OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT ANALYSIS/MODEL COVER SHEET

1. QA: L

Page: 1 of: 12

Complete Only Applicable Items

2. ☒ Analysis
☒ Engineering
☐ Performance Assessment
☐ Scientific | 3. ☐ Model
☐ Conceptual Model Documentation
☐ Model Documentation
☐ Model Validation Documentation |
|--|---|

4. Title:
Classification of the MGR Assembly Transfer System

5. Document Identifier (including Rev. No. and Change No., if applicable):
ANL-ATS-SE-000001 REV 00

6. Total Attachments:
Three (3)

7. Attachment Numbers - No. of Pages in Each:
I-1, II-4, III-44

	Printed Name	Signature	Date
8. Originator	Scott E. Salzman		8/30/99
9. Checker	Kelvin J. Montague		8/30/99
10. Lead/Supervisor	Thomas D. Dunn		8/30/99
11. Responsible Manager	Dealis W. Gwyn		8/31/99

12. Remarks:

This analysis contains To Be Verified (TBV) design input as follows: TBV-1196, TBV-459, TBV-460.

The document number for this analysis was previously BCB000000-01717-0200-00015 REV00.

This analysis bases the classification of Monitored Geologic Repository structures, systems and components on the criteria of proposed rule 10 CFR 63 (64 FR 8640). A review has determined that the changes made to proposed rule 10 CFR 63 by Interim Guidance Pending Issuance of New U. S. Nuclear Regulatory Commission (NRC) Regulations for Yucca Mountain, Nevada (Dyer 1999) do not impact the classifications made in this analysis.

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
ANALYSIS/MODEL REVISION RECORD**

1. Page: 2 of: 12

Complete Only Applicable Items

2. Analysis or Model Title:

Classification of MGR Assembly Transfer System

3. Document Identifier (including Rev. No. and Change No., if applicable):

ANL-ATS-SE-000001 REV 00

4. Revision/Change No.

5. Description of Revision/Change

00

Initial issue. This system specific analysis was performed to supersede the applicable portion of B000000000-01717-0200-00134 Rev 01 (CRWMS M&O 1998d).

CONTENTS

	Page
1. PURPOSE.....	4
2. QUALITY ASSURANCE.....	4
3. COMPUTER SOFTWARE AND MODEL USAGE.....	4
4. INPUTS.....	4
4.1 PARAMETERS.....	4
4.2 CRITERIA.....	5
4.3 CODES, STANDARDS, AND REGULATIONS.....	5
5. ASSUMPTIONS.....	5
6. ANALYSIS.....	6
6.1 METHOD.....	6
6.2 MGR DESIGN CONFIGURATION AND ARCHITECTURE.....	7
6.3 MGR SAFETY STRATEGY.....	7
6.4 DESIGN BASIS EVENT ANALYSIS.....	8
6.5 QUALITY ASSURANCE CLASSIFICATION OF MGR SSCs.....	8
7. CONCLUSIONS.....	8
7.1 MGR QA CLASSIFICATION.....	8
7.2 IMPACT OF UNVERIFIED DATA.....	9
8. REFERENCES.....	10
8.1 DOCUMENTS CITED.....	10
8.2 CODES, STANDARDS, AND REGULATIONS.....	11
8.3 PROCEDURES.....	11
9. ATTACHMENTS.....	12

Tables

1. ASSEMBLY TRANSFER SYSTEM QA CLASSIFICATION.....	9
--	---

1. PURPOSE

The purpose of this analysis is to document the Quality Assurance (QA) classification of the Monitored Geologic Repository (MGR) assembly transfer system structures, systems and components (SSCs) performed by the MGR Safety Assurance Department. This analysis also provides the basis for revision of YMP/90-55Q, *Q-List* (YMP 1998). The Q-List identifies those MGR SSCs subject to the requirements of DOE/RW-0333P, *Quality Assurance Requirements and Description* (QARD) (DOE 1998).

This QA classification incorporates the current MGR design and the results of the *Preliminary Preclosure Design Basis Event Calculations for the Monitored Geologic Repository* (CRWMS M&O 1998a).

2. QUALITY ASSURANCE

This analysis is subject to the requirements of the QARD (DOE 1998) as determined by procedures QAP-2-0, *Conduct of Activities*, and NLP-3-18, *Documentation of QA Controls on Drawings, Specifications, Design Analyses, and Technical Documents. Design Basis Event Definition & Analysis/QA Classification Analysis (1.2.1.11) Activity Evaluation* (CRWMS M&O 1999a) presents the QAP-2-0 activity evaluation addressing the QA classification of MGR SSCs. This analysis is performed in accordance with procedures QAP-2-3, *Classification of Permanent Items*, and AP-3.10Q, *Analyses and Models*, and provides input to the design of SSCs included on the Q-List (YMP 1998). Unverified design inputs are identified and tracked in accordance with NLP-3-15, *To Be Verified (TBV) and To Be Determined (TBD) Monitoring System*.

3. COMPUTER SOFTWARE AND MODEL USAGE

This analysis uses no software which is required to be controlled in accordance with procedure AP-SI.1Q, *Software Management*.

4. INPUTS

4.1 PARAMETERS

The offsite radiological consequences of MGR Category 1 and 2 design basis events (DBEs), as calculated in *Preliminary Preclosure Design Basis Event Calculations for the Monitored Geologic Repository* (CRWMS M&O 1998a), are utilized in the QA classification of MGR SSCs. In addition, more realistic radionuclide release fractions have been developed for use in the evaluation of MGR Category 1 and 2 DBEs. These release fractions have been incorporated into the preliminary DBE calculations (CRWMS M&O 1998a) for use in this classification analysis as documented in a QAP-3-12 Design Input Transmittal (CRWMS M&O 1999c). These results represent a conservative evaluation of MGR DBEs and the best information available.

