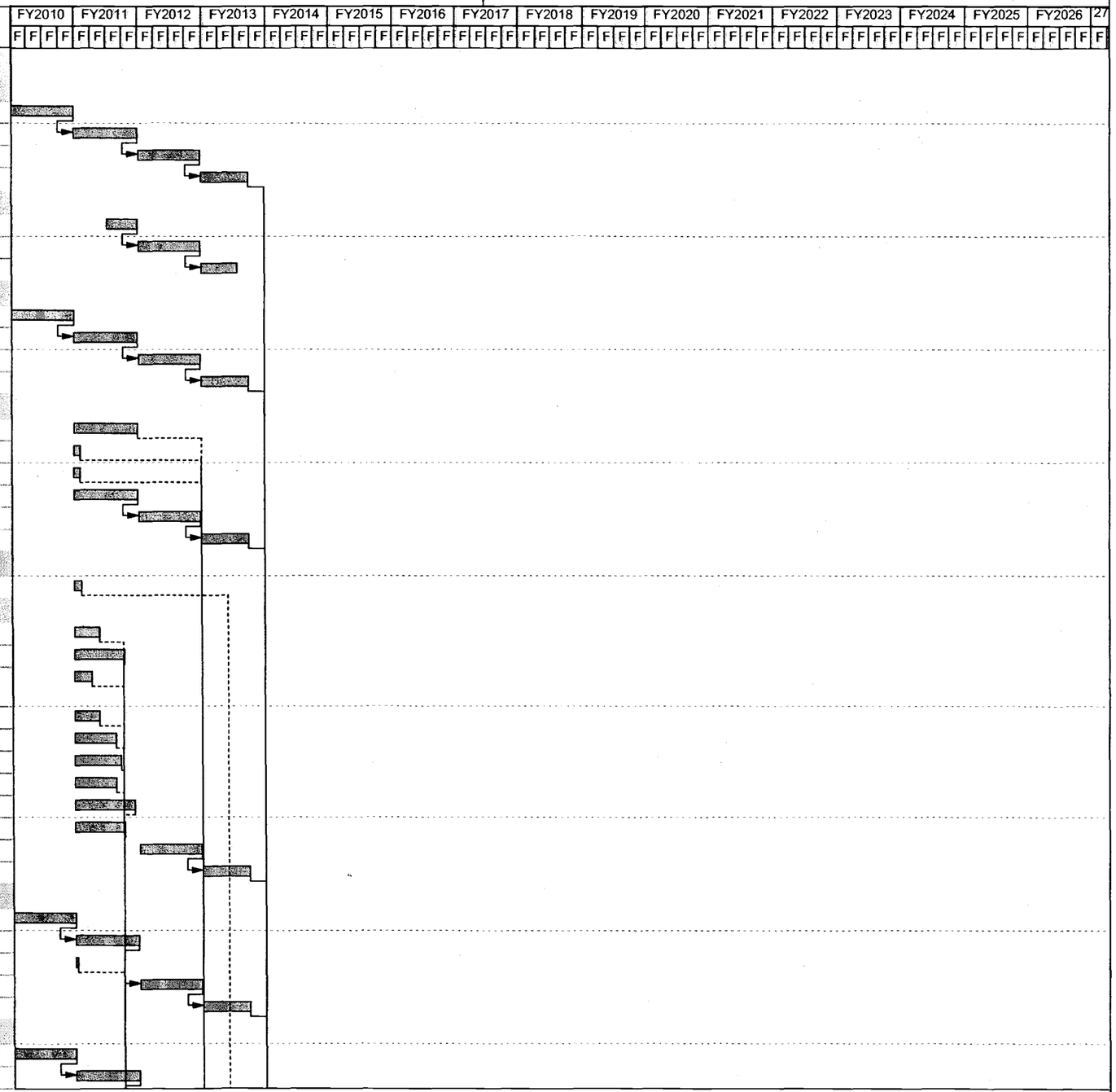
				Possible	Total Subtotal	2.50% Total
I	Personal Access Control	Time Study		0		0.00%
A	Security Check			0-1		
B	MAA Security Check .729 x4 =2.9min		2 trips-in/out	.6		
	.729 x 8 =5.8 min		4 trips-in/out	1.2		
II	Building Access Control	Construction Management		0		0.00%
A	No overnight material storage-multiple material deliveries			1		
B	No overnight material storage-multiple material deliveries			3.25		
III	Building Layout	Time Study & RI internal letter June 3,1987		0		0.00%
A	Distance from Locker Room to MAA Security Check					
	1.1366 x 4 =4.5 min.		2 trips-in/out	0.9		
	1.1366 x 8 =9 min.		4 trips-in/out	1.8		
B	Distance from MAA Security Check to Work Area					
	1.1366 x 4 =6 min.		2 trips-in/out	1.2		
	1.1366 x 8 =12 min.		4 trips-in/out	2.5		
C	Distance from Cafeteria to locker					
	1.35 x 4 =5.4min.		2 trips-in/out	1.1		
	(for use with breaks)					
D	Inordinate circumstances					
	2.5 x 4 =10 min.		2 trips-in/out	2		
	2.5 x 8 =20 min.		4 trips-in/out	4		
IV	Contamination			0		0.00%
A	Category's 1-4			0		
B	Category 5			1		
C	Category 6			2		
V	Monitoring	Time Study& Prove Study August 15, 1989		0		0.00%
A	Self monitoring at combo***	1 min. each	0.8	0.8		
B	Monitor out for 2 Breaks *	7.9 min. each	1.6	3.2		
C	Monitor out at lunch*	7.9 min. each	1.6	1.6		
D	Monitor out at end of day*	7.9 min. each	1.6	1.6		

E	Body Scanner***	3 min. each		0.6	2.5	
	*Assume 2 step off pads, **assume 2 ea., ***assume 4 ea.					
VI Procedural Requirements		Construction Management			0	2.50%
A	Pre-evolution Meetings					
	1 One meeting per week		30min/wk/man		1.25	
	2 One meeting per week		60min/wk/man		2.5	2.50%
	3 One meeting per day	30 min.	30min/dy/man		6.25	
	4 One meeting per day	45 min.	45min/dy/man		9.38	
	5 One meeting per day	60 min.	60min/dy/man		12.5	
VII Shower		RI internal letter June 3,1987			0	0.00%
A	N/A				0	
B	End of day		9 min.		1.9	
C	Deferred Break		N/A	0	0	
D	Breaks,Lunch, End of day	9min x 4=	36 min		7.5	
VIII Clothing change		RI internal letter June 3,1987			0	0.00%
	6 minutes allowable	Time Study	2.59 min.			
A	One change out		6 min x 2 =	6	1.25	
B	0 breaks, lunch & home		6 min x 2 =	12	2.5	
C	Yellows		10 min. x 2 =	20	4.2	
D	Anti-C's		15 min. x 2 =	30	6.3	
E	Fully-encapsulating suits		20 min x 2 =	40	8.3	
F	2 breaks,lunch,&home		6 min. x 4 =	24	5.0	
G	Yellows		10 min. x 4 =	40	8.3	
H	Anti-C's		15 min. x 4 =	60	12.5	
I	Fully-encapsulating suits		20 min. x 4 =	80	16.7	

