ATTACHMENT

BINDER/VOLUME #:

ATTACHMENT

CR 99/008

Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ) and Enhanced Design Alternative (EDA) II

Volume 1

Copy of Approved Change Request

102.8

YMP-216-R5
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
EVALUATION SUMMARY, DIRECTIVE, AND DISPOSITION

CR No.:	CR Title:
CR 99/008	Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ) and Enhanced Design Alternative (EDA) 11

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. EVALUATION SUMMARY OF CCB MEMBERS AND EVALUATORS

CCB Members:

Name	Organization	Approve	Approve w/Conditions	Disapprove	No Recommendation
Jerri Adams	AMAAM	☐	☑	☐	☐
Richard E. Spence	AML	☐	☑	☐	☐
Stephan Brocoum	AMVASP	☐	☑	☐	☐
Mark E. Van Der Puy	AMESH	☐	☑	☐	☐
	SPEA	☐	☐	☐	☐
Victor W. Trebules	OPC	☐	☐	☑	☐
Robert W. Clark	OQA	☐	☑	☐	☐
Additional Evaluators:					
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐

CCB Secretary: Wayne W. Kozai (Print Name) — Wayne N Kozai (Signature) — 6/10/99 (Date)

SECTION II. CHANGE DIRECTIVE AND IMPLEMENTATION INSTRUCTIONS

- Revision to the Project cost and Schedule Baseline, YMP/CM-0015 is approved with conditions.
- Within three (3) working days from the next PACS upload, M&O PP&C shall submit the PACS printout of the SPPS consistent with this Change Request to the CCB Secretary.
- The Document Custodian shall submit a print ready copy of the Project Cost and Schedule Baseline document revision pages to the CCB Secretary in accordance with this directive.

☒ See Documentation Continuation Page

SECTION III. DISPOSITION

☐ Approve ☑ Approved with Conditions ☐ Disapprove ☐ Elevate to next CCB Level

Comments: Evaluation Method: _____

This change request is approved with the following conditions provided on the attached continuation page.

J. Russel Dyer (Print Name) — (Signature) — 6/11/99 (Date)

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

Continuation Of:
- ☐ Change Request
- ☐ Impact Analysis Record/CCB Evaluation
- ☐ Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- ☑ Evaluation Summary, Directive and Disposition

CR Title:
Revise Baseline Workscope, Budget and Milestones to Address Process Model and Data Qualification Initiatives and LADS EDA II

Block No.	Continuation Information

II. *Change Directive and Implementation Instructions:*

- The CCB Secretary shall:
--ensure the document is prepared in accordance with this directive.
--ensure the Configuration Information System (CIS) and the CCB Register are updated to reflect this revision.
--prepare a Document Control Action Request (DCAR) form to transmit this directive and the revision pages to the Project Cost and Schedule Baseline document, YMP/CM-0015 to the Document Control Center in accordance with AP-6.1Q.

-Upon release of the Project Cost and Schedule Baseline document, YMP/0015 all project participants will be required to use it in performing applicable tasks.

III. *Disposition:*

Conditions:

1. Delete deliverable SS12BM3 as a requirement.

2. Do not implement M&O recommendation to add Level 2 Milestone, "YMSCO Approve SR Distribution and Public Information Plan" (referred to as M2DP in CR) to the Project Baseline. The need for a milestone (Level 2 or Level 3) to be addressed as part of FY00 annual planning update.

3. As part of CR implementation revise the Integrated Project Schedule activities to address the deletion of work scope in FY99 associated with Chapters 3 and 8 of the WDLA.

4. The M&O shall provide with the initial FY00 planning submittal (Deliverable BM9500M3 - July 1, 1999) the following:
· A listing of specific data sets (M&O and USGS) that potentially require verification/qualification mapped to AMRs
· A listing of specific personnel responsible for verification/qualification
· The schedule associated with this CR merged with the current Integrated Project Schedule
· A complete set of science and engineering activities tied to PMRs/AMRs in the Integrated Project Schedule
· Update and resubmit crosswalk to VA Volume 4.

5. The M&O shall provide with the final FY00 planning CR submittal (Deliverable BM9560M3 - August 9, 1999) the following:
· An updated logic/activities for revised set of AMRs incorporated into the Integrated Project Schedule to reflect the re-prioritization of principle factors
· Updated activity durations for verifying and qualifying, as appropriate, all data sets, software, and models incorporated into the Integrated Project Schedule.

