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SAIC USGS Support Contract
875 Parfet, MS 425
Lakewood, CO 80215

April 5, 1993

INFORMATION ONLY

Mr. Kenneth Hooks
Quality Assurance Manager
Nuclear Regulatory Commission
Building OWFN
11555 Rockville Pike
Rockville, MD 20852

SUBJECT: Request for Controlled Document Information

Please find enclosed the following documents per your request to Thomas H. Chaney,
YMP-USGS Quality Assurance Manager.

- Index of Active YMP-USGS Technical Procedures
- Table of Contents for YMP-USGS Quality Management Procedures
- QMP-3.03, R3 Software, with Modifications QMP-3.03,R3-M1, -M2, and -M3
- QMP-3.04, R4 Technical Review, Approval, and Distribution of YMP-USGS Publications
- QMP-3.07, R4 YMP-USGS Review Procedure, with Modification QMP-3.07,-R4-M2

If you have any questions or require further information, please contact me at (303) 236-0532.

Sincerely,

Darrell D. Porter
Deputy Project Manager

DDP:hh

Enclosures

cc: T.H. Chaney
SAIC GS1225

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MANAGEMENT PROCEDURES MANUAL

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YMP Quality Administrative Procedures Invoked on YMP-USGS Program . .	xiii

Document Number

CHAPTER 1 - ORGANIZATION AND INTERFACES

Section 1 - Organization Procedure	QMP-1.01, R4
Modification to QMP-1.01, R4	QMP-1.01,R4-M2

CHAPTER 2 - QUALITY ASSURANCE PROGRAM

[See also Chapter 4 for other training procedures]

Section 1 - Management Assessment of the YMP-USGS Quality Assurance Program	QMP-2.01, R2
Modification to QMP-2.01, R2	QMP-2.01,R2-M4
Section 2 - USGS Personnel Qualification	QMP-2.02, R5
Modification to QMP-2.02, R5	QMP-2.02,R5-M1
Modification to QMP-2.02, R5	QMP-2.02,R5-M2
Section 5 - Qualification of Audit and Surveillance Personnel	QMP-2.05, R3
Section 7 - YMP-USGS Instruction	QMP-2.07, R1
Modification to QMP-2.07, R1	QMP-2.07,R1-M5
Section 8 - Non-Federal Contractor Personnel Qualification	QMP-2.08, R1
Modification to QMP-2.08, R1	QMP-2.08,R1-M2
Modification to QMP-2.08, R1	QMP-2.08,R1-M3

CHAPTER 3 - SCIENTIFIC INVESTIGATION AND DESIGN CONTROL

[See also Chapter 5 for related procedures]

Section 3 - Software	QMP-3.03, R3
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Modification to QMP-3.03, R3	QMP-3.03,R3-M2
Modification to QMP-3.03, R3	QMP-3.03,R3-M3

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CHAPTER 3 (continued)

Section 4 - Technical Review, Approval, and QMP-3.04, R4
Distribution of YMP-USGS Publications

Section 5 - Work Request for NTS Contractor Services . . . QMP-3.05, R2
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Modification to QMP-3.05, R2 QMP-3.05,R2-M1

Section 7 - YMP-USGS Review Procedure QMP-3.07, R4
Modification to QMP-3.07, R4 QMP-3.07,R4-M2

Section 10 - Verification of Scientific Investigations . QMP-3.10, R2
Modification to QMP-3.10, R2 QMP-3.10,R2-M1

Section 11 - Peer Review QMP-3.11, R1
Modification to QMP-3.11, R1 QMP-3.11,R1-M1

Section 13 - Design Input QMP-3.13, R1
Modification to QMP-3.13, R1 QMP-3.13,R1-M1

Section 15 - Application of Graded Quality Assurance . . . QMP-3.15, R0

CHAPTER 4 - ADMINISTRATIVE OPERATIONS AND PROCUREMENT

[See also Chapter 2 for indoctrination, training, and certification]

Section 1 - Procurement Document Control QMP-4.01, R4
Modification to QMP-4.01, R4 QMP-4.01,R4-M1

Section 2 - Control of Management Agreements QMP-4.02, R3
Modification to QMP-4.02, R3 QMP-4.02,R3-M1

CHAPTER 5 - INSTRUCTIONS, PROCEDURES, PLANS, AND DRAWINGS

[See also Chapter 3 for related procedures]

Section 1 - Preparation of Technical Procedures QMP-5.01, R4
Modification to QMP-5.01, R4 QMP-5.01,R4-M1
Modification to QMP-5.01, R4 QMP-5.01,R4-M2
Modification to QMP-5.01, R4 QMP-5.01,R4-M4

Section 3 - Development and Maintenance of Quality . . . QMP-5.03, R7
Management Procedures

Section 4 - Preparation and Control of the YMP-USGS . . . QMP-5.04, R4
Quality Assurance Program Plan
Modification to QMP-5.04, R4 QMP-5.04,R4-M1

Section 5 - Scientific Notebook QMP-5.05, R3

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CHAPTER 6 - DOCUMENT CONTROL

[See also Chapter 3 for review, Chapter 8 for control of data,
Chapter 17 for records management]

Section 1 - Document Control	QMP-6.01, R5
Modification to QMP-6.01, R5	QMP-6.01,R5-M1
Modification to QMP-6.01, R5	QMP-6.01,R5-M2

CHAPTER 7 - CONTROL OF PURCHASED ITEMS AND SERVICES

Section 1 - Receipt of Purchased Items and/or Services	QMP-7.01, R5
Section 4 - Supplier Evaluation	QMP-7.04, R0

**CHAPTER 8 - IDENTIFICATION AND CONTROL OF ITEMS, SAMPLES
AND DATA**

Section 1 - Identification and Control of Samples	QMP-8.01, R2
Section 3 - Control and Transmittal of Technical	QMP-8.03, R4
Information to the Project Technical Data Base	

CHAPTER 9 - CONTROL OF PROCESSES

.	No Procedures
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CHAPTER 10 - INSPECTION

.	No Procedures
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CHAPTER 11 - TEST CONTROL

.	No Procedures
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CHAPTER 12 - CONTROL OF MEASURING AND TEST EQUIPMENT

Section 1 - Instrument Calibration	QMP-12.01, R5
Modification to QMP-12.01, R5	QMP-12.01,R5-M1
Modification to QMP-12.01, R5	QMP-12.01,R5-M2
Modification to QMP-12.01, R5	QMP-12.01,R5-M3

CHAPTER 13 - HANDLING, SHIPPING, AND STORAGE

Section 1 - Handling, Storage, and Shipping of	QMP-13.01, R1
Instruments	

CHAPTER 14 - INSPECTION, TEST AND OPERATING STATUS

.	No Procedures
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CHAPTER 15 - CONTROL OF NONCONFORMING ITEMS

Section 1 - Control of Nonconforming Items	QMP-15.01, R4
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Modification to QMP-15.01, R4	QMP-15.01,R4-M2
Modification to QMP-15.01, R4	QMP-15.01,R4-M5

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CHAPTER 16 - CORRECTIVE ACTION

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Modification to QMP-16.01, R3	QMP-16.01,R3-M2
Section 2 - Control of Stop Work Orders	QMP-16.02, R0
Section 3 - Trend Analysis	QMP-16.03, R2
Modification to QMP-16.03, R2	QMP-16.03,R2-M1
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CHAPTER 17 - RECORDS MANAGEMENT

Section 1 - YMP-USGS Records Management	QMP-17.01, R5
Modification to QMP-17.01, R5	QMP-17.01,R5-M1
Section 3 - YMP-USGS Local Records Center	QMP-17.03, R0
Modification to QMP-17.03, R0	QMP-17.03,R0-M1
Modification to QMP-17.03, R0	QMP-17.03,R0-M2
Modification to QMP-17.03, R0	QMP-17.03,R0-M4
Modification to QMP-17.03, R0	QMP-17.03,R0-M5

CHAPTER 18 - AUDITS

Section 1 - Audits	QMP-18.01, R6
Modification to QMP-18.01, R6	QMP-18.01,R6-M1
Modification to QMP-18.01, R6	QMP-18.01,R6-M2
Section 2 - Surveillances	QMP-18.02, R2
Modification to QMP-18.02, R2	QMP-18.02,R2-M1

MANAGEMENT PROCEDURES MANUAL

REVISION RECORD

Record for Quality Assurance Program Plan (QAPP)

<u>QAPP Number</u>	<u>Effective Date</u>
NWM-USGS-QAPP-01, R0	11/01/80
NWM-USGS-QAPP-01, R1	07/15/83
NNWSI-USGS-QAPP-01, R2	08/24/85
NNWSI-USGS-QAPP-01, R3	10/27/86
NNWSI-USGS-QAPP-01, R4	01/05/88
YMP-USGS-QAPP-01, R5	05/03/89
YMP-USGS-QAPP-01, R5 ICN-1	08/04/89
YMP-USGS-QAPP-01, R5 ICN-2	02/07/91
YMP-USGS-QAPP-01, R5 ICN-3	05/21/91
YMP-USGS-QAPP-01, R5 ICN-4	05/21/91
YMP-USGS-QAPP-01, R5 ICN-5	05/21/91
YMP-USGS-QAPP-01, R5 ICN-6	10/04/91
YMP-USGS-QAPP-01, R5 ICN-7	10/15/91
YMP-USGS-QAPP-02, R5 ICN-8	03/12/92

Record for Quality Management Procedures (QMP)

<u>QMP Document Number</u>	<u>Effective Date(s)</u>								
	<u>Rev. 0</u>	<u>Rev. 1</u>	<u>Rev. 2</u>	<u>Rev. 3</u>	<u>Rev. 4</u>	<u>Rev. 5</u>	<u>Rev. 6</u>	<u>Rev. 7</u>	<u>Rev. 8</u>
YMP-USGS-QMP-1.01	08/24/85	10/27/86	07/28/89	02/05/90	10/15/91				
QMP-1.01-Mod.01	08/23/89	Modification superseded by QMP-1.01, R3 on 02/05/90.							
QMP-1.01,R3-M1	08/01/91	Modification superseded by QMP-1.01, R4 on 10/15/91.							
QMP-1.01,R4-M1	10/01/92	Modification superseded by QMP-1.01,R4-M2 on 03/19/93.							
QMP-1.01,R4-M2	03/19/93								
NNWSI-USGS-QMP-1.02	10/27/86	Procedure superseded by QMP-16.02, R0 on 11/04/88.							

* Effective date was not assigned - document was never distributed.

REVISION RECORD - (continued)

Record for Quality Management Procedures (QMP)

<u>QMP Document Number</u>	<u>Effective Date(s)</u>								
	<u>Rev. 0</u>	<u>Rev. 1</u>	<u>Rev. 2</u>	<u>Rev. 3</u>	<u>Rev. 4</u>	<u>Rev. 5</u>	<u>Rev. 6</u>	<u>Rev. 7</u>	<u>Rev. 8</u>
YMP-USGS-QMP-2.01	08/24/85	10/27/86	06/05/89						
QMP-2.01,R2-M1	10/08/91	Modification superseded by QMP-2.01,R2-M3 on 11/09/92.							
QMP-2.01,R2-M2	10/15/91	Modification superseded by QMP-2.01,R2-M3 on 11/09/92.							
QMP-2.01,R2-M3	11/09/92	Modification superseded by QMP-2.01,R2-M4 on 03/19/93.							
QMP-2.01,R2-M4	03/19/93								
YMP-USGS-QMP-2.02	08/24/85	10/27/86	*	06/23/89	*	03/11/91			
QMP-2.02,R3-M1	06/28/90	Modification superseded by QMP-2.02, R5 on 03/11/91.							
QMP-2.02,R5-M1	10/15/91								
QMP-2.02,R5-M2	03/27/92								
NNWSI-USGS-QMP-2.03	08/24/85	10/27/86	Procedure rescinded to be replaced by QMP-2.02 effective 06/05/89.						
NNWSI-USGS-QMP-2.04	08/24/85	Procedure superseded by QMP-2.02, R1 on 10/27/86.							
YMP-USGS-QMP-2.05	08/24/85	10/27/86	10/25/88	02/05/90					
QMP-2.05-Mod.01	08/23/89	Modification superseded by QMP-2.05, R3 on 02/05/90.							
YMP-USGS-QMP-2.06	11/04/88	02/01/89	Procedure rescinded 06/05/89. YMP-USGS will work to AP-5.13Q.						
YMP-USGS-QMP-2.07	07/28/89	03/29/91							
QMP-2.07,R1-M1	05/15/91	Modification superseded by QMP-2.07,R1-M2 on 05/22/91.							
QMP-2.07,R1-M2	05/22/91	Modification superseded by QMP-2.07,R1-M4 on 10/01/92.							
QMP-2.07,R1-M3	10/15/91	Modification superseded by QMP-2.07,R1-M4 on 10/01/92.							
QMP-2.07,R1-M4	10/01/92	Modification superseded by QMP-2.07,R1-M5 on 03/19/93.							
QMP-2.07,R1-M5	03/19/93								
YMP-USGS-QMP-2.08	07/28/89	03/29/91							
QMP-2.08,R1-M1	11/13/91	Modification superseded by QMP-2.08,R1-M2 on 11/15/91.							
QMP-2.08,R1-M2	11/13/91								
QMP-2.08,R1-M3	03/27/92								
NNWSI-USGS-QMP-3.01	08/24/85	10/27/86	Procedure rescinded 06/05/89. Scope incorporated into QMP-5.05.						
NNWSI-USGS-QMP-3.02	08/24/85	10/27/86	Procedure superseded 05/18/92 by QMP-3.15, R0.						
YMP-USGS-QMP-3.03	10/27/86	07/28/89	06/04/90	02/03/92					
QMP-3.03-Mod.01	08/24/89	Modification superseded by QMP-3.03, R2 on 06/04/90.							
QMP-3.03,R2-M1	02/01/91	Modification superseded by QMP-3.03, R3 on 02/03/92.							
QMP-3.03,R2-M2	08/16/91	Modification superseded by QMP-3.03, R3 on 02/03/92.							
QMP-3.03,R3-M1	03/12/92								
QMP-3.03,R3-M2	11/09/92								
QMP-3.03,R3-M3	03/05/93								

* Effective date was not assigned - document was never distributed.

REVISION RECORD - (continued)

Record for Quality Management Procedures (QMP)

<u>QMP Document Number</u>	<u>Effective Date(s)</u>									
	<u>Rev. 0</u>	<u>Rev. 1</u>	<u>Rev. 2</u>	<u>Rev. 3</u>	<u>Rev. 4</u>	<u>Rev. 5</u>	<u>Rev. 6</u>	<u>Rev. 7</u>	<u>Rev. 8</u>	
YMP-USGS-QMP-3.04	08/24/85	10/27/86	06/05/89	07/27/90	11/23/92					
QMP-3.04,R3-M1	12/17/90	Modification superseded by QMP-3.04,R3-M2 on 10/15/91.								
QMP-3.04,R3-M2	10/15/91	Modification superseded by QMP-3.04, R4 on 11/23/92.								
YMP-USGS-QMP-3.05	08/24/85	10/27/86	06/05/89							
QMP-3.05,R2-M1	10/15/91									
YMP-USGS-QMP-3.06	10/27/86	06/05/89	Procedure Rescinded 12/08/92.							
YMP-USGS-QMP-3.07	10/27/86	11/04/88	07/28/89	04/25/90	03/30/92					
QMP-3.07-Mod.01	08/23/89	Modification superseded by QMP-3.07, R3 on 04/25/90.								
QMP-3.07-Mod.02	09/18/89	Modification superseded by QMP-3.07, R3 on 04/25/90.								
QMP-3.07,R3-M1	06/08/90	Modification superseded by QMP-3.07, R4 on 03/30/92.								
QMP-3.07,R3-M2	10/15/91	Modification superseded by QMP-3.07, R4 on 03/30/92.								
QMP-3.07,R4-M1	05/06/92	Modification superseded by QMP-3.07,R4-M2 on 08/10/92.								
QMP-3.07,R4-M2	08/10/92									
YMP-USGS-QMP-3.10	06/05/89	02/28/90	05/08/91							
QMP-3.10-Mod.01	08/23/89	Modification superseded by QMP-3.10, R1 on 02/28/90.								
QMP-3.10,R2-M1	10/15/91									
YMP-USGS-QMP-3.11	*	06/05/89								
QMP-3.11,R1-M1	10/15/91									
YMP-USGS-QMP-3.13	06/05/89	02/28/90								
QMP-3.13-Mod.01	08/23/89	Modification superseded by QMP-3.13, R1 on 02/28/90.								
QMP-3.13,R1-M1	10/15/91									
YMP-USGS-QMP-3.14	*	07/28/89	09/01/89	11/05/90	Procedure superseded by QMP-3.03, R3 on 02/03/92.					
QMP-3.14,R2-M1	06/08/90	Modification superseded by QMP-3.14, R3 on 11/05/90.								
QMP-3.14,R2-M2	07/31/90	Modification superseded by QMP-3.14, R3 on 11/05/90.								
QMP-3.14,R3-M1	11/20/90	Modification superseded by QMP-3.03, R3 on 02/03/92.								
YMP-USGS-QMP-3.15	05/18/92									
YMP-USGS-QMP-4.01	08/24/85	10/27/86	*	06/23/89	04/09/93					
QMP-4.01,R3-M1	06/15/90	Modification superseded by QMP-4.01, R4 on 04/09/93.								
QMP-4.01,R3-M2	08/01/91	Modification superseded by QMP-4.01, R4 on 04/09/93.								
QMP-4.01,R3-M3	10/15/91	Modification superseded by QMP-4.01, R4 on 04/09/93.								
QMP-4.01,R3-M4	11/13/91	Modification superseded by QMP-4.01, R4 on 04/09/93.								
QMP-4.01,R4-M1	04/09/93									

