

INTERNAL ASSESSMENT REPORT

Assessment Activity Information

Start Date	End Date	Area Assessed
April 15, 2021	August 9, 2021	All Areas Related to DOE O 458.1

Assessment Team

Participant's Name	Role ¹ (L, A, M, O)	Fermi ID#
Matt Quinn	L, M	15614N
Maddie Schoell	L, M	16344N
Ben Russell	A, O	42144N
Mary Curtis	A, M	37683N
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¹ Role on assessment team: L=Lead A=Assessor M= Mentor O=Observer

Interviewees

Name	Title
Eric Mieland	ESH Section Environmental Protection Department
Chris Greer	ESH Section Environmental Protection Department

Assessment Type

- | | |
|--|---|
| <input type="checkbox"/> QA Assessment
<input type="checkbox"/> Line Organization Self-assessment
<input checked="" type="checkbox"/> Management System Assessment | <input type="checkbox"/> Tripartite Assessment
<input type="checkbox"/> Triennial Assessment
<input type="checkbox"/> FESHCom Assessment
<input type="checkbox"/> Other: |
|--|---|

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Report

Title

Detailed Crosswalk Review of DOE O 458.1 *Radiological Protection of the Public and the Environment*

Scope

The detailed crosswalk review for DOE O 458.1 *Radiological Protection of the Public and the Environment* Contractor Requirements Document (CRD) was conducted in four parts:

- Part 1 – Crosswalk of CRD Subpart 2.k *Release and Clearance of Property*
- Part 2 – Crosswalk of CRD Subpart 2.a *Environmental Radiological Protection Plan (ERPP)*
- Part 3 – Crosswalk of CRD Subparts 2.b-e *Addressing Dose to the Public*
- Part 4 – Crosswalk of CRD Subparts 2.f-j and l *Addressing the Elements of the Environmental Radiological Protection Plan (ERPP)*

Each Part of the review assessed all manual chapters, programs, documentation and processes associated with and implementing the required elements of the DOE O 458.1 CRD.

Criteria

DOE O 458.1 *Radiological Protection of the Public and the Environment* Contractor Requirements Document (CRD).

Interviews

The review team spoke with members of the Environment, Safety & Health (ESH) Section Environmental Protection Department during Part 4 of the review, to better understand current practices and documentation used by their group related to Subpart 2.g. Information gathered from these discussions were captured within the review documentation, along with the general review team discussion.

Report

The review was conducted in four Parts, described above, and consisted of near-daily meetings with the review team members that included reviewing of manual chapters, programs, documentation, and processes related to each line item of the DOE O 458.1 CRD. When looking at each line item, the review team addressed the following Lines of Inquiry (LOIs):

- What is the meaning of each requirement?
- How should each requirement be met?
- What is done presently?

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- What proof for meeting the requirement should be used?
- Do adequate Technical Basis Documents (TBDs), Standard Operating Procedures (SOPs), other documentation exist for each element?
 - Do documents describe the process?
 - Do documents describe why the process is sufficient/compliant?
- Are there any action items?

The review and LOIs were structured to ensure a detailed review of each CRD Subpart line item was evaluated first to determine what was necessary and sufficient to demonstrate compliance, and then look at the current programs, processes, documentation, etc. to determine if current elements met what the review team deemed as necessary and sufficient. Any potential gap or identified opportunity for improvement was identified as an Action Item.

All discussion for each Subpart line item, and any related Action Items, were captured via a document library in the ESH Section Radiation Physics SharePoint site.

Once all DOE O 458.1 CRD elements were reviewed, additional LOIs were considered:

- Is it clear who is responsible for performing the various types of surveys (i.e., removing material from beamline enclosures, movement of material between Controlled Areas/Radioactive Material Areas, downposting/releasing facilities, etc.)?
- Are identified responsible personnel for surveys appropriate and qualified?
- Given the open nature of the Fermilab site, is using an off-site location to calculate the Maximally Exposed Individual (MEI) appropriate?
- Are current technical bases and methodologies appropriate and sufficient?
- Based on Action Items identified for each element, are there sufficient resources in place?

Results

Description of Items found

Multiple Action Items were identified in the following categories:

- Annual Site Environmental Report
- Assessments & Metrics
- ERPP Document
- ERPP Related Procedures
- FESHM/FRCM Document
- General
- Materials (Storage, Survey & Release)

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- Maximally Exposed Individual (MEI) & Public Dose
- Radiological Training
- Routine Monitoring
- RPP Document
- RWPs/Initial Entry Surveys

All identified Action Items from this crosswalk were incorporated with Findings from the April 2021 Fermi Research Alliance (FRA) Radiological Protection Program (RPP) Review into one collective Corrective Action Plan (CAP). Please see the attached CAP for all Corrective Actions.

