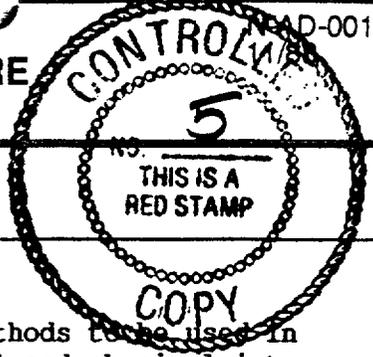


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AP-5.19Q INTERFACE CONTROL

**1.0 PURPOSE AND SCOPE**

The purpose of this procedure is to define the methods to be used in establishing and implementing control of organizational and physical interfaces for the Yucca Mountain Mined Geologic Disposal System (MGDS). This includes identification, definition, control, approval, and changes to interfaces not subject to control by other approved Administrative Procedures. This procedure has been developed to implement interface control, as stated in the Yucca Mountain Project Configuration Management Plan (YMP/88-4).

**2.0 APPLICABILITY**

This procedure applies to all Yucca Mountain Project participants and activities conducted during site characterization, design, construction, operation, and closure of the MGDS and MGDS subsystems, including scientific investigation and testing, but not to include any interface already covered in another approved Administrative Procedure.

**3.0 DEFINITIONS**

**3.1 CHANGE REQUEST (CR)**

A CR is a proposed change to items or documents listed in the Project Change Control Board (CCB) Register. A CR is communicated by a Change Request (CR) Form (form Y-AD-055) that transmits a CR package.

**3.2 COMPONENT INTERFACE DOCUMENT (CID)**

A CID is a document used to specify how mating parts relate to each other at their common boundary and the characteristics of each at that boundary. CIDs may be in the form of data sheets, catalog information, and/or specifications, or in the form of design drawings that identify the interfaces.

**3.3 INTERFACE**

**3.3.1 Physical**

A physical interface is the place where the boundaries of two or more systems, subsystems, or components intersect. A physical interface is the place where there is a flow of material, energy, or information between the two or more systems, subsystems, or components. The form, fit, or function

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of one depends on the form, fit, or function of the other at this boundary. The interactions at this boundary must be controlled for the systems to function, be effective, or be efficient.

### 3.3.2 Organizational

Organizational interface is the relationship between two or more organizations when they are both working on the same physical item, on items that must fit or function together, or must share or transfer information. This relationship results in the flow of information between two or more organizations. An organizational interface occurs when the actions of one organization control whether the other organization(s) can act, produce, or operate.

### 3.4 INTERFACE CONTROL LOG (ICL)

An ICL is a log, part of the Configuration Information System (CIS) [Administrative Procedure (AP)-3.6Q, Configuration Management], that will provide tracking and status of interface characteristics (Exhibit 4). A sample of a log sheet used to disseminate interface data to users is shown in Exhibit 6.

### 3.5 INTERFACE CONTROL DOCUMENT

An Interface Control Document is a controlled document, i.e., CID, Interface Control Drawing (ICD), or System Interface Document (SID) that provides clarification of site and design features for co-functioning equipment, computer software, and facilities, or memorandum of understanding. Interface control documents will also identify interfacing organizations and approval requirements. These documents are used to identify and control interface features throughout all phases of site characterization, design, construction, and operation.

### 3.6 INTERFACE CONTROL DRAWING

An ICD is a controlled drawing that documents and controls the data and information delineating interface boundaries. These interface drawings are used to identify and define physical and organizational interfaces that require coordination to establish and maintain compatibility between co-functioning items of equipment, computer software, and facilities; control design features which if changed would affect compatibility between the co-functioning equipment or facilities; communication of essential design decisions and changes that affect site characterization, design, and performance assessment activities.