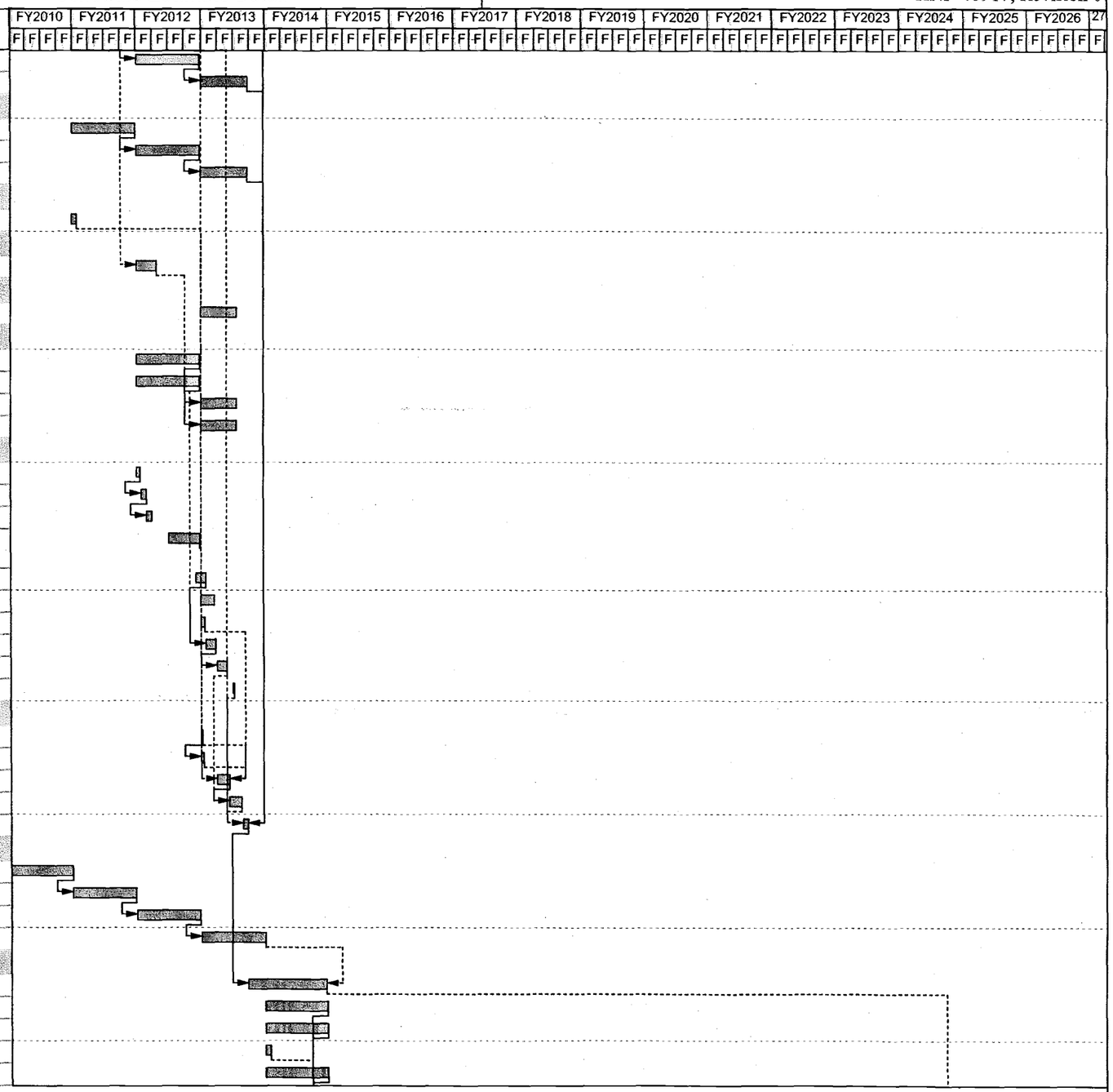
Appendix F

Schedule Estimate Detail

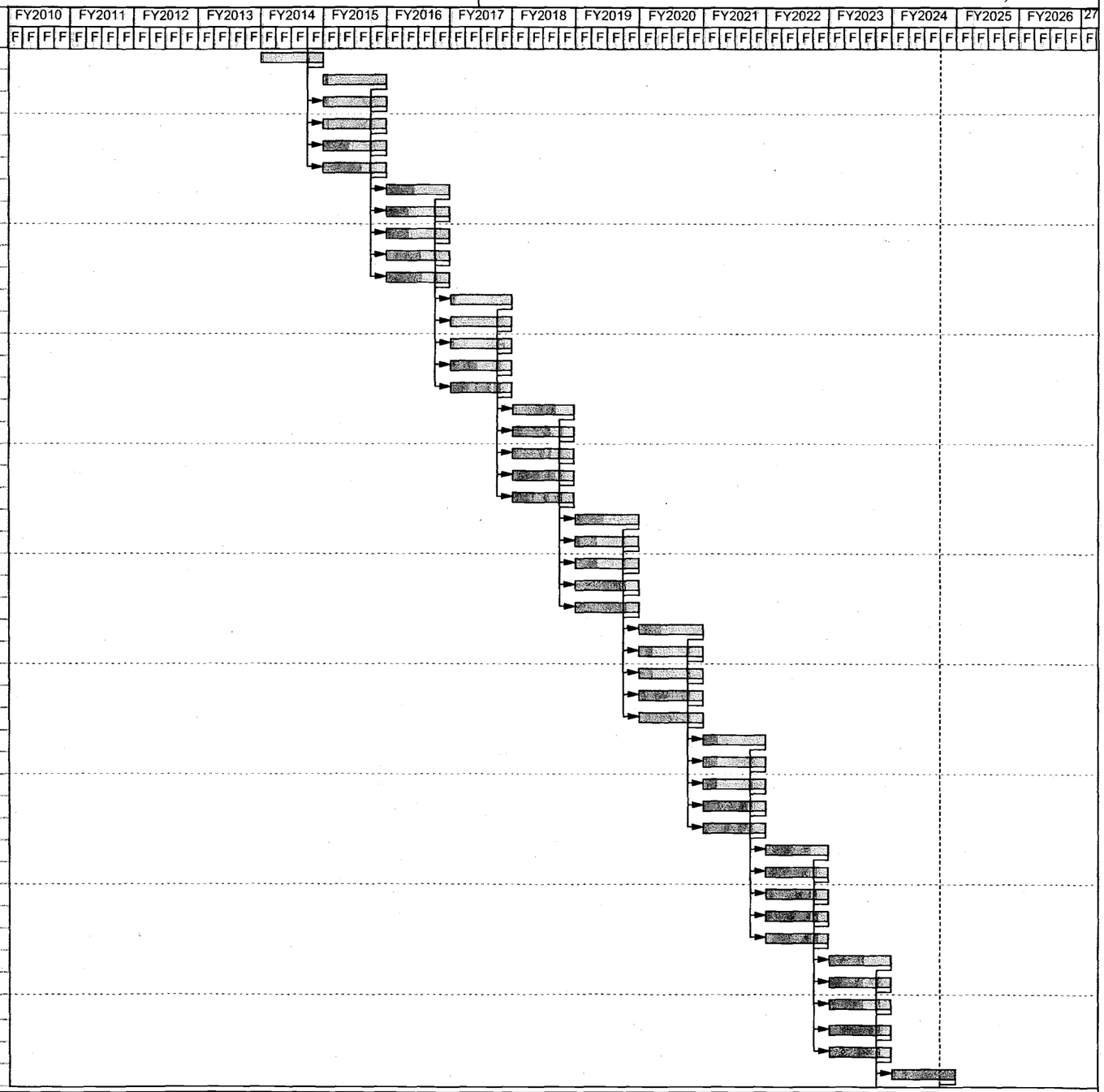
Activity ID	Activity Name	Remaining Duration	Start	Finish
T-Plant Storage		4030	01-Oct-09	30-Sep-25
Project Management		940	01-Oct-09	25-Jun-13
TP01010110	Project Management FY 2010	252	01-Oct-09*	30-Sep-10
TP01010111	Project Management FY 2011	252	01-Oct-10	30-Sep-11
TP01010112	Project Management FY 2012	251	03-Oct-11	28-Sep-12
TP01010113	Project Management FY 2013	185	01-Oct-12	25-Jun-13
Construction Management		518	05-Apr-11	23-Apr-13
TP01020111	Construction Management FY 2011	126	05-Apr-11*	30-Sep-11
TP01020112	Construction Management FY 2012	251	03-Oct-11	28-Sep-12
TP01020113	Construction Management FY 2013	141	01-Oct-12	23-Apr-13
Project Support		940	01-Oct-09	25-Jun-13
TP02010110	Facility Support To Project FY 2010	252	01-Oct-09*	30-Sep-10
TP02010111	Facility Support To Project FY 2011	252	01-Oct-10	30-Sep-11
TP02010112	Facility Support To Project FY 2012	251	03-Oct-11	28-Sep-12
TP02010113	Facility Support To Project FY 2013	185	01-Oct-12	25-Jun-13
Environmental Documents, And Permitting		688	01-Oct-10	25-Jun-13
TP03010111	CERCLA Documentation(Includes NEPA) FY 2011	252	01-Oct-10*	30-Sep-11
TP03010411	Ecological Compliance Resource Review FY 2011	25	01-Oct-10*	04-Nov-10
TP03010311	Hanford Cultural Resource Review	25	01-Oct-10*	04-Nov-10
TP03010511	Review Support FY 2011	252	01-Oct-10*	30-Sep-11
TP03010512	Review Support FY 2012	251	03-Oct-11*	28-Sep-12
TP03010513	Review Support FY 2013	185	01-Oct-12*	25-Jun-13
Waste Acceptance		30	01-Oct-10	11-Nov-10
TP03030111	Waste Acceptance	30	01-Oct-10*	11-Nov-10
Nuclear Safety		688	01-Oct-10	25-Jun-13
TP04010111	Hazard Analysis FY 2011	95	01-Oct-10*	17-Feb-11
TP04010211	Accident Analysis FY 2011	195	01-Oct-10*	12-Jul-11
TP04010311	Thermal/Gas Analysis Update(HNF-10858, SNF-18135,HNF-12563) FY 2011	65	01-Oct-10*	06-Jan-11
TP04010411	GAP Analysis	95	01-Oct-10*	17-Feb-11
TP04010511	Control Definitions	165	01-Oct-10*	27-May-11
TP04010611	MDSA	180	01-Oct-10*	20-Jun-11
TP04010711	Criticality Safety Analysis	165	01-Oct-10*	27-May-11
TP04010911	Fire Hazard Analysis FY 2011	235	01-Oct-10*	07-Sep-11
TP04011011	EPHA	195	01-Oct-10*	12-Jul-11
TP04011112	Un-Reviewed Safety Questions (USQ) Support FY 2012	251	03-Oct-11*	28-Sep-12
TP04011113	Un-Reviewed Safety Questions (USQ) Support FY 2013	185	01-Oct-12*	25-Jun-13
Radiological Control		940	01-Oct-09	25-Jun-13
TP05010110	RADCON Engineering Support FY 2010	252	01-Oct-09*	30-Sep-10
TP05010111	RADCON Engineering Support FY 2011	252	01-Oct-10	30-Sep-11
TP05010211	ALARA Plan FY 2011	10	01-Oct-10*	14-Oct-10
TP05010112	RADCON Engineering Support FY 2012	251	03-Oct-11	28-Sep-12
TP05010113	RADCON Engineering Support FY 2013	185	01-Oct-12	25-Jun-13
Industrial Safety		940	01-Oct-09	25-Jun-13
TP06010110	Industrial Safety FY 2010	252	01-Oct-09*	30-Sep-10
TP06010111	Industrial Safety FY 2011	252	01-Oct-10	30-Sep-11



