

EA Operational Awareness Record		Report Number: OAR-EA-WIPP-2016-07-12
Site: Waste Isolation Pilot Plant (WIPP)	Subject:	Follow-up on Engineering Process Issues from the November 2015 Assessment Report
Dates of Activity: 7/12/2016–7/14/2016	Report Preparer: Charles R. Allen	
Activity Description/Purpose:		
<p>The U.S. Department of Energy (DOE) Office of Environment, Safety and Health Assessments, within the Office of Enterprise Assessments (EA), performed a follow-up assessment to review the status of corrective actions planned in response to issues identified in EA report, <i>Review of Waste Isolation Pilot Plant Engineering and Procurement Processes</i>, November 2015, and EA operational awareness reports dated June 2015 and June 2014.</p> <p>These reports focused on the performance of the WIPP management and operations contractor, Nuclear Waste Partnership, LLC (NWP), in engineering and configuration management.</p>		
ATTACHMENTS:		
List of WIPP Forms generated from the November 2015 report on engineering and procurement.		
Results:		
Individuals Interviewed		
<ul style="list-style-type: none"> • Carlsbad Field Office Manager of Safety System Oversight • NWP Engineering Manager • NWP Design Authority Manager • NWP Facility/Ventilation Systems Manager • NWP Design Engineering Manager • NWP Contractor Assurance Manager. 		
Positives		
<ol style="list-style-type: none"> 1. EA noted improved quality in a review of a small sampling of recent engineering calculations and engineering technical operability evaluations (ETOs). Technical assumptions in the calculations were reasonable and conservative. The calculations, ETOs, and engineering change order (ECO) requested were available electronically, although the WIPP records management process still regards the hard copies of these documents as the record copies. 2. The calculation procedure and the ECO procedure are being upgraded, with the intention of adding increased rigor and aiding in the identification of design inputs during the design change process. These revisions are due, in part, to previous EA concerns about the calculation procedure and problems in the configuration management process. Planned changes to the calculation procedure will require review (checking) using a checklist and closure of unverified assumptions before a design change can be implemented in the field. Planned changes to the ECO procedure are intended to eliminate early procurements without adequate scoping and technical basis. As-building of key drawings is also being implemented to ensure that issued ECOs reflect changes appropriately based on actual field configuration. EA will follow-up on these documents after the revisions are issued. 		

3. The WIPP Documented Safety Analysis was revised extensively earlier in CY 2016, changing requirements for some systems and components. NWP Engineering required the cognizant system engineers (CSEs) affected by these changes to undergo requalification, including a new review board. The first-pass failure rate was 20 percent, reflecting increased rigor in the CSE qualification process.
4. Reorganization of the Engineering group earlier this year created a separate design engineering function. EA expects that this will provide positive returns with regard to configuration management, design basis compliance, and design change package quality.
5. An influx of NWP engineering personnel hired during a recent downsizing at the enrichment plant near Eunice, New Mexico, has strengthened the overall engineering organization, with the addition of senior personnel experienced in the nuclear industry.
6. During this visit, EA found that the corrective action process is being used more effectively by Engineering to track and resolve issues. NWP Engineering has documented findings from the EA November 2015 report in WIPP Forms, and resolutions are being tracked. However, consideration of recurrence control and extent of condition for Action Level-3 WIPP Forms remains weak.

Weaknesses

1. Concerns raised in previous reviews about over-reliance on hard copy records and lack of an electronic records system onsite remain valid. Although non-record copies of some documents may be retrieved from shared drives onsite, access to the current version of these documents is not guaranteed.
2. Handling of vendor manuals remains a concern. Procedurally, CSEs must submit approved manuals to the file room for retention; however, many vendor manuals are not available from the file room and no electronic copies are created or maintained.
3. Configuration management issues persist. A recent modification to add a level instrument to the fire water storage tank became problematic when electrical drawings implementing the change did not match actual wiring configuration in an electrical panel.