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REVISION RECORD - (continued)

Record for Quality Management Procedures (QMP)

<u>QMP Document Number</u>	<u>Effective Date(s)</u>								
	<u>Rev. 0</u>	<u>Rev. 1</u>	<u>Rev. 2</u>	<u>Rev. 3</u>	<u>Rev. 4</u>	<u>Rev. 5</u>	<u>Rev. 6</u>	<u>Rev. 7</u>	<u>Rev. 8</u>
YMP-USGS-QMP-4.02	*	06/23/89	11/05/90	12/02/91					
QMP-4.02,R1-M1	05/22/90	Modification superseded by QMP-4.02, R2 on 11/05/90.							
QMP-4.02,R3-M1	03/12/92								
YMP-USGS-QMP-5.01	08/24/85	10/27/86	06/05/89	04/25/90	09/04/90				
QMP-5.01-Mod.01	08/23/89	Modification Superseded by QMP-5.01, R3 on 04/25/90.							
QMP-5.01,R4-M1	10/15/91								
QMP-5.01,R4-M2	06/26/92								
QMP-5.01,R4-M3	10/01/92	Modification superseded by QMP-5.01,R4-M4 on 03/19/93.							
QMP-5.01,R4-M4	03/19/93								
YMP-USGS-QMP-5.02	10/27/86	11/04/88	06/05/89	02/05/90	Procedure rescinded 03/19/93.				
QMP-5.02-Mod.01	08/23/89	Modification superseded by QMP-5.02, R3 on 02/05/90.							
QMP-5.02,R3-M1	10/15/91	Procedure rescinded 03/19/93.							
YMP-USGS-QMP-5.03	10/27/86	02/17/88	10/04/88	02/17/89	08/04/89	05/18/90	05/01/91	10/15/91	
QMP-5.03-Mod.01	08/23/89	Modification superseded by QMP-5.03, R5 on 05/18/90.							
YMP-USGS-QMP-5.04	11/22/88	02/17/89	08/04/89	02/05/90	10/15/91				
QMP-5.04-Mod.01	09/18/89	Modification superseded by QMP-5.04, R3 on 02/05/90.							
QMP-5.04-R4-M1	03/01/93								
YMP-USGS-QMP-5.05	*	07/28/89	11/05/90	04/02/93					
QMP-5.05-Mod.01	08/23/89	Modification superseded by QMP-5.05, R2 on 11/05/90.							
QMP-5.05,R2-M1	10/15/91	Modification superseded by QMP-5.05, R3 on 04/02/93.							
QMP-5.05,R2-M2	06/26/92	Modification superseded by QMP-5.05, R3 on 04/02/93.							
YMP-USGS-QMP-6.01	08/24/85	10/27/86	11/04/88	*	07/28/89	02/05/90			
QMP-6.01-Mod.01	08/23/89	Modification superseded by QMP-6.01, R5 on 02/05/90.							
QMP-6.01,R5-M1	06/30/92	06/30/92							
QMP-6.01,R5-M2	10/01/92								
YMP-USGS-QMP-7.01	10/27/86	11/04/88	*	06/23/89	08/25/89	04/09/93			
QMP-7.01,R4-M1	06/15/90	Modification superseded by QMP-7.01, R5 on 04/09/93.							
QMP-7.01,R4-M2	06/28/90	Modification superseded by QMP-7.01, R5 on 04/09/93.							
QMP-7.01,R4-M3	10/15/91	Modification superseded by QMP-7.01, R5 on 04/09/93.							
NNWSI-USGS-QMP-7.02	10/27/86	Procedure rescinded 11/04/88. Scope incorporated into QMP-7.01.							
NNWSI-USGS-QMP-7.03	10/27/86	Procedure rescinded 11/04/88. Scope incorporated into QMP-7.01.							
YMP-USGS-QMP-7.04	04/09/93								

* Effective date was not assigned - document was never distributed.

REVISION RECORD - (continued)

Record for Quality Management Procedures (QMP)

<u>QMP Document Number</u>	<u>Effective Date(s)</u>										
	<u>Rev. 0</u>	<u>Rev. 1</u>	<u>Rev. 2</u>	<u>Rev. 3</u>	<u>Rev. 4</u>	<u>Rev. 5</u>	<u>Rev. 6</u>	<u>Rev. 7</u>	<u>Rev. 8</u>		
YMP-USGS-QMP-8.01	08/24/85	10/27/86	02/19/88								
YMP-USGS-QMP-8.03	11/04/88	07/28/89	09/01/89	04/25/90	11/27/91						
QMP-8.03,R3-M1	01/11/91	Modification superseded by QMP-8.03, R4 on 11/27/91.									
NNWSI-USGS-QMP-9.01	10/27/86	Procedure deleted from QA Program 12/12/88. As directed in the YMP-USGS QAPP, Section 9 applies only to engineered items and not to scientific investigation.									
NNWSI-USGS-QMP-10.01	08/24/85	10/27/86	Procedure rescinded 11/04/88. Scope incorporated into QMP-5.05.								
NNWSI-USGS-QMP-11.01	08/24/85	10/27/86	Procedure rescinded 07/28/89. Scope incorporated into QMP-5.05.								
YMP-USGS-QMP-12.01	08/24/85	10/27/86	10/25/88	06/05/89	03/12/90	11/26/90					
QMP-12.01-Mod.01	08/23/89	Modification superseded by QMP-12.01, R4 on 03/12/90.									
QMP-12.01,R4-M1	06/28/90	Modification superseded by QMP-12.01, R5 on 11/26/90									
QMP-12.01,R5-M1	05/08/91										
QMP-12.01,R5-M2	05/06/92										
QMP-12.01,R5-M3	03/05/93										
YMP-USGS-QMP-13.01	10/27/86	06/05/89									
YMP-USGS-QMP-15.01	08/24/85	10/27/86	10/25/88	06/05/89	02/05/90						
QMP-15.01-Mod.01	08/23/89	Modification superseded by QMP-15.01, R4 on 02/05/90.									
QMP-15.01,R4-M1	12/31/90										
QMP-15.01,R4-M2	05/22/91										
QMP-15.01,R4-M3	10/15/91	Modification superseded by QMP-15.01,R4-M4 on 11/09/92.									
QMP-15.01,R4-M4	11/09/92	Modification superseded by QMP-15.01,R4-M5 on 03/19/93.									
QMP-15.01,R4-M5	03/19/93										
NNWSI-USGS-QMP-15.02	10/27/86	Procedure rescinded 11/11/88. No longer required by the YMP QA Plan.									
YMP-USGS-QMP-16.01	08/24/85	10/27/86	10/11/88	02/05/90							
QMP-16.01-Mod.01	08/23/89	Modification superseded by QMP-16.01, R3 on 02/05/90.									
QMP-16.01,R3-M1	03/14/91										
QMP-16.01,R3-M2	11/09/92										
YMP-USGS-QMP-16.02	11/04/88										
YMP-USGS-QMP-16.03	10/11/88	06/05/89	02/05/90								
QMP-16.03-Mod.01	08/23/89	Modification superseded by QMP-16.03, R2 on 02/05/90.									
QMP-16.03,R2-M1	03/14/91										
QMP-16.03,R2-M2	05/15/91										
QMP-16.03,R2-M3	07/02/91										

* Effective date was not assigned - document was never distributed.

REVISION RECORD - (continued)

Record for Quality Management Procedures (QMP)

<u>QMP Document Number</u>	<u>Effective Date(s)</u>								
	<u>Rev. 0</u>	<u>Rev. 1</u>	<u>Rev. 2</u>	<u>Rev. 3</u>	<u>Rev. 4</u>	<u>Rev. 5</u>	<u>Rev. 6</u>	<u>Rev. 7</u>	<u>Rev. 8</u>
YMP-USGS-QMP-17.01	08/24/85	10/27/86	10/07/88	03/03/89	09/24/90	02/28/92			
QMP-17.01-Mod.01	08/21/89	Modification superseded by QMP-17.01, R4 on 09/24/90.							
QMP-17.01,R4-M1	10/31/90	Modification superseded by QMP-17.01, R5 on 02/28/92.							
QMP-17.01,R4-M2	12/17/90	Modification superseded by QMP-17.01,R4-M5 on 08/30/91.							
QMP-17.01,R4-M3	05/01/91	Modification superseded by QMP-17.01, R5 on 02/28/92.							
QMP-17.01,R4-M4	06/03/91	Modification superseded by QMP-17.01, R5 on 02/28/92.							
QMP-17.01,R4-M5	08/30/91	Modification superseded by QMP-17.01, R5 on 02/28/92.							
QMP-17.01,R4-M6	11/13/91	Modification superseded by QMP-17.01, R5 on 02/28/92.							
QMP-17.01,R5-M1	10/01/92								
NNWSI-USGS-QMP-17.02	10/27/86	Procedure rescinded 08/25/89. YMP-USGS will work to DOE AP-5.9Q.							
YMP-USGS-QMP-17.03	11/05/90								
QMP-17.03,R0-M1	06/03/91								
QMP-17.03,R0-M2	11/13/91								
QMP-17.03,R0-M3	02/28/92	Modification superseded by QMP-17.03,R0-M5 on 08/10/92.							
QMP-17.03,R0-M4	04/10/92								
QMP-17.03,R0-M5	08/10/92								
YMP-USGS-QMP-18.01	08/24/85	10/27/86	11/04/88	06/05/89	04/25/90	07/30/90	05/01/91		
QMP-18.01-Mod.01	11/09/89	Modification superseded by QMP-18.01, R4 on 04/25/90.							
QMP-18.01,R4-M1	04/25/90	Modification superseded by QMP-18.01, R5 on 07/30/90.							
QMP-18.01,R5-M1	10/30/90	Modification superseded by QMP-18.01, R6 on 05/01/91.							
QMP-18.01,R5-M2	12/31/90	Modification superseded by QMP-18.01, R6 on 05/01/91.							
QMP-18.01,R6-M1	05/23/91								
QMP-18.01,R6-M2	10/15/91								
YMP-USGS-QMP-18.02	11/04/88	05/18/90	05/01/91						
QMP-18.02-Mod.01	01/17/90	Modification superseded by QMP-18.02, R1 on 05/18/90.							
QMP-18.02,R1-M1	10/30/90	Modification superseded by QMP-18.02, R2 on 05/01/91.							
QMP-18.02,R2-M1	10/15/91								

* Effective date was not assigned - document was never distributed.

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- AP-1.10Q Preparation, Review, and Approval of SCP Study Plans
- AP-5.1Q Control and Transfer of Technical Data on the Yucca Mountain Project
- AP-5.9Q Qualification of Data or Data Analyses Not Developed under the Yucca Mountain Project Quality Assurance Plan
- AP-5.19Q Interface Control
- AP-6.3Q Procedure for Requesting Samples for Examination at the Yucca Mountain Site Characterization Project Sample Management Facility
- AP-6.4Q Procedure for the Submittal, Review, and Approval of Requests for Yucca Mountain Project Geologic Specimens
- AP-6.26Q Submission and Documentation of Non-Borehole Samples to the Sample Management Facility

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<u>Geochemical Procedures</u>		
GCP-02,R2	10/22/90	Labeling, Identification, and Control of Samples for Geochemistry and Isotope Geology
GCP-03,R2	06/21/90	Uranium-Series Dating
GCP-04,R2	06/21/90	Uranium-Trend Dating
GCP-07,R2	05/06/91	Mineral Separation for Geochemistry and Isotopic Analysis
GCP-08,R2	01/22/90	Fission-Track Dating
GCP-09,R1	09/10/90	Preparation of Spike Solutions
GCP-12,R3	07/16/90	Rb-Sr Isotope Geochemistry
GCP-13,R2	11/06/90	U-Th-Pb Isotope Geochemistry
GCP-15,R2	08/24/89	Oxygen Isotope Analysis of Opaline Silica, Chalcedony, and Quartz
GCP-16,R3	07/09/90	Carbonate Carbon and Oxygen Isotope Analyses
GCP-17,R2	08/23/89	Determination of the Isotopic Ratio of H/D in H ₂ O
GCP-21,R1	10/22/90	Sm-Nd Isotope Geochemistry
GCP-22,R0	06/21/90	Spike Calibration for Uranium-Series and Uranium-Trend Analyses
GCP-27,R0	06/24/92	Determination of Temperature and Salinity from Mineral-Hosted Fluid Inclusions
GCP-28,R0	06/22/92	Uranium Isotope Geochemistry
GCP-30,R0	03/03/93	Carbon Dioxide Measurement with EGM-1 and WMA-2 Portable IRGA
<u>Geologic Procedures</u>		
GP-01,R2	07/29/91	Geologic Mapping
GP-06,R3	03/25/91	Geodetic Leveling and Quadrilateral Surveys
GP-07,R1	11/06/90	Conventional Geologic Mapping of Trench Walls
GP-10,R1	12/19/90	Borehole Video Fracture Logging
GP-12,R1	03/06/87	Mapping Fractures on Pavements, Outcrops and Along Traverses

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GP-17,R1	11/06/90	Describing and Sampling Soils in the Field
GP-20,R0	09/10/87	Volumetric Estimation of Lithophysae
GP-22,R2	05/21/90	Dust Trap Sampling and Mineralogical Analysis of Dust Samples
GP-23,R0	01/08/87	Estimation of Rates of Soil Development
GP-27,R2	10/22/90	Trench Wall and Natural Outcrop Sampling for Coordinated Studies
GP-29,R1	04/08/89	Image Processing of Landsat and Synthetic Aperture Radar
GP-39,R0	03/16/92	Geophotogrammetric Mapping of Trench Walls - Field Work
GP-50,R0	03/03/93	Identification of Geomorphic Features of Possible Tectonic Origin Using Conventional and Low-Sun-Angle Vertical Aerial Photographs.
<u>Geophysical Procedures</u>		
GPP-01,R2	01/09/91	Gravity Methods
GPP-11,R2	07/20/92	Magnetic Methods
GPP-15,R1	12/31/92	Magnetic Susceptibility Borehole Logging Operations
GPP-17,R1	12/31/92	Magnetometer Borehole Logging Operations
GPP-18,R1	01/18/91	Magnetotelluric Measurements
GPP-20,R2	05/15/92	Measurement of Subsurface Temperatures
GPP-21,R1	05/15/92	Measurement of Thermal Conductivity of Rocks
GPP-22,R1	05/15/92	Determining Porosity and Density of Rock Samples for Geothermal Investigations
<u>Hydrologic Procedures</u>		
HP-07,R2	03/22/93	Method to Inject Tracer Gas to Drilling Air
HP-09,R2	09/09/91	Construction of Piezometers in Unconsolidated Sediments
HP-12,R3	06/08/88	Method for Collection, Processing, and Handling of Drill Cuttings and Core from Unsaturated-Zone Boreholes at the Well-Site, NTS

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HP-25,R1	09/13/88	Method for Measuring Water Level Using a Portable Multiconductor
HP-26,R1	06/18/90	Method for Calibrating Water-Level Measurement Equipment Using the Reference Steel Tape
HP-27,R0	04/29/88	Instructions for Operation of the Iron Horse for Determining Water-Level Measurements in Wells
HP-37,R1	11/18/88	Drilling and Coring of Unconsolidated Sediments
HP-40,R2	03/23/92	Estimation of Peak-Streamflow Discharge by the Slope-Conveyance Method
HP-43,R2	03/23/92	Installation, Operation, and Examination of Two Types of Non-Recording Rain Gages
HP-44,R2	04/13/92	Installation, Operation, and Examination of Crest-Stage Streamflow Gages
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HP-59,R0	10/06/88	Method for Calibrating Digital Thermometers
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HP-71,R0	09/01/87	Method for Monitoring Water-Level Changes Using a Campbell Scientific 21X Micrologger
HP-75,R1	09/07/90	Method for Measuring Water Levels in Wells Using Reeled (2600-foot and 2800-foot) Steel Tapes
HP-76,R1	06/20/90	Diatom Enumeration Studies
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HP-84,R1	08/01/90	Sealing Neutron Access-Hole Casings at the Ground Surface
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HP-89,R0	07/08/88	Method of Performing Injection (Slug) Tests of Cased Boreholes in Remote Areas
HP-91,R3	03/26/91	Collection and Field Analysis of Surface-Water Samples
HP-93,R0	05/11/88	Method for Processing Electronic Data from Campbell Scientific 21X Micrologger Into Water Levels
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HP-97,R1	03/15/91	Measurement of Temperature and Relative Humidity Using a CSI 207 Temperature and Relative Humidity Probe
HP-99,R1	02/15/90	Instruction for Operation of a Well Sounder for Measuring Water Levels
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HP-114,R1	04/13/92	Estimation of Streamflow Discharge
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HP-117,R1	06/30/92	Installation, Examination, and Maintenance of Scour Chains at Streamflow Gaging Sites
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HP-125,R0	05/20/88	Method for Extraction of Pore Water from Tuff Cores by Triaxial Compression
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HP-165,R0	06/23/88	Method for Measuring Snow Water Content
HP-166,R1	09/14/92	Stream Discharge Measurements Using a Pygmy Current Meter
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HP-168,R0	06/09/88	Measurement of Energy Flux Density by a Pyranometer
HP-169,R1	03/23/92	Determination of Peak-Streamflow Discharge by the Slope-Area Method
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HP-172,R0	06/09/88	Water Level Measurement Using a Ten-Turn Potentiometer
HP-173,R0	06/23/88	Data Collection Protocol for Plant Community Analysis
HP-175,R2	11/08/88	Method for Surface Measurements of Velocity, Direction, Temperature and Humidity of Convective Airflow in Topographically-Affected Wells