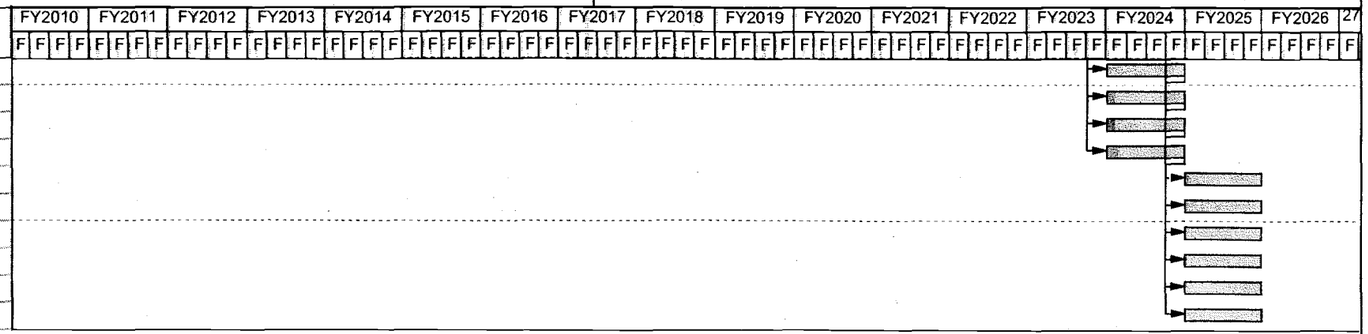
Activity ID	Activity Name	Remaining Duration	Start	Finish
TP06010112	Industrial Safety FY 2012	251	03-Oct-11	28-Sep-12
TP06010113	Industrial Safety FY 2013	185	01-Oct-12	25-Jun-13
Quality Assurance		**688**	**01-Oct-10**	**25-Jun-13**
TP07010111	Quality Assurance FY 2011	252	01-Oct-10*	30-Sep-11
TP07010112	Quality Assurance FY 2012	251	03-Oct-11	28-Sep-12
TP07010113	Quality Assurance FY 2013	185	01-Oct-12	25-Jun-13
Safeguards And Security		**20**	**01-Oct-10**	**28-Oct-10**
TP08010111	Vulnerability Assessment FY 2011	20	01-Oct-10*	28-Oct-10
Final Design		**80**	**03-Oct-11**	**27-Jan-12**
TP12010112	Final Design FY 2012	80	03-Oct-11*	27-Jan-12
Engineering During Construction		**141**	**01-Oct-12**	**23-Apr-13**
TP13010113	Engineering During Construction FY 2013	141	01-Oct-12*	23-Apr-13
Procurement		**392**	**03-Oct-11**	**23-Apr-13**
TP14010112	Procurement Support FY2012	251	03-Oct-11*	28-Sep-12
TP14020112	Equipment Procurement FY 2012	251	03-Oct-11*	28-Sep-12
TP14010113	Procurement Support FY 2013	141	01-Oct-12	23-Apr-13
TP14020113	Equipment Procurement FY 2013	141	01-Oct-12	23-Apr-13
Construction		**385**	**03-Oct-11**	**12-Apr-13**
TP15030212	Cleanout Cell 14R	20	03-Oct-11*	28-Oct-11
TP15032012	Cleanout Cell 16R	20	31-Oct-11	29-Nov-11
TP15032112	Cleanout Cell 2R	20	30-Nov-11	29-Dec-11
TP15030112	Clean Off Canyon Deck (Relocate Permacons and NLOP grout equip.)	127	02-Apr-12*	28-Sep-12
TP15030313	Install New Cell Equipment In 14R	40	04-Sep-12*	29-Oct-12
TP15030813	Install Inert Gas Exhaust Ducting/Inert Gas System Tools	55	01-Oct-12*	18-Dec-12
TP15030913	Water Addition system	20	01-Oct-12*	26-Oct-12
TP15032213	Install New Cell Equipment In 16R	40	30-Oct-12	28-Dec-12
TP15032313	Install New Cell Equipment In 2R	40	31-Dec-12	26-Feb-13
TP15031013	Tunnel Egress stairs	10	01-Apr-13*	12-Apr-13
Startup And Testing		**185**	**01-Oct-12**	**25-Jun-13**
TP16010213	CORAMI evaluation	10	01-Oct-12*	12-Oct-12
TP16010313	Procedure development	15	01-Oct-12	19-Oct-12
TP16010413	Readiness Activities/Planning	50	02-Jan-13*	13-Mar-13
TP16020113	System Tests	50	14-Mar-13	22-May-13
TP16020313	Startup	20	29-May-13	25-Jun-13
Contingency		**1007**	**01-Oct-09**	**30-Sep-13**
TP17010110	Contingency FY 2010	252	01-Oct-09*	30-Sep-10
TP17011111	Contingency FY 2011	252	01-Oct-10	30-Sep-11
TP17011312	Contingency FY 2012	251	03-Oct-11	28-Sep-12
TP17011313	Contingency FY 2013	252	01-Oct-12	30-Sep-13
Operations And Maintenance		**3090**	**26-Jun-13**	**30-Sep-25**
TP18010514	Operations Unload And Load	315	26-Jun-13	24-Sep-14
TP18020114	Semi Annual Below the hook lifting devices PM FY 2014	252	01-Oct-13*	30-Sep-14
TP18020214	Annual inert gas system calibration FY 2014	252	01-Oct-13*	30-Sep-14
TP18020314	Confinement Ventilation System PM FY 2014	20	01-Oct-13*	28-Oct-13
TP18020414	Annual Crane Maintenance FY 2014	252	01-Oct-13*	30-Sep-14