6. By July1, 1999, compile listing of added and changed deliverables.

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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

CR No.: d: 99/008	1a. CR Title: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2	1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

2b. Work Scope Impact Description:

See Continuation Page: 2

☐ N/A

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

3b. Schedule Impact Description:

See Continuation Page: 2

☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No		
Level 0	☐	☑	Budget Baseline	☑
Level 1	☐	☑	TPC	☐
Level 2	☑	☐	TSLCC	☐
Level 3	☑	☐		

See Continuation Page ☐

5. Impact on Other Scope? ☑ Yes ☐ No

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☑	☐	
Level 2	☐	☑	
Level 3	☐	☑	☐ N/A

5b. Other Impact Description:

Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2

☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)

☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c. Phone:	7d. Date:
W.A. Gregory	Wayne Gregory	M&O/PP&C	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:

☐ Approved ☑ Approved with Conditions ☐ Disapproved ☐ No Recommendation

Comments:

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:
Mark E. VanDerPry		AMES/I		6/10/99

YMP-218-R2
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

CR No. 99/008
Page 2 of 2

Continuation Of:
- [x] Change Request
- [ ] Impact Analysis Record/CCB Evaluation
- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continuted)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
5b	**Other Impacts (continued)** **Work authorization will be required to complete the work scope.** **This CR affects key PEMP deliverables as described in the CR narrative. The PEMP will require revision to address these changes.**

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09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

CR No.: 99/008
Rev. No.:

1a. CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2

1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No	N/A
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐

2b. Work Scope Impact Description:
See Continuation Page: 2
☐ N/A

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No	N/A
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐

3b. Schedule Impact Description:
See Continuation Page: 2
☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☐	☑
Level 2	☑	☐
Level 3	☑	☐

Budget Baseline ☑
TPC ☐
TSLCC ☐

See Continuation Page ☐

5. Impact on Other Scope? ☑ Yes ☐ No

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No	N/A
Level 0	☐	☑	
Level 1	☑	☐	
Level 2	☐	☑	
Level 3	☐	☑	☐

5b. Other Impact Description:
Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2
☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)
☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c. Phone:	7d. Date:
W.A. Gregory	Wayne A. Gregory	MEO/PPSC	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:
☐ Approved ☑ Approved with Conditions ☐ Disapproved ☐ No Recommendation

Comments:

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:
R.E. SPENCE	R.E. Spence	OPE	4-1455	6/10/99

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

Continuation Of:
- [x] Change Request
- [ ] Impact Analysis Record/CCB Evaluation
- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continued)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
5b	**Other Impacts (continued)** **Work authorization will be required to complete the work scope.** **This CR affects key PEMP deliverables as described in the CR narrative. The PEMP will require revision to address these changes.**

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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

CR No.: 99/008

1a. CR Title: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2

1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☐	☑
Level 2	☑	☐
Level 3	☑	☐

☐ N/A

2b. Work Scope Impact Description:

See Continuation Page: 2

☐ N/A

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☐	☑
Level 2	☑	☐
Level 3	☑	☐

☐ N/A

3b. Schedule Impact Description:

See Continuation Page: 2

☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☐	☑
Level 2	☑	☐
Level 3	☑	☐

Budget Baseline ☑
TPC ☐
TSLCC ☐

See Continuation Page ☐

5. Impact on Other Scope? ☑ Yes ☐ No

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☑	☐
Level 2	☐	☑
Level 3	☐	☑

☐ N/A

5b. Other Impact Description:

Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2

☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)
☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c. Phone:	7d. Date:
W.A. Gregory	Wayne Gregory	MEO/PP&C	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:
☐ Approved ☑ Approved with Conditions ☐ Disapproved ☐ No Recommendation

Comments:

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:
Robert W. Clark	R.W. Clark	OQA RW-3	702-794-5583	6/10/99

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09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

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Continuation Of:
- [7] Change Request
- [ ] Impact Analysis Record/CCB Evaluation
- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continuted)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
5b	**Other Impacts (continued)** **Work authorization will be required to complete the work scope.** **This CR affects key PEMP deliverables as described in the CR narrative. The PEMP will require revision to address these changes.**

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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

CR No.: J: 99/008

1a. CR Title: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2

1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

2b. Work Scope Impact Description:

See Continuation Page: 2

☐ N/A

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

3b. Schedule Impact Description:

See Continuation Page: 2

☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No		
Level 0	☐	☑	Budget Baseline	☑
Level 1	☐	☑	TPC	☐
Level 2	☑	☐	TSLCC	☐
Level 3	☑	☐		

See Continuation Page ☐

5. Impact on Other Scope? ☑ Yes ☐ No

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☑	☐	
Level 2	☐	☑	
Level 3	☐	☑	☐ N/A