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HP-176,R1	12/11/89	Procedure to Collect Gas Composition Samples at Selected Depth Intervals
HP-177,R1	02/22/91	Operation of the Setra Model 270 Barometric Pressure Transducer
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HP-179,R2	04/14/92	Field Measurement of Precipitation Using a Tipping Bucket Rain Gage
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HP-182,R0	09/20/88	Collecting Microvertebrate Fossils by Washing and Sieving
HP-183,R2	07/03/91	Investigation into the Chloride Ion Leaching from Fresh Rhyolitic Tuff Surfaces
HP-184,R1	01/01/90	Collection and Preservation of Atmospheric Precipitation Samples for Chemical Analysis
HP-186,R1	09/07/90	Methods for Locating Field Sites on Topographic Maps for Reconnaissance and Site Characterization Activities
HP-187,R0	01/08/90	Terrain Conductivity Measurement Using Model EM-34-3
HP-192,R2	03/24/93	Shallow Soil Gas Collection
HP-194,R1	08/17/92	Approximation of Relative Humidity Using a Silica Gel Tower, Cold Trap, and Molecular-Sieve Within Unsaturated Zone Test Holes as an Aid in Determining Pumping Efficiency
HP-195,R0	06/10/90	Method for Heat Evacuating Gas Storage and Collection Cylinders
HP-196,R1	10/17/92	Method for Collecting Water Level Data Using Data Collection Platforms
HP-198,R1	08/09/91	Measurement of Wind Speed and Wind Direction Using the 05301 R.M. Young Wind Monitor
HP-200,R0	12/16/91	Collection of Ground-Water Samples from Wells
HP-202,R0	05/27/92	Analysis of Water Samples for Anion and Cation Concentrations by Ion Chromatography

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HP-204,R0	01/08/92	Liquid Scintillation Spectrometry Method for Tritium Measurement of Water Samples
HP-209,R0	09/24/91	Method for Preparing Tracers for Addition to a Water Supply System
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HP-212,R0	10/09/92	Method for Locating Fractures within Welded Tuff Using a Miniature Packer System
HP-216,R0	05/03/91	Topographic Contour Mapping Using an Alidade and Plane Table
HP-218,R0	05/22/91	Measurement of Leaf Water Potential Using a Pressure Chamber
HP-219,R0	08/24/92	Method to Install, Operate, and Examine a Recording Streamflow Gage Using the Fluid Data G-II Manometer System
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HP-240,R0	08/17/92	Method for Analysis of Co2 and/or Gas Sample Concentrations by Gas Chromatography Using Summit Interests SIP 1000
HP-242,R0	05/27/92	Method for Analyzing the Concentration of Halocarbon Gases with an ITI Leakmeter 120
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HP-249,R0	12/29/92	Method for Pore-Water Extraction Using High-Pressure One-Dimensional Compression

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HP-256,R0	02/17/93	Method for Collecting and Storing CO ₂ Gas Samples from Borehole Atmosphere or From Free Air by Absorption in a KOH Solution
HP-257,R0	12/14/92	Method to Measure Shut-In Pressure in Unsaturated Zone Boreholes
HP-260,R0	04/05/93	Hydrologic Testing, Monitoring, and Sampling Perched-Water Zones in the Exploratory Studies Facility
HP-262,R0	03/23/93	Collection of Chlorofluorocarbon (CCL ₃ F and CCL ₂ F ₂) Gas Samples for Age Dating
<u>Seismic Procedures</u>		
SP-01,R4	01/10/90	Preliminary Earthquake Location Procedure
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SP-06,R2	04/12/90	Preliminary Determination of Earthquake Focal Mechanism from P-Wave Polarities and SV/P Amplitudes
SP-11,R2	07/26/90	Operation and Calibration of Remote Telemetered Seismic Array
SP-13,R0	05/29/92	VSP and Crosshole Tomographic Surveys
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GCP-24T,R0	06/28/91	Modifications to U-Th-Pb Isotope Geochemistry Procedure
GCP-31T,R0	03/03/93	Collection of Neo-Formed Carbonate from Soils.
GCP-32T,R0	03/03/93	Collection of Soil Gases and Moisture for Stable Isotope Analysis.
GP-38T,R0	01/08/90	Stratigraphic Studies from Geologic Description of Core, Bit Cuttings, and Outcrop
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HP-190T,RO	11/14/89	Silica Gel Dewatering
HP-193T,RO	06/22/90	Determination of Sorption Properties of Yucca Mountain Tuff and Borehole Stemming Material with Respect to SF ₆ , Freon-11, Freon-12, ¹⁴ CO ₂ , ¹³ CO ₂ , and CO ₂
HP-197T,RO	04/26/90	Techniques for Measuring Severe Stream-Channel or Hillslope Erosion and (or) Resultant Sediment Deposit
HP-199T,RO	01/15/91	Collection of Aquatic Micro-organisms
HP-205T,R1	05/17/91	Selection of Sites and Collection of Data for Channel Geometry Measurements
HP-206T,RO	06/06/90	Pedogenic Carbonate Sample Collection
HP-208T,RO	09/14/90	Field Verification of Surficial Material Properties from Remote Sensing Analysis Techniques
HP-211T,RO	05/22/91	Long-Term Meteorological Data Collection
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HP-217T,RO	05/22/91	Estimation of Leaf Area Index in Plant Canopies
HP-220T,RO	02/26/92	Air Flow Monitoring in Deep Saturated Zone Boreholes and in Partially Cased Boreholes
HP-221T,RO	03/13/92	Monitoring the Well Water Level or Fluid Pressure Response to Underground Nuclear Explosions or Earthquakes
HP-222T,RO	03/13/92	Installation of a Small Diameter Packer and Transducer to Measure Fluid Pressure in Wells
HP-226T,RO	07/12/91	Measurement of Transpiration Using Chamber Methods
HP-228T,RO	09/18/91	Identification, Monitoring, and Sampling of Perched Water Encountered While Drilling Neutron-Access Boreholes

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HP-233T,RO	12/06/91	Thermal Pulse Flowmeter Survey at the UE-25c Hole Complex
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HP-236T,RO	08/03/92	Installation and Operation of PVC Straddle Packer String in UZ Boreholes for Gas and Water Vapor Sampling
HP-237T,RO	05/27/92	Methods for Sealing Unsaturated Zone Borehole Core Samples to Preserve Moisture Content
HP-238T,RO	05/27/92	Injection of a Trace Gas for Determining Atmospheric Contamination in a Dry-Drilled Borehole
HP-239T,RO	09/09/92	Method for Removing Traced Drilling Air From Unsaturated-Zone Boreholes
HP-241T,RO	10/20/92	Air Permeability Testing (SN#0033)
HP-253T,RO	02/08/93	Performing Various Hydraulic Tracer Tests Using Prototype Pressure Transducer and Packer Assemblies
HP-261T,RO	03/08/93	Collection and Processing of Rock Cutting Samples from Wells Drilled with Mud Using the Rotary Hydraulic Method.
SP-16T,RO	08/08/90	Two-Dimensional Seismic Array Measurements at Yucca Mountain
<u>YMP-USGS-EGP Technical Procedures</u>		
EGP-01,RO	02/12/93	Determining Leach Filled Percolation

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<u>DOCUMENT NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>TITLE</u>
<u>YMP-USGS Activity Controls Specification Reports</u>		
ACS-G1232212-1,R0	11/12/92	Characterization of Structural Features Within the Site Area.
ACS-G1232843-1,R0	11/12/92	Quaternary Faulting within 100 km of Yucca Mountain, including the Walker Lane.
ACS-G1233111-1,R0	12/21/92	Precipitation and Meteorological Monitoring
ACS-G1233112-1,R0	12/21/92	Characterization of Runoff and Streamflow.
ACS-G1233114-1,R0	02/02/93	Regional Hydrologic System Synthesis and Modeling
ACS-G1233121-1,R0	12/21/92	Characterization of Surficial Materials
ACS-G1233121-2,R0	01/08/93	Characterization of Natural Infiltration
ACS-G1233121-3,R0	12/21/92	Evaluation of Artificial Infiltration.
ACS-G1233123-1,R0	12/21/92	Matrix Hydrologic-Properties Testing
ACS-G1233123-2,R0	12/21/92	Site Vertical Borehole Study
ACS-G1233123-3,R0	12/21/92	Solitario Canyon Horizontal Borehole Study
ACS-G1233124-1,R0	02/02/93	Percolation Test in the ESF.
ACS-G1233124-2,R0	12/21/92	Intact - Fracture Test in the ESF
ACS-G1233127-1,R0	12/21/92	Hydrochemical Characterization of the Unsaturated Zone.
ACS-G1233127-2,R0	11/12/92	Hydrochemical Characterization of the Unsaturated Zone and Pore Water Extraction.
ACS-G1233127-3,R0	12/21/92	Hydrochemical Characterization of the Unsaturated Zone.
ACS-G1233131-1,R0	12/21/92	Characterization of the Site Saturated-Zone Groundwater Flow System.
ACS-G1236213-1,R0	11/12/92	Climatic Implications of Terrestrial Paleoecology
ACS-G1236221-1,R0	12/21/92	Geochemistry of Arid Zone Infiltration.
ACS-G1236222-1,R0	02/02/93	Characterization of the Future Regional Hydrology Due to Climate Changes

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MANAGEMENT PROCEDURES MANUAL

CHAPTER 3 - DESIGN (SITE INVESTIGATION CONTROL)

SECTION 3 - SOFTWARE

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1. **PURPOSE.** This procedure establishes a software quality assurance (QA) methodology for controlling and documenting the development, acquisition, change, verification, validation, and use of Software Products intended to support those scientific investigations, studies, and activities to be conducted by the U.S. Geological Survey (USGS) as part of the U.S. Department of Energy's (DOE) Yucca Mountain Project (YMP). This procedure also describes the functions and implementation of software configuration management for the YMP-USGS.
2. **SCOPE OF COMPLIANCE.** This Quality Management Procedure (QMP) applies to Software Products developed or acquired by YMP-USGS, including commercial-grade software, for use to support the acquisition, manipulation, and/or transformation of site characterization data, engineering design data, performance assessment data, or licensing data. This QMP also includes modeling software used to support these activities, but does not include the Interpretive Model or validation of the Interpretive Model. Software Products such as operating systems, system utility routines, and software libraries are exempt from the requirements of this QMP as long as software products that invoke the above products are controlled by this QMP. Firmware acquired with hardware, word processors, and compilers also are exempt from the requirements of this QMP. All Software Documents submitted in accordance with QMP-3.03, R2, will not require revision under this QMP.
3. **DEFINITIONS.**
 - 3.1 **Definitions:**
 - 3.1.1 **CONFIGURATION STATUS ACCOUNTING:** The recording and reporting of information that is necessary to manage the development, change, acquisition, and operation of software.
 - 3.1.2 **CRITICAL SOFTWARE:** Software that generates Unique Data which may be used for site characterization, engineering design, performance assessment, or licensing. Unique Data can be acquired only once, even if the process is repeatable. Failure of critical software means that Unique Data will be lost.
 - 3.1.3 **FIRMWARE:** Software embedded in instrumentation or hardware so that it cannot be changed.
 - 3.1.4 **INTERPRETIVE MODEL:** A complete model structure that includes (1) the conceptual model, including assumptions and restrictions relative to the physical process; (2) the mathematical model, which may be embodied in software; and (3) input and data used to implement the model to predict future events or physical processes for site characterization, engineering design, performance assessment, or licensing.
 - 3.1.5 **NON-CRITICAL SOFTWARE:** Software Products that do not generate Unique Data but are used to manipulate or transform data that may be used for site characterization, engineering design, performance assessment, or licensing.
 - 3.1.6 **PERIPHERAL SOFTWARE:** All Software Products that are not used for licensing, engineering design, performance assessment, and/or site

characterization, including those that have not yet been classified as Non-Critical or Critical.

3.1.7 PRIMARY USER: The Software User (SCP Activity) initiating or otherwise having principal responsibility for the development, acquisition, or application of a particular Software Product.

3.1.8 SOFTWARE DOCUMENT: Any documentation pertaining to a Software Product.

3.1.9 SOFTWARE LIFE CYCLE: A series of activities that begin when a Software Product is conceived and ends when the software is no longer available for use.

3.1.10 SOFTWARE PROBLEM: An error in a computer code (synonymous with "bug") or a failure to meet one or more specifications of a Software Product.

3.1.11 SOFTWARE PRODUCT: An operational set of one or more modules regarded as a single, uniquely identifiable software entity.

3.1.12 SOFTWARE USER: Within YMP-USGS, a specific Site Characterization Plan (SCP) activity as identified and described in the DOE SCP.

3.1.13 SOFTWARE VALIDATION: The process that demonstrates that the Software Product correctly performs its stated capabilities and functions.

3.1.14 SOFTWARE VERIFICATION: The process of determining whether the products of a given software life cycle phase satisfy the conditions imposed at the start of that phase.

3.1.15 UNIQUE DATA: Data that only can be acquired once, even if the process is repeatable.

3.2 Acronyms and Abbreviations:

CCC	Configuration Control Committee
CID	Configuration Identifier
CSA	Configuration Status Accounting
DOE	U.S. Department of Energy
GSP	Geologic Studies Program
HIP	Hydrologic Investigations Program
OCRWM	Office of Civilian Radioactive Waste Management
PI	Principal Investigator
QA	Quality Assurance
QMP	Quality Management Procedure
SBR	Software Baseline Request
SCF	Software Control Form
SCM	Software Configuration Management
SCP	Site Characterization Plan
SDD	Software Design Description
SDR	Software Document Review
SIR	Software Identification Request

SPR	Software Problem Report
SRS	Software Requirements Specification
STR	Software Transfer Request
SUD	Software User Documentation
SVR	Software Validation Report
TC	Technical Contact
USGS	U. S. Geological Survey
YMP	Yucca Mountain Project
YMPB	Yucca Mountain Project Branch

4. RESPONSIBILITIES.

- 4.1 The Chief, Yucca Mountain Project Branch (YMPB), has programmatic responsibility for the implementation of this QMP. The Chief, YMPB selects and directs the Software Configuration Management System (SCM) Coordinator.
- 4.2 The Chief, Geologic Studies Program (GSP), is responsible for (1) ensuring the implementation of this QMP by GSP personnel engaged in YMP-USGS scientific investigations, studies, and activities, and (2) selecting a representative to the Configuration Control Committee (CCC).
- 4.3 The Chief, Hydrologic Investigations Program (HIP), is responsible for (1) ensuring the implementation of this QMP by HIP personnel engaged in YMP-USGS scientific investigations, studies, and activities, and (2) selecting a representative to the CCC.
- 4.4 The YMP-USGS Quality Assurance (QA) Manager, is responsible for ensuring that all software used by the YMP-USGS satisfies the requirements set forth within this QMP. The QA Manager selects and directs the Software QA (SQA) Specialist.
- 4.5 The Principal Investigator (PI) of the SCP Activity designated to be the Primary User of a YMP-USGS Software Product is responsible for (1) assigning a Technical Contact (TC) for the Software Product, (2) ensuring the preparation of Software Documents, and (3) providing such other information as required.
- 4.6 The Technical Contact (TC) has the immediate responsibility for implementing the provisions of this QMP for those YMP-USGS Software Products or versions of those Software Products that are assigned to the TC.
- 4.7 The Software Quality Assurance (SQA) Specialist is responsible for (1) reviewing Software Documentation associated with Non-Critical Software to verify compliance with this QMP and (2) participating as a member of the CCC on behalf of the QA Manager.
- 4.8 The Software Configuration Management System (SCM) Coordinator is responsible for (1) reviewing Software Documents for records quality, (2) performing Configuration Status Accounting (CSA), (3) participating as a member of the CCC on behalf of the Chief, YMPB, (4) preparing the minutes of CCC meetings, and (5) submitting completed records to YMP-USGS Local Records Center on behalf of the records source.

- 4.9 The Configuration Control Committee (CCC) is responsible for (1) reviewing and approving the classification, selection of controls, and proposed changes documented on the Software Control Form (SCF) (Attachment 2, or equivalent), and (2) reviewing Software Documents associated with Critical Software to verify compliance with this QMP.
5. PROCEDURE. Prior to use to generate, manipulate, or transform data which may be used for licensing, engineering design, performance assessment, and/or site characterization for YMP, Software Products are required to be classified (Para. 5.1) and released (see Para. 5.5).

Prior to classification as Non-Critical or Critical, Software Products covered by this QMP are Peripheral Software and require no Software Documents. Software used for prototype work or scoping and bounding is Peripheral Software. Software Products, such as spreadsheets, data-base managers, and graphing and plotting routines, that do not generate any data to support site characterization, engineering design, performance assessment, or licensing will remain Peripheral Software. Programs written for use by the data-base software or spreadsheet Software Product may meet the criteria to be classified as Non-Critical or Critical Software.

Software Documents required for all Non-Critical and Critical Software Products shall be completed, reviewed, and approved before release for use to support the acquisition, manipulation, and/or transformation of site characterization data, engineering design data, performance assessment data, or licensing data.

- 5.1 Software Classification: The following categories shall be used to classify the types of software QA controls applied to Software Products:

5.1.1 CRITICAL: Software that generates Unique Data, which may be used for site characterization, engineering design, performance assessment, or licensing shall be deemed Critical Software. Unique Data can be acquired only once, even if the process is repeatable, such as when time is a critical component of the data (e.g., rainfall in January); the process that generates the data includes random noise (e.g., a voltmeter output); or the process itself cannot be repeated (e.g., seismic events). Programs that destroy the original data or render it unusable are also considered to be Critical Software.

