

Remote Handled Low-Level Waste Disposal Facility (RDF) Constructability Report

INL Construction Management
Lex J. Strain

March 2015



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March 2015

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SUMMARY

This report has been prepared to document the Constructability Review (CR) process that was implemented to insure that an effective CR was performed and all requirements of DOE Order 413.3-9, "U.S. Department of Energy Project Review Guide for Capital Asset Projects," in regards to this process have been addressed for the Remote-Handled Low-Level Waste Disposal Facility (RDF).

Independent Constructability Reviews were performed by Battelle Energy Alliance, LLC, (BEA) Construction Management (CM) and Areva Federal Services (AFS) personnel. In addition, BEA CM was also requested to provide an assessment of the adequacy of AFS Constructability Review.

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ACRONYMS

AFS	Areva Federal Services
BEA	Battelle Energy Alliance, LLC
CM	Construction Management
CR	Constructability Review

Remote Handled Low-Level Waste Disposal Facility (RDF) Constructability Report

1. INTRODUCTION

This report documents the Constructability Review (CR) process that was implemented to insure that an effective CR was performed and that all requirements of DOE Order 413.3-9, “U.S. Department of Energy Project Review Guide for Capital Asset Projects,” in regards to this process have been addressed for the Remote-Handled Low-Level Waste Disposal Facility (RDF).

Independent Constructability Reviews were performed by Battelle Energy Alliance, LLC, (BEA) Construction Management (CM) and Areva Federal Services (AFS) personnel. In addition, BEA CM was also requested to provide an assessment of the adequacy of AFS Constructability Review.

2. PURPOSE

This Constructability Review provides an independent and structured review of bid documents by objective construction professionals to insure that the work requirements are clear, the documents are coordinated, and there is an overall configuration consistency, which will result in a reduction of construction and project administration impacts to the project.

A CR is NOT a peer check, a QC check, or a “value engineering effort.”

3. REQUIREMENTS

3.1 DOE Guide 413.3-9 (9-23-08) Review Elements/Lines of Inquiry

3.1.1 (3) Construction/Execution Planning

- *Assess adequacy of construction/project execution planning.*
- *Review the adequacy of constructability reviews to assess whether construction documents have been reviewed for accuracy, completeness, and systems coordination issues.*
- *Assess status of logistics including interface with operating facilities and maintenance organizations, infrastructure interfaces, adequacy of lay-down areas, temporary construction facilities, security and badging readiness, and other logistical elements.*
- *Assess potential coordination issues, missed details, time delays, potential liability, or inter-contractor coordination items.*

4. CONSTRUCTABILITY REVIEWS

4.1 BEA Construction Management

BEA CM personnel were commissioned to perform a CR that addressed the standard constructability criteria, but also included an emphasis on the criteria identified from DOE Guide 413.3-9. The CR was conducted independently by an INL Construction Field Representative who is regularly engaged in and experienced in construction oversight at Idaho National Laboratory (INL). All comments generated from the BEA CM review were recorded on Form 412.13, “Document Management Review Comments and Resolutions,” and were formally transmitted to AFS for resolution and inclusion into final design documents. See Appendix A for the generated comments and their resolutions.

Risks and their impacts pertaining to the construction, as stated and documented the Project Risk Register have been incorporated within review comments herein.

4.1.1 Assessment Findings

The following information details the overall AFS CR that specifically addresses the DOE G 413.3 criteria:

- Assess adequacy of construction/project execution planning.

Finding: AFS has begun construction execution planning, but there is a significant amount of work yet to be accomplished. A primary contributor to the delay in construction planning is that the necessary planning activities were not authorized to proceed under the AFS subcontract until very recently. AFS has engaged personnel with good general construction expertise that they are utilizing for the review; but they need to become fully familiar with the INL requirements and intricacies of working at INL. For example, coordination and discussions with the local Building and Trades Unions has only recently begun. AFS will be pressed to become sufficiently familiar with INL training, logistics, and understanding of the specific Health and Safety requirements implemented via the INL Subcontract Requirements Manual (SRM).

- Review the adequacy of constructability reviews to assess whether construction documents have been reviewed for accuracy, completeness, and systems coordination issues.