5b. Other Impact Description:

Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2

☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)

☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c. Phone:	7d. Date:
W.A. Gregory	Wayne Gregory	MEO/PP&C	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:

☐ Approved ☒ Approved with Conditions ☐ Disapproved ☐ No Recommendation

Comments:

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:
Stephen Brocum	Stephen Brocum	OLRC	5-1359	6/10/99

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09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

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Page 2 of 2

Continuation Of:
- [x] Change Request
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- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continued)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
5b	**Other Impacts (continued)** **Work authorization will be required to complete the work scope.** **This CR affects key PEMP deliverables as described in the CR narrative. The PEMP will require revision to address these changes.**

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09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

CR No.: 99/008

1a. CR Title: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2

1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

2b. Work Scope Impact Description:

See Continuation Page: 2

☐ N/A

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

3b. Schedule Impact Description:

See Continuation Page: 2

☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☐	☑
Level 2	☑	☐
Level 3	☑	☐

Budget Baseline ☑
TPC ☐
TSLCC ☐

See Continuation Page ☐

5. Impact on Other Scope? ☑ Yes ☐ No

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☑	☐	
Level 2	☐	☑	
Level 3	☐	☑	☐ N/A

5b. Other Impact Description:

Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2

☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)
☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c. Phone:	7d. Date:
W.A. Gregory	Wayne Gregory	MEO/PP&C	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:
☐ Approved ☐ Approved with Conditions ☑ Disapproved ☐ No Recommendation

Comments:

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:
VICTOR I REBULES	Victor Trebules	OPC	5068	6-10-99

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09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

CR No 99/008
Page 2 of 2

Continuation Of:
- [x] Change Request
- [ ] Impact Analysis Record/CCB Evaluation
- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continuted)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
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YMP-215-R3
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

CR No.: d: 99/008

1a. CR Title: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2

1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

2b. Work Scope Impact Description:

See Continuation Page: 2

☐ N/A

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

3b. Schedule Impact Description:

See Continuation Page: 2

☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	Budget Baseline ☑
Level 1	☐	☑	TPC ☐
Level 2	☑	☐	TSLCC ☐
Level 3	☑	☐	

See Continuation Page ☐

5. Impact on Other Scope? ☑ Yes ☐ No

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☑	☐	
Level 2	☐	☑	
Level 3	☐	☑	☐ N/A

5b. Other Impact Description:

Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2

☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)
☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c. Phone:	7d. Date:
W.A. Gregory	Wayne Gregory	MEO/PP&C	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:
☐ Approved ☑ Approved with Conditions ☐ Disapproved ☐ No Recommendation

Comments:

see YMP-216-R5 for CR 99/008

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:
Birdie Hamilton-Ray	Birdie Hamilton-Ray		794-5586	6/10/99

YMP-218-R2
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

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Continuation Of:
- [7] Change Request
- [ ] Impact Analysis Record/CCB Evaluation
- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continuted)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
5b	**Other Impacts (continued)** **Work authorization will be required to complete the work scope.** **This CR affects key PEMP deliverables as described in the CR narrative. The PEMP will require revision to address these changes.**

M&O-99-008:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA2)

Executive Summary

A series of communications, briefings, and Project Operations Review Board (PORB) decisions during February, March, and April 1999 culminated in the Yucca Mountain Site Characterization Office (YMSCO) directing the Civilian Radioactive Waste Management System (CRWMS) Management and Operating Contractor (M&O) to initiate a Change Request (CR) to (1) refocus work efforts on high-priority quality assurance initiatives that are essential for developing the documentation and traceability for the Yucca Mountain Site Recommendation (SR) report and License Application (LA) and (2) begin implementing the License Application Design Selection (LADS) Enhanced Design Alternative 2 (EDA2) as the recommended repository design.

This CR presents a plan and logic for how site characterization and project design work performed over the years can be assembled into Process Model Reports (PMRs) and System Description Documents (SDDs) to support the SR report and the LA. A detailed, logic-driven schedule to LA (FY99 – FY02) has been developed that (1) supports development of credible and defensible pre- and post-closure safety cases and (2) details work needed to begin implementing LADS EDA2. The contents and structure of nine PMRs and their supporting analyses and model reports have been delineated. Work activities to compile the PMRs and SDDs have been integrated with Tiger Team, data qualification, and Process Validation and Reengineering (PVAR) efforts and logically tied to the Total System Performance Assessment (TSPA), Environmental Impact Statement (EIS), SR, and LA activities to create a comprehensive schedule. One of the benefits from assembling the integrated logic and schedule is that suppliers and customers of data/models/codes recognized and began to resolve imbalances between schedule deadlines, costs, and the definition/attainment of requirements. The increase in FY99 budget to accommodate these changes is just under $11.7 million.