5.1.2 NON-CRITICAL: Software Products that do not generate Unique Data but are used to manipulate or transform data that may be used for site characterization, engineering design, performance assessment, or licensing. This category includes all products that preserve the original data and may be re-run several times without changing the results. For instance, curve fitting programs, statistics programs, and unit conversion programs are considered Non-Critical Software.

- 5.2 Software Life Cycle: The YMP-USGS shall adhere to and implement a software development methodology based on the concept of an iterative Software Life Cycle. The relative emphasis placed on each phase of the Software Life Cycle will depend on the nature, complexity, importance, and intended application of the computer software being developed. The

YMP-USGS Software Life Cycle methodology for the development of Software Products shall consist of a sequence of phases as described below:

5.2.1 REQUIREMENTS: A preliminary Software Product development phase that (1) defines the task or problem to be addressed by the Software Product, (2) investigates the feasibility of developing and using the Software Product, and (3) evaluates resource requirements. Software Verification activities for this phase shall consist of confirming that all requirements can be tested.

5.2.2 DESIGN: This phase consists of developing the formal structure and architecture of the Software Product with respect to modules, units, external interfaces, and internal control logic and data flow. Software Verification activities for this phase shall consist of confirming that the requirements are reflected in the design.

5.2.3 IMPLEMENTATION AND VALIDATION: This phase consists of implementing the Software Product design into computer code and testing or debugging the Software Product. Software Verification should be performed to verify that the requirements and design are correctly implemented in the code. Software Validation should be performed to validate that the code functions properly.

5.2.4 OPERATION AND MAINTENANCE: This phase shall consist of the use of the Software Product by the Primary User to support the SCP activity. This phase may also include change and transfer of released Software Products.

5.3 Selection of Software Controls: The type of controls and the degree to which controls are applied to Software Products shall depend on the nature, complexity, importance, and intended application of the software. Each Software Product shall be considered individually to determine the applicable controls. Examples of typical considerations in determining the nature, complexity, importance, and intended application of a Software Product include:

- o Any supplemental controls existing outside the requirements of this QMP that may govern the use of Software Product, such as technical procedures, scientific notebook plans, publications, etc.
- o Whether or not the Software Product is controlled as an integral part of measurement and test equipment calibrations or data acquisition equipment. If so, the Software Product may not be subject to all documentation requirements of this QMP.
- o The number of programmers and length of time expected to be spent developing the software. The amount of detail required in documenting the software product may need to be adjusted depending upon these factors.

5.3.1 DOCUMENTATION OF THE SELECTION OF CONTROLS: Controls selected for Non-Critical and Critical Software shall be identified on the Software Control Form (SCF) (Attachment 2, or equivalent) (see Para. 5.4.2) and shall include change control and documentation of the Software

Product. The SCF shall be reviewed and approved by the Configuration Control Committee (CCC) (see Para. 5.12.4.2).

5.3.2 ADDITIONAL CONTROLS FOR CRITICAL SOFTWARE: Generally, the level of detail should be greater for Software Documents associated with Critical Software than for Non-Critical Software. All Software Documents associated with Critical Software shall be reviewed by the CCC.

5.4 Software Life Cycle Documentation: In order to initiate classification of software as Non-Critical or Critical, complete the Software Identification Request (SIR) (Attachment 1, or equivalent) and the SCF (Attachment 2, or equivalent). The SCF shall specify the documentation requirements for each Software Product as approved by the CCC. The minimum amount of additional documentation typically required for Non-Critical or Critical Software is as follows:

- o Software Requirements Specification (SRS) (Attachment 3, or equivalent),
- o Software Design Description (SDD) (Attachment 4, or equivalent),
- o Software Code,
- o Software Validation Report (SVR) (Attachment 5, or equivalent),
- o Software User Documentation (SUD) (Attachment 6, or equivalent), and
- o Software Release Request (SRR) (Attachment 7, or equivalent).

Some of this information may not be available in some cases, e.g., when software is not developed by the YMP-USGS. A clarification shall be documented on the SCF for any unavailable documentation.

A description of the information found in each Software Document is given in the following paragraphs.

5.4.1 SOFTWARE IDENTIFICATION REQUEST (SIR): The SIR (Attachment 1, or equivalent) shall be prepared by the PI to:

- o Identify the SCP activity designated to be the Primary User of the Software Product or version;
- o Assign, change, or update information for a TC for the Software Product;
- o Assign a unique Configuration Identifier (CID) to the Software Product or version in accordance with Section. 5.10; and
- o Inactivate or withdraw a program.

5.4.2 SOFTWARE CONTROL FORM (SCF): The SCF (Attachment 2, or equivalent) shall be submitted by the TC in order to document the classification of Critical and Non-Critical Software and the identification of the proper controls and Software Documentation. Each Software Product shall be considered individually to determine the applicable controls. The rationale for the exclusion of controls shall be documented on the SCF, as appropriate. Supplemental controls, such as technical procedures, scientific notebook plans, or publications, may also be referenced in the SCF.

The SCF also shall be submitted to document software changes as required by Para. 5.6.

5.4.3 SOFTWARE REQUIREMENTS SPECIFICATION (SRS): The TC shall describe the requirements of the software by specifying the following on the SRS (Attachment 3, or equivalent):

- o Functional Requirements - what the software is intended to do;
- o Performance Requirements or Constraints - any limitations of the expected inputs or outputs;
- o Interfaces with hardware, other software, or external data,
- o Software Engineering Standards;
- o Operation Issues - any requirements concerning portability, maintainability, reliability, and efficiency; and
- o Software Validation Test Plan - how the software will be validated.

Software Verification of the SRS shall confirm that all requirements can be tested (see Paras. 5.12.3 and 5.12.4).

5.4.4 SOFTWARE DESIGN DESCRIPTION (SDD): The TC prepares the SDD (Attachment 4, or equivalent) to describe the design in a manner that is easily traceable to the requirements described in the SRS (Attachment 3, or equivalent). In particular, the description shall address the following:

- o Overall description of the design (such as a flowchart, a narrative, data flow diagram, etc.),
- o Programming language and version,
- o Major variables,
- o Descriptions of files,
- o Hardware and operating system,
- o Special and peripheral hardware, and
- o Internal and external interfaces.

If the software is an integral part of an Interpretive Model, the SDD shall include a description of mathematical models and numerical methods used.

Software Verification of the SDD shall confirm that the requirements are reflected in the design (see Paras. 5.12.3 and 5.12.4).

5.4.5 SOFTWARE CODE: A paper copy of the source code shall be submitted when available. A magnetic medium copy of the source code and the executable code also shall be submitted if feasible. When either copy is not available, justification is required on the SCF (Attachment 2, or equivalent).

5.4.6 SOFTWARE VALIDATION REPORT (SVR): An SVR (Attachment 5, or equivalent) shall be submitted for tests performed to document that the Software Product properly performs the required technical capabilities/functions as specified in the SRS (Attachment 3, or equivalent).

Software Verification of the SVR shall confirm that the requirements outlined in the SRS are tested (See Paras. 5.12.3 and 5.12.4).

5.4.7 **SOFTWARE USER DOCUMENTATION (SUD):** The TC shall prepare the SUD (Attachment 6, or equivalent) to address the following:

- o Instructions for using the software;
- o Input and output options;
- o Data files, input/output data and file formats;
- o Initialization requirements;
- o Anticipated errors and how the user can respond;
- o Hardware/software environment;
- o Any available sample problems; and
- o Changes since the last release that affect the user.

5.4.8 **SOFTWARE RELEASE REQUEST (SRR):** The PI shall prepare the SRR (Attachment 7, or equivalent) to provide a summary of information about the Software Product. Upon receipt of the SRR, the SCM Coordinator shall attach to the SRR a list of the Software Document CID numbers (see Para 5.10.2) associated with the version being released. The SRR documents the completion of the development of the Software Product and its associated documentation.

5.5 **Software Release:**

5.5.1 Approval of the SRR (see Para. 5.4.8) signifies the formal release of the Software Product for use by the Primary User.

5.5.2 A Software Product is conditionally released when all required Software Documents, including the SRR, have been received by the SCM Coordinator but are not yet approved. The Primary User may use the Software Product prior to approval of the Software Documents, as long as the code is not changed, with the knowledge that the data is not fully qualified until formal release.

5.6 **Software Changes:** The TC shall submit a Software Control Form (SCF) (Attachment 2, or equivalent) to document proposed changes to a released Software Product. All Software Documents impacted by the change shall be revised by the TC. Software Documents not impacted by the change shall be referenced on the SCF by their Software Document CID. All other Software Users of a Software Product shall be notified of any changes by the SCM Coordinator (see Para. 5.11). It is not necessary to submit the SCF to revise documentation unless the software has been conditionally or formally released.

5.7 **Software Transfers:** A Software Product may be transferred from the Primary User to another Software User by submittal of Part I of the Software Transfer Request (STR) (Attachment 8, or equivalent) to the SCM Coordinator by the PI or organization representative/contact requesting the transfer. Prior to effecting the transfer, the TC shall complete Part II of the STR (see Para. 5.11). After approval, the SCM Coordinator shall provide copies of all Software Documents to the new Software User (see Para. 5.11).

5.8 **Software Problem Reporting:** If software problems are discovered, they shall be reported to the SCM Coordinator as soon as possible by completing and submitting Part I of the Software Problem Report (SPR)

(Attachment 9, or equivalent). The SCM Coordinator shall forward a copy of the SPR to the responsible TC. The TC shall complete Part II of the SPR and return it to the SCM Coordinator with her/his recommendations. The completion of Part II shall include an evaluation of the potential impact of the problem on the data produced by this version. The SPR is then processed in accordance with Para. 5.11 in order to notify other users of any corrective action required or taken. For each problem identified as having potential impact on data, the Software Users should evaluate the actual impact of the problem in accordance with QMP-15.01.

5.9 Software Document Preparation:

5.9.1 All Software Documents shall adhere to the records quality standards described in QMP-17.01 prior to their submittal to the SCM Coordinator. Specifically:

- o Records shall be legible;
- o Records shall be recorded using black ink;
- o Records shall not have any information scratched out or obliterated, by correction fluids/tape, etc.;
- o Corrections shall be made by scribing a single line through the incorrect information, and entering the correct information along with the date and initials of the person making the correction;
- o All questions shall have a response or be marked 'NA' or 'N/A'; and
- o Additional or supporting documentation, information, or data may be provided as exhibits to any document. Each exhibit shall be numbered sequentially and each page of an exhibit shall be labeled by the YMP-USGS Software Document CID (see Para. 5.10.2) for the parent document, the exhibit number, a page number, and total number of pages.

5.9.2 Submit completed Software Documents to the YMP-USGS SCM Coordinator, Box 25046 MS 425, Denver Federal Center, Denver, CO 80225 for subsequent review and processing.

5.10 Software Identification:

5.10.1 SOFTWARE PRODUCT IDENTIFICATION: Upon receipt of each SIR (Attachment 1, or equivalent), the SCM Coordinator shall assign a unique Configuration Identifier (CID) to the Software Product or version. The CID assigned to a Software Product shall be the primary identifier for that Software Product and shall have the following format:

YMP-USGS/AAAbbbb.cc

where (1) "AAA" denotes a three-character alphabetic organization identifier (i.e., GSP, HIP, etc.), (2) "bbbb" denotes a four-digit numeric Software Product identifier, and (3) "cc" denotes a two-digit version number for the Software Product.

5.10.2 SOFTWARE DOCUMENT IDENTIFICATION: For the SIR and for all subsequent Software Documents related to a specific Software Product,

a suffix shall be appended to the Software Product CID such that each Software Document revision is uniquely identified. The identifier assigned to a Software Document shall be the primary identifier for that document and shall have the following format:

YMP-USGS/AAAbbbb.cc/Dee.ff

where (1) "YMP-USGS/AAAbbbb.cc" denotes the Software Product CID (as described in Para. 5.10.1), (2) "D" denotes a single alphabetic attachment identifier, (3) "ee" denotes a two-digit document number, and (4) "ff" denotes a two-digit document revision number. For example:

YMP-USGS/HIP0017.01/A01.00

is a valid CID.

5.10.3 DATA IDENTIFICATION: Data used for site characterization, engineering design, performance assessment, or licensing shall be uniquely related to the specific software version that produced the data by identifying the Software Product CID, as described in Para. 5.10.1, in one or more of the following:

- o software output (hardcopy or other media; data or analyses results),
- o a description of the technical data (e.g. Technical Data Information Form),
- o a scientific notebook,
- o a technical procedure,

- o a technical publication, or
- o another project record.

For new software development, the TC is encouraged to have data identification accomplished by the software on the software output. The selected method of data identification is a control that shall be documented on the SCF in accordance with Section 5.4.2.

- 5.11 Configuration Status Accounting (CSA):** The SCM Coordinator shall initiate and maintain a CSA Log which shall contain information for each identified Software Product. The CSA Log shall record (1) the status of all the Software Documentation received, (2) all documented Software Users, (3) the status of all documented Software Problems, and (4) the status and a brief description of all software changes.

The SCM Coordinator shall record any event which represents a change in the status of a Software Product or its associated documentation in the CSA Log. An event which represents a change in status is one of the following:

- o the receipt of any Software Document,
- o the failure of any review of a Software Document,
- o the approval of any Software Document, and
- o any corrective action taken as a result of a SPR.

The SCM Coordinator shall provide a CSA Log Quarterly Update to the YMP-USGS Local Records Center on a quarterly basis. The CSA Log Quarterly Update shall contain all CSA Log changes that were recorded within the Quarter.

The TC and/or users, as appropriate, shall be notified within ten (10) working days of the change in status. In addition, the TC shall be notified by the SCM Coordinator of any unusual delay in the processing of Software Documents associated with Software Products for which the TC is responsible.

5.12 Document Reviews:

5.12.1 Upon receiving a Software Document, the SCM Coordinator shall record its receipt by initiating a Software Document Review (SDR) (Attachment 10, or equivalent). When completed, the SDR shall indicate:

- o the date of receipt of the Software Document,
- o the dates of document reviews,
- o any comments generated by the document reviews together with any related comment resolution information,
- o the date of completion of the SDR,
- o the signatures of the reviewers, and
- o the dates and summaries of any other actions.

5.12.2 RECORDS QUALITY REVIEW: Each Software Document shall be reviewed by the SCM Coordinator for records quality as described in Para. 5.9.1. Software Documents failing this review shall be returned to the submitter with an explanation of the problem(s). Software Documents passing this review, except the SIR, shall be forwarded to the SQA Specialist or the CCC, as appropriate, for further review. SIRs passing the Records Quality Review shall be processed with no further review.

5.12.3 SQA SPECIALIST REVIEW: The SQA Specialist shall review each Software Document associated with Non-Critical Software (except for the SCF) for compliance with this QMP. Software Verification shall be performed when appropriate. Upon completion of the review, the Software Document shall be returned to the SCM Coordinator who updates the CSA Log. If any problems are identified in the review, the Software Document shall be returned to the submitter for resolution of the comments.

5.12.4 CCC REVIEWS: The CCC shall conduct Critical Software Document and Software Control reviews as described in the following paragraphs.

5.12.4.1 The CCC shall review each Software Document associated with Critical Software for compliance with this QMP. Software Verification shall be performed when appropriate. Upon completion of the review, the Software Document shall be returned to the SCM Coordinator who updates the CSA Log. If any problems are identified in the review, the Software Document

shall be returned to the submitter for resolution of the comments.

5.12.4.2 The CCC, in conjunction with the TC, shall review each SCF (Attachment 2, or equivalent) for approval of the selected classification, controls, documentation requirements, and any proposed changes. Review of proposed changes shall include an evaluation of impact of the change on classification, controls, and documentation requirements. Upon completion of the review, the Software Document shall be returned to the SCM Coordinator who updates the CSA Log. If any problems are identified in the review, the SCF shall be returned to the submitter for resolution of the comments.

5.12.5 REVIEW DOCUMENTATION: Comments generated by the Software Document reviews shall be recorded on the SDR (Attachment 10, or equivalent) and resolved, as necessary. Upon completion of all required Software Document reviews, the SCM Coordinator shall record the date of completion on the SDR and update the CSA Log.

5.13 Configuration Control Committee Meetings:

5.13.1 Membership of the CCC shall include (1) the SQA Specialist or delegate, (2) the SCM Coordinator or delegate, and (3) one representative each from the USGS GSP and the USGS HIP.

5.13.2 The TC (or other adequate representative) for the Software Product is strongly encouraged to attend the CCC meetings when her/his software is to be addressed.

5.13.3 The CCC shall meet on a regular monthly schedule. Additional meetings of the CCC may be requested by any member.

5.13.4 The SCM Coordinator shall provide notification of each CCC meeting to the members of the CCC and others as requested. The SCM Coordinator shall record the minutes of each CCC meeting for distribution to all CCC members and others as designated by the CCC.

6. RECORDS MANAGEMENT.

6.1 Controlled Documents: None.

6.2 Records Center Documents: Records associated with this procedure shall be submitted to the YMP-USGS Local Records Center, in accordance with QMP-17.01, by the SCM Coordinator within 10 working days from the date of completion recorded for each record. Individual records include the following:

- o the minutes of the CCC meetings, which typically include the agenda, meeting roster, and assorted attachments;
- o any of the Attachments 1 through 9, or equivalent, to this procedure along with a variety of exhibits and notifications as required by

the Attachments, or equivalent, when completed by Attachment 10, or equivalent; and

- o the CSA Log Quarterly Update.