Planned procedure modifications may address these configuration management weaknesses in the long term. Problems noted with the records management system remain unresolved, with funding requested in future budget planning. Several follow-up items have been noted below for further review.

EA Participants	References (Key Documents, Interviews, and Observations)
1. Charles R. Allen	<ol style="list-style-type: none"> 1. CALC-15-004 2. CALC-15-018 3. ETO-Z-209 4. ETO-Z-229 5. ECO-13893 6. WP 09-CN3007 7. WP 09-CN3031

Were there any items for EA follow-up? Yes No

EA Follow-Up Items	
<ol style="list-style-type: none"><li>1. Two Engineering self-assessments were performed earlier this year that had not been approved and were not available for review during this visit.<li>2. System design descriptions (SDDs) are defined in the WIPP document heirarchy as design input documents; however, that may change, based on interviews with Engineering management. WIPP does not have design criteria or other documents that could replace SDDs as design inputs.<li>3. Planned revisions to the calculation procedure and the design change procedure should be reviewed when issued.	

Finding / OFI	Description	WF Number	WF Action	Status / ECD	Action Worker	Remarks
F-NWP-01	Contrary to the requirements of 10 CFR 830, Subpart A and DOE-STD-1189-2008, the NWP calculation process permits calculations based on unverified assumptions to be used in the implemented design basis for the facility and provides inadequate control and accessibility of calculation records.	15-473-0	Develop Corrective Actions	11-Jan-16	Garcia, J.	Likely Action is to Modify WP 09-CN3031 (Engineering Calculation Procedure) - The procedure update is being worked by J. Garcia and J. Skiles.
		15-473-1 15-473-2	Enter Cause Code Modify WP 09-CN3031 to incorporate F-NWP-01 concerns	Complete * Due 7/30/16	Garcia, J. Skiles, J.	Revision is in Skiles review after several revisions
F-NWP-02	Contrary to the requirements of 10 CFR 830, Subpart A, WP 09-CN3007, Engineering Change Order Preparation and Design Document Change Control, permits changes to the facility without documentation of the technical basis and justification for those changes.	15-474-0	Develop Corrective Actions	11-Jan-16	Garcia, J.	Likely Action is to Modify WP 09-CN3007 (Engineering Change Order)
		15-474-1 15-474-1	Enter Cause Code Update WP 09-CN3018 based on EA review	Complete * Review shows no further action required, Complete	Garcia, J. Beeman, B	See the comments for this WIPP Form
F-NWP-03	Contrary to the requirements of 10 CFR 830, Subpart B, fire suppression in Building 411 is outside of analyzed hydraulic conditions, and its performance cannot be assured.	15-477	Early Closure - CAP Not Required	Closed	N/A	Tracking via WF 15-397 - will result in additional actions
		15-397	Develop Corrective Action Plan	30-Jan-16	Stuve	Awaiting Approval of Root Cause Analysis
		15-397-1	Develop Causal Analysis	Complete *	Gomes	Root Cause Analysis due to Positive USQD (D15-102)
		15-397-1	1) Root Cause Analysis	1) Complete * 4/16	1) Hendrickson, M. (Contractor Assur.)	1) Draft Root Cause Analysis -Completed and Approved Senior Management
		15-397-3	2) Extent of condition DSA Rev 4 to 5 SS systems require further analysis	2) Complete 5/16	2) McCormick, J.	3) Beeman has ready fro Fadeley Review