The schedule included in this CR does contain issues that still need to be addressed. These are listed in the sections of the CR where the schedule is presented. Plans for resolving these issues are outlined in the CR. In addition, the plan presented with this CR is yet to benefit from the results of several ongoing initiatives, including the reallocation of principal factors affecting post-closure performance, TSPA Peer Review comment resolution, Tiger Team findings, LA schedule revisions, and an updated assessment of pre-closure design products required to support SR/LA. These initiatives are expected to help (1) prioritize the work efforts by better defining which work is absolutely necessary and (2) resolve expected budget problems that have been pushed into out-years. Again, plans for incorporating the results of these initiatives (many of which are to be resolved in the FY00 planning exercise) are included in the CR.

This CR also implements process improvements authorized during April PORB meetings. The YMP Baseline controlled by YMSCO are Level 2 and 3 milestones, deliverable criteria, and budgets at the Subproduct level; Affected Organizations, in coordination with M&O Project Planning and Control, will now control Control Accounts, Work Packages, and Integrated Project Schedule activities.

M&O-99-008: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA2)

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YMP-214-R4
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
CHANGE REQUEST

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

1. CR No.: 99/008 Mod.:

2. Original's Control No.: **M&O-99-008**

3. Change Type:
- [x] Scope
- [x] Cost
- [ ] Project WBS
- [x] Schedule
- [ ] Technical
- [ ] Other

4. Change Control Level:
- [ ] Level 1 PBCCB
- [x] Level 2 CCB Baseline
- [ ] Level 2 CCB Controlled

5. Priority:
- [ ] Immediate
- [ ] Urgent
- [x] Routine

6. Title of Change Request:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ) and Enhanced Design Alternative 2 (EDA 2)

7. Identify the Documents Affected by this CR: [ ] See Documentation Continuation

Document Number/Title	Current Rev/ICN	A/R/D	Quality Affecting (Y/N)	Resulting Rev/ICN	Design Package	Job Package	Configuration Item Identifier
YMP/CM-0015 Project Cost and Schedule Baseline	N/A	R	N/A	N/A	N/A	N/A	N/A

8. List Attachments *[page number(s) and page count(s)]*
See continuation sheet.

9. Identify Related CR, CAR, BCP, DAR, etc.:
See continuation sheet.

10. Identify Project WBS No.(s) at the Level Affected by the Change:
Various

11. Description of the Change Request:
See continuation sheet.

12. Justification for Change and Priority Type; Summarize the Impact if Change is not Approved:
See continuation sheet.

[x] See Documentation Continuation Page

13. CR Point of Contact:

Print Name	Organization	Phone	Date
W. A. Gregory	M&O/PP&C	295-6673	05/14/99

14. Requesting Manager:

Print Name	Signature	Organization	Date
C. J. Nesbitt		M&O	5/17/99

15. This CR has been Accepted or Rejected by the CCB Secretary as indicated below:

[x] Accepted [ ] Rejected CCB Secretary: Initials: WR Date: 6/10/99

Exhibit YAP-30.61.2

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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
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Continuation Of:
- [x] Change Request
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- [ ] Cost/Schedule Baseline Change Proposal Concurrence Signature Sheet
- [ ] Evaluation Summary, Directive and Disposition

CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ) and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
8	**List Attachments (continued)** **Concurrence Signature Sheet (2 page)** **Impact Analysis Record/CCB Evaluation (2 pages)** **Change Request Narrative (8 pages)** **References: Letter LV.NS.JKC.02/99-003, Wilkins to Dyer, dated February 9, 1999 (31 pages)** **Letter OPS:NSG-0814, Adams to Wilkins, dated February 12, 1999 (5 pages)** **Letter LV.PP&C.CJN.2/99-02, Nesbitt to Dyer, dated March 4, 1999 (43 pages)** **Letter OPC:JRS-1012, Dyer to Wilkins, dated March 25, 1999 (5 pages)** **Briefing 1999-043cjn Rev. 1, prepared by C. J. Nesbitt, III, dated April 13, 1999 (17 pages)** **Management Plan and Response to Corrective Action Requests (CARs) LVMO-98-002 (CAR-002), LVMO-98-005 (CAR-005), LVMO-98-006 (CAR-006), and LVMO-98-010 (CAR-010), Revision 2, dated November 30, 1998 (22 pages)** **Data, Model and Code Qualification/Validation and Control Plan, dated December 1998 (10 pages)** **Project Operations and Review Board (PORB) Minutes & Actions, dated April 15, 1999 (2 pages)** **SPS Mark-ups (110 pages)** **Schedule (502 ages)** **Cost Back-up (7 pages)** **Responses to 3/25/99 Guidance Letter (273 pages)**
9	**Identify Related CR, CAR, BCP, DAR, etc. (continued)** **CARs: LVMO-98-C-002, VAMO-98-C-005, LVMO-98-C-006, LVMO-98-C-010** **CR 99/003, Revision to the Project Cost and Schedule Baseline Document to Incorporate the Detailed Re-planning for FY1999 - FY2002 in the YMP Multiyear Cost and Schedule Baseline** **M&O-99-005, Add Workscope and Budget to Project Baseline for Cross Drift Excavation and Testing and CL-36 Validation Study** **M&O-99-007, Revise Project Baseline Workscope and Budget to Bypass Stuck Drill in Borehole SD-6**
11	**Description of the Change Request (continued)** **The purpose of this change is to revise (for FY99 only) work scope, budget, and milestones associated with qualification of data and process modeling issues identified in the referenced Corrective Action Reports (CARs) and to make changes associated with the License Application Design Selection (LADS) Enhanced Design Alternative (EDA) 2. The CR revises work scope, budget and milestones related to Process Model Reports, Tiger Teams, Process Validation and Reenginerring (PVAR). Additionally, two Level 2 milestones are deleted (M2MP Initial Licensing Case Selection and M2MR Poposed SR/LA Licensing Case Selection) which are part of close out activities for CR 99/004 (M&O-99-004), "Revision to the Project Cost and Schedule Baseline Document to Incorporate the Detailed Re-planning for FY1999 - FY2002 in the YMP Multiyear Cost and Schedule Baseline."** **Justification for the Change (continued)**
12	**The changes addressed in this CR are required to support data qualification and process modeling work that is essential in preparing defensible documents for SR. The refocus on LADS EDA 2 work is required to support SR.**

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YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
COST/SCHEDULE BASELINE CHANGE PROPOSAL
CONCURRENCE SIGNATURE SHEET

1 CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

2 CR No.: 99/008

3 Originator's Control No.: **M&O-99-008**

4 AO Manager's Concurrence:

CRWMS M&O
Organization

D. R. Wilkins | **AGM, MGR**
Print Name | Print Title

D R Wilkins | 5-17-99
Signature | Date

5 Other Impacted AO Manager's Concurrence:

USGS
Organization

R. W. Craig | **Technical Project Officer**
Print Name | Print Title

Robert W. Craig | 5/17/99
Signature | Date

6 AMAAM Concurrence: Is Contract/WAD Revision Required? ☐ Yes ☐ No

Is Contract Modification Required? ☐ Yes ☐ No Is AFP Change Required? ☐ Yes ☐ No

Jerri J. Adams | **Director, OPS**
Print Name | Print Title

Signature | Date

7 Affected AM/Director Concurrence:

Print Name | Print Title

Signature | Date

8 Responsible AM/Director Concurrence:

Victor W. Trebules | **Director, OPC**
Print Name | Print Title

Signature | Date

9 OPC Concurrence:

Victor W. Trebules | **Director, OPC**
Print Name | Print Title

Signature | Date

YMP-215-R3
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
IMPACT ANALYSIS RECORD/CCB EVALUATION

1. CR No.: 99/008
Mod:

1a. CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA) 2

1b. Priority: ☐ Immediate ☐ Urgent ☑ Routine

Signatures on this document represent signers' knowledge that the applicable procedures have been read, understood, and complied with.

SECTION I. CR TECHNICAL COST AND SCHEDULE IMPACT ANALYSIS

2. Impact on Work Scope? ☑ Yes ☐ No

3. Impact on Schedule? (Attach schedule print-out) ☑ Yes ☐ No

2a. Work Scope Impacts-If the Yes box in field (2) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

2b. Work Scope Impact Description:
See Continuation Page: 2
☐ N/A

3a. Schedule Impacts-If the Yes box in field (3) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☐	☑	
Level 2	☑	☐	
Level 3	☑	☐	☐ N/A

3b. Schedule Impact Description:
See Continuation Page: 2
☐ N/A

4. Impact on Cost? ☑ Yes ☐ No

5. Impact on Other Scope? ☑ Yes ☐ No

4a. Cost Impacts-If the Yes box in field (4) is checked, identify the level of Impact Occurrence:

	Yes	No
Level 0	☐	☑
Level 1	☐	☑
Level 2	☑	☐
Level 3	☑	☐

Budget Baseline ☑
TPC ☐
TSLCC ☐

See Continuation Page ☐

5a. Other Impacts-If the Yes box in field (5) is checked, identify the level of Impact Occurrence:

	Yes	No	
Level 0	☐	☑	
Level 1	☑	☐	
Level 2	☐	☑	
Level 3	☐	☑	☐ N/A

5b. Other Impact Description:
Technical Scope, Institutional, Programmatic, and/or Contractual Impacts on Continuation Page: 2
☐ N/A

6. Other Documents Affected? (List other documents potentially affected by approval of this change, but not changed by this change.)
☐ Yes ☐ See Continuation Page ____ ☑ No

Doc ID.: _____ Title: _____

7. Originator: (Print Name)	7a. Signature:	7b. Org.:	7c, Phone:	7d. Date:
W.A. Gregory	Wayne D. Gregory	MEO/PPSC	5-5673	5/17/99

SECTION II. CCB EVALUATION AND RECOMMENDATION

8. Evaluation Start Date:	8a. Due Date:	8b. Evaluator's Title:

9. Recommendations:
☐ Approved ☐ Approved with Conditions ☐ Disapproved ☐ No Recommendation

Comments:

☐ See Documentation Continuation Page

10. Print Name:	10a. Signature:	10b. Org.:	10c. Phone:	10d. Date:

YMP-218-R2
09/14/98

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
DOCUMENTATION CONTINUATION PAGE

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Continuation Of:
- [x] Change Request
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CR Title:
Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA 2)

Block No.	Continuation Information
2b	**Work Scope Impacts (continuted)** **This CR affects Level 2 and Level 3 work scope by adding new work scope, deleting work scope, and revising work scope as delineated in the CR narrative.**
3b	**Impact on Schedule (continued)** **Level 1, Level 2, and Level 3 milestones are affected as described in the CR narrative.**
5b	**Other Impacts (continued)** **Work authorization will be required to complete the work scope.** **This CR affects key PEMP deliverables as described in the CR narrative. The PEMP will require revision to address these changes.**

M&O-99-008: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA2)

Narrative

1. Background

On February 9, 1999, the Civilian Radioactive Waste Management System (CRWMS) Management and Operating Contractor (M&O) presented an approach to integrate and focus ongoing work efforts to address quality assurance (QA) deficiencies and process validation and reengineering (PVAR) activities (Reference 1). The letter also presented an approach to enhancing the traceability and the transparency of process models that support Site Recommendation (SR) and License Application (LA) by using the Process Model Report (PMR) concept. A list of recommendations for immediate action was proposed including refocusing and augmenting resources for supporting PVAR, Corrective Action Request (CARs), technical reviews, and process model validation. A revised approach to Level 3 deliverables was proposed where requirements for certain Level 3 reports would be revised and other Level 3 deliverables would be deleted.

The Yucca Mountain Site Characterization Office (YMSCO) responded on February 12, 1999 (Reference 2), approving the M&O to proceed with refocusing work efforts. However, YMSCO did not approve changes or deletions of Level 3 deliverables. YMSCO approved the start of interim work identified in Reference 1 and requested the M&O to prepare a plan for a change request (CR) that provides justification for each Level 3 deliverable deletion. The February 12 letter also contained a number of comments for the M&O to resolve/address.

On March 4, 1999, the M&O informed YMSCO that interim work reflecting the February 12 direction from YMSCO had been initiated (Reference 3). Several attachments were submitted, including responses to the comments outlined in YMSCO's February 12 letter. Additional attachments provided impacts to work scope and deliverables resulting from the refocus on high priority tasks, schedule activity descriptions, cost estimates, and a description of the PMR concept.

The YMSCO directed the M&O on March 25, 1999 (Reference 4) to initiate a CR to address process model and data qualification (PMDQ) issues. The CR is to upgrade plans that address high priority tasks in order to (1) put in place full traceability of models, software, and qualified data, (2) implement improved work control processes, and (3) ensure a credible and defensible basis for SR and LA. In addition, the YMSCO outlined a series of requirements and directives that the M&O work refocus CR must address. These requirements are outlined in a "Requirements/Products Matrix" presented in the "Responses to 3/25/99 Requirements" section of this CR along with the documentation the M&O has produced to assure closure of actions to respond to each of the YMSCO requirements. It should be noted that some requirements are addressed as part of this CR while others will be addressed after CR submittal or during CR implementation.