7. RELATED DOCUMENTS.

7.1 Superseded Documents: This QMP supersedes YMP-USGS-QMP-3.03, R2, Software Quality Assurance, with Modifications QMP-3.03,R2-M1 and QMP-3.03, R2-M2; and YMP-USGS-QMP-3.14, R3, Software Configuration Management System, with Modification QMP-3.14,R3-M1.

7.2 References Cited:

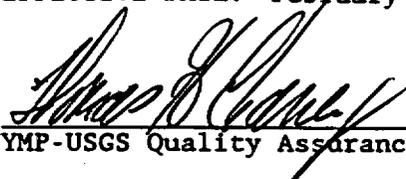
- o DOE-YMP Site Characterization Plan
- o YMP-USGS-QMP-15.01, Control of Nonconforming Items
- o YMP-USGS-QMP-17.01, YMP-USGS Records Management

8. ATTACHMENTS.

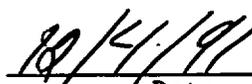
- Attachment 1: Software Identification Request (SIR)
- Attachment 2: Software Control Form (SCF)
- Attachment 3: Software Requirements Specification (SRS)
- Attachment 4: Software Design Description (SDD)
- Attachment 5: Software Validation Report (SVR)
- Attachment 6: Software User Documentation (SUD)
- Attachment 7: Software Release Request (SRR)
- Attachment 8: Software Transfer Request (STR)
- Attachment 9: Software Problem Report (SPR)
- Attachment 10: Software Document Review (SDR)

9. APPROVALS AND EFFECTIVE DATE.

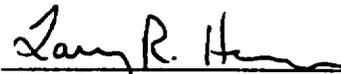
EFFECTIVE DATE: February 3, 1992



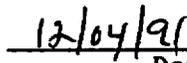
YMP-USGS Quality Assurance Manager



Date



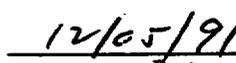
Chief, Yucca Mountain Project Branch



Date



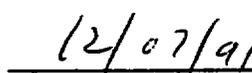
Assistant Chief Hydrologist for Program
Coordination and Technical Support



Date



Assistant Director for Engineering
Geology



Date

SOFTWARE IDENTIFICATION REQUEST (SIR)

CID Assignment: *To be completed by YMP-USGS SCM Coordinator*

CID: YMP-USGS/

Page ____ of ____

To be prepared by the Principal Investigator (PI) responsible for the SCP Activity identified in Item C below and submitted to the SCM Coordinator.

Instructions: Use black ink (no white out). Mark each applicable with an "X".

A. Software Product:

1. Name: _____
2. Version/Release: _____

B. Purpose of the SIR (*check one only*):

1. Initial TC assignment for a software product or version
2. Change of TC
3. Revert to Peripheral Software
4. Other: _____

C. Primary User:

1. SCP Activity Number: _____
2. Activity Title: _____

3. Organization (*Check one only*): HIP GSP

D. Technical Contact:

1. Name: _____
2. Address: _____

3. Phone: FTS _____ - _____ Commercial: (_____) _____ - _____

E. Principal Investigator:

1. Name: _____
2. Signature: _____ Date: _____

SOFTWARE CONTROL FORM (SCF)

YMP-USGS-QMP-3.03,R3

Attachment 2

Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

PART I. To be prepared by the Technical Contact responsible for the software product and submitted to the SCM Coordinator.

Instructions: Use black ink (no white out). Mark each applicable with a "X".

A. Software Product Name/Version: _____

B. Purpose for the SCF: *(Check one only.)*

1. Classification of the Software Product.
2. Change to a Previously Released Software Product.

Describe the change and the reason for it:

C. Source of the Software Product:

Is the Software Product acquired from outside YMP-USGS?

Yes No

Vendor Name: _____

Vendor Address: _____

D. Intended Application: *(Briefly describe.)*

E. Software Product Classification: *(Check one only. See Para. 5.1 of this QMP for detailed explanation.)*

Critical Generates Unique Data which may be used for site characterization, engineering design, performance assessment, or licensing.

Non-Critical Does not generate Unique Data but is used to manipulate or transform data which may be used for site characterization, engineering design, performance assessment, or licensing.

F. When do you require the software to be released?

CID: YMP-USGS/

Page ____ of ____

PART II. To be completed by the responsible Technical Contact to specify the appropriate controls.
Instructions: Use black ink (no white out). If the software product is being changed, provide the CID number of any released documents which will not be impacted by the change. Print "Required" for the appropriate controls. Print "Not Available" for those items where the control is appropriate but the documentation is unavailable and explain. Mark all inappropriate controls "Not Required." Any controls marked "Not Required" in Part A must have an explanation.

A. Control:

- 1. Software Requirements Specification (SRS) _____
- 2. Software Design Description (SDD) _____
- 3. Source Code (Hardcopy) _____
- 4. Magnetic Media Copy of Code _____
- 5. Software Validation Report (SVR) _____
- 6. Software User Documentation (SUD) _____
- 7. Software Release Request (SRR) _____

B. Supplemental Controls:

- 1. Technical Procedures _____
- 2. Scientific Notebook Plans _____
- 3. Publications _____
- 4. Other _____

C. Data Identification Method: _____

Use additional sheets as necessary to clarify the above selections.

Part III. After completion of this document and approval by the CCC, the SCM Coordinator shall attach a listing showing the status of all required documentation for this software product and forward a copy to the TC.

SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

CID: YMP-USGS/

Page ____ of ____

PART I: To be prepared by the responsible Technical Contact and submitted to the SCM Coordinator. The SRS should be completed with a level of detail appropriate to the nature, complexity, importance, and intended application of the software product.

Instructions: Use black ink (no white out). Use additional sheets, as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. Requirements Specification: Describe the software requirements making sure that the requirements are testable. The following should be addressed:

- o Functional Requirements - what the software is intended to do,
- o Performance Requirements or Constraints - any limitations of the expected inputs or outputs,
- o Interfaces with hardware, other software, or external data,
- o Software Engineering Standards (Use N/A if not applicable), and
- o Operation Issues - any requirements concerning portability, maintainability, reliability, and efficiency (Use N/A if not applicable).

C. Software Validation Test Plan: Briefly describe how the requirements listed above will be validated in the finished software.

PART II: To be completed by the person performing software verification.

Software Verification: Document the methods used for independent software verification. Software verification of the SRS shall confirm that all requirements can be tested.

Printed Name

Signature

Date

SOFTWARE DESIGN DESCRIPTION (SDD)

YMP-USGS-QMP-3.03, R3

Attachment 4

Page 1 of 1

CID: YMP-USGS/

Page ____ of ____

PART I: To be prepared by the responsible Technical Contact and submitted to the SCM Coordinator. The SDD should be completed with a level of detail appropriate to the nature, complexity, importance, and intended application of the software product.

Instructions: Use black ink (no white out). Use additional sheets, as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. Design Description: Provide a description of the software design that is easily traceable to the requirements described in the SRS. The description shall address the following:

- o an overall description of the design (such as a flowchart, a narrative, data flow diagram, etc.),
 - o the programming language and version,
 - o major variables,
 - o descriptions of files,
 - o hardware and operating system,
 - o special and peripheral hardware, and
 - o internal and external interfaces.
-

C. Model Description:

Is the software an integral part of an Interpretive Model?

Yes No

If yes, include a description of mathematical models and numerical methods used:

PART II: To be completed by the person performing software verification.

Software Verification: Document the methods used for independent software verification. Software verification of the SDD shall confirm that all requirements are reflected in the design.

Printed Name

Signature

Date

SOFTWARE VALIDATION REPORT (SVR)

YMP-USGS-QMP-3.03,R3

Attachment 5

Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

PART I: To be prepared by the person responsible for performing the test and submitted to the Technical Contact for each test for subsequent transmittal to the YMP-USGS SCM Coordinator (MS 425, Box 25046, Denver Federal Center, Denver, CO 80225).

Instructions: Use black ink (no white out). Use additional sheets as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. Person Responsible for Performing the Test:

1. Name: _____

2. Address: _____

3. Phone: FTS _____ Commercial: (_____) _____

4. Signature: _____ Date: _____

C. Technical Contact:

1. Name: _____

2. Signature: _____ Date: _____

D. Operating Environment:

1. Computer system/model: _____

2. Operating system: _____

3. Other system(s) requirements: _____

SOFTWARE USER DOCUMENTATION (SUD)

YMP-USGS-QMP-3.03,R3
Attachment 6
Page 1 of 1

CID: YMP-USGS/

Page ____ of ____

To be prepared by the responsible Technical Contact and submitted to the SCM Coordinator. The SUD should be completed with a level of detail appropriate to the nature, complexity, importance, and intended application of the software product.

Instructions: Use black ink (no white out). Use additional sheets, as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. User Documentation:

Provide documentation for the user of the software. The documentation shall address the following:

- o instructions for using the software,
 - o input and output options,
 - o data files, input/output data and file formats,
 - o initialization requirements,
 - o anticipated errors and how the user can respond,
 - o hardware/software environment,
 - o any available sample problems, and
 - o changes since the last release that affect the user.
-

SOFTWARE RELEASE REQUEST (SRR)

CID: YMP-USGS/

Page ____ of ____

PART I. To be prepared by the PI and submitted to the SCM Coordinator upon completion of all required documents.

Instructions: Use black ink (no white out).

A. Software Product Name/Version: _____

B. YMP-USGS Software User:

SCP Activity Number: _____

Title: _____

C. Intended Application: Describe how the software product will be applied to the above SCP Activity:

D. Supplemental Controls: List any controls for using the code (i.e, specific technical procedures, scientific notebook plans, publications, etc.):

E. Principal Investigator:

1. Name: _____

2. Address: _____

3. Phone: FTS _____ - _____ Commercial: (_____) _____ - _____

4. Signature: _____ Date: _____

PART II. The SCM Coordinator shall attach a listing showing the status of all required documentation for this software product and forward a copy to the TC.

SOFTWARE TRANSFER REQUEST (STR)

YMP-USGS-QMP-3.03,R3

Attachment 8

Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

PART I. REQUESTOR: Part I to be prepared by the Principal Investigator for the SCP Activity or by the YMP-USGS representative/contact requesting the software-product transfer and submitted to the YMP-USGS SCM Coordinator (MS 425, Box 25046, Denver Federal Center, Denver, CO 80225).

Instructions: Use black ink (no white out).

A. Software Product Name/Version: _____

B. PI or Organization Representative/Contact Requesting the Software Product Transfer:

1. Name: _____

2. Address: _____

3. Phone: FTS _____ - _____ Commercial: (_____) _____ - _____

4. Signature: _____ Date: _____

C. Software User:

1. SCP Activity Number: _____

2. Activity Title: _____

Intended Application: (Briefly describe.)

CID: YMP-USGS/

Page ____ of ____

PART II. TECHNICAL CONTACT REVIEW: Part II to be prepared by the responsible Technical Contact and submitted to the SCM Coordinator.

Instructions: Use black ink (no white out).

A. Recommended Action: (Check one only.)

- 1. Transfer the requested software product to the requestor.
- 2. Withhold transfer because:

B. Supplemental Controls: Indicate any controls applicable after the transfer of the software product (i.e., specific technical procedures, scientific notebook plan, publications, etc.):

C. Technical Contact:

1. Name: _____

2. Signature: _____ Date: _____

SOFTWARE PROBLEM REPORT (SPR)

YMP-USGS-QMP-3.03,R3
Attachment 9
Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

PART I. ORIGINATOR: Submit Part I to the YMP-USGS SCM Coordinator (MS 425, Box 25046, Denver Federal Center, Denver, CO 80225).

Instructions: Use black ink (no white out).

A. Software Product Name/Version: _____

B. Originator:

1. Name: _____

2. Address: _____

3. Phone: FTS _____ Commercial: (_____) _____

4. Signature: _____ Date: _____

C. Software Problem Description: *(Attach any pertinent documentation.)*

CID: YMP-USGS/

Page ____ of ____

PART II. TECHNICAL CONTACT REVIEW: Part II to be prepared by the responsible Technical Contact and submitted to the SCM Coordinator.

Instructions: Use black ink (no white out).

A. Potential Impact of the Problem on Data?:

Yes No

Explain:

B. Corrective Action Required:

None.

Describe the Corrective Action to be Taken.

C. Relevant or Impacted Documentation: (List by CID.)

None.

D. Technical Contact:

1. Name: _____

2. Signature: _____ Date: _____

SOFTWARE DOCUMENT REVIEW (SDR)

CID: YMP-USGS/

Page ____ of ____

A. Software Document Receipt:

1. Software Product Name/Version: _____
2. Software Document Title: _____
3. Date Received: _____ By: _____

B. Records Quality Approval:

Comments Attached: Yes No

SCM Coordinator: _____ Date: _____

C. SQA Specialist Approval:

Comments Attached: Yes No

SQA Specialist: _____ Date: _____

D. Configuration Control Committee Approval:

Comments Attached: Yes No

1. GSP Representative: _____ Date: _____
2. HIP Representative: _____ Date: _____
3. SCM Coordinator: _____ Date: _____
4. SQA Specialist: _____ Date: _____
5. Technical Contact: _____ Date: _____

E. Software Document Review Completion:

Date Completed: _____ By: _____

Use Page Two of this Attachment and additional sheets as necessary to provide review comments.

CID: YMP-USGS/

Page ____ of ____

A. Comments: (*Mark each comment requiring response with an asterisk [*].*)

Signature: _____ Date: _____

B. Resolution:

C. Reviewer's Resolution Acceptance:

1. Reviewer Name: _____

2. Signature: _____ Date: _____

D. Author's Resolution Acceptance:

1. Author Name: _____

2. Signature: _____ Date: _____

UNCONTROLLED COPY

YMP-USGS-QMP-5.03, R7
Attachment 1

FOR INFORMATION ONLY

QMP-3.03, R3-M1
WBS: 1.2.9.3
QA:QA
QA File: 3.5.03
Page 1 of 8

YMP-USGS MODIFICATION TO
YMP-USGS QUALITY MANAGEMENT PROCEDURE

Modification Number: OMP-3.03.R3-M1

Applies to YMP-USGS-QMP- 3.03, Rev. 3

QMP Title: Software Quality Assurance

REQUIRED MODIFICATIONS:

Para. Changed to

3.1.16 Add definition: "REVISION: An original Software Document or changes to an approved Software Document."

3.1.17 Add definition: "VERSION: An original Software Product or changes to a released Software Product."

5.2 After the second sentence, add the following new paragraph:

"The independence and qualification requirements for personnel performing software validation and verification shall depend on the nature, importance, and complexity of the software. Software validation and software verification method(s) shall include inspection, analysis, demonstration, review, and/or test and shall be performed relative to a specific hardware configuration. For developed software the supervisor of the developer, in consultation with the developer, shall determine the method(s) and personnel necessary to perform software verification and software validation. The method(s) selected shall be based on the criteria described in Section 5.3 of this QMP. Each person responsible for performing software validation and/or software verification shall document the method(s) used, as appropriate for the activities described below."

5.4 Replace the second paragraph, which begins "Some of this information..." with the following:

"For software acquired from outside of the YMP-USGS, it is recognized that requirements, design, and implementation (coding and debugging) activities associated with the Software Life Cycle are not performed by YMP-USGS personnel. Documentation associated with these activities may not be available. Documentation may not be available in other cases as well, such as

Effective Date: March 12, 1992

Supersedes Modification No. N/A

[Signature] 3/12/92
YMP-USGS Quality Assurance Manager Date

[Signature] 3/12/92
Chief, Yucca Mountain Project Branch Date

**YMP-USGS MODIFICATION TO
YMP-USGS QUALITY MANAGEMENT PROCEDURE
CONTINUATION SHEET**

Modification Number: OMP-3.03.R3-M1Applies to YMP-USGS-QMP- 3.03, Rev. 3QMP Title: Software Quality Assurance**REQUIRED MODIFICATIONS:**

<u>Para.</u>	<u>Changed to</u>
5.4 (cont.)	when the software product predates the YMP-USGS QA Program (05/03/89). Clarification shall be provided on the SCF for any unavailable documentation. In all cases, Software Validation shall be performed and documented against requirements documented in the Software Requirements Specification (SRS, Attachment 3 or equivalent), even if the Requirements Phase is not used."
Attachment 3	Replace existing Attachment 3, Software Requirements Specification (SRS), with a new Attachment 3 (page 3 of this modification) to add signature line and instructions for independent verification.
Attachment 4	Replace existing Attachment 4, Software Design Description (SDD), with a new Attachment 4 (page 4 of this modification) to add signature line and instructions for independent verification.
Attachment 5	Replace existing Attachment 5, Software Validation Report (SVR), with a new Attachment 5 (pages 5 and 6 of this modification) to add signature line and instructions for independent verification.
Attachment 10	Replace page two of the existing Attachment 10, Software Document Review (SDR), with a new page two of Attachment 10 (page 8 of this modification) to add signature line to identify the reviewer.

YMP-USGS MODIFICATION TO YMP-USGS QUALITY MANAGEMENT PROCEDURE CONTINUATION SHEET

Modification Number: _____

Applies to YMP-USGS-QMP-_____, Rev. ____

QMP Title: _____

SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

YMP-USGS-QMP-3.03.R3
Attachment 3
Page 1 of 1

CID: YMP-USGS/

Page ____ of ____

PART I: To be prepared by the responsible Technical Contact and submitted to the SCM Coordinator. The SRS should be completed with a level of detail appropriate to the nature, complexity, importance, and intended application of the software product.