As discussed in Section 6.1 of this analysis, NUREG-1318, *Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements* (NRC 1998, Section 4.2(a)) allows the use of engineering judgement and conservative bounding assumptions in the QA classification of facility SSCs when data sources are limited. The use of preliminary accident analysis results in the QA classification of MGR SSCs is allowed by Attachment 3 of procedure YAP-2.7Q, *Item Classification and Maintenance of the Q-List*, and Section 5.1.3 of procedure QAP-2-3. Procedure YAP-2.7Q directs the use of the highest level of detail available to support the conclusion of the QA classification analysis and QAP-2-3 directs the use of the best available design information. The use of preliminary release fractions is tracked by TBV-1196 and is discussed further in Section 5.3.

4.2 CRITERIA

The criteria used in the QA classification of MGR SSCs are provided in procedure QAP-2-3 as discussed in Section 6.1. These criteria satisfy the requirement of Section 2.2.2, *Classifying Items*, of DOE/RW-0333P (DOE 1998).

4.3 CODES, STANDARDS, AND REGULATIONS

10 CFR (Code of Federal Regulations) 20. Energy: Standards for Protection Against Radiation. January 1, 1999.

64 FR (Federal Register) 8640. Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada. Proposed rule 10 CFR 63.

NRC (U. S. Nuclear Regulatory Commission) 1998. *Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements*. NUREG-1318. April 1988. Washington, D.C.: U.S. Nuclear Regulatory Commission.

5. ASSUMPTIONS

The following assumptions are made in the performance of this analysis.

- 5.1 This analysis assumes that system design, architecture and functions are established by the *Assembly Transfer System Description Document* (CRWMS M&O 1998c). This analysis also assumes that the MGR architecture is established by *Monitored Geologic Repository Architecture* (CRWMS M&O 1999b) and that MGR operations and architecture are described by *Monitored Geologic Repository Concept of Operations* (CRWMS M&O 1998b). These documents represent the best available MGR design information. This assumption is utilized in Section 6.2 to define the assembly transfer system design configuration and SSC functions.

- 5.2 This analysis assumes the implementation of guidance provided by the "Strategy to Mitigate Preclosure Offsite Exposure" (Hastings 1998, Attachment 3 [all]), hereafter referred to as the "safety strategy." The safety strategy proposes general guidance focused on reducing the risks associated with the handling of spent nuclear fuel, high-level waste and the associated casks, canisters, and containers. This assumption is utilized in Section 6.5 for the classification of the assembly transfer system. In the case of the assembly transfer system, the safety strategy assumes that system design prevents (occurrence frequency less than 1×10^{-6} /year) impacts which exceed the transportation cask design basis with impact limiters removed. In the system operating areas where bare SNF assemblies are handled, the safety strategy assumes that system design provides confinement by pool or assembly cell and nuclear HVAC system (TBV-460).
- 5.3 The 10 CFR Part 63 definition of *Important to Safety* invokes the 10 CFR Part 20 radiation exposure limits for Category 1 DBEs. However, the analysis of occupational exposures as a result of Category 1 DBEs has not been performed to date. This analysis assumes that the radiation doses to facility workers as the result of Category 1 DBEs associated with the assembly transfer system, do not exceed the occupational dose limits of 10 CFR Part 20, Subpart C. This assumption is based upon protection of facility workers against external exposures by installed radiation shielding and internal exposures by the confinement functions of the Waste Handling Building (WHB) System and the WHB Ventilation System. This assumption is utilized in Section 6.5 for the classification of assembly transfer system SSCs. (TBV-459)
- 5.4 The QA classification results presented in Section 7.0 assume the incorporation of preliminary release fractions (CRWMS M&O 1999c) into the MGR DBE calculations (CRWMS M&O 1998a). These release fractions represent the best available information and the use of them is tracked by TBV-1196.

6. ANALYSIS

6.1 METHOD

The basic process for classifying MGR permanent SSCs is provided by procedure QAP-2-3. Guidance provided by procedure YAP-2.7Q is also used in this analysis. The process consists of establishing the configuration and function of MGR SSCs and the effect of the SSC on MGR radiological safety. This information is then evaluated against criteria provided in QAP-2-3 to determine the QA classification of the particular item. The classification criteria are provided in the form of checklists in procedure QAP-2-3. A copy of these criteria checklists is provided in Attachment II. The following classification categories are specified by QAP-2-3 to meet the requirements of Section 2 of the QARD (DOE 1998).

Quality Level 1 (QL-1) Those SSCs whose failure could *directly* result in a condition adversely affecting public safety. These items have a high safety or waste isolation significance.

Quality Level 2 (QL-2) Those SSCs whose failure or malfunction could *indirectly* result in a condition adversely affecting public safety, or whose *direct* failure would result in consequences in excess of normal operational limits. These items have a low safety or waste isolation significance.

Quality Level 3 (QL-3) Those SSCs whose failure or malfunction would not significantly impact public or worker safety, including those defense-in-depth design features intended to keep doses ALARA (As Low As Reasonably Achievable). These items have a minor impact on public and worker safety and waste isolation.

Conventional Quality (CQ) Those SSCs not meeting any of the criteria for Quality Levels 1, 2, or 3. Conventional quality items are not subject to the requirements of QARD.

This analysis method is based on an iterative design-classification process where each analysis iteration is considered a final product for that phase of design. In this case, the system design and the DBE analysis are evaluated to determine which of the system's SSCs require design control under the QA program. The analysis presented in this document, therefore, will be reevaluated as necessary using a methodology appropriate to the level of DBE analysis and system design detail. This approach is consistent with NUREG-1318, *Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements* (NRC 1998, Section 4.2(a)), which allows engineering judgement and conservative bounding assumptions to be used in cases where data are limited.

6.2 MGR DESIGN CONFIGURATION AND ARCHITECTURE

Prior to the QA classification of MGR SSCs, the system design configuration as well as the function of system's SSCs are established. This classification analysis is based upon the system design and functions as established by the System Description Document (SDD) (CRWMS M&O 1998c) and the MGR Concept of Operations (CRWMS M&O 1998b). In the process of QA classification, if two or more subsystems perform similar functions or are similarly classified, these subsystems are classified as a group under the higher level system and not listed individually.

6.3 MGR SAFETY STRATEGY

The MGR safety strategy provides general guidance that limits or reduces the risks associated with the receipt, handling, packaging and emplacing of spent nuclear fuel and other high level wastes in the planned repository. The strategy is described in "Strategy to Mitigate Preclosure Offsite Exposure" (Hastings 1998 [all]) which suggests a combination of containment and event prevention concepts for the following functional areas of the MGR: (1) receipt of waste, (2) transfer of waste to WP, (3) packaging/sealing waste in WP, (4) transfer of the WP to the emplacement drift, and (5) emplacement of the WP.