Finding: The AFS CR is adequate in this regard, but AFS must make the necessary revisions to the final design addressing the constructability issues identified by the AFS and BEA CR.

- Assess status of logistics including interface with operating facilities and maintenance organizations, infrastructure interfaces, adequacy of lay-down areas, temporary construction facilities, security and badging readiness, and other logistical elements.

Finding: Given the very recent start of construction planning AFS needs to focus on clearly defining the interface between the vault installation/construction contractor and the infrastructure contractor. The ATR interface also needs better definition. The construction lay-down areas, soil staging areas, temporary office areas, and logistics should be identified.

- Assess potential coordination issues, missed details, time delays, potential liability, or inter-contractor coordination items.

Finding: Overall coordination needs to be addressed during construction planning as noted above.

4.2 Areva Federal Services (AFS) Constructability Review and Assessment

The AFS CR was conducted in conjunction with their internal *Ninety Percent Design Review* conducted in December 2014. The review was conducted by Mr. Curt Ulferts, an AFS construction consultant, and senior personnel from DelHur Industries—an AFS teaming partner on this project.

BEA CM Assessment concluded that the AFS review appears to have documented all comments in a combination of recording, using their own company individual Review Comment Record (RCR) forms, or annotating directly on the drawings. Both methods are acceptable means of CR documentation.

All comments noted appear to have been captured and addressed for inclusion into final design documents. Mr. Ulferts made 18 comments, six of which would be considered beneficial constructability comments.

5. CONCLUSION

By itself, the Constructability Review performed by AFS did not meet or adequately address all of the pertinent review elements/lines of inquiry of DOE G 413.3-9. However, it did identify numerous general constructability issues that will benefit the project. The BEA Constructability Review, coupled with the previously completed BEA design review, ensured that all design elements were thoroughly reviewed

while specifically addressing the DOE guidance for constructability reviews. Together these reviews demonstrate that the review elements/lines of inquiry of DOE G 413.3-9 for a constructability review were considered and addressed.

Revised design documentation for the RDF was reviewed by BEA Construction Management personnel. All BEA comments were adequately addressed in the final documentation consistent with the agreed-upon comment responses. Construction-specific procedures, interface protocols, mobilization documentation, ES&H documentation, etc. will be reviewed and approved prior to subcontractor mobilization consistent with the BEA construction process. The revised Construction Plan (RHLLW-CNP-00001) adequately identifies all elements necessary to conduct detailed construction planning that will support successful mobilization and start of construction.

6. APPENDIXES

Appendix A, “Document Management Review Comments and Resolutions”

Appendix A

Document Management
Review Comments and Resolutions

Appendix A

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DOCUMENT MANAGEMENT REVIEW COMMENTS AND RESOLUTIONS

Tracking No.: _____
(Optional)

Technical Point of Contact:	Phone No.:	Return Comments To:	MS:	E-Mail:	Comments Due By:	Reviewer's Name/Discipline: Lex Strain	Phone No.: 533-4702
Comments resolved by:		Date:		Signature of reviewer accepting comment resolutions:			Date:

Comments, submitted within the scope of the review, should be resolved between reviewer and document owner, or their agent. If an acceptable resolution cannot be negotiated, the reviewer may escalate the issue to management for resolution.

