

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
ANALYSIS/MODEL COVER SHEET**

1. QA: L

Page: 1 of: 12

*Complete Only Applicable Items*

2. <input checked="" type="checkbox"/> Analysis	<input checked="" type="checkbox"/> Engineering	3. <input type="checkbox"/> Model	<input type="checkbox"/> Conceptual Model Documentation
	<input type="checkbox"/> Performance Assessment		<input type="checkbox"/> Model Documentation
	<input type="checkbox"/> Scientific		<input type="checkbox"/> Model Validation Documentation

4. Title:

Classification of the MGR Disposal Container Handling System

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

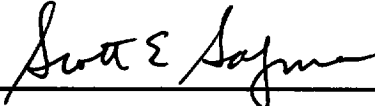
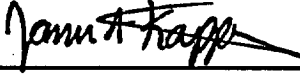


ANL-DCH-SE-000001 REV 00

6. Total Attachments:

Three (3)

7. Attachment Numbers - No. of Pages in Each:

I-1, II-4, III-28

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12. Remarks:

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

The document number for this analysis was previously BCB000000-01717-0200-00018 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 Disposal Container Handling System

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

ANL-DCH-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 B00000000-01717-0200-00134 Rev 01 (CRWMS M&O 1998d).

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## 1. PURPOSE

The purpose of this analysis is to document the Quality Assurance (QA) classification of the Monitored Geologic Repository (MGR) disposal container handling 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 *Disposal Container Handling 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 disposal container handling 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 disposal container handling system. In the case of the disposal container handling system, the preclosure safety strategy assumes that system design will prevent (occurrence frequency less than  $1 \times 10^{-6}$ /year) the tipping or dropping of a loaded DC prior to sealing. The preclosure safety strategy also assumes that lifts or transports that exceed the design basis impact for a sealed or welded DC (waste package) will not be performed. System confinement is provided by the DC handling cell and Waste Handling Building (WHB) ventilation 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 disposal container handling 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 disposal container handling 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 (OL-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 (OL-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 (OL-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 (CO)** 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 (CRWMS M&O 1998a) 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 disposal container handling system receives loaded DCs from the assembly transfer or canister transfer systems and functions to seal weld the DCs and place them into the waste package transporter for subsurface transport and emplacement. On receipt, the DCs are equipped with a temporary sealing device that functions to maintain DC confinement and prevent the introduction of foreign material to the DC. The preclosure safety strategy assumes that system design will prevent (occurrence frequency less than  $1 \times 10^{-6}$ /year) the tipping or dropping of a loaded DC prior to sealing. The preclosure safety strategy assumes that lifts or transports that have the potential to exceed the design basis impact for a sealed DC (waste package) will not be performed.

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

#### **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 Disposal Container Handling System QA Classification**

Disposal Container Handling System (DCH)	QL-1	QL-2	QL-3	CQ	TBV
Control and Tracking System		X			460, 1196
DC Handling System					
DC Cell Bridge Crane		X			460, 1196
DC Staging Fixtures				X	459, 460, 1196
Lifting Fixtures		X			460, 1196
DC Weld/Inspection Systems					
DC Inerting System		X			N/A
DC Lid Weld System				X	N/A
DC Weld Inspection System				X	N/A
DC Weld Station Jib Crane		X			N/A
DC Weld Station Turntable				X	459, 460, 1196
Empty DC Preparation System				X	N/A
WP Emplacement Preparation System					
WP Decontamination System		X			N/A
WP Horizontal Lifting System		X			460
WP Horizontal Transfer System				X	459, 460
WP Tilting Fixture				X	459, 460

## 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 disposal container handling 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 preclosure safety strategy assumes that lifts or transports that have the potential to exceed the

design basis impact for a WP will not be performed. The impact of not achieving the strategy objective may include:

- Seismically qualified DC staging fixtures, weld station turntable, horizontal transfer system, and tilting fixture. Reclassification of these SSCs from CQ to QL-1 or QL-2.
- Reclassification of the DC cell bridge crane, lifting fixtures, WP horizontal lifting system and the associated control and tracking system from QL-2 to 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 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 the DC cell bridge crane, lifting fixtures, and the associated control and tracking system from QL-2 to QL-1.
- Reclassification of the DC staging fixtures and weld station turntable from CQ to QL-1 or QL-2.