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## 3.7 INTERFACE CONTROL BOARD (ICB)

The ICB is a group, led by a chairperson appointed by the Yucca Mountain Project Office (Project Office), that provides the communications link between the Project Participants (including the Project Office) for interface activities. The members of the ICB are individuals who represent the Project Office and other Project participants. The attendance of participant board members will be dictated by the interface activity being conducted at the board meeting. On occasion, a meeting of all participant representatives may be called by the Project Office to discuss general interface activities. If the interface activity is within one participant's organization and does not require Project CCB approval, interface control is directed by the participant's implementing procedures.

## 3.8 SYSTEM INTERFACE DOCUMENT

An SID is a diagrammatic representation used to specify the extent of the boundary of a system and the characteristics of the interface information that flows across this boundary.

## 4.0 RESPONSIBILITIES

### 4.1 YUCCA MOUNTAIN PROJECT OFFICE

#### 4.1.1 Yucca Mountain Project Manager

The Project Manager or designee shall appoint an ICB Chairperson from the Project Office for interface activities involving more than one participant pertaining to interface identification, definition, control, approval, and changes. Delegation of authority from the Project Manager to the ICB Chairperson shall be documented and distributed to all Project participants.

#### 4.1.2 ICB Chairperson

The Chairperson shall be responsible for ICB meeting schedule and conduct and require participation of only the organizations affected by the particular interface topic on the agenda. The Chairperson shall perform the final evaluation and approval of interface control documentation prior to its submittal to the appropriate board for approval per AP-3.3Q, Change Control Process.

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4.2 INTERFACE CONTROL BOARD

The ICB shall control interface documentation, changes to the documentation, schedules and schedule changes that have an impact on interfaces; review the status of actions having a direct bearing on interface activities; review and recommend solutions for interface problems; ensure that interfaces are properly addressed; and develop a charter for the operation and function of the group.

4.3 PROJECT PARTICIPANTS

Each Project participant shall provide an individual representative to the ICB who is authorized to review and make recommendations to the ICB Chairperson on interface control documentation submitted to the ICB for review prior to being submitted to the appropriate CCB. The Project participants can request changes through their representative.

4.3.1 Technical Project Officer (TPO)

The TPO shall appoint the participant's primary and alternate representatives to the ICB. Each ICB participant representative shall have the recommendation and approval of their TPO to represent the interest of their organization, with stated full approval authority for all activities and responsibilities within the scope of the ICB.

5.0 PROCEDURE

5.1 INTERFACE IDENTIFICATION

5.1.1 The interface identification begins with the development of a set of interface identification forms (Exhibits 2 and 3) by the participants. If the interface is physical, the next step is the production of SIDs. If the interface is only organizational, go to paragraph 5.1.10. An SID is prepared for the MGDS and each system/subsystem depicting the boundary outlines of each system/subsystem and any flow characteristics across the boundary. The flow characteristics shall include all pertinent information needed by the designer of the interfacing system/subsystem. Exhibit 1 shows the overall flow for both physical and organizational interfaces and Exhibit 2 shows the flow specific steps for physical interfaces.

5.1.2 Interface characteristics shall include the general configuration and the interface dimensional data specifically applicable to the envelope, mounting and mating of the item (e.g., space dimensions, location and dimen-

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sions of supporting planes with respect to common datum, forces, weights, moments, and temperature with tolerances).

5.1.3 Interface characteristics shall include all necessary design input interface data requirements, such as mechanical, electrical, electronic, hydraulic, pneumatic, optical, and computer data links and software that affect physical or organizational characteristics of co-functioning items.

5.1.4 Any other characteristics that cannot be changed without affecting the co-functioning item are also interface characteristics.

5.1.5 After the participant requesting the information and the party providing the information have agreed on what and when the information is required, the Technical and Management Support Services Configuration Management Organization (CMO) will compile a list of interfaces from the interface identification forms and the corresponding SIDs. Holmes & Narver will maintain the log tracking the status of interface characteristics for the ESF and the controlled distribution of ESF design interface identifications. The CMO will maintain all other interfaces manually.