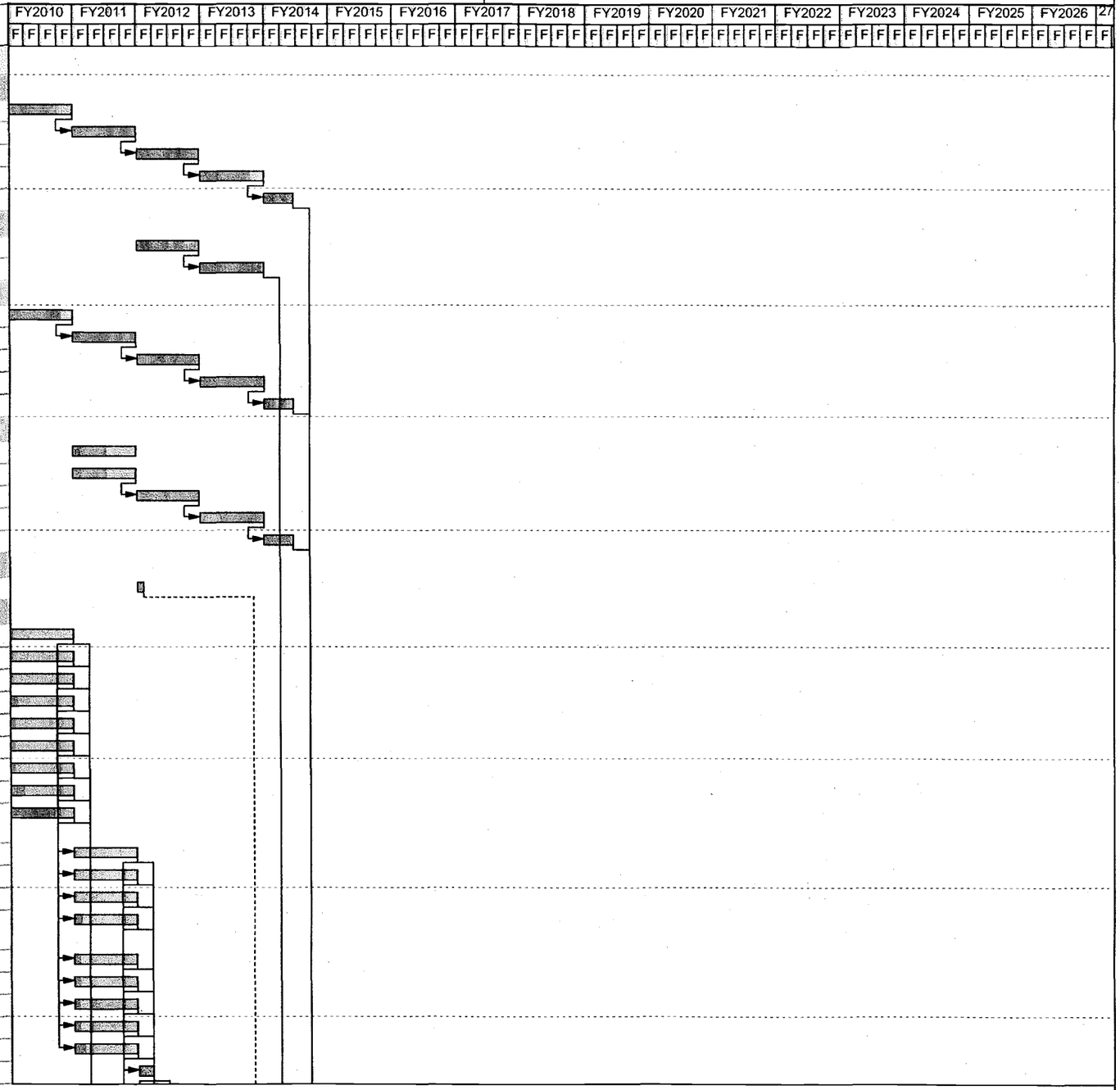
Activity ID	Activity Name	Remaining Duration	Start	Finish
TP18010714	Min Safe FY 2014	252	01-Oct-13*	30-Sep-14
TP18010615	Water Addition FY 2015	252	01-Oct-14*	30-Sep-15
TP18010715	Min Safe FY 2015	252	01-Oct-14*	30-Sep-15
TP18020115	Semi Annual Below the hook lifting devices PM FY 2015	252	01-Oct-14	30-Sep-15
TP18020215	Annual inert gas system calibration FY 2015	252	01-Oct-14	30-Sep-15
TP18020415	Annual Crane Maintenance FY 2015	252	01-Oct-14	30-Sep-15
TP18010616	Water Addition FY 2016	253	01-Oct-15	30-Sep-16
TP18010716	Min Safe FY 2016	253	01-Oct-15	30-Sep-16
TP18020116	Semi Annual Below the hook lifting devices PM FY 2016	253	01-Oct-15	30-Sep-16
TP18020216	Annual inert gas system calibration FY 2016	253	01-Oct-15	30-Sep-16
TP18020416	Annual Crane Maintenance FY 2016	253	01-Oct-15	30-Sep-16
TP18010617	Water Addition FY 2017	251	03-Oct-16	29-Sep-17
TP18010717	Min Safe FY 2017	251	03-Oct-16	29-Sep-17
TP18020117	Semi Annual Below the hook lifting devices PM FY 2017	251	03-Oct-16	29-Sep-17
TP18020217	Annual inert gas system calibration FY 2017	251	03-Oct-16	29-Sep-17
TP18020417	Annual Crane Maintenance FY 2017	251	03-Oct-16	29-Sep-17
TP18010618	Water Addition FY 2018	251	02-Oct-17	28-Sep-18
TP18010718	Min Safe FY 2018	251	02-Oct-17	28-Sep-18
TP18020118	Semi Annual Below the hook lifting devices PM FY 2018	251	02-Oct-17	28-Sep-18
TP18020218	Annual inert gas system calibration FY 2018	251	02-Oct-17	28-Sep-18
TP18020418	Annual Crane Maintenance FY 2018	251	02-Oct-17	28-Sep-18
TP18010619	Water Addition FY 2019	252	01-Oct-18	30-Sep-19
TP18010719	Min Safe FY 2019	252	01-Oct-18	30-Sep-19
TP18020119	Semi Annual Below the hook lifting devices PM FY 2019	252	01-Oct-18	30-Sep-19
TP18020219	Annual inert gas system calibration FY 2019	252	01-Oct-18	30-Sep-19
TP18020419	Annual Crane Maintenance FY 2019	252	01-Oct-18	30-Sep-19
TP18010620	Water Addition FY 2020	253	01-Oct-19	30-Sep-20
TP18010720	Min Safe FY 2020	253	01-Oct-19	30-Sep-20
TP18020120	Semi Annual Below the hook lifting devices PM FY 2020	253	01-Oct-19	30-Sep-20
TP18020220	Annual inert gas system calibration FY 2020	253	01-Oct-19	30-Sep-20
TP18020420	Annual Crane Maintenance FY 2020	253	01-Oct-19	30-Sep-20
TP18010621	Water Addition FY 2021	252	01-Oct-20	30-Sep-21
TP18010721	Min Safe FY 2021	252	01-Oct-20	30-Sep-21
TP18020121	Semi Annual Below the hook lifting devices PM FY 2021	252	01-Oct-20	30-Sep-21
TP18020221	Annual inert gas system calibration FY 2021	252	01-Oct-20	30-Sep-21
TP18020421	Annual Crane Maintenance FY 2021	252	01-Oct-20	30-Sep-21
TP18010622	Water Addition FY 2022	252	01-Oct-21	30-Sep-22
TP18010722	Min Safe FY 2022	252	01-Oct-21	30-Sep-22
TP18020122	Semi Annual Below the hook lifting devices PM FY 2022	252	01-Oct-21	30-Sep-22
TP18020222	Annual inert gas system calibration FY 2022	252	01-Oct-21	30-Sep-22
TP18020422	Annual Crane Maintenance FY 2022	252	01-Oct-21	30-Sep-22
TP18010623	Water Addition FY 2023	251	03-Oct-22	29-Sep-23
TP18010723	Min Safe FY 2023	251	03-Oct-22	29-Sep-23
TP18020123	Semi Annual Below the hook lifting devices PM FY 2023	251	03-Oct-22	29-Sep-23
TP18020223	Annual inert gas system calibration FY 2023	251	03-Oct-22	29-Sep-23
TP18020423	Annual Crane Maintenance FY 2023	251	03-Oct-22	29-Sep-23
TP18010624	Water Addition FY 2024	252	02-Oct-23	30-Sep-24