## 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. *Disposal Container Handling System Description Document*. BCB000000-01717-1705-00023, REV 00. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19980910.0676.

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*. B00000000-01717-5700-00011 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

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**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
DC	Disposal Container
DOE	U. S. Department of Energy
FR	Federal Register
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
WP	Waste Package
YAP	YMP Administrative Procedure
YMP	Yucca Mountain Site Characterization Project





Attachment II MGR Classification Checklists

CRWMS/M&O

Importance to Safety or Waste Isolation Evaluation  
 for MGR

QA: L

Page: 2 Of: 4

Complete only applicable items.

MGR Quality Level 2 Checklist

Yes	No	
		<p>8. 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>
		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?
		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?
		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.
		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.
		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. 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>
		b. long-term changes to the hydrological characteristics of natural barriers by creating significant ponding or the possibility of drainage into the postclosure underground?
		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?
		d. compromising the ability of the natural barriers to isolate waste in the postclosure phase?
		10. Do the answers to Blocks 8 and 9 qualify the item as a Quality Level 2 item?



# DCH

Disposal Container Handling System

SSC: Control and Tracking System

Level 3: N/A

Level 4: N/A

DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

SDD / SSC Reference:

TBVs Applicable to this Item:

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. The control and tracking system provides for the control of DC handling equipment including DC transfer carts, cranes, manipulators and the DC weld system. The control and tracking system is relied upon to provide operations support necessary for waste handling safety. b. c. d. e. f.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the control and tracking system does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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 5.2, TBV-460
1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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 5.2, TBV-460 and Assumption 5.4, TBV-1196
1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. The inerting system does not perform a waste isolation function. b.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The control and tracking system is involved in the management of site-generated radioactive waste and performs a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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.

# DCH

Disposal Container Handling System

SSC: Control and Tracking System

Level 3: N/A

Level 4: N/A

DCH

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. 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 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 and 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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: DC Handling System

Level 3: DC Cell Bridge Crane

Level 4: N/A

DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

SDD / SSC Reference:

TBVs Applicable to this Item:

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. The disposal container (DC) cell bridge crane moves empty and loaded DCs and waste packages (WP) within the DC cell.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. The bridge crane is relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	c.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	d.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	e.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	f.
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the bridge crane does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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 5.2, TBV-460
1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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 5.2, TBV-460 and Assumption 5.4, TBV-1196
1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	a. The bridge crane does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	b.

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	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 WPs and loaded DCs.

# DCH

Disposal Container Handling System

SSC: DC Handling System

Level 3: DC Cell Bridge Crane

Level 4: N/A

# DCH

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. 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 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 and 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 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.3 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.5 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |

**Q-List Rationale**

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

TBVs Applicable to this Item: **459, 460, 1196**

**Pre-Screen - Importance to Safety or Waste Isolation Evaluation**

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The disposal container (DC) staging fixtures support upright loaded DCs and waste packages (WP) and allow staging of containers to support the welding and emplacement preparation processes. The staging fixtures are relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the staging fixtures does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The staging 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 5.2, TBV-460
1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The staging 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 5.2, TBV-460 and Assumption 5.4, TBV-1196
1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The staging fixtures do not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the staging fixtures 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. 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 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 and Assumption 5.4, TBV-1196
- 2.7   a. Failure of the staging fixtures as a result of a DBE do not compromise the ability of natural or engineered barriers to isolate waste.  
  b.  
  c.  
  d.

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

- | Yes                          | No                                  | Rationale:   |
|------------------------------|-------------------------------------|--|
| 3.1 <input type="checkbox"/> | <input checked="" type="checkbox"/> | This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.   |
| 3.2 <input type="checkbox"/> | <input checked="" type="checkbox"/> | This item does not function to monitor variables to verify that operating conditions are within technical specifications.  |
| 3.3 <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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: **460, 1196**

**Pre-Screen - Importance to Safety or Waste Isolation Evaluation**

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DC handling system lifting fixtures provide the lifting interface between the system bridge crane and the DCs/WPs. The lifting fixtures are relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the lifting fixtures does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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 5.2, TBV-460
1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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 5.2, TBV-460 and Assumption 5.4, TBV-1196
1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The lifting fixtures do not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	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 DC and the associated fuel assemblies.