5.1.6 Holmes & Narver or another Project Office designee (project participant) will control the interfaces at the respective participant level until the interface is designated to come under project control. The ICB will request the interface participant controller to submit the interface identification forms and the corresponding SIDs for evaluation and approval.

5.1.7 Upon approval, the SIDs are distributed as controlled documents in accordance with AP-1.5Q, Issuance and Maintenance of Controlled Documents. Holmes & Narver will maintain the log tracking the status of interface characteristics for the ESF and the controlled distribution of ESF design interface identifications. The CMO will maintain all other interfaces manually until the CIS is operating. All participants have access to the information in the ICL. Participants can request additional information be included in the ICL through the ICB.

5.1.8 Interface characteristics that are to be maintained in the Yucca Mountain Project Technical Data Base or the Reference Information Base shall be transmitted in accordance with AP-5.2Q, Technical Information Flow to and from The Yucca Mountain Project Technical Data Base or AP-5.3Q, Information Flow into The Project Reference Base respectively.

5.1.9 The ICB shall ascertain whether additional interface control documentation (CID/ICD) is required to control the interface if the interface is a physical interface involving more than one Project participant or it meets the criteria of AP-3.6Q, Configuration Management.

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5.1.10 If the interface is organizational (e.g., scientific investigation and testing, or an interface involving two or more participants who must work together), the Interface Identification Forms and a Memorandum of Understanding to provide interface information shall be prepared. This shall be tracked by use of the ICL.

5.2 INTERFACE CONTROL DOCUMENTATION

5.2.1 Interface control documentation (CIDs/ICDs) shall be prepared when it is determined according to paragraph 5.1.9 of this AP that the design of physical and functional features between items (subsystems, facilities, or components) could result in a mismatch, omission, interference, or duplication. Physical interfaces are identified in SIDs.

5.2.2 Interface control documentation delineates design features on both sides of the boundary to the extent required to control physical, functional, organizational, and operational compatibility between the affected items.

5.2.3 Interface control documentation shall not be included as part of construction/fabrication packages.

5.2.4 Engineering drawings may contain information controlled by interface control documentation, but the drawing must be consistent with the interface boundaries and features in the interface control documentation. Engineering drawings shall provide traceability to the interface control documentation, and conversely, the interface control documentation shall provide traceability to the engineering drawings. Each affected dimension, characteristic, or note on the engineering drawing shall be identified by a symbol and a statement that it cannot be changed without a review by the ICB.

5.2.5 The interface control documentation shall be submitted to the ICB for evaluation and approval. Upon approval, the interface characteristics are entered into the ICL to be tracked for schedule completion. All participants have access to the information in the ICL. Participants can request additional information be included in the ICL through the ICB. The ICDs are submitted to the CCB by the ICB on a CR for inclusion in the Project CCB register per the Configuration Management Plan, and distributed per AP-1.5Q.

5.2.6 Interface characteristics that are to be maintained in the Yucca Mountain Project Technical Data Base or the Reference Information Base shall be transmitted in accordance with AP-5.2Q or AP-5.3Q respectively.

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**5.3 CHANGES TO INTERFACE CONTROL DOCUMENTATION**

Changes to interface control documentation controlled by the Project CCB shall be submitted on a CR to the ICB prior to being submitted to the CCB. See Exhibit 3. The ICB shall evaluate and approve the submitted change and transmit to the CCB or return it to the submitting participant with an explanation why it was not approved.

**5.4 FIELD CHANGES TO INTERFACE CONTROL DOCUMENTATION**

Field Changes processed under AP-3.3Q that affect an interface must be presented before the ICB the next work day after the field change is approved.

**6.0 REFERENCES**

YMP/88-4, Yucca Mountain Project Configuration Management Plan.

AP-1.5Q, Issuance and Maintenance of Controlled Documents.

AP-1.7Q, Records Management.

AP-3.3Q, Change Control Process.

AP-3.6Q, Configuration Management.

AP-5.2Q, Technical Information Flow to and from The Yucca Mountain Project Technical Data Base.