Implementation of the safety strategy is assumed in this analysis to determine SSC QA

classifications. If the proposed safety strategy is not or cannot be implemented, the QA classification of the affected SSCs will be reviewed and the SSCs reclassified appropriately.

The assembly transfer system functions to transfer bare spent fuel assemblies from transportation casks and dual purpose canisters to disposal containers. In this case, the preclosure safety strategy assumes that a drop of a cask or one or more bare fuel assemblies may occur and that confinement is maintained by the assembly transfer system structure, the assembly transfer system fuel handling pools and a nuclear HVAC system. Defense in depth features include design of assembly transfer system SSCs to minimize the occurrence of assembly drop.

6.4 DESIGN BASIS EVENT ANALYSIS

A preliminary analysis of MGR DBEs (CRWMS M&O 1998a) has been performed to determine the effects of internal and external events on facility radiological safety and is utilized by this analysis in the classification of MGR SSCs. The DBE analysis addresses both the DBE frequencies and dose consequences at the site boundary. As discussed in Section 4.1, revised release fractions have been incorporated into the preliminary DBE calculations (CRWMS M&O 1998a) for use in this classification analysis.

This analysis utilizes the results of the DBE analysis to evaluate MGR SSCs against the classification criteria of procedure QAP-2-3.

6.5 QUALITY ASSURANCE CLASSIFICATION OF MGR SSCs

The MGR SSCs are evaluated against the criteria of QAP-2-3 to determine the item QA classification level. The results of the MGR preliminary DBE calculations (CRWMS M&O 1998a) are utilized in this evaluation.

7. CONCLUSIONS

7.1 MGR QA CLASSIFICATION

The results of this QA classification analysis are provided in Table 1. As the design of the MGR proceeds and further DBE analyses of MGR hazards are performed, this classification analysis will be reviewed for impact and revised as necessary. The MGR classification checklists included in procedure QAP-2-3 are reproduced in Attachment II. The basis for the classification evaluation is provided in Attachment III.

Table 1 Assembly Transfer System QA Classification

Assembly Transfer System (ATS)	QL-1	QL-2	QL-3	CQ	TBV
Assembly Drying System		X			N/A
Assembly Handling System, Dry					
Assembly Cell Manipulator				X	N/A
Bridge Crane		X			N/A
DC Load Port Mating Device		X			N/A
Dry Assembly Transfer Machine		X			1196
Lifting Fixtures		X			1196
Assembly Handling System, Wet					
Assembly Transfer Baskets	X				1196
Basket Staging Racks	X				N/A
Wet Assembly Transfer Machine		X			N/A
Basket Transport Systems				X	459
Cask & DPC Preparation System					
Bridge Crane		X			1196
Cooling System		X			N/A
Decontamination System		X			N/A
DPC Lid Severing Tool		X			N/A
Lifting Fixtures		X			1196
Preparation Manipulator			X		N/A
Sampling System				X	N/A
Cask Transport System				X	459,460
Control and Tracking System		X			1196
DC Preparation System					
DC Decontamination System		X			N/A
DC Inerting System		X			N/A
DC Transport System				X	459, 1196

7.2 IMPACT OF UNVERIFIED DATA

7.2.1 TBV-459

This analysis assumes that the radiation doses to facility workers as the result of Category 1 DBEs associated with the assembly transfer system do not exceed the occupational dose limits of 10 CFR Part 20, Subpart C.

The basis of this assumption is provided in Section 5.3. TBV-459 requires that future DBE analysis verify this assumption. If the assumptions addressed by TBV-459 cannot be verified by MGR DBE analysis, some CQ items may be reclassified as QL-3.

7.2.2 TBV-460

This analysis assumes the implementation of guidance provided by the “Strategy to Mitigate Preclosure Offsite Exposure” (Hastings 1998, Attachment 3 [all]). The following paragraph discusses the impacts of not implementing the strategy. It should be noted that these impacts are

based upon preliminary DBE calculations (CRWMS M&O 1998a) and are dependent on the approach taken to prevent or mitigate the effects of an associated DBE. Further DBE analysis may have an effect on the impacts as discussed. The preclosure safety strategy is described in Sections 5.2 and 6.3.

The safety strategy assumes that a design basis drop height/impact for a transportation cask with impact limiters removed is determined and that lifts, transfers or impacts exceeding the design value are not exceeded. The impact of not achieving the strategy objective may include seismically qualified cask carts and reclassification of cask cart system from CQ to QL-2 or QL-1.

7.2.3 TBV-1196

The QA classification results presented in Section 7.0 assume the incorporation of preliminary release fractions (CRWMS M&O 1999c) into the MGR DBE analysis (CRWMS M&O 1998a). Additional DBE analysis is required to verify the radiological doses calculated using the preliminary release fractions. The impact of not verifying these doses may include:

- Reclassification of dry assembly transfer machine, system lifting fixtures, and cask & DPC preparation system bridge crane from QL-2 to QL-1.
- Reclassification of the DC transport system from CQ to QL-2 or QL-1.

8. REFERENCES

8.1 DOCUMENTS CITED

CRWMS M&O (Civilian Radioactive Waste Management System Management and Operating Contractor) 1998a. *Preliminary Preclosure Design Basis Event Calculations for the Monitored Geologic Repository*. BC0000000-01717-0210-00001 REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19981002.0001.

CRWMS M&O 1998b. *Monitored Geologic Repository Concept of Operations*. B00000000-01717-4200-00004 REV 02. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19980810.0283.

CRWMS M&O 1998c. *Assembly Transfer System Description Document*. BCB000000-01717-1705-00023, REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19981111.0035.

CRWMS M&O 1998d. *Classification of the Preliminary MGDS Repository Design*. B00000000-01717-0200-00134 REV 01. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19981103.0546.

CRWMS M&O 1999a. *Design Basis Event Definition & Analysis/QA Classification Analysis (1.2.1.11) Activity Evaluation*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990325.0008.