Activity ID	Activity Name	Remaining Duration	Start	Finish
TP18010724	Min Safe FY 2024	252	02-Oct-23	30-Sep-24
TP18020124	Semi Annual Below the hook lifting devices PM FY 2024	252	02-Oct-23	30-Sep-24
TP18020224	Annual inert gas system calibration FY 2024	252	02-Oct-23	30-Sep-24
TP18020424	Annual Crane Maintenance FY 2024	252	02-Oct-23	30-Sep-24
TP18010525	Open & Load Out	252	01-Oct-24*	30-Sep-25
TP18010625	Water Addition FY 2025	252	01-Oct-24	30-Sep-25
TP18010725	Min Safe FY 2025	252	01-Oct-24	30-Sep-25
TP18020125	Semi Annual Below the hook lifting devices PM FY 2025	252	01-Oct-24	30-Sep-25
TP18020225	Annual inert gas system calibration FY 2025	252	01-Oct-24	30-Sep-25
TP18020425	Annual Crane Maintenance FY 2025	252	01-Oct-24	30-Sep-25

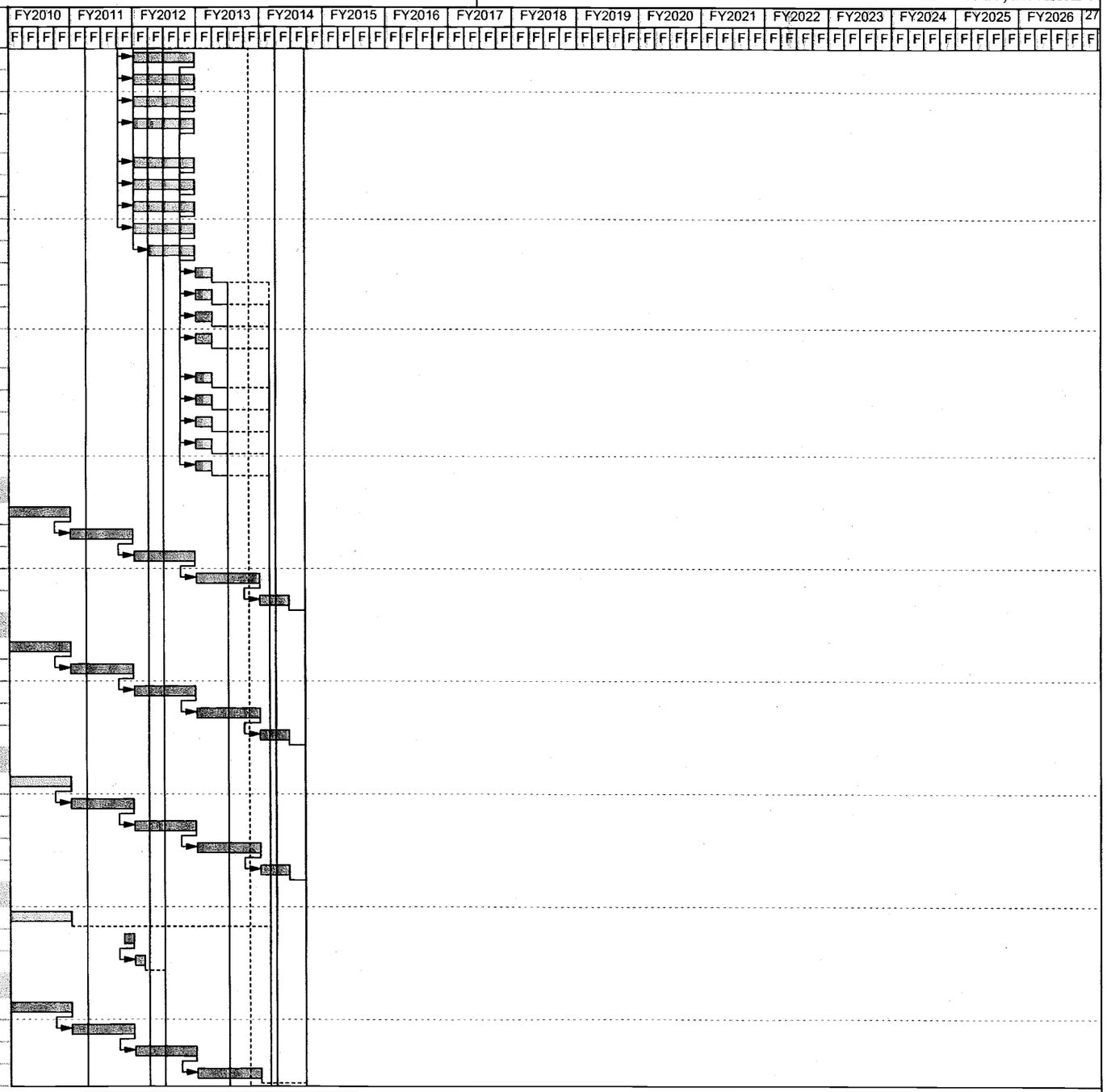


Activity ID	Activity Name	Remaining Duration	Start	Finish
Alternate Storage Facility		4282	01-Oct-09	30-Sep-26
Project Management		1125	01-Oct-09	21-Mar-14
NP01010110	Project Management FY 2010	252	01-Oct-09*	30-Sep-10
NP01010111	Project Management FY 2011	252	01-Oct-10	30-Sep-11
NP01010112	Project Management FY 2012	251	03-Oct-11	28-Sep-12
NP01010113	Project Management FY 2013	252	01-Oct-12	30-Sep-13
NP01010114	Project Management FY 2014	118	01-Oct-13	21-Mar-14
Construction Management		503	03-Oct-11	30-Sep-13
NP01020112	Construction Management FY 2012	251	03-Oct-11*	28-Sep-12
NP01020113	Construction Management FY 2013	252	01-Oct-12	30-Sep-13
Project Support		1125	01-Oct-09	21-Mar-14
NP02010110	Facility Support To Project FY 2010	252	01-Oct-09*	30-Sep-10
NP02010111	Facility Support To Project FY 2011	252	01-Oct-10	30-Sep-11
NP02010112	Facility Support To Project FY 2012	251	03-Oct-11	28-Sep-12
NP02010113	Facility Support To Project FY 2013	252	01-Oct-12	30-Sep-13
NP02010114	Facility Support To Project FY 2014	118	01-Oct-13	21-Mar-14
Environmental Documents, And Permitting		873	01-Oct-10	21-Mar-14
NP03010111	CERCLA Documentation FY 2011	252	01-Oct-10*	30-Sep-11
NP03010211	Review Support FY 2011	252	01-Oct-10*	30-Sep-11
NP03010212	Review Support FY 2012	251	03-Oct-11	28-Sep-12
NP03010213	Review Support FY 2013	252	01-Oct-12	30-Sep-13
NP03010214	Review Support FY 2014	118	01-Oct-13	21-Mar-14
Waste Acceptance		30	03-Oct-11	11-Nov-11
NP03030112	Waste Acceptance FY 2012	30	03-Oct-11*	11-Nov-11
Nuclear Safety		817	01-Oct-09	31-Dec-12
NP04010710	Criticality Safety Analysis FY 2010	252	01-Oct-09*	30-Sep-10
NP04010910	Fire Hazard Analysis FY 2010	252	01-Oct-09*	30-Sep-10
NP04011010	EPHA FY 2010	252	01-Oct-09*	30-Sep-10
NP04010410	GAP Analysis FY 2010	252	01-Oct-09*	30-Sep-10
NP04010510	Control Definitions FY 2010	252	01-Oct-09*	30-Sep-10
NP04010610	Conceptual Safety Design Report FY 2010	252	01-Oct-09*	30-Sep-10
NP04010110	Hazards Analysis FY 2010	252	01-Oct-09*	30-Sep-10
NP04010210	Accident Analysis FY 2010	252	01-Oct-09*	30-Sep-10
NP04010310	Thermal/ Gas Analysis Update (HNF-10858, SNF-18135, HNF-12563) FY 2010	252	01-Oct-09*	30-Sep-10
NP04010711	Criticality Safety Analysis FY 2011	252	01-Oct-10	30-Sep-11
NP04010911	Fire Hazard Analysis FY 2011	252	01-Oct-10	30-Sep-11
NP04011011	EPHA FY 2011	252	01-Oct-10	30-Sep-11
NP04010311	Thermal/ Gas Analysis Update (HNF-10858, SNF-18135, HNF-12563) FY 2011	252	01-Oct-10	30-Sep-11
NP04010411	GAP Analysis FY 2011	252	01-Oct-10	30-Sep-11
NP04010511	Control Definitions FY 2011	252	01-Oct-10	30-Sep-11
NP04010111	Hazards Analysis FY 2011	252	01-Oct-10	30-Sep-11
NP04010211	Accident Analysis FY 2011	252	01-Oct-10	30-Sep-11
NP04010611	Preliminary Safety Design Report FY 2011	252	01-Oct-10*	30-Sep-11
NP04010612	Preliminary Safety Design Report FY 2012	61	03-Oct-11	30-Dec-11