On April 15, 1999, the first meeting of the Project Operations Review Board (PORB) was held. This session resulted in direction from YMSCO to include planning for the License Application Design

Selection (LADS) Enhanced Design Alternative 2 (EDA2) into the PMDQ CR. In addition, the YMSCO approved implementation of the revised annual planning process (as briefed at the April 6-8, 1999, Colorado Springs Off-Site Meeting) for the PMDQ/LADS EDA2 CR (References 5 and 8). As a result, the following changes are being made in the CR/planning process:

- Cost estimates are made at the subproduct level as opposed to control account or work package levels.
- Planning occurs at the subproduct level, with detailed control account and work packages to follow after CR approval as part of CR implementation.
- The M&O continues reporting to the current baseline until the PMDQ/LADS EDA2 CR is approved.
- The M&O reports to the new schedule once the PMDQ/LADS EDA2 CR is approved.
- The M&O continues to report earned value at Inception to Date (ITD) by subproduct for the balance of the Fiscal Year (FY) once the CR is approved.
- The M&O will modify work packages and control accounts only to the degree necessary to control and report work for the balance of the 1999 Fiscal Year.

To implement this new process, Subproduct Plan Sheets (SPSs) have been created for this CR for the 16 existing FY99 subproducts. The SPS structure is to replace the control account structure in the current Performance Measurement Baseline. The SPSs are structured as follows:

- The SPSs are similar in style and structure to the Control Account Plan (CAP) Sheet used to date in FY99.
- The SPSs present cost data by fiscal year and do not show monthly spreads.
- The Statements of Work for the SPSs are based on the Product Guidance Documents and are presented in a broad, general manner.
- The SPSs used in the CR are produced in an off-line Excel file. (SPSs presented in the FY00 planning will be electronically produced using PACS (or other) software application.)
- Deliverables (Level 3 Milestones) are listed on the SPS. A note is included in the SPS deliverable section stating that the deliverables are considered baseline items, with deliverable details to be included in an appendix for each SPS.
- For the Baseline document, an appendix for each SPS will be attached identifying all deliverables associated with the subproduct, including deliverable ID, title, description, completion criteria, evaluation criteria, and deliverable finish date. For this CR, only those deliverables that are new or revised are included in the appendices. The appendices present deliverable data similar to that shown in the Multi-Year Planning System (MYPS) database.

2. Assessment of the Strengths, Risks, and Issues Associated with the Plan Represented by this CR

This Change Request is intended to capture the remaining FY99 high priority revisions to the plans to refocus project activities to finish the Site Recommendation (SR) and License Application milestones. Many of the revised approaches represent deviations from those contained in the Viability Assessment (VA) document. This Change Request submittal will be followed next week by a preliminary comparison of the changes from the VA as a result of the work that is detailed in this CR.

Strengths

In this Change Request, a plan and logic for how the wealth of site characterization and project design work conducted over the years can be assembled into a defensible and credible SR/LA are presented. The backbones of the construct are PMRs, which document the technical information used to develop and justify the post-closure safety case for the Yucca Mountain repository, and System Description Documents (SDDs), which outline the design for ensuring pre-closure safety. This Change Request also details FY99 work needed to begin implementing the LADS EDA2 repository design.

A detailed, multi-year schedule to LA has been developed that (1) supports development of a defensible and credible SR report/LA and (2) implements the LADS EDA2 design. The schedule captures the tasks needed to produce PMRs and SDDs. These activities include the efforts of the Tiger Teams, data qualification, analysis and modeling, and PMR/SDD compilation. Logic ties have been made to the TSPA, EIS, SR, and LA activities to create a comprehensive schedule. The network will be placed under baseline control following CR approval.

Annotated outlines for each of the nine PMRs, as well as scope statements for each of the supporting analyses and model reports generated using Administrative Procedure (AP)-3.10Q, Analyses and Models, have also been developed. Preliminary software and data qualification tasks have been identified to reflect the efforts needed to ensure that qualified software and data are available to support the SR and LA. Work plans to close the major open Corrective Action Requests (CARs) have been incorporated in the schedule. PVAR efforts, as modified by this CR, have also been logically linked into the schedule. One of the chief benefits from assembling the integrated logic and schedule is that suppliers and customers of data/models/codes recognized and began to resolve imbalances between schedule deadlines, costs, and definition/attainment of requirements.

The existing YMP schedule has been modified to reflect the LADS results. Some activities are no longer needed to support the recommended design and have been or will be stopped following an orderly shutdown. Other activities are being initiated to support the recommended design option (EDA2). The associated FY99 budget credits and debits have been identified.