CRWMS M&O 1999b. *Monitored Geologic Repository Architecture*. B000000000-01717-5700-00011 REV 02 ICN 01. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990713.0203.

CRWMS M&O 1999c. *Monitored Geologic Repository (MGR) Design Basis Event (DBE) Dose Calculation Incorporating Revised Release Fractions and Source Terms*. SEI-SEI-99225.Ta. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990624.0091.

DOE (U.S. Department of Energy) 1998. *Quality Assurance Requirements and Description*. DOE/RW-0333P, Rev. 8. Washington D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19980601.0022.

Dyer, J.R. 1999. *Interim Guidance Pending Issuance of New U. S. Nuclear Regulatory Commission (NRC) Regulations for Yucca Mountain, Nevada*. Letter from J. Russell Dyer (DOE) to D. R. Wilkins (YMP), June 18, 1999. OL&RC:AVG:1435. ACC: MOL.19990623.0026 and MOL.19990623.0027.

Hastings, C. R. 1998. "Strategy to Mitigate Preclosure Offsite Exposure." Hastings (CRWMS M&O) Interoffice Correspondence to Distribution (CRWMS M&O). LV.SEI.CRH.7/98-024. July 21, 1998. ACC: MOL.19980916.0357, MOL.19980916.0358, MOL.19980916.0359, and MOL.19980916.0360.

YMP (Yucca Mountain Site Characterization Project) 1998. *Q-List*. YMP/90-55Q, Rev. 5. Las Vegas, Nevada: Yucca Mountain Site Characterization Office. ACC: MOL.19980513.0132.

8.2 CODES, STANDARDS, AND REGULATIONS

10 CFR (Code of Federal Regulations) 20. Energy: Standards for Protection Against Radiation. January 1, 1999.

64 FR (Federal Register) 8640. Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada. Proposed rule 10 CFR 63.

NRC (U. S. Nuclear Regulatory Commission) 1998. *Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements*. NUREG-1318. April 1988. Washington, D.C.: U.S. Nuclear Regulatory Commission.

8.3 PROCEDURES

AP-3.10Q, Rev. 0, ICN 0. *Analyses and Models*. ACC: MOL.19990225.0335.

AP-SI.1Q, Rev. 1, ICN 0. *Software Management*. ACC: MOL.19990520.0164.

NLP-3-15, Rev. 5. *To Be Verified (TBV) and To Be Determined (TBD) Monitoring System.*
ACC: MOL.19981117.0148.

NLP-3-18, Rev. 04. *Documentation of QA Controls on Drawings, Specifications, Design Analyses, and Technical Document.* ACC: MOL.19960611.0170.

QAP-2-0, Rev. 5. *Conduct of Activities.* ACC: MOL.19980826.0209.

QAP-2-3, Rev. 10. *Classification of Permanent Items.* ACC: MOL.19990316.0006.

YAP-2.7Q, Rev. 1, ICN 1. *Item Classification and Maintenance of the Q-List.* ACC: MOL.19990115.0065.

9. ATTACHMENTS

Attachment I	Acronyms
Attachment II	MGR Classification Checklists
Attachment III	MGR QA Classification

Attachment I

Acronyms

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CQ	Conventional Quality
CRWMS	Civilian Radioactive Waste Management System
DBE	Design Basis Event
DOE	U. S. Department of Energy
M&O	Management and Operating Contractor
MGR	Monitored Geologic Repository
NLP	Nevada Line Procedure
NRC	U. S. Nuclear Regulatory Commission
QA	Quality Assurance
QAP	Quality Administrative Procedure
QARD	Quality Assurance Requirements and Description
QL	Quality Level
SDD	System Description Document
SSCs	Structures, Systems, and Components
TBD	To Be Determined
TBV	To Be Verified
TEDE	Total Effective Dose Equivalent
YAP	YMP Administrative Procedure
YMP	Yucca Mountain Site Characterization Project

CRWMS/M&O

QA: L

Page: 1 Of: 1

1. Classification Analysis I.D.:	2. SDD/SSC Evaluated:
3. Description of SDD/SSC (or reference):	

[illegible]

Attachment II MGR Classification Checklists

CRWMS/M&O

Importance to Safety or Waste Isolation Evaluation for MGR

QA: L

Page: 1 Of: 4

Complete only applicable items.

1. Classification Analysis I.D.:	2. SDD/SSC Evaluated:
3. Description of SDD/SSC (or reference):	

MGR Quality Level 1 Checklist

Yes No

[illegible]

Attachment II MGR Classification Checklists

CRWMS/M&O

Importance to Safety or Waste Isolation Evaluation
for MGR

QA: L

Complete only applicable items.