Once all Action Items were determined, the additional LOIs were reviewed:

- Is it clear who is responsible for performing the various types of surveys (i.e., removing material from beamline enclosures, movement of material between Controlled Areas/Radioactive Material Areas, downposting/releasing facilities, etc.)?
 - *Roles and responsibilities for who is able to perform various surveys is discussed within FRCM and Radiological Worker training (both Classroom (Virtual) and Practical Factors). However, a Corrective Action item was identified to do an additional review of FRCM, training, and SOPs to ensure Roles & Responsibilities were clearly specified. (CAP for item RPP #L3-9)*
- Are identified responsible personnel for surveys appropriate and qualified?
 - *During the review, the review team determined that the survey process used to perform release and clearance surveys should be updated to meet Indistinguishable From Background (IFB) standards. (CAP for item 458.1 – 2.k #15) Once this new process is implemented, the personnel appropriate for performing release and clearance surveys will need to be modified to only allow for Radiological Control Technicians (RCTs) to perform such surveys.*
 - *The review team also discussed the potential for additional changes that may be needed at other survey points (i.e., exiting Radiological Areas, exiting beamline enclosures, transfer between facilities, etc.) that may warrant additional surveys that should only be performed by RCTs. This discussion will continue within the ESH Radiation Physics Operations (RPO) and Radiation Physics Science (RPS) Departments, and will require Lab-wide modifications to implement and incorporate any determined change.*
- Given the open nature of the Fermilab site, is using an off-site location to calculate the Maximally Exposed Individual (MEI) appropriate?
 - *The review team was not able to make this determination themselves. However, a Corrective Action was identified (CAP for item 458.1 – 2.b-e #18) to re-evaluate MEI location and document the determination and justification.*

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- Are current technical bases and methodologies appropriate and sufficient?
 - *It was determined that several technical basis and methodologies needed to be updated and/or created:*
 - *Release & Clearance of Material (CAP for items RPP #L1-2, 458.1 – 2.k #15)*
 - *Sampling location determination (CAP for items 458.1 – 2.f-j&l #47)*
 - *Determination for when contamination wipes are needed during enclosure Initial Entry surveys (CAP for items 458.1 -2.k # 11 & #12)*
 - *MEI Calculation (CAP for item RPP #L1-1_4)*
 - *Process Knowledge (CAP for item 458.1 – 2.k #21)*
- Based on Action Items identified for each element, are there sufficient resources in place?
 - *It was determined that an additional role is needed in the ESH RPS Department to fulfill an ERPP Manager role, who will be responsible for implementing identified Corrective Actions from this review (along with Findings from the April 2021 Fermi Research Alliance (FRA) Radiological Protection Program (RPP) Review) and oversee the program moving forward. The hiring process to fill this role has begun.*
 - *Additional RCT resources will be needed in order to be the sole authorized surveyors for release & clearance of property. The ESH RPO Department is currently in the process of hiring additional RCTs, which may be sufficient to fill this need. This will need to be continuously monitored to ensure RCT staff is able to conduct these additional surveys, along with current responsibilities to perform routine radiological monitoring and radiological work coverage.*
 - *If it is determined that surveys at other points (i.e., exiting Radiological Areas, exiting beamline enclosures, transfer between facilities, etc.) also require RCTs to perform such surveys, additional RCT resources will be needed.*

Documents Reviewed

(List procedures, manuals, forms, etc. reviewed.)

- Fermilab Environment, Safety & Health Manual (FESHM)
 - 3000 Series
 - 8000 Series
- Fermilab Radiological Control Manual (FRCM)
- Environmental management Program (EMP)
- Fermilab Annual Site Environmental Report
- Radiation Physics (R.P.) Note 87
- R.P. Note 108
- R.P. Note 109
- ESH RPO Routine Monitoring Procedures

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- BNL, LBNL, Jefferson Lab, ANL Annual Site Environmental Report, ERPP

Distribution

Management of Assessed Area

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Matt Quinn
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Assessment Team

Mary Curtis
Rachel Madiar
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Maddie Schoell

Interviewees

Chris Greer
Eric Mieland

Quality Section Liaison

TJ Sarlina

Other Stakeholders

Whitney Bengner, DOE FSO
John Scott, DOE FSO
Rick Verhaagen, DOE FSO