		15-397-4	3) Implement Backfit Analysis rev to use on previous SS systems in Rev. 4 of the DSA	3) Beeman, B. ready to approve	3) Beeman, B.	4) Hendrichson on schedule to complete 8/5/16
		15-397-5	4) Develop a plant Mod Traveler	4) 8/5/16 Scheduled	4) Hendrickson, J.	5) New Eng Management using Plant personnel at DSA Prep site
F-NWP-04	Contrary to the requirements of 10 CFR 830, Subpart B, the basis of TSR 4.1.1.7, Pump Output, does not ensure the system's capability to meet DSA requirements.	15-478	Early Closure - CAP Not Required	Closed	N/A	Tracking via WF 15-397 - will result in additional actions
		15-397	Develop Corrective Action Plan	30-Jan-16	Stuve	Awaiting Approval of Root Cause Analysis
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F-NWP-05	Contrary to the requirements of 10 CFR 830, Subpart A, the document control and records handling processes do not adequately control the creation and maintenance of records and do not provide sufficient accessibility to support facility operations.	15-490-0	Develop Corrective Actions	Complete *	Gomes	
		15-490-1	Enter Cause Code	Complete *	Gomes	
		15-490-2	Evaluate the feasibility of transitioning existing and placing future WIPP Engineering Documentation into a searchable electronic media format.	30-Sep-16	Hendrickson, J	First step is to evaluate an implementation plan and determine resources to accomplish transition. May require additional funding. See 14-088 for electronic records management
OFI-NWP-01	Consider extending design verification requirements to encompass changes to safety-related SSCs to augment the design review process and provide additional validation of design inputs in the absence of a checking process.	15-471-0	Develop Correction Actions	Complete *	Beeman	
OFI-NWP-02	Consider creating electronic record copies of all calculations when they are issued and establishing EDMS as the official source of those records.	15-471-1	Update WP 09-CN3018	Complete *	Beeman	Determined that sufficient information exists in NQA-1A, WP 13-1, WP 09-CN3018 that addresses the subject OFI. No further action is necessary.
		15-472-0	Develop Correction Actions	Complete *	Hendrickson, J	
OFI-NWP-03	Consider enhancing WP 09-12, Evaluation of Technical Operability Adequacy of Facility SSCs, to provide direction beyond boilerplate requirements that the preparer use the correct form and that the reviewer review, including specific direction as to what considerations might be appropriate in developing an assessment of operability.	15-472-1	Develop Process to Utilize Best Practices	Complete *	Hendrickson, J	Item already being tracked via 14-088
		14-088-9	Upgrade information technology for the document control function.	22-Dec-16	Hejmanowski	
OFI-NWP-03	Consider enhancing WP 09-12, Evaluation of Technical Operability Adequacy of Facility SSCs, to provide direction beyond boilerplate requirements that the preparer use the correct form and that the reviewer review, including specific direction as to what considerations might be appropriate in developing an assessment of operability.	15-475-0	Develop Correction Actions	In-Review *	Beeman	
		15-475-1	Update WP 09-12	25-Mar-16	Beeman	09-CN3025 revision to include comments 4/20/16
	Consider revising the WP 09-CN3025, Annual System Health/Walk down/	15-476-0	Develop Correction Actions	Complete *	Beeman	