Page: 2 Of: 4

MGR Quality Level 2 Checklist

Yes	No	
8.		<p>Preclosure Phase:</p> <p>2.1. Does the item function to provide control and management (i.e., collection and/or confinement) of site-generated liquid, gaseous, or solid low-level or mixed radioactive waste?</p> <p>NOTE: Systems with trace concentration of radionuclides, the failure of which could result in offsite doses less than 0.25 mrem per year, are not considered to perform radioactive waste management or control functions for the purpose of this quality level determination.</p> <p>2.2. Does the item provide fire detection, fire suppression, or otherwise protect the important-to-radiological safety or waste isolation functions of Quality Level 1 SSCs from the hazards of a fire?</p> <p>2.3. As a result of a DBE, could consequential failure of the item, which is not intended to perform a Quality Level 1 radiological safety function, prevent Quality Level 1 SSCs from performing their intended radiological safety function?</p> <p>2.4. Is the item required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE, per event, to any member of the public located on or beyond the site boundary [10 CFR 63.111(a) and 10 CFR 20.1301(a)(1)]? Category 1 DBE "per event" limits are interpreted as the sum of the normal operating dose and anticipated operational occurrences plus the consequences from any single additional low frequency Category 1 DBE. This sum is stated on an annual basis and consistent with 10 CFR 63.111(a) or 10 CFR 20.</p> <p>2.5. Is the item, in conjunction with an additional item or administrative control (i.e., indirect impact), required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE, per event, to any member of the public located on or beyond the site boundary? Category 1 DBE "per event" limits are interpreted as the sum of the normal operating dose and anticipated operational occurrences plus the consequences from any single additional low frequency Category 1 DBE. This sum is stated on an annual basis and consistent with 10 CFR 63.111(a) or 10 CFR 20.</p> <p>2.6. Is the item, in conjunction with an additional item or administrative control (i.e., indirect impact), required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep dose equivalent and committed dose equivalent to any individual organ or tissue (other than the lens of the eye), 15 rem dose equivalent to the lens of the eye, or 50 rem shallow dose equivalent to the skin, per event, to any individual located on or beyond any point on the boundary of the site?</p>
9.		<p>Postclosure Phase:</p> <p>2.7. As a result of a DBE, could consequential failure of the item, which is not intended to perform a Quality Level 1 waste isolation function, result in:</p> <p>a. the inability of Quality Level 1 engineered barriers to perform their intended long-term waste isolation function in the postclosure phase?</p> <p>b. long-term changes to the hydrological characteristics of natural barriers by creating significant ponding or the possibility of drainage into the postclosure underground?</p> <p>c. the introduction of fluids or other materials that could adversely affect the long-term geo-mechanical characteristics of natural barriers in the postclosure phase?</p> <p>d. compromising the ability of the natural barriers to isolate waste in the postclosure phase?</p>
10.		<p>Do the answers to Blocks 8 and 9 qualify the item as a Quality Level 2 item?</p>

Attachment II MGR Classification Checklists

CRWMS/M&O

Importance to Safety or Waste Isolation Evaluation for MGR

Complete only applicable items.

QA: L

Page: 4 Of: 4

MGR Quality Level 3 Checklist

Yes	No
-----	----

[illegible]

ATS

Assembly Transfer System

SSC: Assembly Drying System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**SDD / SSC Reference: **CRWMS M&O 1998c**TBVs Applicable to this Item: **N/A****Pre-Screen - Importance to Safety or Waste Isolation Evaluation**

	Yes	No	Rationale:
PS1	☐	☒	a. The assembly drying system removes free water from spent fuel assemblies following transfer from the staging pool. The system collects and manages site-generated waste resulting from the drying process. This item is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the assembly drying system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The assembly drying system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The assembly drying system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The assembly drying system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☒	☐	The assembly drying system collects and manages site-generated radioactive waste produced in the assembly drying process.
2.2	☐	☒	This SSC does not protect QL1 SSCs from the effects of fire.
2.3	☐	☒	Failure of the assembly drying system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: Assembly Drying System

Level 3: N/A

Level 4: N/A

ATS

QL1 ☐

PS1 ☒ QL2 ☒

PS2 ☐ QL3 ☐

PS CQ ☐ CQ ☐

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of the assembly drying system as a result of a DBE is not expected to result in an interaction with other QL1 High Waste Isolation Significant SSCs or compromise their ability to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

Q-List Rationale

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The assembly cell manipulator provides remote operating capability in the dry assembly handling cell. Shielding is provided to maintain facility operator radiation doses within the limits of 10 CFR 63.111(a)(1) and As Low As Reasonably Achievable (ALARA). This item is not relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☐	☒	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: If only No answers are given, the item is not subject to QARD requirements. The item is classified as Conventional Quality and an Importance to Safety or Waste Isolation evaluation is not required. Stop Here.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☐	N/A
1.2	☐	☐	N/A
1.3	☐	☐	N/A
1.4	☐	☐	a. N/A
	☐	☐	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☐	N/A
2.2	☐	☐	N/A
2.3	☐	☐	N/A

Q-List Rationale

2.4	☐	☐	N/A
2.5	☐	☐	N/A
2.6	☐	☐	N/A
2.7	☐	☐	a. N/A
	☐	☐	b.
	☐	☐	c.
	☐	☐	d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Assembly Handling System, Dry

Level 3: Bridge Crane

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The dry handling bridge crane provides a support function in the assembly cell only. This crane does not lift SNF or SNF baskets. The dry handling bridge crane, however, is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the bridge crane does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The bridge crane is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The bridge crane is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The bridge crane does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of the bridge crane as a result of a DBE may result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function. The crane may impact SNF assemblies and assembly transfer baskets.

ATS

Assembly Transfer System

SSC: Assembly Handling System, Dry

Level 3: Bridge Crane

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
- ☐ ☒ b.
- ☐ ☒ c.
- ☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

Q-List Rationale

SDD / SSC Reference: **CRWMS M&O 1998c**

TBVs Applicable to this Item: **N/A**

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The DC loading port mating device creates a seal between the assembly cell/DC and the DC load cell during DC loading operations. The seal prevents the migration of radioactive contaminants between the cells and minimizes transferable contamination levels in the DC load cell. The mating device is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the loading port mating device does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The loading port mating device is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The loading port mating device is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The loading port mating device does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of the loading port mating device as a result of a DBE could impair the capability of QL-1 SSCs to perform their intended radiological safety function. Failure could cause an interaction with a loaded DC and the associated fuel assemblies.

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

Yes	No	Rationale:
3.1	☐ ☐	N/A
3.2	☐ ☐	N/A
3.3	☐ ☐	N/A
3.4	☐ ☐	N/A
3.5	☐ ☐	N/A
3.6	☐ ☐	N/A

Q-List Rationale

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The dry assembly transfer machine transfers assembly baskets from the incline transfer cart to the assembly dryer and bare SNF assemblies from the dryer to the DC. The transfer machine is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the transfer machine does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The transfer machine is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The transfer machine is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The transfer machine does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of the transfer machine as a result of a DBE could impair the capability of QL-1 SSCs to perform their intended radiological safety function. Failure could cause an interaction with a loaded DC or assembly dryer and the associated fuel assemblies.