# DCH

Disposal Container Handling System

SSC: DC Handling System

Level 3: Lifting Fixtures

Level 4: N/A

# DCH

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. 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 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 and Assumption 5.4, TBV-1196
- 2.7   a. Failure of the lifting fixtures as a result of a DBE do not compromise the ability of natural or engineered barriers to isolate waste.  
  b.  
  c.  
  d.

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

	Yes	No	Rationale:
3.1	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Inerting System

Level 4: N/A

DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

SDD / SSC Reference:

TBVs Applicable to this Item:

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The DC inerting system evacuates air from a loaded DC and backfills the DC with an inert gas following installation of a DC lid. The system is relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the inerting system does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The inerting system does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The inerting system collects and contains potentially radioactive waste generated during the evacuation of the loaded DC.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the 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.

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Inerting System

Level 4: N/A

# DCH

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 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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Lid Weld System

Level 4: N/A

DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

SDD / SSC Reference:

TBVs Applicable to this item:

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The DC lid weld system seals loaded DCs by welding on the inner and outer DC lids. This item is not directly or indirectly relied upon to provide one of the following important to Safety functions for radioactive wastes received or handled at the MGR: confinement or containment, criticality control, shielding, heat transfer, structural integrity, or operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The DC lid weld system ensures a satisfactory closure weld of the WP. Although the weld is an essential part of the WP, the weld and inspection process per applicable codes ensures weld integrity rather than the weld equipment itself. The lid weld system does not perform a 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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
	<input type="checkbox"/>	<input type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Lid Weld System

Level 4: N/A

# DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

2.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.7	<input type="checkbox"/>	<input type="checkbox"/>	a. N/A
	<input type="checkbox"/>	<input type="checkbox"/>	b.
	<input type="checkbox"/>	<input type="checkbox"/>	c.
	<input type="checkbox"/>	<input type="checkbox"/>	d.

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

	Yes	No	Rationale:
3.1	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Weld Inspection System

Level 4: N/A

# DCH

QL1

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The DC weld inspection system ensures a satisfactory closure weld of the WP. This item is not directly or indirectly relied upon to provide one of the following important to safety functions for radioactive wastes received or handled at the MGR: confinement or containment, criticality control, shielding, heat transfer, structural integrity, or operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The DC handling weld inspection system ensures a satisfactory closure weld of the WP. Although the weld is an essential part of the WP, the weld and inspection process per applicable codes ensures weld integrity rather than the inspection equipment itself. The weld inspection system does not perform a waste isolation function.
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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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
	<input type="checkbox"/>	<input type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Weld Inspection System

Level 4: N/A

# DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

2.4

N/A

2.5

N/A

2.6

N/A

2.7   a.  
  b.  
  c.  
  d.

N/A

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

Yes No  
3.1

Rationale:

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The weld station jib crane performs auxiliary hoist and lift functions at the weld station. The crane does not directly lift high level radioactive wastes. The system is relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the jib crane does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The jib 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The jib 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The jib crane does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Failure of a jib crane 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 DC and the associated fuel assemblies.

# DCH

Disposal Container Handling System

SSC: DC Weld/Inspection System

Level 3: DC Weld Station Jib Crane

Level 4: N/A

# DCH

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 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 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.3 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.5 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |
| 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | N/A        |

## Q-List Rationale

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

TBVs Applicable to this Item: **459, 460, 1196**

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The DC weld station turntable supports unwelded DCs before and during the welding process. The system is relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the weld station turntable does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The weld station turntable 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The weld station turntable 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 and Assumption 5.4, TBV-1196
1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The weld station turntable does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the weld station turntable 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. 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 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 and 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.   |
| 3.2 | <input type="checkbox"/> <input checked="" type="checkbox"/> | This item does not function to monitor variables to verify that operating conditions are within technical specifications.  |
| 3.3 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 |