AP-5.3Q, Information Flow into The Project Reference Data Base.

**7.0 APPLICABLE FORMS**

Exhibit 4. Interface Control Document Identification.

Exhibit 5. ESF Interface Control Document Identification.

Exhibit 6. Interface Control Log.

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8.0 RECORDS

The following documents shall be Quality Assurance Records and shall be maintained in accordance with AP-1.7Q, Records Management.

1. CIDs.
2. Completed Interface Identification Forms.
3. CRs with supporting documentation.
4. ICB meeting minutes.
5. ICDs.
6. SIDs.

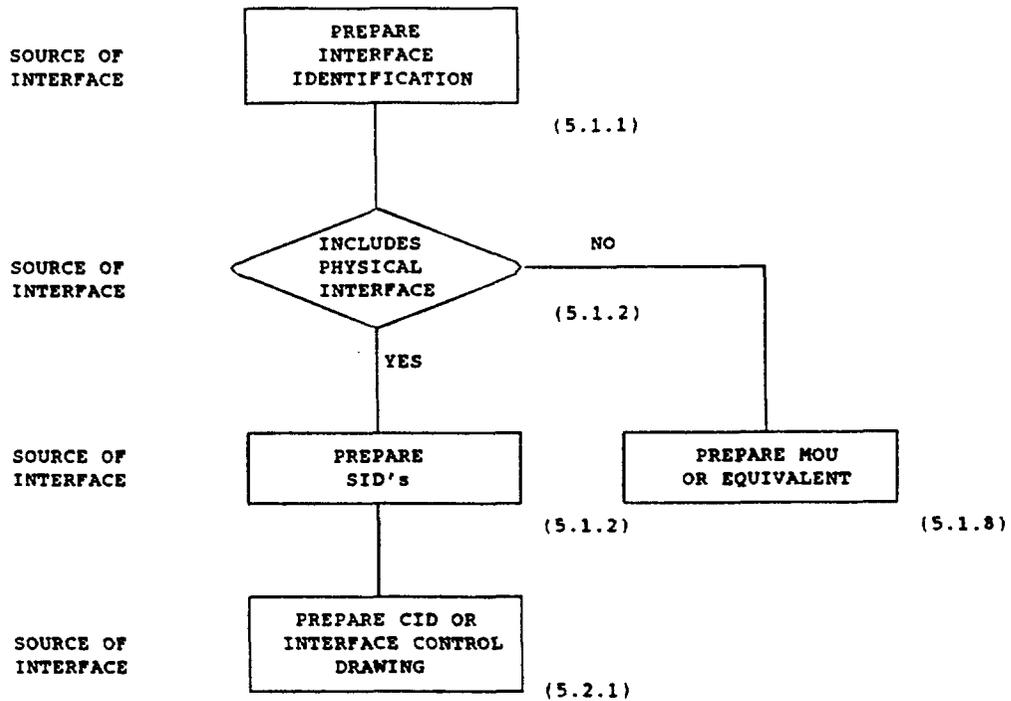
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Numbers in parentheses refer to paragraphs in this procedure.