Document ID: RHLLW Drawings		Document Title: Remote Handled Low-Level Waste Disposal Project			Revision ID:	eCR No.:
Item No.	Page No	Section or Zone	Review Comment	Comment Resolution		
01	C-2		Dwg C-2 and RH LLW-EIR-00005 (sec 4.1 and 2.7) The approved soil staging areas should be clearly identified on drawings. This would include those areas for the over-burden or top-soil as well as those soils identified as satisfactory and unsatisfactory soils. Even if a portion of the soils will be used for road construction not all soils removed will be acceptable. Also must identify if any of these stockpiles will be allowed to remain after construction is complete. Coordinate this information with RH LLW-EIR-00005 sec 2.7 (pg 20). Note: these areas must be cleared for archeological, wildlife impact and potential unexploded ordnance prior to disturbance.	At this time we plan to have the staging areas inside the current "cleared" area. Since this area is already "cleared" for use, we will leave it up to the subcontractor to determine the best location. Therefore, we do not plan to show staging areas on the drawings. We understand that if we want to go outside the "cleared" area for some reason that it could take a lot of time to get ecological clearances, etc.		
02	C-2		All temporary construction laydown areas should be identified on the drawings. Coordinate this information with RH LLW-EIR-00005 sec 4.1 (pg 26). If the plan is to use the snow accumulation area as a temporary storage area is there adequate space for the vault and infrastructure contractor materials? If there are potentially two General Contractors using this area how will access be controlled? Also if any temporary roads area required to access this or any other areas these roads must also be included on the drawings.	See resolution above. Also see construction plan.		
03	C-8		How is CLSM going to be placed in a vertical wall with backfill? Means and methods should not be on drawings, but is this reasonably possible to execute? Need to look at alternate acceptable materials.	There is no longer any CLSM on this project.		
04	Multiple (C-37, C40, etc...)		Is ISPWC SD-407 included in the documents? This requirement is not clear. Drawings or spec should clearly say what the requirements are.	This is Idaho Standards for Public Works Construction, which is reference-able document.		
05	Multiple (C-9, C-12, C-14)		Means and methods to place CLSM in vaults needs to be addressed. This requirement put the constructor in a very error likely situation with limited option for recovery if something goes wrong. Are there other suitable materials available?	There is no longer any CLSM on this project.		

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Item No.	Page No	Section or Zone	Review Comment	Comment Resolution	
06	C-41		Additional detail is required on the drawings to identify known interferences and security requirements when bringing utility undergrounds through the ATR fence.	See note added to drawing.	
07	C-42		Additional detail is required to clearly identify known interferences within the ATR boundary. In addition, the tie-in locations need to clearly identify the utility tie-in materials and conditions.	See note added to drawing.	

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Comments resolved by:		Date:		Signature of reviewer accepting comment resolutions:			Date:

Comments, submitted within the scope of the review, should be resolved between reviewer and document owner, or their agent. If an acceptable resolution cannot be negotiated, the reviewer may escalate the issue to management for resolution.

Document ID: RH LLW-EIR-00005			Document Title: AREVA Federal Services RH LLW Facility Construction Plan		Revision ID:	eCR No.:
Item No.	Page No	Section or Zone	Review Comment		Comment Resolution	
01	26	4.1	Sec 4.1 (pg 26) Clearing and grubbing: Identify how satisfactory soils and unsatisfactory soils will be identified and controlled. (Note: various stockpiles types and locations must be shown on drawings.		Attachment B, Section B.1 was modified per a separate comment and addresses this concern. Section B.1 now reads: "DelHur intends to excavate the RH LLW during the 2015 work schedule utilizing an excavator and haul trucks. The excavated material will be hauled to the designated stockpile area south of the RH LLW. Material will be stockpiled utilizing 3:1 sloping and will be covered with soil fixative to prevent erosion. Separate stockpiles will be designated for topsoil, common excavation, and unsuitable backfill materials."	
02	26	4.1	Sec 4.1 (pg 26) Temp Construction Trailers.: All temporary power plans must be submitted and approved prior to installation. Coordinate this statement with your later requirement identified in Sec 6.8 (pg 45)		The following statement has been added: "A layout plan depicting the location of where the trailer will be located and location of the power to be connected will be submitted and approved by BEA prior to installation."	
03	20	3.0	Sec 3.0, para 3.6 - what does this sentence mean? Need to clarify the meaning and purpose.		It means construction of the access road will not start until the utility trench excavatoin and tie-in is almost complete. Paragraph has been changed to read: "3.6 Construct the new facility access road – will start once most of the utility trench excavation and tie-in work is complete."	