← copy requested 7/12

← follow up w/ Skiles

OFI-NWP-04	<p>Requalification system health report format to include:</p> <ul style="list-style-type: none"> • Corrective action reports • Trending of all active components • Evaluation of present performance against past performance • Identification of potential degradation • Evaluation of vibration monitoring for rotating equipment • More frequent health assessments for safety-related systems. 	15-476-1	Update WP 09-CN3025	26-Feb-16	Beeman	09-CN3025 revision to include comments 4/20/16
OFI-NWP-05	<p>Consider performing a comprehensive technical adequacy review of calculations used to support or demonstrate compliance with the safety bases and calculations performed in support of design changes to safety related SSCs.</p>	15-675	Develop Corrective Actions	Complete *	Gomes	As part of the development of Revision 5 to the WIPP Documented Safety Analysis (DSA) all the calculations and design bases for safety related SSCs system or component were evaluated. These systems and components were credited as providing a safety function during operation of the plant.
OFI-NWP-06	<p>Consider providing documented references on drawings to the calculations and analyses that demonstrate the adequacy of credited SSCs.</p>	15-479-0	Develop Corrective Actions	Complete *	Beeman	<p>The Engineering Calculation procedure update is in progress. The procedure update is being worked by J. Skiles.</p>
		15-479-1	Update WP 09-3031	31-Jan-16	Beeman	
OFI-NWP-07	<p>Consider adding identification of SS and SC system boundaries to engineering drawings.</p>	15-480-0	Develop Corrective Actions	Closed	Beeman	<p>Alter review and evaluation no action required to update drawings. Justification: SS and SC designations are tracked at the component level in the Master Equipment List (MEL). Drawings are tracked by system number (located in title block). The configuration of the facility is maintained by having the MEL and controlled drawings as accurate as possible along with any outstanding engineering change orders (ECO).</p>
		15-480-1	Review Drawings for Update	Closed	Beeman	
OFI-NWP-08	<p>Consider adding a reference to the legend drawing defining all P&ID symbols and providing the information necessary to construct complete instrument tags from instrument numbers to P&IDs.</p>	15-481-0	Develop Corrective Actions	Complete *	Beeman	<p>P&ID revisions underway - Working</p>
		15-481-1	Complete Field Work - Update P & IDs	30-Sep-16	Stuve	
OFI-NWP-09	<p>Consider a project to update drawings to reflect the as-built configuration of underground facilities.</p>	15-482-0	Develop Corrective Actions	Closed	Gomes	<p>WP 09-CN3025 directs Engineering to conduct an annual system walk down and system health assessment. The purpose of WP 09-CN3025 is to ascertain the operability, availability, reliability, and overall health of site systems. The system health report (EA09CN3025-1-0) provides guidance to the Cognizant Engineer in the performance of the subject walk down and system health assessment. Section 13 of EA09CN3025-1-0 requires the Cognizant Engineer to review and comment on the condition of the drawings. Since some systems contain a large number of drawings, the current practice is to stagger the review cycle, such that all drawings will eventually receive a full review over several years.</p> <p>This WIPP form is an OFI that states to consider a project to update drawings to reflect the as-built configuration of the underground facilities. Thus, the procedure stipulated in WP 09-CN3025 and EA09CN3025-1-0 meets the intent of the OFI stated in the WIPP Form.</p>
		15-482-1	Enter Cause Code	Closed	Gomes	
OFI-NWP-10	<p>Consider evaluating the current condition of VU01 ducting, dampers, and supports for degradation that could compromise these SSCs' ability to perform their design functions under all postulated environmental conditions and challenges.</p>	15-483-0	Develop Corrective Actions	Complete *	Stuve	
		15-483-1	Evaluate Condition of VU01 Ducting Dampers	26-Feb-16	Rodriguez	
		15-483-2	Modify ETO-K-0-71 - Incorporate Results of Evaluation	1-Nov-16	Rodriguez	
OFI-NWP-11	<p>Consider providing additional guidance to CSEs regarding maintenance of the design basis and design basis ownership.</p>	15-484-0	Develop Corrective Actions	Complete *	Gomes	<p>CSE task analysis developed and in review for CSE quals and training, last step qual cards then updated training J. Skiles</p> <p>CSE task analysis developed and in review for CSE quals and training, last step qual cards then updated training J. Skiles</p>
		15-484-1	Develop Training Materials - Engineering Procedures	29-Jul-16	Gomes	
OFI-NWP-12	<p>Consider revising SDDs to:</p> <ul style="list-style-type: none"> • Comply with DOE-STD-3024-2011. • Incorporate a basis statement for each requirement. • State unambiguous, technically accurate requirements. 	15-485	Early Closure	30-Jul-16	Ploetz, D.	SDDs are being revised to incorporate DSA Revision 5 and will satisfy the intent of the OFI.
OFI-NWP-13	<p>Consider adding a design check process to the ECOs, in addition to design verification, in order to identify CM impacts.</p>	15-486	Early Closure	15-Jul-16	Beema, B.	Latest Revision to WP 09-CN3007 incorporate the intent of the OFI. Ready for Release by 7/15/16
OFI-NWP-14	<p>Consider the following with regard to all facility records:</p> <ul style="list-style-type: none"> • Migrating all records to EDMS and using it as the official record source for all facility records and documents. • Develop capability to enter electronic records into EDMS on site. • Enhance record accessibility and availability by eliminating reliance on hard copy records of any type. 	15-487-0	Develop Corrective Actions	Complete *	Hendrickson, J	<p>The WIPP Site as a whole is working on a new electronic document storage system. Due to restart activities, this implementation of a new system is being considered as a post start action, which drives it out to the end of the fiscal year at best. Once the site has selected and implemented a system, Engineering will work on transitioning their documents to an electronic platform to align with the company.</p> <p>This a Duplicate Item - Should be closed</p>
		15-487-1	Engineering Action to Align Electronic Documentation System with the entire NWP Organization	16-Dec-16	Hendrickson, J	
		15-487-2	Engineering Action to Align Electronic Documentation System with the entire NWP Organization	16-Dec-16	Hendrickson, J	
		15-488-0	Develop Corrective Actions	Complete *	Hendrickson, J	