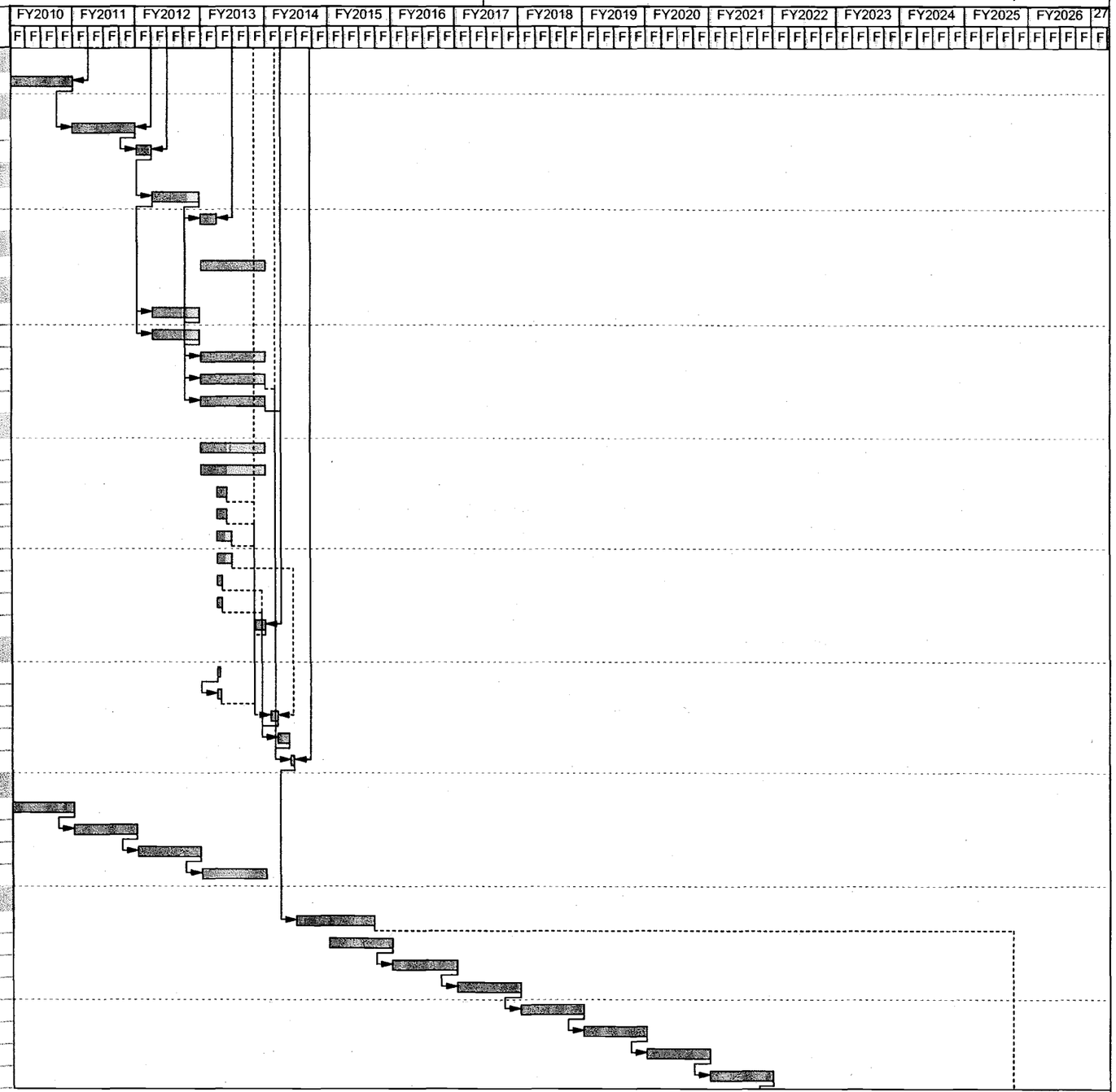


Remaining Work

Activity ID	Activity Name	Remaining Duration	Start	Finish
NP04010712	Criticality Safety Analysis FY 2012	251	03-Oct-11	28-Sep-12
NP04010912	Fire Hazard Analysis FY 2012	251	03-Oct-11	28-Sep-12
NP04011012	EPHA FY 2012	251	03-Oct-11	28-Sep-12
NP04010312	Thermal/ Gas Analysis Update (HNF-10858, SNF-18135, HNF-12563) FY 2012	251	03-Oct-11	28-Sep-12
NP04010412	GAP Analysis FY 2012	251	03-Oct-11	28-Sep-12
NP04010512	Control Definitions FY 2012	251	03-Oct-11	28-Sep-12
NP04010112	Hazards Analysis FY 2012	251	03-Oct-11	28-Sep-12
NP04010212	Accident Analysis FY 2012	251	03-Oct-11	28-Sep-12
NP04012012	Final Safety Design Analysis FY 2012	190	03-Jan-12	28-Sep-12
NP04010713	Criticality Safety Analysis FY 2013	62	01-Oct-12	31-Dec-12
NP04010913	Fire Hazard Analysis FY 2013	62	01-Oct-12	31-Dec-12
NP04011013	EPHA FY 2013	62	01-Oct-12	31-Dec-12
NP04010313	Thermal/ Gas Analysis Update (HNF-10858, SNF-18135, HNF-12563) FY 2013	62	01-Oct-12	31-Dec-12
NP04010413	GAP Analysis FY 2013	62	01-Oct-12	31-Dec-12
NP04010513	Control Definitions FY 2013	62	01-Oct-12	31-Dec-12
NP04010113	Hazards Analysis FY 2013	62	01-Oct-12	31-Dec-12
NP04010213	Accident Analysis FY 2013	62	01-Oct-12	31-Dec-12
NP04010613	Final Safety Design Analysis FY 2013	62	01-Oct-12	31-Dec-12
Radiological Control		1125	01-Oct-09	21-Mar-14
NP05050110	RADCON Engineering Support FY 2010	252	01-Oct-09*	30-Sep-10
NP05050111	RADCON Engineering Support FY 2011	252	01-Oct-10	30-Sep-11
NP05050112	RADCON Engineering Support FY 2012	251	03-Oct-11	28-Sep-12
NP05050113	RADCON Engineering Support FY 2013	252	01-Oct-12	30-Sep-13
NP05050114	RADCON Engineering Support FY 2014	118	01-Oct-13	21-Mar-14
Industrial Safety		1125	01-Oct-09	21-Mar-14
NP06060110	Industrial Safety FY 2010	252	01-Oct-09*	30-Sep-10
NP06060111	Industrial Safety FY 2011	252	01-Oct-10	30-Sep-11
NP06060112	Industrial Safety FY 2012	251	03-Oct-11	28-Sep-12
NP06060113	Industrial Safety FY 2013	252	01-Oct-12	30-Sep-13
NP06060114	Industrial Safety FY 2014	118	01-Oct-13	21-Mar-14
Quality Assurance		1125	01-Oct-09	21-Mar-14
NP07010110	Quality Assurance FY 2010	252	01-Oct-09*	30-Sep-10
NP07010111	Quality Assurance FY 2011	252	01-Oct-10	30-Sep-11
NP07010112	Quality Assurance FY 2012	251	03-Oct-11	28-Sep-12
NP07010113	Quality Assurance FY 2013	252	01-Oct-12	30-Sep-13
NP07010114	Quality Assurance FY 2014	118	01-Oct-13	21-Mar-14
Safeguards And Security		544	01-Oct-09	29-Nov-11
NP08080110	Design Review Of Conceptual Design	251	01-Oct-09*	29-Sep-10
NP08080211	Vulnerability Assessment FY 2011	40	05-Aug-11*	30-Sep-11
NP08080212	Vulnerability Assessment FY 2012	40	03-Oct-11	29-Nov-11
Technology Development		1007	01-Oct-09	30-Sep-13
NP09090110	Technology Development FY 2010	252	01-Oct-09*	30-Sep-10
NP09090111	Technology Development FY 2011	252	01-Oct-10	30-Sep-11