ATS

Assembly Transfer System

SSC: Assembly Handling System, Dry

Level 3: Dry Assembly Transfer Machine

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

- 2.4 ☒ ☐ Failure of the transfer machine may result in a drop event involving two assembly transfer baskets. DBE analysis shows this event to result in an offsite dose of 17.7 mrem. This SSC is conservatively determined to exceed the 25 mrem limit of this criterion and is made with the use of engineering judgement and conservatism (Section 6.1) and the consideration of the Category 1 DBE "per event" limits as stated in this criterion. Assumption 5.4, TBV-1196
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE. Assumption 5.4, TBV-1196
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Assembly Handling System, Dry

Level 3: Lifting Fixtures

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. Dry assembly handling lifting fixtures provide the interface between the dry assembly transfer machine and the various SNF assemblies and assembly baskets. The lifting fixtures are relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of a lifting fixture does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The lifting fixtures are not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The lifting fixtures are not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The lifting fixtures do not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of a lifting fixture as a result of a DBE could impair the capability of QL-1 SSCs to perform their intended radiological safety function. Failure could cause an interaction with a loaded DC or assembly dryer and the associated fuel assemblies.

Q-List Rationale

2.4	☒	☐	Failure of a lifting fixture may result in a drop event involving two assembly transfer baskets. DBE analysis shows this event to result in an offsite dose of 17.7 mrem. This SSC is conservatively determined to exceed the 25 mrem limit of this criterion and is made with the use of engineering judgement and conservatism (Section 6.1) and the consideration of the Category 1 DBE "per event" limits as stated in this criterion. Assumption 5.4, TBV-1196
2.5	☐	☒	This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE. Assumption 5.4, TBV-1196
2.6	☐	☒	This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
2.7	☐	☒	a. Failure of the lifting fixtures as a result of a DBE does not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Assembly Handling System, Wet

Level 3: Assembly Transfer Baskets

Level 4: N/A

ATSQL1 ☒PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The assembly transfer baskets are used to store and transfer multiple SNF assemblies in the assembly transfer system pool area and assembly cell. The baskets are relied upon to provide criticality control for the contained fuel assemblies.
	☒	☐	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☐	☒	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☒	☐	Failure of a transfer basket may directly result in loss of criticality control for the spent nuclear fuel.
1.2	☐	☒	The transfer baskets are not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The transfer baskets are not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The transfer baskets do not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☐	N/A
2.2	☐	☐	N/A
2.3	☐	☐	N/A

Q-List Rationale

2.4	☐	☐	N/A
2.5	☐	☐	N/A
2.6	☐	☐	N/A
2.7	☐	☐	a. N/A
	☐	☐	b.
	☐	☐	c.
	☐	☐	d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Assembly Handling System, Wet

Level 3: Basket Staging Racks

Level 4: N/A

ATSQL1 ☒PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The basket staging racks are used to store and transfer multiple SNF assemblies in the assembly transfer system pool area and assembly cell. The racks are relied upon to provide criticality control for the contained fuel assemblies.
	☒	☐	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☐	☒	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☒	☐	Failure of the basket storage racks may directly result in loss of criticality control for the spent nuclear fuel.
1.2	☐	☒	The basket staging racks are not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The basket staging racks are not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The basket staging racks do not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☐	N/A
2.2	☐	☐	N/A
2.3	☐	☐	N/A

Q-List Rationale

2.4	☐	☐	N/A
2.5	☐	☐	N/A
2.6	☐	☐	N/A
2.7	☐	☐	a. N/A
	☐	☐	b.
	☐	☐	c.
	☐	☐	d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Assembly Handling System, Wet

Level 3: Wet Assembly Transfer Machine

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The wet assembly transfer machine functions to move fuel assemblies and assembly transfer baskets within the cask unload and wet staging pools. The wet assembly transfer machine is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the transfer machine does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The transfer machine is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The transfer machine is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The transfer machine does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of transfer machine as a result of a DBE may impact SNF assemblies, baskets or staging racks located in the staging or the cask unload pools.

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
- ☐ ☒ b.
- ☐ ☒ c.
- ☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Basket Transport System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☒**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 459

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The basket transfer system consists of a cross-line transfer system and an incline transfer system. The cross-line system transfers assemblies between staging pools, while the incline system transfers assemblies from the staging pool to the assembly cell. The basket transport system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the basket transport system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The basket transport system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The basket transport system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The transfer cart does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the basket transport system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
- ☐ ☒ b.
- ☐ ☒ c.
- ☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

Yes	No	Rationale:
3.1 ☐	☒	This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.
3.2 ☐	☒	This item does not function to monitor variables to verify that operating conditions are within technical specifications.
3.3 ☐	☒	This item is not used in MGR emergency response to provide prompt evacuation of personnel, or to monitor variables used in helping to determine the cause or consequences of DBEs (during post accident investigations).
3.4 ☐	☒	This item does not function as part of the radiological, meteorological, or environmental monitoring systems required to assess radionuclide release or dispersion following a DBE.
3.5 ☐	☒	This item is not part of the design or design objectives for keeping levels of radioactive material in effluent to unrestricted areas as low as practicable during normal operations.
3.6 ☐	☒	This item is not required during normal operations, Category I DBEs, and planned recovery actions to limit onsite worker doses to less than 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.3, TBV-459

Q-List Rationale

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The cask & DPC preparation bridge crane moves empty and loaded transportation casks and dual purpose canisters within cask preparation area and cask unload pool. The bridge crane is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the bridge crane does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The bridge crane is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The bridge crane is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The bridge crane does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of bridge crane as a result of a DBE may impact transportation casks, dual purpose canisters, and SNF assemblies located in the cask preparation area or the cask unload pool.

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE. Assumption 5.4, TBV-1196
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE. Assumption 5.4, TBV-1196
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
- ☐ ☒ b.
- ☐ ☒ c.
- ☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Cask & DPC Preparation System

Level 3: Cooling System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The cask & DPC preparation cooling system is used to cool spent nuclear fuel containers prior to placing the containers into the cask unload pool. The system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the cooling system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The cooling system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The cooling system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The cooling system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☒	☐	The cooling system controls and manages the radioactive waste generated as a result of the spent nuclear fuel container cooling process.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the cooling equipment as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: Cask & DPC Preparation System

Level 3: Cooling System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Cask & DPC Preparation System

Level 3: Decontamination System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The cask & DPC preparation decontamination system is used to decontaminate empty transportation casks prior to dispatch from the MGR. The system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the decontamination system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The decontamination system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The decontamination system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The decontamination system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☒	☐	The decontamination system controls and manages the radioactive wastes generated in the decontamination of transportation casks.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the decontamination system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

Q-List Rationale

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The cask & DPC preparation system dual purpose canister (DPC) lid severing tool is used in the cask unload pool to remove the welded DPC lids. The severing tool is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the severing tool does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The severing tool is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The severing tool is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The severing tool does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☒	☐	The severing tool may be required to collect radiologically contaminated metal chips generated during DPC lid removal operations.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of the severing tool as a result of a DBE may impact dual purpose canisters and contained SNF assemblies located in the cask unload pool.