Instructions: Use black ink (no white out). Use additional sheets, as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. Requirements Specification: Describe the software requirements making sure that the requirements are testable. The following should be addressed:

- o Functional Requirements - what the software is intended to do.
- o Performance Requirements or Constraints - any limitations of the expected inputs or outputs.
- o Interfaces with hardware, other software, or external data.
- o Software Engineering Standards (Use N/A if not applicable), and
- o Operation Issues - any requirements concerning portability, maintainability, reliability, and efficiency (Use N/A if not applicable).

C. Software Validation Test Plan: Briefly describe how the requirements listed above will be validated in the finished software.

PART II: To be completed by the person performing software verification.

Software Verification: Document the methods used for independent software verification. Software verification of the SRS shall confirm that all requirements can be tested.

Printed Name

Signature

Date

YMP-USGS MODIFICATION TO YMP-USGS QUALITY MANAGEMENT PROCEDURE CONTINUATION SHEET

Modification Number: _____ Applies to YMP-USGS-QMP-_____, Rev. _____

QMP Title: _____

SOFTWARE DESIGN DESCRIPTION (SDD)

YMP-USGS-QMP-3.03, R3
Attachment 4
Page 1 of 1

CID: YMP-USGS/

Page _____ of _____

PART I: To be prepared by the responsible Technical Contact and submitted to the SCM Coordinator. The SDD should be completed with a level of detail appropriate to the nature, complexity, importance, and intended application of the software product.

Instructions: Use black ink (no white out). Use additional sheets, as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. Design Description: Provide a description of the software design that is easily traceable to the requirements described in the SRS. The description shall address the following:

- o an overall description of the design (such as a flowchart, a narrative, data flow diagram, etc.),
- o the programming language and version,
- o major variables,
- o descriptions of files,
- o hardware and operating system,
- o special and peripheral hardware, and
- o internal and external interfaces.

C. Model Description:

Is the software an integral part of an Interpretive Model? Yes No

If yes, include a description of mathematical models and numerical methods used:

PART II: To be completed by the person performing software verification.

Software Verification: Document the methods used for independent software verification. Software verification of the SDD shall confirm that all requirements are reflected in the design.

Printed Name

Signature

Date

YMP-USGS MODIFICATION TO YMP-USGS QUALITY MANAGEMENT PROCEDURE CONTINUATION SHEET

Modification Number: _____

Applies to YMP-USGS-QMP-_____, Rev. ____

QMP Title: _____

SOFTWARE VALIDATION REPORT (SVR)

YMP-USGS-QMP-3.03.R3
Attachment 5
Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

PART I: To be prepared by the person responsible for performing the test and submitted to the Technical Contact for each test for subsequent transmittal to the YMP-USGS SCM Coordinator (MS 425, Box 25048, Denver Federal Center, Denver, CO 80225).

Instructions: Use black ink (no white out). Use additional sheets as applicable, labeled with CID and paged in numerical sequence.

A. Software Product Name/Version: _____

B. Person Responsible for Performing the Test:

1. Name: _____

2. Address: _____

3. Phone: FTS _____ Commercial: (_____) _____

4. Signature: _____ Date: _____

C. Technical Contact:

1. Name: _____

2. Signature: _____ Date: _____

D. Operating Environment:

1. Computer system/model: _____

2. Operating system: _____

3. Other system(s) requirements: _____

YMP-USGS MODIFICATION TO YMP-USGS QUALITY MANAGEMENT PROCEDURE CONTINUATION SHEET

Modification Number: _____ Applies to YMP-USGS-QMP-_____, Rev. _____

QMP Title: _____

SOFTWARE DOCUMENT REVIEW (SDR)

YMP-USGS-QMP-3.03.R3
Attachment 10
Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

A. Software Document Receipt:

1. Software Product Name/Version: _____
2. Software Document Title: _____
3. Date Received: _____ By: _____

B. Records Quality Approval:

Comments Attached: Yes No

SCM Coordinator: _____ Date: _____

C. SQA Specialist Approval:

Comments Attached: Yes No

SQA Specialist: _____ Date: _____

D. Configuration Control Committee Approval:

Comments Attached: Yes No

1. GSP Representative: _____ Date: _____
2. HIP Representative: _____ Date: _____
3. SCM Coordinator: _____ Date: _____
4. SQA Specialist: _____ Date: _____
5. Technical Contact: _____ Date: _____

E. Software Document Review Completion:

Date Completed: _____ By: _____

Use Page Two of this Attachment and additional sheets as necessary to provide review comments.

YMP-USGS MODIFICATION TO YMP-USGS QUALITY MANAGEMENT PROCEDURE CONTINUATION SHEET

Modification Number: _____

Applies to YMP-USGS-QMP-_____, Rev. ____

QMP Title: _____

SDR

YMP-USGS-QMP-3.03,R3
Attachment 10
Page 2 of 2

CID: YMP-USGS/

Page ____ of ____

A. Comments: (Mark each comment requiring response with an asterisk (*).)

Signature: _____ Date: _____

B. Resolution:

C. Reviewer's Resolution Acceptance:

1. Reviewer Name: _____

2. Signature: _____ Date: _____

D. Author's Resolution Acceptance:

1. Author Name: _____

2. Signature: _____ Date: _____

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FOR INFORMATION ONLY

WBS: 1.29.11
QA:QA
QA File: 3.5.03
Page 1 of 1

YMP-USGS MODIFICATION TO
YMP-USGS QUALITY MANAGEMENT PROCEDURE

Modification Number: OMP-3.03.R3-M2

Applies to YMP-USGS-QMP- 3.03, Rev. 3

QMP Title: Software Quality Assurance

REQUIRED MODIFICATIONS:

Para. Changed to

Throughout Following each reference to "nature", "complexity", and "importance" (in any order) add "(See para. 5.3.)"

5.3 Replace paragraph with "The types of controls to be applied to a Software Product shall be determined by the technical contact (TC) after consideration of, at minimum, the nature, complexity, and importance of the Software Product. Each Software Product shall be considered individually to determine the applicable controls. Considerations in determining the nature, complexity, and importance of a Software Product include:

- o Any supplemental controls existing outside the requirements of this QMP that may govern the use of Software Product, such as technical procedures, scientific notebook plans, publications, etc.
- o Whether or not the Software Product is controlled as an integral part of measurement and test equipment calibrations or data acquisition equipment. If so, the Software Product may not be subject to all documentation requirements of this QMP.
- o The number of programmers and length of time expected to be spent developing the software. The amount of detail required in documenting the software product may need to be adjusted depending upon these factors.

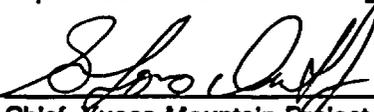
Other considerations include the classification and intended application of the software product.

Satisfactory selection of appropriate controls is confirmed through review and approval by the Configuration Control Committee (CCC). Satisfactory accomplishment of other determinations involving the nature, complexity, and importance of the Software Product is confirmed through review and approval by the CCC or SQA Specialist, as appropriate."

Effective Date: 11/09/92

Supersedes Modification No. N/A


10/23/92
YMP-USGS Quality Assurance Manager Date


10/23/92
Chief, Yucca Mountain Project Branch Date

FOR INFORMATION ONLY

WBS: 1.2.11.2
QA:QA
QA File: 3.5.03
Page 1 of 3

YMP-USGS MODIFICATION TO
YMP-USGS QUALITY MANAGEMENT PROCEDURE

Modification Number: OMP-3.03,R3-M3

Applies to YMP-USGS-QMP- 3.03, Rev. 3

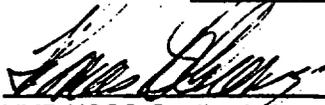
QMP Title: Software

REQUIRED MODIFICATIONS:

- | <u>Para.</u> | <u>Changed to</u> |
|--------------|---|
| 3.1.11 | Replace definition with: "SOFTWARE PRODUCT: A set of one or more related software items. |
| 3.1.18 | Add paragraph: "SOFTWARE ITEM: Source code, object code, job control code, control data, or a collection of these items that function as a single unit." |
| 5.0 | Add the word "formal" to precede the word "release" in the first sentence of the third paragraph. |
| 5.1 | Preceding the first sentence of the paragraph, insert the following: "Classification of a software product is performed and documented by the Technical Contact (TC) on the Software Control Form (SCF, Attachment 2 or equivalent). The TC's classification requires concurrence of the CCC by review and approval of the SCF prior to formal or conditional release (see Para. 5.5). |
| 5.4.2 | After the second sentence add: "If the Software Product contains multiple software items, each software item shall be listed on the SCF (Part I, Section A). Each selected control (SCF Part II) shall be applied to the Software Product and to each listed software item. |
| 5.5.2 | Replace the paragraph as follows: "A Software Product is conditionally released when the SCF has been approved by the CCC and all required Software Documents listed on the SCF, have been received by the SCM Coordinator. The Primary User may use the Software Product prior to approval of the remaining software Documents, as long as the code is not changed, with the knowledge that the data is not fully qualified until formal release." |
| Attachment 2 | Replace existing Attachment 2, Software Control Form (SCF), with a new Attachment 2 (page 2 of this modification). |

Effective Date: 03/05/93

Supersedes Modification No. N/A


YMP-USGS Quality Assurance Manager

2/23/93
Date


Chief, Yucca Mountain Project Branch

2/23/93
Date

YMP-USGS MODIFICATION TO YMP-USGS QUALITY MANAGEMENT PROCEDURE CONTINUATION SHEET

Modification Number: OMP-3.03.R3-M3

Applies to YMP-USGS-QMP- 3.03, Rev. 3

QMP Title: Software

REQUIRED MODIFICATIONS:

SOFTWARE CONTROL FORM (SCF)	YMP-USGS-QMP-3.03.R3 Attachment 2 Page 1 of 2
CID: YMP-USGS/ 	Page ____ of ____
PART I. To be prepared by the Technical Contact responsible for the software product and submitted to the SCM Coordinator.	
<i>Instructions: Use black ink (no white out). Mark each applicable <input type="checkbox"/> with a "X".</i>	
A. Software Product:	
1. Name and Version/Release: _____	
2. Is this software product started by using this name? _____	
3. Are other names used to run this software? _____	
4. If the answer to three is yes, give the name of each software item: _____	
B. Purpose for the SCF: (Check <u>one</u> only.)	
1. <input type="checkbox"/> Classification of the Software Product.	
2. <input type="checkbox"/> Change to a Previously Released Software Product.	
Describe the change and the reason for it: _____	
C. Source of the Software Product:	
Is the Software Product acquired from outside YMP-USGS? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Vendor Name: _____	
Vendor Address: _____	
D. Intended Application: (On an attached sheet, briefly describe for each software item listed in Section A.)	
E. Software Product Classification: (Check <u>one</u> only. See Para. 5.1 of this QMP for detailed explanation.)	
<input type="checkbox"/> Critical	Generates Unique Data which may be used for site characterization, engineering design, performance assessment, or licensing.
<input type="checkbox"/> Non-Critical	Does not generate Unique Data but is used to manipulate or transform data which may be used for site characterization, engineering design, performance assessment, or licensing.
F. When do you require the software to be released?	

**YMP-USGS MODIFICATION TO
YMP-USGS QUALITY MANAGEMENT PROCEDURE
CONTINUATION SHEET**

Modification Number: OMP-3.03, R3-M3Applies to YMP-USGS-QMP- 3.03, Rev. 3QMP Title: Software**REQUIRED MODIFICATIONS:****SCF**YMP-USGS-QMP-3.03, R3
Attachment 2
Page 2 of 2

CID: YMP-USGS/

Page ____ of ____

PART II. To be completed by the responsible Technical Contact to specify the appropriate controls to apply to each software item listed in Part I, Section A.

Instructions: Use black ink (no white out). If the software product is being changed, provide the CID number of any released documents which will not be impacted by the change. Print "Required" for the appropriate controls. Print "Not Available" for those items where the control is appropriate but the documentation is unavailable and explain. Mark all inappropriate controls "Not Required." Any controls marked "Not Required" in Part A must have an explanation.

A. Control:

1. Software Requirements Specification (SRS) _____
2. Software Design Description (SDD) _____
3. Source Code (Hardcopy) _____
4. Magnetic Media Copy of Code _____
5. Software Validation Report (SVR) _____
6. Software User Documentation (SUD) _____
7. Software Release Request (SRR) _____

B. Supplemental Controls:

1. Technical Procedures _____
2. Scientific Notebook Plans _____
3. Publications _____
4. Other _____

C. Data Identification Method: _____

Use additional sheets as necessary to clarify the above selections.

Part III. After completion of this document and approval by the CCC, the SCM Coordinator shall attach a listing showing the status of all required documentation for this software product and forward a copy to the TC.

SOFTWARE CONTROL FORM (SCF)

YMP-USGS-QMP-3.03,R3

Attachment 2

Page 1 of 2

CID: YMP-USGS/

Page ____ of ____

PART I. To be prepared by the Technical Contact responsible for the software product and submitted to the SCM Coordinator.

Instructions: Use black ink (no white out). Mark each applicable with a "X".

A. Software Product:

1. Name and Version/Release: _____
2. Is this software product started by using this name? _____
3. Are other names used to run this software? _____
4. If the answer to three is yes, give the name of each software item: _____

B. Purpose for the SCF: (Check one only.)

1. Classification of the Software Product.
2. Change to a Previously Released Software Product.

Describe the change and the reason for it:

C. Source of the Software Product:

Is the Software Product acquired from outside YMP-USGS? Yes No

Vendor Name: _____

Vendor Address: _____

D. Intended Application: (On an attached sheet, briefly describe for each software item listed in Section A.)

E. Software Product Classification: (Check one only. See Para. 5.1 of this QMP for detailed explanation.)

- Critical** Generates Unique Data which may be used for site characterization, engineering design, performance assessment, or licensing.
- Non-Critical** Does not generate Unique Data but is used to manipulate or transform data which may be used for site characterization, engineering design, performance assessment, or licensing.

F. When do you require the software to be released?

CID: YMP-USGS/

Page ____ of ____

PART II. To be completed by the responsible Technical Contact to specify the appropriate controls to apply to each software item listed in Part I, Section A.

Instructions: Use black ink (no white out). If the software product is being changed, provide the CID number of any released documents which will not be impacted by the change. Print "Required" for the appropriate controls. Print "Not Available" for those items where the control is appropriate but the documentation is unavailable and explain. Mark all inappropriate controls "Not Required." Any controls marked "Not Required" in Part A must have an explanation.

A. Control:

- 1. Software Requirements Specification (SRS) _____
- 2. Software Design Description (SDD) _____
- 3. Source Code (Hardcopy) _____
- 4. Magnetic Media Copy of Code _____
- 5. Software Validation Report (SVR) _____
- 6. Software User Documentation (SUD) _____
- 7. Software Release Request (SRR) _____

B. Supplemental Controls:

- 1. Technical Procedures _____
- 2. Scientific Notebook Plans _____
- 3. Publications _____
- 4. Other _____

C. Data Identification Method: _____

Use additional sheets as necessary to clarify the above selections.

Part III. After completion of this document and approval by the CCC, the SCM Coordinator shall attach a listing showing the status of all required documentation for this software product and forward a copy to the TC.

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YMP-USGS-QMP-3.04, R4
Page 1 of 6

MANAGEMENT PROCEDURES MANUAL

CHAPTER 3 - SCIENTIFIC INVESTIGATION AND DESIGN CONTROL

SECTION 4 - TECHNICAL REVIEW, APPROVAL, AND DISTRIBUTION OF YMP-USGS PUBLICATIONS

1. **PURPOSE.** This Quality Management Procedure (QMP) establishes the process for submission, review, and approval of publications supporting Yucca Mountain Project (YMP)- U.S. Geological Survey (USGS) activities prior to their publication and dissemination to the general public.
2. **SCOPE OF COMPLIANCE.** This procedure applies to all scientific/technical publications including maps that report the results of investigations of YMP-USGS activities, including those activities conducted by other organizations for the YMP-USGS. This procedure does not apply to plans, procedures, and similar documents reviewed or prepared under QMP-3.07 or QMP-5.03. Actions prior to the effective date of this QMP are considered acceptable for publications currently in process. As appropriate, any further actions to complete processing shall be in compliance with the requirements of this QMP.
3. **DEFINITIONS.**
 - 3.1 **Publication:** A publication is any YMP-USGS sponsored or produced document that is destined for publication, distribution, or dissemination to the general public, giving the results of YMP-USGS work, including data analyses or interpretations. Publications include data reports, interpretive reports, abstracts, meeting proceedings, symposia, journal articles, speech handouts, poster sessions, maps, etc.
 - 3.2 **Technical Review:** A documented traceable review performed by qualified personnel who are independent of those who performed the work but who have technical expertise at least equivalent to those who performed the original work. Technical reviews are in-depth, critical reviews, analyses and evaluation of documents, material or data that require technical verification and/or validation for applicability, correctness, adequacy and completeness.
4. **RESPONSIBILITIES.**
 - 4.1 **The Chief, Yucca Mountain Project Branch (YMPB)** has the overall responsibility for ensuring that publications satisfy USGS Project and U.S. Department of Energy (DOE) policy requirements, and for ensuring that technical reviews of YMP-USGS publications prepared by Branch staff are conducted in accordance with this procedure. The Chief, YMPB is also responsible for performing a preliminary DOE policy review, submittal of draft documents to the DOE, and the USGS if appropriate; and maintenance of a YMP Publication Distribution List as required by AP-1.3. The Chief, YMPB, has delegated these responsibilities to the Chief, Programs and Plans (PAP).