← follow up

← Desig issue
Not a calc issue

← Follow up

OFI-NWP-15	Consider revising affected procedures to place record copies of drawings into EDMS to permit access by key plant personnel.	15-488-1	Engineering Action to Align Electronic Documentation System with the entire NWP Organization	16-Dec-16	Hendrickson, J	The WIPP Site as a whole is working on a new electronic document storage system. Due to restart activities, this implementation of a new system is being considered as a post start action, which drives it out to the end of the fiscal year at best. Once the site has selected and implemented a system, Engineering will work on transitioning their documents to an electronic platform to align with the company. Ops and other Department have access to the current Electronic DWG Database and have been trained how to retrieve them
OFI-NWP-16	<i>Consider revising the ECO closure process to require notification to drafting when ECOs are field complete and ready for incorporation.</i>	15-489	<i>Develop Corrective Actions</i>	<i>Complete *</i>	<i>Garcia, J.</i>	<i>Revision to WP 09-CN3007, Engineering Change Order Preparation and Design Document Change Control is not required. Processing of an Engineering Change Order (ECO) after field work completion and ready for change incorporation is not controlled via WP 09-CN3007. After field work completion the ECO is returned to the Engineering File Room (EFR). In accordance with WP 09-CN3022, Engineering File Room Operations, the EFR is required to process the ECO, including notifying the Drafting group. Step 3.1 states as an action for the EFR, "Perform the following when an ECO with MIP (Modification in Progress) status has been signed and dated as Field Work Completed by CE (Cognizant Engineer)"; Step 3.1.2 states, "Notify Drafting Team Lead the ECO record is in "O" (Open) status". Based on the referenced steps in WP 09-CN3022, Engineering File Room Operations, no further action is required.</i>
OFI-NWP-17	Consider the need to establish an NWP procurement program expectation that storage and periodic PM requirements for procured equipment be established before components arrive on site.	15-491	Not Established	Not Established	Hester (Business)	On January 9, Engineering (Gomes) requested Contractor Assurance (Estrada) to advise the status establishing actions for resolving this WF Item.
OFI-NWP-18	Consider the need to reinforce the NWP procurement program expectation for potential seller competition by ensuring that future requisition requests for proposals include all known performance expectations important to qualification for award of the PO / Subcontract.	15-492	Not Established	Not Established	Hester (Business)	On January 9, Engineering (Gomes) requested Contractor Assurance (Estrada) to advise the status establishing actions for resolving this WF Item.
OFI-NWP-19	Consider the need to revise the Dry De-duster System PO/subcontract, section 5.01, to remove or provide explanation for the need to discuss the Management Level determination for "The HIGH Profile Diesel/Electric Roof Bolters."	15-493	Not Established	Not Established	Taylor (Procurement)	On January 9, Engineering (Gomes) requested Contractor Assurance (Estrada) to advise the status establishing actions for resolving this WF Item.

* In-Review or Completed incates the action has been submitted to the WIPP Committee for Closure. No further Engineering Actions are required for the item.