# DCH

Disposal Container Handling System

SSC: Empty DC Preparation System

Level 3: N/A

Level 4: N/A

# DCH

QL1

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The empty DC preparation system handles and prepares empty DCs and lids for loading. This system does not handle high level or site generated radioactive wastes and is not directly or indirectly relied upon to provide one of the following Important to Safety functions for radioactive wastes received or handled at the MGR: confinement or containment, criticality control, shielding, heat transfer, structural integrity, or operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This system 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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
1.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
	<input type="checkbox"/>	<input type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: Empty DC Preparation System

Level 3: N/A

Level 4: N/A

# DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

2.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A
2.7	<input type="checkbox"/>	<input type="checkbox"/>	a. N/A
	<input type="checkbox"/>	<input type="checkbox"/>	b.
	<input type="checkbox"/>	<input type="checkbox"/>	c.
	<input type="checkbox"/>	<input type="checkbox"/>	d.

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

	Yes	No	Rationale:
3.1	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: WP Emplacement Preparation System

Level 3: WP Decontamination System

Level 4: N/A

# DCH

QL1

PS1  QL2

PS2  QL3

PS CQ  CQ

## Q-List Rationale

SDD / SSC Reference:

TBVs Applicable to this Item:

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The waste package (WP) decontamination system is used to decontaminate WP prior to WP transporter loading and emplacement. The system is relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the decontamination system does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The decontamination system does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The decontamination system controls and manages the radioactive wastes generated in the decontamination of WPs.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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.

# DCH

Disposal Container Handling System

SSC: WP Emplacement Preparation System

Level 3: WP Decontamination System

Level 4: N/A

# DCH

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 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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

## Q-List Rationale

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

TBVs Applicable to this Item: **460**

### Pre-Screen - Importance to Safety or Waste Isolation Evaluation

	Yes	No	Rationale:	
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>a. The waste package (WP) horizontal lifting system functions to transfer WPs from the WP horizontal transfer cart to the reusable rail car in preparation for WP transporter loading. The system is relied upon to provide operations support necessary for waste handling safety.</p>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		b.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		c.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		d.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		e.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>		f.
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the horizontal lifting system does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The horizontal lifting 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The horizontal lifting 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The horizontal lifting system does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Failure of the horizontal lifting system 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 waste package.

## 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. 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	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.2	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.3	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.4	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.5	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3.6	<input type="checkbox"/>	<input type="checkbox"/>	N/A

# DCH

Disposal Container Handling System

SSC: WP Emplacement Preparation System

Level 3: WP Horizontal Transfer System

Level 4: N/A

# DCH

QL1

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The waste package (WP) horizontal transfer system moves WPs from the WP tilting fixture in the DC cell to the WP transfer/decon cell. A power supply and the required controls are also provided. The cask transport system is relied upon to provide operations support necessary for waste handling safety.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the transfer system does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The transfer 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The transfer 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The transfer system does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the transfer 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. 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 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.   |
| 3.2 | <input type="checkbox"/> <input checked="" type="checkbox"/> | This item does not function to monitor variables to verify that operating conditions are within technical specifications.  |
| 3.3 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> <input checked="" type="checkbox"/> | 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: **459, 460**

**Pre-Screen - Importance to Safety or Waste Isolation Evaluation**

	Yes	No	Rationale:	
PS1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>a. The waste package (WP) tilting fixture functions with the DC cell bridge crane to downend WPs from a vertical position onto the horizontal transfer cart. The tilting fixture is relied upon to provide operations support necessary for waste handling safety.</p>	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		b.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		c.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		d.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>		e.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>		f.
PS2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the tilting fixture does not directly result in loss of waste package containment or criticality control.
1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The tilting fixture 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The tilting fixture 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The tilting fixture does not perform a waste isolation function.
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

	Yes	No	Rationale:
2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a site-generated radioactive waste control function.
2.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This SSC does not perform a fire protection function.
2.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Failure of the tilting fixture 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. 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 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 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | This item does not function to provide an alarm to warn of significant increases in radiation levels or concentrations of radioactive materials.   |
| 3.2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | This item does not function to monitor variables to verify that operating conditions are within technical specifications.  |
| 3.3 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 |