- 4.2 The Chief, Hydrologic Investigations Program (HIP) and the Chief, Geologic Studies Program (GSP), have the responsibility for ensuring that technical reviews of YMP-USGS publications prepared by individuals under their technical direction are conducted in accordance with this procedure. The appropriate Chief is also responsible for selecting the technical reviewers. These responsibilities will sometimes be delegated by the Chiefs to other members of their staffs, or to members of organizations providing technical support.
 - 4.3 The Quality Assurance (QA) Manager has the responsibility for verifying that publications satisfy the YMP-USGS QA Program requirements delineated in this procedure.
 - 4.4 The Author has the responsibility for the preparation of a publication, the revision of the publication in response to review comments, and for submitting supporting data to the Local Records Center (LRC).
 - 4.5 The Technical Reviewer is responsible for conducting the required reviews according to the criteria outlined in this procedure.
 - 4.6 The Records Coordinator has the responsibility for obtaining accession numbers and submitting copies of references to the Central Records Facility when appropriate.
5. PROCEDURE.
- 5.1 Abstracts: Abstracts are processed in accordance with this procedure with the following exceptions:
 - o Technical Reviewer Selection Form not required.
 - o Review is performed directly on preliminary draft. YMP-USGS Publication Review/Comment Resolution Form (PR/CRF) is not required.
 - o YMP-USGS QA and Chief, YMPB, reviews are not required.
 - o DOE Form 1332.15 is not required
 - o Technical Data Information Form is not required.
 - 5.2 Technical Review: Two independent technical reviews are mandatory for all publications prepared for the YMP-USGS. The reviewers will be selected on the basis of special knowledge or experience in the subject material of the publication.
 - 5.2.1 Qualified reviewers shall be selected by the appropriate Chief. Documentation of this selection (Attachment 1) is necessary only for reviewers who do not have qualifications documented in accordance with QMP-2.02 or QMP-2.08. For work in which the selecting Chief has been directly involved, the reviewers shall be selected/approved by an individual at the next higher supervisory level.
 - 5.3 Specifications of Technical Review: The technical review will be documented using the YMP-USGS PR/CRF (Attachment 2). Only comments that a reviewer determines to represent substantive concerns regarding the technical content of the preliminary draft should be documented on the PR/CRF. Non-substantive and editorial comments should be marked on

the preliminary draft. A memorandum outlining these comments may be attached and referenced on the PR/CRF.

5.3.1 All comments on the PR/CRF (or memorandum) require resolution. If no substantive comments exist, it shall be so noted on the PR/CRF. Response to reviewer's non-substantive/editorial comments marked on the preliminary draft are at the author's discretion and are not be recorded or referred to on the PR/CRF (or memorandum).

5.3.2 The technical review shall, at a minimum, include an opinion whether the report is sound, by consideration of the following elements:

5.3.2.1 Technical Correctness: Is the report technically sound? Are conclusions properly supported by correctly interpreted data? Are all computations correct? Are assumptions reasonable and clearly stated?

5.3.2.2 Methods: Were appropriate techniques used in this study? Are new methods properly described? Are alternate methods adequately discussed?

5.3.2.3 Conclusions or Results: Do they summarize the principal findings of the study and answer each of the objectives described in the introduction? Are they sound and properly documented? No information should be given that was not discussed in the body of the report.

5.4 Sequence of Reviews and Approvals:

5.4.1 The technical reviewer shall complete the PR/CRF, and sign and date the first page of the PR/CRF and submit the technical review for consideration of comments.

5.4.2 The author(s) shall document acceptance or rejection of each comment on the PR/CRF (or reference memorandum). For each comment accepted a corresponding modification will be made on the preliminary draft. For each comment rejected, an explanation of why the comment is not fully or partly accepted will be documented. The response to all comments on the PR/CRF shall be included as part of the record package supporting documentation.

5.4.3 The draft and supporting documentation, including the Technical Reviewer Selection Form (if appropriate) and a copy of the Technical Data Information Form(s) (TDIFs) required by AP-5.1Q, showing the location of technical data that support the publication, shall be submitted to the appropriate Chief (Para. 4.1 and 4.2) who shall determine, based on the technical adequacy, technical reviewer's comments, and author's responses, if the draft is ready for forwarding to the QA Manager for QA review and to the Chief, YMPB for a preliminary DOE policy review. The signature of the appropriate Chief on the PR/CRF indicates satisfactory resolution of all technical review comments.

NOTE: Supporting data not previously submitted to the Local Records Center (LRC) must be submitted to the LRC as a record no later than 10 working days following the date of receipt of publication by the author. In the case where either there are no supporting data, or all supporting data are within the report, an appropriate statement must be made in lieu of the supporting data.

5.4.4 The QA Manager shall perform a documented YMP-USGS QA review of the draft publication to verify that it has been processed in accordance with this QMP and that no holds have been placed on the release of the data. The review shall be documented on the PR/CRF.

5.4.5 The Chief, YMPB shall perform a documented review. This review will address, but not be limited to, policy discussions and their acceptability to YMP-USGS or DOE organizational matters and their consistency; satisfactory resolution of reviewer comments; and acceptability of management or methodology approaches. The review shall be documented on the PR/CRF.

5.4.6 If the draft publication is found acceptable by the QA Manager and Chief, YMPB, copies of the draft publication and supporting documents shall be forwarded by the Chief, YMPB to the DOE for concurrence and the USGS for approval, if appropriate. The letter of transmittal to the DOE shall include information regarding completion of a milestone/deliverable; a statement that QA, Chief, YMPB, and Technical Reviews have been completed; reference to TDIF numbers for data associated with that publication; WBS number under which work was performed; planned publication outlet; and date by which DOE concurrence is needed.

5.4.7 When a draft publication is submitted to DOE for concurrence, and USGS for approval if appropriate, the appropriate Chief will send a copy of the title page and the References Cited List to the LRC. The LRC will obtain accession numbers for the references cited within that publication. These numbers will be forwarded to the author for inclusion into the final printed version of the publication. Copies of each cited reference will be collected by the LRC for forwarding to the Central Records Facility. This requirement does not apply to outside publications such as journal articles, meeting proceedings, symposia papers, etc. Upon approval of the publication, the appropriate Chief shall obtain an accession number for that publication from the LRC.

5.4.7.1 The accession number for publications will be printed inside the back cover or a part of the "Acknowledgement" section, or on the envelope of map reports. The statement should read as follows:

The following number is for U.S. Department of Energy Office of Civilian Radioactive Waste Management (OCRWM) records management purposes only and should not be used when ordering this publication:

Accession Number: NNY.YYMMDD.NNN

5.4.7.2 Each cited reference listed within that publication shall have the accession number printed in parenthesis following the citation in the cited references section with a similar statement printed at the end of that section. That statement should read as follows:

Parenthesized numbers following each cited references are for U.S. Department of Energy Office of Civilian Radioactive Waste Management (OCRWM) records management purposes only and should not be used when ordering the publication.

5.4.8 Any DOE concerns shall be addressed before the final document is prepared. The Chief, YMPB shall seek resolution for review comment dispute through communications with the author(s) and the appropriate DOE officials, as necessary.

5.4.9 USGS comments, if appropriate, shall be addressed by the author(s). If requested by the USGS, the revised draft shall be resubmitted for approval.

5.5 Distribution:

5.5.1 Upon DOE concurrence and USGS approval (if appropriate) the document will be processed through appropriate channels for printing or submission to the publisher (i.e., scientific journals, symposia).

5.5.2 Publications prepared for the YMP-USGS shall be distributed in accordance with the YMP Distribution List, as required. Two copies of all publications shall be submitted along with a completed form DOE F 1332.15 (Attachment 3) to the Office of Scientific and Technical Information (OSTI) for entry into the OSTI Automated Retrieval System (OARS) data base.

6. RECORDS MANAGEMENT.

6.1 Controlled Documents: None.

6.2 Records Center Documents: Records associated with this procedure shall be submitted to the YMP-USGS LRC as a QA Record Package in accordance with QMP-17.01, and may include the following:

- o Copy of draft report as submitted to DOE for concurrence
- o YMP-USGS Publication Review/Comment Resolution Form(s) (including memorandum, if appropriate)
- o Technical Reviewer Selection Form (if appropriate)
- o Approval/concurrence letters
- o QA and Chief, YMPB reviews
- o Technical Data Information Forms (if appropriate)
- o DOE Form 1332.15 (if appropriate)
- o Copy of published publication

NOTE: The supporting data plus the TDIF(s) shall be a part of the data Records package that is submitted in accordance with AP-5.1Q.

7. RELATED DOCUMENTS.

7.1 Superseded Documents: This QMP supersedes YMP-USGS-QMP-3.04, R3 Technical Review, Approval, and Distribution of YMP-USGS Publications, and Modification 3.04,R3-M2.

7.2 References Cited:

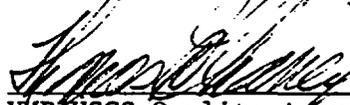
- o YMP-AP-1.3, Publications Review, Approval and Distribution
- o YMP-AP-5.1Q, Control and Transfer of Technical Data on the Yucca Mountain Project
- o YMP-USGS-QMP-2.02, USGS Personnel Qualification
- o YMP-USGS-QMP-2.08, Non-Federal Contractor Personnel Qualification
- o YMP-USGS-QMP-3.07, YMP-USGS Review Procedure
- o YMP-USGS-QMP-5.03, Development and Maintenance of Quality Management Procedures
- o YMP-USGS-QMP-17.01, YMP-USGS Records Management

8. ATTACHMENTS.

- Attachment 1: Technical Reviewer Selection Form
Attachment 2: YMP-USGS Publication Review/Comment Resolution Form
Attachment 3: DOE F 1332.15
Attachment 4: Flow Chart

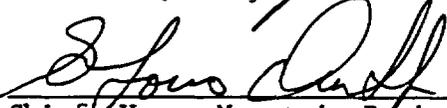
9. APPROVALS AND EFFECTIVE DATE.

EFFECTIVE DATE: 11/23/92



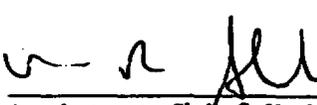
YMP-USGS Quality Assurance Manager

10/13/92
Date



Chief, Yucca Mountain Project Branch

10/13/92
Date



Assistant Chief Hydrologist for Program Coordination and Technical Support

10/17/92
Date



Assistant Director for Engineering Geology

11/23/92
Date

TECHNICAL REVIEWER SELECTION FORM

[To be completed by the appropriate official for reviewers outside the YMP-USGS as outlined in Para. 5.2.1.]

Manuscript(s) to be reviewed: _____

Name of Reviewer: _____

Title of Reviewer: _____

Organization of Reviewer: _____

Basis of Qualification for Reviewer: _____

Printed Name

Title

Signature

Date

YMP-USGS PUBLICATION REVIEW/COMMENT RESOLUTION FORM

Title/Author and Draft Version: _____ Page 1 of _____

Reviewer Name: _____ WBS No. of Activity: _____

Reviewer Signature: _____ Date: _____

Governing Procedure: QMP-3.04, R4 Technical Review QA Review Other: _____

REVIEWER'S COMMENTS			RESPONSE		
COMMENT NO.	PAGE NO.	COMMENTS	ACCEPT	REJECT	JUSTIFICATION

AUTHOR RESPONSE TO REVIEW FOUND TO BE ADEQUATE:

Appropriate Official

Date

YMP-USGS PUBLICATION REVIEW/COMMENT RESOLUTION FORM (Continued)

Title/Author and Draft Version: _____ Page ___ of ___

Reviewer Name: _____ WBS No. of Activity: _____

REVIEWER'S COMMENTS			RESPONSE		
COMMENT NO.	PAGE NO.	COMMENTS	ACCEPT	REJECT	JUSTIFICATION

INSTRUCTIONS

Who uses this form: All DOE offices and DOE contractors except those contractors and grantees specifically instructed by their DOE contract administrator to use DOE F 1332.16 (10-90).

When to use: Submit one copy of this form with each report title that is sent to the DOE Office of Scientific and Technical Information (OSTI) in accordance with the requirements of DOE 1430.1A. Additional instructions concerning report preparation, etc., can be found in DOE 1430.2A. Questions may be referred to OSTI on FTS 626-1261 or commercial 615-576-1261.

Where to send: Forward this form and the documents to:

U.S. Department of Energy
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831

Item instructions:

Item 1. A standard report code system has been established for numbering DOE reports. A unique number that is complete and accurate is essential. The following specific instructions apply:

- (a) **DOE Program Office Reports**—Use DOE/ and the two letters identifying the Assistant Secretary or Office under whose authority the program office operates at the beginning of the report number. Complete the number with dashes and the report sequence number as obtained from the Chief, Printing Operations Branch (AD-235.2). Example: DOE/NE-193.
- (b) **DOE Field Organization Reports**—Use DOE/ and the two letters identifying the organization responsible for the report (e.g., OR for Oak Ridge; BP for Bonneville Power, etc.). Complete the number with dashes and a report sequence number as assigned by the Technical Information Officer at the site. Example: DOE/OR-759.
- (c) **Major Project Office Reports**—Use DOE/ and the two- or three-character identifier for the organization responsible for the report (e.g., LLW for Low Level Waste, etc.). The identifiers will be assigned by OSTI. Complete the number with dashes and a report sequence number as assigned at the project office. Example: DOE/LLW-198.
- (d) **Contractor Reports**—Major contractors have been assigned report codes by OSTI. Other contractors will use DOE/ and the final seven characters (two letters and five digits) from the applicable contract or grant number. A slash mark must separate the letters from the digits. Complete the number with dashes followed by a sequential number for each report generated under the contract. For example, the first report generated under contract number DE-AC03-79NE01834 should have the report number DOE/NE/01834-1.

Reports that are issued in multivolumes, parts, or revisions, etc., should be numbered as follows:

DOE/NE/01834-1 Vol.1
DOE/NE/01834-1 Pt. 1
DOE/NE/01834-1 Rev. 1

Caution: Report numbers are to be structured exactly as specified in the above examples. Modifications, if essential, must be approved by OSTI.

- Item 2.** Insert DOE contract number under which the work was funded.
- Item 3.** Insert the name of the DOE Office providing support. For projects funded by more than one office, indicate all sources of DOE funding, e.g., CE and ER.
- Item 4.** For all reports insert the appropriate UC- or C- category from DOE/OSTI-4500 or M-3679 for unclassified and classified documents, respectively, whether or not printed for standard distribution.

Item 5. Give title exactly as on the document itself unless title is classified. In that case, omit title and state "classified title" in the space for Item 5.

Item 6. Self-explanatory.

Item 7. a. Forward the number of copies specified in DOE/OSTI-4500 for distribution to the appropriate category or categories.

b. Self-explanatory.

c. Self-explanatory.

d. One copy must be original ribbon or offset and be completely legible as per DOE 1430.2A. A high-contrast photocopy is acceptable as a second reproducible copy. For classified documents, send only one copy except where distribution requires more copies (see box f).

e. Forward mailing labels to OSTI for special distribution.

f. Forward number of copies specified in M-3679. If OSTI is to make distribution, so indicate in item 10.

g. Self-explanatory.

Item 8. DOE is obligated to make available (printed or electronic media) the results of its federally funded R&D to the widest extent possible. Sites should recommend access limitations only for those documents for which DOE has a legal basis, or has received written programmatic guidance, for so withholding.

If box [no] is checked, unlimited distribution may be made within the U.S. In addition, copies may be made available to foreign requestors through exchange agreements or NTIS sales.

If box [a] is checked for a classified document, the document will be announced by OSTI to appropriate recipients as listed in M-3679.

If any of the boxes b-g are checked, the document will be announced only to Government agencies and their contractors. Authorization to restrict the audience to Government agencies and their contractors must be granted by existing laws or regulations. Availability varies by document.

Box h is used for information generated under Cooperative Research and Development Agreements (CRADAs) in accordance with the National Competitiveness and Technology Transfer Act of 1989. Information will be handled in accordance with applicable regulations.

Box i is used for special types of information for which access is defined by written DOE Program Office guidance.

Item 9. If patent clearance has been granted by the responsible DOE patent group, it is assumed that there is no objection to publication from the standpoint of the originating organization's patent interest.

Item 10. Self-explanatory.