NP09090112	Technology Development FY 2012	251	03-Oct-11	28-Sep-12
NP09090113	Technology Development FY 2013	252	01-Oct-12	30-Sep-13

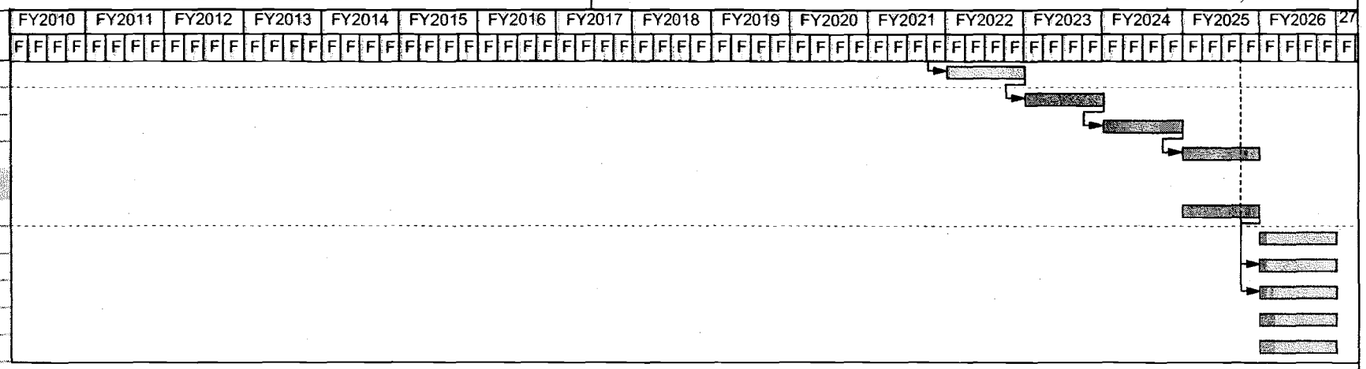


Activity ID	Activity Name	Remaining Duration	Start	Finish
Conceptual Design		252	01-Oct-09	30-Sep-10
NP10100110	Conceptual Design FY 2010	252	01-Oct-09*	30-Sep-10
Preliminary Design		313	01-Oct-10	30-Dec-11
NP11110111	Preliminary Design FY 2011	252	01-Oct-10	30-Sep-11
NP11110112	Preliminary Design FY 2012	61	03-Oct-11	30-Dec-11
Final Design		252	03-Jan-12	31-Dec-12
NP12120112	Final Design FY 2012	190	03-Jan-12	28-Sep-12
NP12120113	Final Design FY 2013	62	01-Oct-12	31-Dec-12
Engineering During Construction		252	01-Oct-12	30-Sep-13
NP13130113	Engineering During Construction FY 2013	252	01-Oct-12*	30-Sep-13
Procurement		442	03-Jan-12	30-Sep-13
NP14140112	Procurement Support FY 2012	190	03-Jan-12	28-Sep-12
NP14020112	Equipment Procurement FY 2012	190	03-Jan-12	28-Sep-12
NP14140113	Procurement Support FY 2013	252	01-Oct-12	30-Sep-13
NP15010913	Fabricate Concrete Storage Caisson FY 2013	252	01-Oct-12*	30-Sep-13
NP14020113	Equipment Procurement FY 2013	252	01-Oct-12	30-Sep-13
Construction		252	01-Oct-12	30-Sep-13
NP15010113	Field Staff	252	01-Oct-12*	30-Sep-13
NP15010213	Field Office	252	01-Oct-12*	30-Sep-13
NP15010813	Install Site Utilities	40	02-Jan-13*	27-Feb-13
NP15011013	Powered Ventilation	40	02-Jan-13*	27-Feb-13
NP15010313	Prepare Subgrade, Place Base, And Pavement	60	02-Jan-13*	27-Mar-13
NP15010413	Concrete	60	02-Jan-13*	27-Mar-13
NP15010513	Install Security Fence And Type 4 Barrier	20	02-Jan-13*	29-Jan-13
NP15010613	Install Conduit, Wire, And Light Pole	20	02-Jan-13*	29-Jan-13
NP15010713	Install Sensors And Controls	40	05-Aug-13	30-Sep-13
Startup And Testing		308	02-Jan-13	21-Mar-14
NP16160113	CORAMI Evaluation	10	02-Jan-13*	15-Jan-13
NP16160213	Procedure Development	15	02-Jan-13*	22-Jan-13
NP16160314	Readiness Activities/Planning	25	01-Nov-13*	09-Dec-13
NP16160414	System Tests	50	10-Dec-13	21-Feb-14
NP16160514	Startup	20	24-Feb-14	21-Mar-14
Contingency		1007	01-Oct-09	30-Sep-13
NP17170110	Contingency FY 2010	252	01-Oct-09*	30-Sep-10
NP17170111	Contingency FY 2011	252	01-Oct-10	30-Sep-11
NP17170112	Contingency FY 2012	251	03-Oct-11	28-Sep-12
NP17170113	Contingency FY 2013	252	01-Oct-12	30-Sep-13
Operations And Maintenance		2906	24-Mar-14	01-Oct-25
NP18180115	Operations Unload And Store	315	24-Mar-14	19-Jun-15
NP18180215	Maintenance FY 2015	253	01-Oct-14*	01-Oct-15
NP18180216	Maintenance FY 2016	253	02-Oct-15	03-Oct-16
NP18180217	Maintenance FY 2017	251	04-Oct-16	02-Oct-17
NP18180218	Maintenance FY 2018	251	03-Oct-17	01-Oct-18
NP18180219	Maintenance FY 2019	252	02-Oct-18	01-Oct-19
NP18180220	Maintenance FY 2020	253	02-Oct-19	01-Oct-20
NP18180221	Maintenance FY 2021	252	02-Oct-20	01-Oct-21