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Document ID: RH LLW-EIR-00005			Document Title: AREVA Federal Services RH LLW Facility Construction Plan		Revision ID:	eCR No.:
Item No.	Page No	Section or Zone	Review Comment	Comment Resolution		
04	28	A.2	Sec A2, pg 28 The INL Subsurface Investigation Team will be responsible for performing any and all subsurface investigations and marking. Means and methods for locating and identifying underground obstructions and utilities will be up to their discretion. Refer to RD-2014 Excavations and Surface Penetrations for specific requirements.	Paragraph will be modified to say the following: "Prior to trenching, the INL Subsurface Investigation Team will be responsible for performing any and all subsurface investigations and marking. Means and methods for locating and identifying underground obstructions and utilities will be up to their discretion per the requirements given in RD-2014, "Excavations and Surface Penetrations." Hand excavation will be required within five (5') feet of known buried utilities including utility tie-in locations. A track mounted excavator will be used to excavate the utility trenches to the design grades shown on the project drawings. A grade checker will use GPS to ensure that the excavation is performed to design grade."		
05	44	6.0	Sec 6.0 pg 44 This document should be coordinate with requirements of the Subcontractor Requirements Manual (SRM) throughout the document. Need to be clear that the SRM will be the ES&H Plan for all subcontractors working on-site. This section does not appear to be coordinated with the previous parts of the the document.	Paragraph 6.16 has been modified, moved and renumbered to 6.4 so it is not buried in the requirements. It now states: "6.4 Construction shall comply with the INL Subcontractor Requirements Manual (SRM) which is the ES&H Plan for all subcontractors working at the site."		
06	44	6.2	Sec 6.2 pg 44 DOE-STD-1090 is only part of the requirements. Refer to RD-2007 Hoisting & Rigging for complete requirements.	Paragraph has been modified to say: "6.2.3 All rigging/lifting equipment shall be designed to meet DOE-STD-1090 and RD-2007, Hoisting and Rigging requirements."		
07	47 & 48	6.18 thru 6.25	Sec 6.18 thru 6.25 pg 47 & 48 What is the purpose of these requirements and do they add value? If not, remove.	There are no demolition activities so Paragraphs 6.18, 6.19, 6.23, 6.24 and 6.25 will be deleted.		

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Item No.	Page No	Section or Zone	Review Comment	Comment Resolution	
08	48	6.28	Sec 6.28 pg 48 This section conflicts with previous requirements and statemnts in this document in regards to excess soil disposition.	First sentence modified to read as follows: "Excess soil that is not reused for the project and debris shall may be disposed of at the CFA Landfill, or other area(s) designated by the Construction Field Representative and Waste Generator Services."	
09	48	6.59	Sec 6.59 pg 48 Delete this section as it is not applicable to this contract. The Subcontractor Requirements Manual (SRM) identified in the contract is the only INL Worker S&H Program.	Deleted.	
10	GNL		Construction plan should demonstrate an understanding of the Site Stabilization Agreement as it relates to the local labor union agreements and practices.	The following statement has ben added to pae 43, Sectoin 6.0: "6.1 All subcontractor use of labor in all subcontracts established by AREVA require that each organization be signatory to the Site Stabilization Agreement."	
11	GNL		Interface protocols between Infrastructure and Vault Contractor, and all lower-tier contractors, needs to be developed and documented.	The following statement has ben added to pae 43, Sectoin 6.0: "6.2 Interface protocols are required between all contractors at the site. These protocols will be developed as construction planning progresses."	

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Item No.	Page No	Section or Zone	Review Comment	Comment Resolution	
12	GNL		Site access controls are not identified. For example, how will be visitors versus workers be controlled? How will deliveries be controlled. Address safety, security and quality aspects of site controls.	The following statement has ben added in Attachment E, Section 4.1: "Site Access Controls: Site access will be controlled by having all workers and visitors sign in at the project office before performing any work on the project. Signs will be placed off of Monroe Blvd directing project personnel and visitors to the project office. Vendors and workers will have the adequate site specific training and required badges to have unrestricted site access. Visitors will have temporary badges and be escorted while on the project site. All workers, vendors, and visitors within the construction zones of the project will be required to wear the Personal Protection Equipment (PPE) established by the PPE Assessment for that area."	

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Document ID: RH LLW-SPC-00008			Document Title: General Site Construction for Remote-Handled Low-Level Waste Disposal Project		Revision ID: 0A	eCR No.:
Item No.	Page No	Section or Zone	Review Comment			Comment Resolution