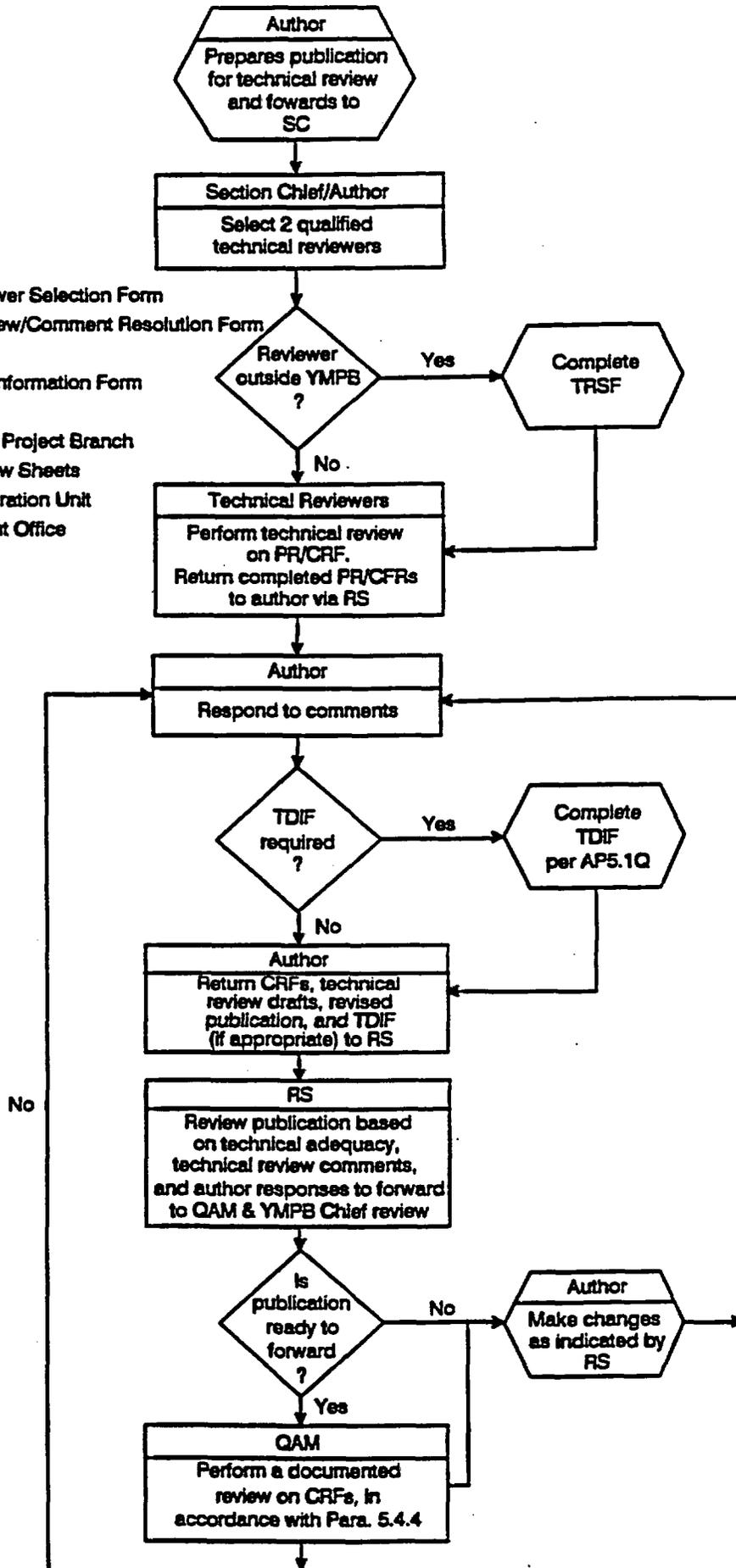
Item 11. Enter name of person to whom inquiries concerning the recommendations on this form may be addressed. Please give FTS phone number if possible. The form must be signed by the appropriate authorizing official.

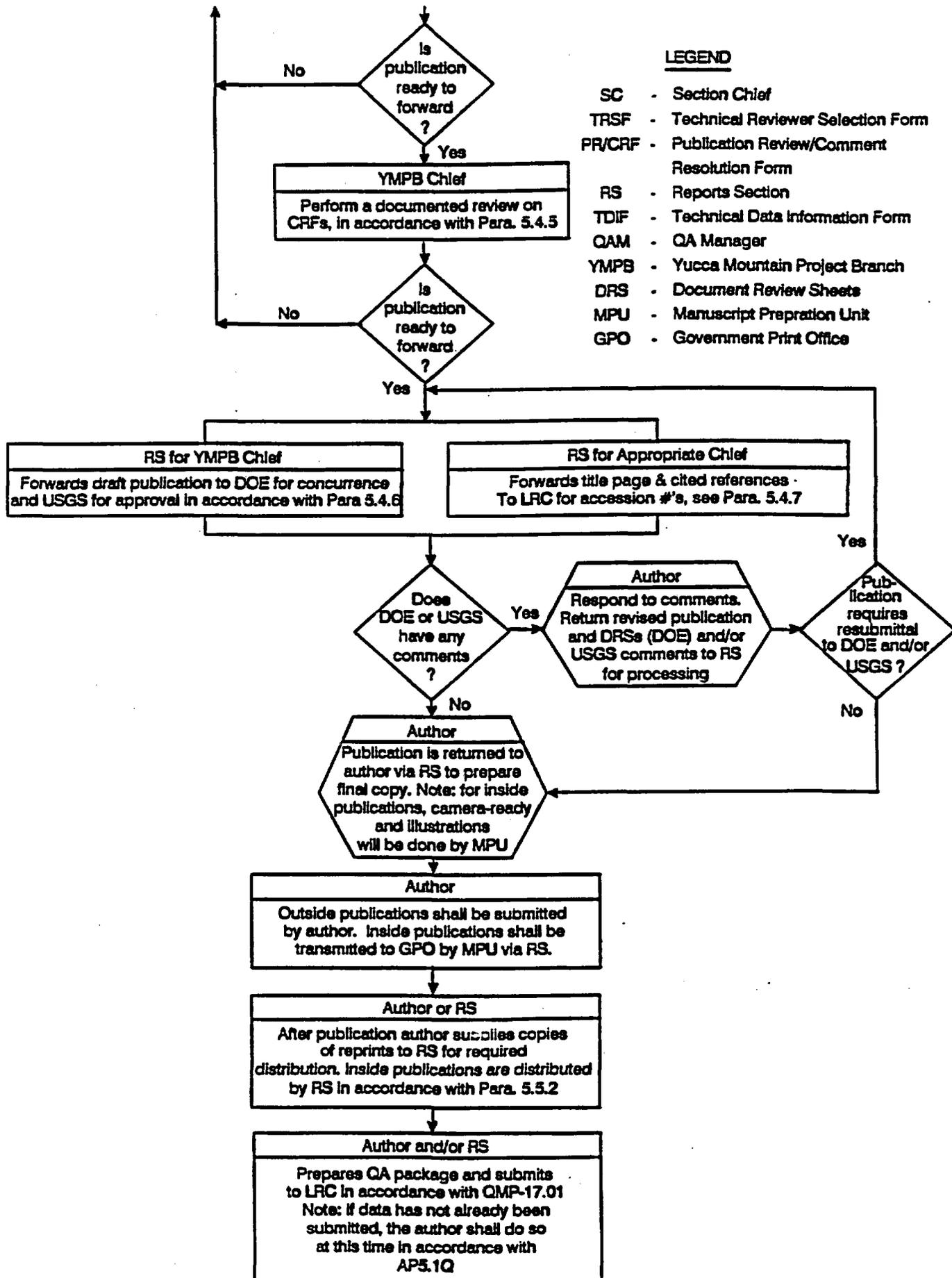
BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Information Resources Management Policy, Plans, and Oversight, Paperwork Reduction Project, (1910-1400), AD-241.2-GTN, U.S. Department of Energy, Washington, DC 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-1400), Washington, DC 20503.

LEGEND

- SC - Section Chief
- TRSF - Technical Reviewer Selection Form
- PR/CRF - Publication Review/Comment Resolution Form
- RS - Reports Section
- TDIF - Technical Data Information Form
- QAM - QA Manager
- YMPB - Yucca Mountain Project Branch
- DRS - Document Review Sheets
- MPU - Manuscript Preparation Unit
- GPO - Government Print Office





LEGEND

- SC - Section Chief
- TRSF - Technical Reviewer Selection Form
- PR/CRF - Publication Review/Comment Resolution Form
- RS - Reports Section
- TDIF - Technical Data Information Form
- QAM - QA Manager
- YMPB - Yucca Mountain Project Branch
- DRS - Document Review Sheets
- MPU - Manuscript Preparation Unit
- GPO - Government Print Office

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MANAGEMENT PROCEDURES MANUAL

CHAPTER 3 - SCIENTIFIC INVESTIGATION AND DESIGN CONTROL

SECTION 7 - YMP-USGS REVIEW PROCEDURE

1. **PURPOSE.** This Quality Management Procedure (QMP) defines the requirements for performing and documenting reviews conducted on specific Yucca Mountain Project (YMP)-U.S. Geological Survey (USGS) documents governed by the YMP-USGS Quality Assurance (QA) Program.
2. **SCOPE OF COMPLIANCE.** This procedure applies to the technical, QA, and other reviews of criteria letters (QMP-3.05), quality management procedures (QMP-5.03), scientific planning documents (QMP-3.06, AP-1.10Q), design inputs (QMP-3.13), and technical procedures (QMPs -5.01, -5.05) governed by the YMP-USGS QA Program. It shall also apply to the review of documents governed by other QMPs if so directed within those QMPs. It does not apply to the review of USGS publications (QMP-3.04) or to Peer Reviews (QMP-3.11).
3. **DEFINITIONS.**
 - 3.1 **Governing Procedure** is the procedure (QMP or APQ) that defines the need and criteria for review of a YMP-USGS document.
 - 3.2 **Major comments** are those that a reviewer determines to represent substantive concerns or inconsistencies about the content (technical or procedural) of a YMP-USGS document. A major comment must be of sufficient importance that the failure to resolve the comment may jeopardize the success in achieving the objective(s) of the document. When review criteria, as stipulated by the governing procedure, are not satisfactorily met the recorded comment shall be considered major.
 - 3.3 **Minor comments** are those the reviewer designates for consideration by the author(s) about the organization or content of the document. Failure to resolve a minor comment would not jeopardize the success in achieving the objective(s) of the document. Minor comments are incorporated in the document at the discretion of the author(s). Editorial comments can be considered minor comments.
4. **RESPONSIBILITIES.**
 - 4.1 **The Chief, Hydrologic Investigation Program (HIP), the Chief, Geologic Studies Program (GSP), and the Chief, Yucca Mountain Project Branch (YMPB), or delegates, are responsible for the selection of qualified, independent reviewers and the settlement of comment resolution disputes within their respective organizations.**
 - 4.2 **The Quality Assurance (QA) Manager, or delegate, is responsible for conducting the required QA reviews, for comment resolution subsequent to QA reviews, and for approval of a technical reviewer's selection if that individual has been involved in the development of the document under review.**
 - 4.3 **The Reviewer is responsible for conducting the required reviews according to criteria identified in the governing procedure.**

5. PROCEDURE.

5.1 Selection of Reviewers: Selection of qualified reviewers shall be accomplished by the Chief, HIP/GSP, QA Manager, or the Chief, YMPB, or delegates. Documentation of this selection (Attachment 1) is necessary only for reviewers 1) whose qualifications have not previously been documented under QMPs -2.02 or -2.08, or 2) who are directly involved in the development of the document under review. For reviewers who have been directly involved in the development of the document under review, the QA Manager's approval is required.

5.2 Documentation of Review: The review shall be documented using the YMP-USGS Review/Comment Resolution Form (Attachment 2). The document reviewed, date of the document (if applicable), the governing procedure(s), and the type of review (technical, QA, other) shall be indicated on the form.

5.2.1 The reviewer shall review the document against the criteria designated in the governing procedure(s) and provide comments on the YMP-USGS Review/Comment Resolution form. All comments shall be identified as either major, indicating a comment requiring resolution or minor, indicating a suggestion or editorial comment. These comments, either major or minor, shall be so noted by including either major or minor with the comment number on the review form in the left-hand column. When review criteria, as stipulated by the governing procedure, are not satisfactorily met the recorded comment shall be considered major.

5.2.2 When there are no comments, the reviewer(s) may mark the form "No Comments" under the heading "Reviewer's Comments" and return the form, signed and dated, to the originating office.

5.3 Comment Resolution: Personnel responsible for preparation of the document under review shall respond in writing to each major comment, indicating acceptance or rejection of the comment. If the comment is rejected, the author shall provide written justification. Detailed justification may require using additional attached sheets.

5.3.1 Responses to major comments along with justifications, as appropriate, accompanied by a concurrence draft shall be returned to the reviewer(s). The reviewer shall indicate acceptance or rejection of each major comment response by initialing the form.

5.3.2 When a major comment is rejected and the justification is unacceptable to the reviewer, the appropriate manager (the Chief, HIP/GSP Chief, YMPB, or QA Manager, or delegate), shall assess whether the justification for rejection is appropriate. This assessment and resolution of the disagreement shall be documented, either by signature on the Review Form or by separate correspondence which shall be attached to the review form. If resolution cannot be achieved the disputed comment shall be referred for resolution to the next higher management level in accordance with QMP-1.01. -

6. RECORDS MANAGEMENT.

6.1 Controlled Documents: None.

6.2 Records Center Documents: The following records shall be submitted to the USGS Local Records Center in accordance with QMP-17.01:

- o Reviewer Selection Forms
- o Review forms and attachments

7. RELATED DOCUMENTS.

7.1 Superseded Documents: This QMP supersedes YMP-USGS-QMP-3.07, R3, YMP-USGS Review Procedure and Modifications QMP-3.07,R3-M1 and QMP-3.07,R3-M2.

7.2 References Cited:

- o YMP-AP-1.10Q, Preparation, Review, and Approval of SCP Study Plans
- o YMP-USGS-QMP-1.01, Organization Procedure
- o YMP-USGS-QMP-2.02, USGS Personnel Qualification
- o YMP-USGS-QMP-2.08, Non-Federal Contractor Personnel Qualification
- o YMP-USGS-QMP-3.04, Technical Review, Approval, and Distribution of YMP-USGS Publications
- o YMP-USGS-QMP-3.05, Work Request for NTS Contractor Services (Criteria Letter)
- o YMP-USGS-QMP-3.06, Scientific Investigation Plan
- o YMP-USGS-QMP-3.11, Peer Review
- o YMP-USGS-QMP-3.13, Design Input
- o YMP-USGS-QMP-5.01, Preparation of Technical Procedures
- o YMP-USGS-QMP-5.03, Development and Maintenance of Quality Management Procedures
- o YMP-USGS-QMP-5.05, Scientific Notebook System
- o YMP-USGS-QMP-17.01, YMP-USGS Records Management

8. ATTACHMENTS.

- Attachment 1: Reviewer Selection Form
Attachment 2: YMP-USGS Review/Comment Resolution Form

9. APPROVALS AND EFFECTIVE DATE.

EFFECTIVE DATE: March 30, 1992

<p><i>Martha H. Mustard</i> for YMP-USGS Quality Assurance Manager</p>	<p><u>2-28-92</u> Date</p>
<p><i>[Signature]</i> for Chief, Yucca Mountain Project Branch</p>	<p><u>2/28/92</u> Date</p>
<p><i>[Signature]</i> for Assistant Chief Hydrologist for Program Coordination and Technical Support</p>	<p><u>3/2/92</u> Date</p>
<p><i>[Signature]</i> for Assistant Director for Engineering Geology</p>	<p><u>3/3/92</u> Date</p>

REVIEWER SELECTION FORM

[Part A and/or Part B to be completed by the Chief, Geologic Studies Program/ Hydrologic Investigations Program, Chief, Yucca Mountain Project Branch or Quality Assurance Manager responsible for reviewer selection.]

Document(s) to be reviewed:

Name of reviewer: _____

Title of reviewer: _____

PART A:

Selection of reviewer not drawn from YMP-USGS:

Employer of reviewer: _____

Basis of selection for reviewer: _____

Printed Name Title

Signature Date

PART B:

Although this reviewer is or has been indirectly involved in the development of the document, he/she is the only qualified person available.

Printed Name Title

Signature Date

QA Manager's Approval Date

YMP-USGS REVIEW/COMMENT RESOLUTION FORM

WBS #: 1.2.9.3
QA: QA

Document No. and Title: _____ Page 1 of _____

Date of Document (if applicable): _____

Reviewer Name(s): _____ Governing Procedure: _____

Reviewer's Signature(s): _____ Date: _____

Technical Review
 QA Review
 Other: _____

REVIEWER'S COMMENTS			RESPONSE			REVIEWER DISPOSITION FOR MAJOR COMMENTS	
COMMENT NO. MAJOR/MINOR	PAGE NO.	COMMENTS	ACCEPT	REJECT	JUSTIFICATION	ACCEPT	* REJECT

* Justification(s) for rejection of reviewer's comment(s) is/are found to be justified:

Chief, YMPB / Chief, GSP / Chief, HIP / QA Manager Date

YMP-USGS-QMP-3.07, R4
 Attachment 2
 Page 1 of 2

YMP-USGS REVIEW/COMMENT RESOLUTION FORM

Document No. and Title: _____ Page ____ of ____

Date of Document (if applicable): _____

Reviewer Name(s): _____

REVIEWER'S COMMENTS			RESPONSE			REVIEWER DISPOSITION FOR MAJOR COMMENTS	
COMMENT NO. MAJOR/MINOR	PAGE NO.	COMMENTS	ACCEPT	REJECT	JUSTIFICATION	ACCEPT	* REJECT
	1						

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FOR INFORMATION ONLY

WBS: 1.2.9.3
QA:QA
QA File: 3.5.03
Page 1 of 1

**YMP-USGS MODIFICATION TO
YMP-USGS QUALITY MANAGEMENT PROCEDURE**

Modification Number: OMP-3.07.R4-M2

Applies to YMP-USGS-QMP- 3.07, Rev. 4

QMP Title: YMP-USGS Review Procedure

REQUIRED MODIFICATIONS:

Para. Changed to

5.3 Delete and replace with: "Comment Resolution: The intent of comment resolution is to ensure that the review comments are considered and incorporated as appropriate in the final document."

5.3.1 Delete and replace with: "The preparer of the document under review shall respond in writing to each major comment, indicating acceptance or rejection of the comment. If the comment is rejected, the preparer shall provide written justification on the form or, if necessary, using additional sheets attached to the form. Responses to major comments shall be returned to the reviewers. A concurrence draft may accompany the response when there are multiple reviewers, when comments involve lengthy and/or complex resolution, or when reviewers are not signatories on the final document. For review of technical procedures prepared under YMP-USGS-QMP-5.01, the necessity for a concurrence draft shall be at the discretion of the reviewer."

5.3.2 Insert as the first sentence: "The reviewer shall indicate acceptance or rejection of the response to each major comment by initialing the form."

Effective Date: 8/10/92

Supersedes Modification No. OMP-3.07.R4-M1

D. Hildandy 8/3/92
YMP-USGS Quality Assurance Manager Date

Jan R. Ihm 8/03/92
Chief, Yucca Mountain Project Branch Date