**Exhibit 1. Overall Interface Control Process Flow Diagram.**

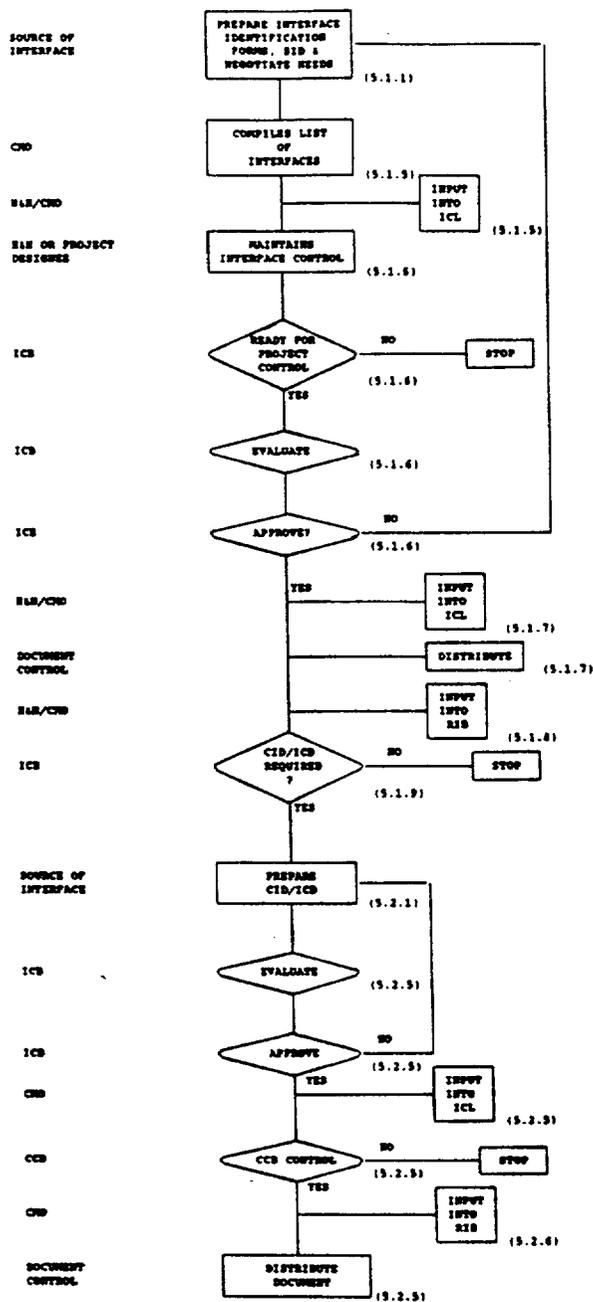
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Numbers in parentheses refer to paragraphs in this procedure.

**Exhibit 2. Physical Interface Control Process Flow Diagram.**

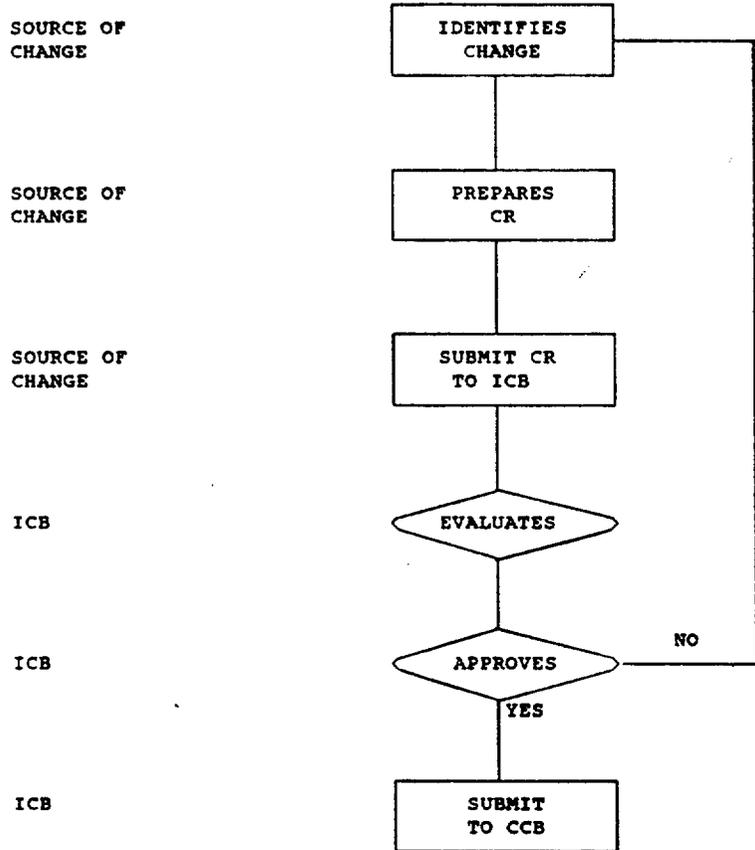
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**Exhibit 3. Interface Control Change Process Flow Diagram.**