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
- ☐ ☒ b.
- ☐ ☒ c.
- ☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☒	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

Q-List Rationale

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. Cask & DPC preparation system lifting fixtures provide the lifting interface between the system bridge crane and the various SNF transportation casks and DPCs. The lifting fixtures are relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of a lifting fixture does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The lifting fixtures are not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The lifting fixtures are not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☒	☐	Failure of a lifting fixture as a result of a DBE could impair the capability of QL-1 SSCs to perform their intended radiological safety function. Failure could cause an interaction with a loaded transportation cask and the associated fuel assemblies.

ATS

Assembly Transfer System

SSC: Cask & DPC Preparation System

Level 3: Lifting Fixtures

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE. Assumption 5.4, TBV-1196
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE. Assumption 5.4, TBV-1196
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
- 2.7 ☐ ☒ a. Failure of the lifting fixtures as a result of a DBE does not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

Yes No		Rationale:
3.1	☐ ☐	N/A
3.2	☐ ☐	N/A
3.3	☐ ☐	N/A
3.4	☐ ☐	N/A
3.5	☐ ☐	N/A
3.6	☐ ☐	N/A

Q-List Rationale

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. This item is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This preparation manipulator is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the manipulators does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The manipulators are not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The manipulators are not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The manipulators do not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	The manipulators do not perform a site-generated radioactive waste control function.
2.2	☐	☒	The manipulators do not perform a fire protection function.
2.3	☐	☒	Failure of the manipulators as a result of a DBE does not impair the capability of a QL1 High Safety Significant SSC to perform its radiological safety function (Assumption 5.4).

Q-List Rationale

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE, per event, to any member of the public located on or beyond the site boundary [10 CFR 63.111(a) and 10 CFR 20.1301 (a)(1)].
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE, per event, to any member of the public located on or beyond the site boundary.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to the more limiting of 10 CFR 63.111(b)(2) doses to any individual located on, or beyond, any point on the site boundary.
- 2.7 ☐ ☒ a. Failure of the manipulators as a result of a DBE does not compromise the ability of a QL1 High Waste Isolation Significant SSC to perform its waste isolation function (Assumption 5.4).
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

Yes	No	Rationale:
3.1 ☐	☒	This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.
3.2 ☐	☒	This item does not function to monitor variables to verify that operating conditions are within technical specifications.
3.3 ☐	☒	This item is not used in MGR emergency response to provide prompt evacuation of personnel, or to monitor variables used in helping to determine the cause or consequences of DBEs (during post accident investigations).
3.4 ☐	☒	This item does not function as part of the radiological, meteorological, or environmental monitoring systems required to assess radionuclide release or dispersion following a DBE.
3.5 ☐	☒	This item is not part of the design or design objectives for keeping levels of radioactive material in effluent to unrestricted areas as low as practicable during normal operations.
3.6 ☒	☐	This item functions to limit onsite worker doses from normal operations and during Category 1 DBEs, including planned recovery operations, to less than 10 CFR 63.111(a)(1) [10 CFR 20.1201] requirements. The manipulator permits remote operations and increased distance between facility operators and radiation source.

ATS

Assembly Transfer System

SSC: Cask & DPC Preparation System

Level 3: Sampling System

Level 4: N/A

ATSQL1 ☐PS1 ☐ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☒ CQ ☒**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. Cask & DPC preparation sampling system provides remote sampling capability in the cask preparation area. Shielding is provided to maintain facility operator radiation doses within the limits of 10 CFR 63.111(a)(1) and As Low As Reasonably Achievable (ALARA). This item is not relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☐	☒	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: If only No answers are given, the item is not subject to QARD requirements. The item is classified as Conventional Quality and an Importance to Safety or Waste Isolation evaluation is not required. Stop Here.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☐	N/A
1.2	☐	☐	N/A
1.3	☐	☐	N/A
1.4	☐	☐	a. N/A
	☐	☐	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☐	N/A
2.2	☐	☐	N/A
2.3	☐	☒	N/A

Q-List Rationale

2.4	☐	☐	N/A
2.5	☐	☐	N/A
2.6	☐	☐	N/A
2.7	☐	☐	a. N/A
	☐	☐	b.
	☐	☐	c.
	☐	☐	d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☒	☒	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: Cask Transport System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☒**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 459, 460

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The cask transport system consists of a cask transfer cart and power supply. The system transfers sealed transportation casks from the waste handling building carrier bay to the cask preparation area. The cask transport system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the cask transport system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The cask transport system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.2, TBV 460
1.3	☐	☒	The cask transport system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.2, TBV 460
1.4	☐	☒	a. The cask transport system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the cask transport system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: Cask Transport System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☒**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE. Assumption 5.2, TBV 460
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem TEDE. Assumption 5.2, TBV 460
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.2, TBV 460
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☒	This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.
3.2	☐	☒	This item does not function to monitor variables to verify that operating conditions are within technical specifications.
3.3	☐	☒	This item is not used in MGR emergency response to provide prompt evacuation of personnel, or to monitor variables used in helping to determine the cause or consequences of DBEs (during post accident investigations).
3.4	☐	☒	This item does not function as part of the radiological, meteorological, or environmental monitoring systems required to assess radionuclide release or dispersion following a DBE.
3.5	☐	☒	This item is not part of the design or design objectives for keeping levels of radioactive material in effluent to unrestricted areas as low as practicable during normal operations.
3.6	☐	☒	This item is not required during normal operations, Category I DBEs, and planned recovery actions to limit onsite worker doses to less than 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.3, TBV-459