Remaining Work

Activity ID	Activity Name	Remaining Duration	Start	Finish
NP18180222	Maintenance FY 2022	252	04-Oct-21	03-Oct-22
NP18180223	Maintenance FY 2023	251	04-Oct-22	02-Oct-23
NP18180224	Maintenance FY 2024	252	03-Oct-23	01-Oct-24
NP18180225	Maintenance FY 2025	252	02-Oct-24	01-Oct-25
Deactivation And Decommisioning		504	01-Oct-24	30-Sep-26
NP19190125	Deactivation And Decommissioning Planning FY 2025	252	01-Oct-24*	30-Sep-25
NP19190126	Construction Management FY 2026	252	01-Oct-25*	30-Sep-26
NP19190226	Demolition FY 2026	252	01-Oct-25	30-Sep-26
NP19190326	Site Restoration FY 2026	252	01-Oct-25	30-Sep-26
NP19190426	Field Staff For Deactivation And Decommissioning	252	01-Oct-25*	30-Sep-26
NP19190526	Field Office For Deactivation And Decommissioning	252	01-Oct-25*	30-Sep-26



Appendix G

Risks Associated with Sludge Storage at T Plant and the Alternate Storage Facility

Table G-1. Risks Associated with Sludge Storage at T Plant and the Alternate Storage Facility

Risk No.[1]	Risk Title	Risk Level[2]	Risk Strategy/Handling	Comments
T-01	New requirements/ methodology change the conclusions of the T Plant seismic evaluation	Low	T Plant roof would need to be upgraded to withstand seismic event to meet Seismic Design Category-3 seismic input criteria.	Preliminary evaluation to determine the seismic design requirements for storage of container and settler sludge at T Plant concluded that canyon structure must meet Performance Category 2 and Seismic Design Category–2 (KBC-40114). T Plant currently meets PC-2 (HNF-6033) and SDC-2 criteria (HNF-36856). However, if the structure has to meet the next higher category (SDC-3), then the roof will need to be reinforced. Assuming the existing structural standing seam metal roof would need to be removed then reinstalled after carbon fiber reinforced polymer is applied, the estimated ROM cost is $10 M. The probability that the conclusions of the T Plant seismic evaluation will change has been judged to be low; the consequences are significant. The overall risk level is low.
T-02	Sludge transport/ storage containers exceed the number (30) assumed	Low	Additional cells would be cleaned out and modified to accommodate up to 6 more STSCs each.	The current baseline for T Plant calls for cleaning and equipping 6 cells, each of which can accommodate up to 6 STSCs. At least one position is reserved for an empty Overpack. Therefore, the current baseline includes contingency for up to 5 extra STSCs. Should more cells be required, the cost associated with cleaning out and modifying an additional cell is estimated to be $2 M. The probability that there will be more than 30 STSCs is moderate; the consequences are judged to be marginal. Overall risk level is low.

Risk No.[1]	Risk Title	Risk Level[2]	Risk Strategy/Handling	Comments
T-03	Initial packaging of RH-TRU waste under Project M-91 has been proposed for T Plant. M-91 construction/ operations may interfere with interim sludge storage and / or removal.	Low	Integrate M-91 construction and operations schedule with STSC surveillance and removal schedule. Develop interface documents with Waste and Fuels Management Project (W&FMP).	The M-91 project, if going into T Plant, becomes operational in 2022. The probability that T Plant RH-TRU packaging of waste under project M-91 will impact sludge storage activities is considered to be medium; the consequences are judged to be marginal. Overall risk level is low.
T-04	Changes to the W&FMP Baseline Planning Scenarios eliminate their need for continued funding of T Plant	Moderate	Develop interface documents with W&FMP.	Based on discussions with W&FMP management, this assessment assumes that the T Plant facility remains operational and is baseline funded through Fiscal Year (FY) 2025. That is, the estimated $13 to $20 M life cycle cost shown for T Plant is an incremental cost associated with sludge handling and storage only, and includes no fixed operations costs. However, if this baseline funding changes and 100% of the cost to maintain T Plant in a Min Safe condition is allocated solely to the Sludge Storage mission, the life cycle costs for storage of sludge are estimated to be $117 to $124 M. The likelihood of this risk being realized is low. Because of the > $100 M cost differential between the assumed baseline and the 100% funding scenario, the consequences of this risk were judged to be critical. The overall risk level assigned is Moderate.

Risk No.[1]	Risk Title	Risk Level[2]	Risk Strategy/Handling	Comments
T-05	System failures at T Plant due to age of the facility impact the ability to support sludge receipt, monitoring, storage, and/or transfer activities.	Low	The maintenance activities that will be performed to handle this risk are funded and performed by the W&FMP.	Based on discussions with W&FMP management, this assessment assumes that the T Plant facility remains operational and is baseline funded through Fiscal Year (FY) 2025. The W&FMP planning assumptions being used to develop the performance measurement baseline include upgrades to the main T Plant canyon crane, HEPA filter replacements for the main stack, and electrical upgrades. The likelihood of this risk being realized is medium. Consequences of this risk are judged to be marginal. The overall risk level is low.
ASF-01	An additional structure over the caissons will be required to satisfy DOE secondary confinement requirements.	Low	A more substantial confinement structure (with ventilation, fire protection, etc.) would be provided.	The caissons will be designed to provide secondary confinement. If this approach is not accepted, the cost of a confinement structure (with ventilation and fire protection; large enough to accommodate the crane) over the ASF pad is estimated to be $17 M. The probability that more substantial confinement structure would be required at the ASF is considered to be low, and the consequences are judged to be significant. Overall risk level is low.
ASF-02	Sludge transport/storage containers exceed the number assumed (30).	Low	Additional caissons would be built and the size of the pad increased.	Cost associated with providing caissons and extending the ASF pad to accommodate 10 extra STSCs is estimated to be $2 M. The probability that there will be more than 30 STSCs is medium; the consequences are judged to be marginal. Overall risk level is low.

Risk No.[1]	Risk Title	Risk Level[2]	Risk Strategy/Handling	Comments
ASF-03	Water level measurements cannot discriminate expanded sludge from required water cover depth.	Low	Performance of development testing needs to confirm suitability of identified technology.	Various technologies offer potential solution to identified risk, but testing will be required. The probability that suitable remote-monitoring water level measurement technology can not be found is low. The consequences are also low, because STSC's could be weighed to determine water loss, if required. Overall risk level is low.

[1] In this table, T Plant risks are designated as T-XX; risks associated with the Alternate Storage Facility are designated as ASF-XX.

[2] The risk levels shown in this table were developed using the CHPRC Qualitative Risk Value Criteria Matrix.