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INTERFACE IDENTIFICATION FORM		N-AD-056 5/89															
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17 Full Description:	<hr/>																
18 Agreement:	<hr/>																
19 ICL Data:	Date Initiated: _____ Date Required: _____ Agreement Date: _____ Requester Organization: _____ Requester Name: _____ Provider Organization: _____ Provider Name: _____ Affected CI Number: (A) _____ (B) _____ (C) _____ (D) _____ (E) _____ (F) _____																
20 Participants and Approvals:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 20%;">ORGANIZATION</th> <th style="width: 20%;">RESPONSIBLE MANAGER</th> <th style="width: 20%;">SIGNATURE</th> <th style="width: 10%;">DATE</th> </tr> </thead> <tbody> <tr> <td>Requester:</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Provider:</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>			ORGANIZATION	RESPONSIBLE MANAGER	SIGNATURE	DATE	Requester:	_____	_____	_____	_____	Provider:	_____	_____	_____	_____
	ORGANIZATION	RESPONSIBLE MANAGER	SIGNATURE	DATE													
Requester:	_____	_____	_____	_____													
Provider:	_____	_____	_____	_____													
21 ICB Chairperson	_____																
22 Completion	_____																
Completed	_____																

**Exhibit 4. Example of Interface Identification Form (continued).**

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**INSTRUCTIONS FOR PREPARATION OF  
INTERFACE IDENTIFICATION FORM  
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1. Enter Configuration Item Number(s) if known. If not known, the number(s) can be obtained from T&MSS CMO.
2. Enter revision letter of this change.
3. Enter date prepared.
4. Obtain CR number from T&MSS CMO.
5. Enter the QA Level.
6. Mark appropriate type of Interface Control Document.
7. Obtain Interface Control Number from T&MSS CMO.
8. Enter System Name for system being worked on.
9. Enter System Number from Requirements Document of system being worked on.
10. Enter WBS for system being worked on.
11. Enter descriptive title for the interface being documented.
12. Provide brief description of interface.
13. Provide description of purpose of interface.
14. Provide description of scope of interface.
15. If interface has related nodes on a Project Logic Diagram, list them.
16. Check document that initiated the interface.
17. Provide full description of interface including characteristics to be entered into the ICL.
18. Describe agreement made between Requester and Provider including dates for completion.
19. Provide information for input into ICL for tracking of completion.
20. Both Requester and Provider managers must sign.
21. ICB Chairperson signs and dates.
22. Requester signs and dates.

**Exhibit 4. Example of Interface Identification Form (continued).**

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ESF INTERFACE CONTROL DOCUMENT IDENTIFICATION		N-AD-057 3/89
<b>HOLMES &amp; NARVER ENERGY SUPPORT DIVISION</b>	<b>DESIGN INTERFACE IDENTIFICATION</b>	
(Please Print)		
System: _____		WBS No. _____
Responsible Design Participant <input type="checkbox"/> H&N <input type="checkbox"/> F&S		
Design Interface Participant <input type="checkbox"/> H&N <input type="checkbox"/> F&S <input type="checkbox"/> LANL		
Description/Location of Interface: _____		
_____		
_____		
_____		
Reviewed and Agreed With: _____		
(check one)      Date: _____		
<input type="checkbox"/> Phone		
<input type="checkbox"/> Conference		
<input type="checkbox"/> Correspondence		
Reference Drawings: _____		
(if available)		
Submitted By: _____		Lead Engineering/Other _____
Date: _____		
Send To:      Holmes & Narver, Inc.      Attention: Document Control Dept. 101 Convention Center Dr. Suite P280 (M/S 519) Las Vegas, NV 89109		

**Exhibit 5. Example of ESF Interface Control Document Identification.**

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