ATS

Assembly Transfer System

SSC: Control and Tracking System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The control and tracking system provides for the control of assembly transfer equipment including assembly transfer machines, cask and DC transfer carts, and bridge cranes. The control and tracking system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the control and tracking system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The control and tracking system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The control and tracking system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The control and tracking system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not perform a site-generated radioactive waste control function.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the control and tracking system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: Control and Tracking System

Level 3: N/A

Level 4: N/A

ATS

QL1 ☐

PS1 ☒ QL2 ☒

PS2 ☐ QL3 ☐

PS CQ ☐ CQ ☐

Q-List Rationale

- 2.4 ☒ ☐ Failure of the control and tracking system may result in a drop event involving two assembly transfer baskets. DBE analysis shows this event to result in an offsite dose of 17.7 mrem. This SSC is conservatively determined to exceed the 25 mrem limit of this criterion and is made with the use of engineering judgement and conservatism (Section 6.1) and the consideration of the Category 1 DBE "per event" limits as stated in this criterion. Assumption 5.4, TBV-1196
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE. Assumption 5.4, TBV-1196
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: DC Preparation System

Level 3: DC Decontamination System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The disposal container (DC) decontamination system is used to decontaminate loaded DCs prior to transfer to the disposal container handling area. The system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to OARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the decontamination system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The decontamination system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The decontamination system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The decontamination system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☒	☐	The decontamination system controls and manages the radioactive wastes generated in the decontamination of transportation casks.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the decontamination system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: DC Preparation System

Level 3: DC Decontamination System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☒	☐	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: DC Preparation System

Level 3: DC Inerting System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: N/A

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The DC preparation inerting system evacuates air from a loaded DC and backfills the DC with an inert gas following installation of a temporary sealing device. The system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the inerting system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The inerting system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE).
1.3	☐	☒	The inerting system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
1.4	☐	☒	a. The inerting system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☒	☐	The inerting system collects and contains potentially radioactive waste generated during the evacuation of the loaded DC.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the inerting system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: DC Preparation System

Level 3: DC Inerting System

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☒PS2 ☐ QL3 ☐PS CQ ☐ CQ ☐**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE.
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE.
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin.
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☐	N/A
3.2	☐	☒	N/A
3.3	☐	☐	N/A
3.4	☐	☐	N/A
3.5	☐	☐	N/A
3.6	☐	☐	N/A

ATS

Assembly Transfer System

SSC: DC Transport System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☒**Q-List Rationale**

SDD / SSC Reference: CRWMS M&O 1998c

TBVs Applicable to this Item: 459, 1196

Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	☐	☒	a. The DC transport system consists of a DC transfer cart and power supply. The system transfers temporarily sealed DCs from the assembly transfer decontamination area to the DC handling area. The DC transport system is relied upon to provide operations support necessary for waste handling safety.
	☐	☒	b.
	☐	☒	c.
	☐	☒	d.
	☐	☒	e.
	☒	☐	f.
PS2	☐	☒	This item is not directly or indirectly relied upon to provide an Important to Waste Isolation function.

Note: A Yes answer has been selected for either PS1 or PS2, therefore, the item is subject to QARD requirements. An Importance to Safety or Waste Isolation evaluation is required. Please continue with the evaluation checklists below.

QL1 - Quality Level 1: High Safety or Waste Isolation Significance

	Yes	No	Rationale:
1.1	☐	☒	Failure of the DC transport system does not directly result in loss of waste package containment or criticality control.
1.2	☐	☒	The DC transport system is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 100 mrem total effective dose equivalent (TEDE). Assumption 5.4, TBV-1196
1.3	☐	☒	The DC transport system is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
1.4	☐	☒	a. The DC transport system does not perform a waste isolation function.
	☐	☒	b.

QL2 - Quality Level 2: Low Safety or Waste Isolation Significance

	Yes	No	Rationale:
2.1	☐	☒	This SSC does not collect, contain, or monitor any site-generated radioactive waste.
2.2	☐	☒	This SSC does not perform a fire protection function.
2.3	☐	☒	Failure of the DC transport system as a result of a DBE is not expected to result in an interaction with other QL1 SSCs or impair their capability to perform their intended radiological safety function.

ATS

Assembly Transfer System

SSC: DC Transport System

Level 3: N/A

Level 4: N/A

ATSQL1 ☐PS1 ☒ QL2 ☐PS2 ☐ QL3 ☐PS CQ ☐ CQ ☒**Q-List Rationale**

- 2.4 ☐ ☒ This item is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or equal to 25 mrem TEDE. Assumption 5.4, TBV-1196
- 2.5 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 1 DBE that could result in offsite doses greater than or 100 mrem TEDE. Assumption 5.4, TBV-1196
- 2.6 ☐ ☒ This item, in conjunction with an additional item or administrative control (i.e., indirect impact), is not required to prevent or mitigate a Category 2 DBE that could result in offsite doses greater than or equal to 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.4, TBV-1196
- 2.7 ☐ ☒ a. Failure of this SSC as a result of a DBE will not compromise the ability of QL1 High Waste Isolation Significant SSCs to perform their intended waste isolation function.
☐ ☒ b.
☐ ☒ c.
☐ ☒ d.

QL3 - Quality Level 3: Minor Safety Significance or Occupational Exposure Significance

	Yes	No	Rationale:
3.1	☐	☒	This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.
3.2	☐	☒	This item does not function to monitor variables to verify that operating conditions are within technical specifications.
3.3	☐	☒	This item is not used in MGR emergency response to provide prompt evacuation of personnel, or to monitor variables used in helping to determine the cause or consequences of DBEs (during post accident investigations).
3.4	☐	☒	This item does not function as part of the radiological, meteorological, or environmental monitoring systems required to assess radionuclide release or dispersion following a DBE.
3.5	☐	☒	This item is not part of the design or design objectives for keeping levels of radioactive material in effluent to unrestricted areas as low as practicable during normal operations.
3.6	☐	☒	This item is not required during normal operations, Category I DBEs, and planned recovery actions to limit onsite worker doses to less than 5 rem TEDE, 50 rem combined deep and committed dose equivalents to any individual organ or tissue, 15 rem to the lens of the eye, or 50 rem shallow dose equivalent to the skin. Assumption 5.3, TBV-459