Risks and Issues

Improvements in the project plan and schedule are still needed and will be made both while this CR is being approved and implemented and during the FY00 planning exercise. The Schedule Section of the CR lists weaknesses associated with the schedule and the plans for improving it.

The principal factors affecting post-closure performance of the repository system are being carefully reviewed in light of the attributes of the recommended enhanced system design. The M&O has established a team to prioritize these factors and the associated technical work to ensure that those most important to the SR/LA safety case are addressed. The output of this review will ensure that the PMRs adequately address these factors and that the forthcoming information is consistent with the needs of the PMRs. This prioritization could result in some changes in emphasis in Project activities, especially in

light of expected FY00 budget limitations. The team's recommendations are expected to be available by the end of May 1999.

As noted in the March 25 guidance letter (Reference 4), specific software and data qualification activities in support of each of the PMRs cannot be fully identified at this time. As such, the data qualification effort represents one of the biggest risks to completing a draft SR report that is defensible for the Consideration Hearing by November 2000. The strategy for qualifying the technical data, models, and software needed for SR/LA is contained in the M&O's Data, Model and Code Qualification/Validation and Control Plan, developed in December 1998 (Reference 7). As part of the resolution of CARs 98-002, 98-006, and 98-010, verification of the "Q" status of the Data Tracking Numbers (DTNs) and Codes used for the Viability Assessment (VA) that were likely to go forward to the SR/LA was initiated. Tiger Teams are tasked with reviewing the status of all software and data necessary to support each individual PMR. The Tiger Teams will also identify the actions needed to qualify the software and the portions of the data that can be qualified. Of the data used in the VA, 372 DTNs were identified as likely to be used in the SR/LA. Of these 372 DTNs, 56 are in the process of being verified. One DTN has been taken through the entire verification checklist process. Of the 136 codes identified as likely to be used in the SR/LA, 28 are in the process of being verified. Eleven have completed the verification process, have had their deficiencies corrected, and have been placed under baseline control. The output of the prioritization being done by the M&O's principal factors reallocation team will be used to guide the efforts of the Tiger Teams. The Tiger Teams are currently scheduled to complete these reviews by the end of October. As each Tiger Team completes its assigned review, the affected data qualification schedule of activities, including logic ties to the SR, will be updated.

Total System Performance Assessment (TSPA) Peer Review comment responses are to be completed by the end of May 1999. The actions identified in the response will be incorporated in the FY00 update to the YMP Multi-Year Plan.

A revised, more detailed, LA schedule is being coordinated and developed by the M&O Regulatory and Licensing Organization. This effort will incorporate the schedules for production of the PMRs (and associated products), the SR, the SDDs the Design Basis Events (DBEs) and the TSPA. In addition, the schedule will establish the production process for the development of the individual Chapters of the LA and will eventually include the production of the sections and their supporting products. The schedule outlines a new team approach to the production and review of the LA in that it includes participation from the M&O, MTS and DOE. Through this integrated schedule, we will have developed an overarching strategy for submittal of the LA. The expectation is that this effort will redefine deliverables, milestones and budgetary considerations by focusing on only those things that are important and sufficient to SR and LA production. It is anticipated that the integrated schedule can be completed by mid-June 1999 and updated in the FY00 planning.

A task team consisting of the M&O Regulatory and Licensing, Systems Engineering, and the Design organizations is performing a revised markup of the Technical Guidance Document (TGD) and the corresponding products list that detail the required level of detail for the LA. To perform this effort, thi team is using the latest DBE analysis/assumptions, the level of detail white paper, and the draft graded quality assurance classification procedure. The findings of this team will then be incorporated into the

planning and budgetary considerations to support the SR/LA integrated schedules. This effort is expected to be finished by mid-June and will be updated in the FY00 planning.

This CR provides budget for FY99 only, and provides a rough order of magnitude estimate for the PMRs and analyses and model reports for FY00 and FY01. FY00 budget requirements will be identified as part of the FY00 update to the YMP Multi-Year Plan.

3. Change Description/Justification

3.1 Process Validation and Reengineering (PVAR), Tiger Teams, CARs

Summary

Guidance for work scope addressed in this CR is provided, in part, by the Data, Model and Code Qualification/Validation and Control Plan (Reference 7). This plan (Reference 7) provides an outline for identifying the minimum set of data that needs to be qualified for SR/LA and the method and timetable for qualification. The plan identifies the relationship between the CAR management plan (Reference 6), Tiger Teams, PVAR effort, and data qualification activities.

The guidance for actions associated with the CARs is provided in the Management Plan and Response to Corrective Action Requests (Reference 6). Actions that are addressed in this CR respond to CARs LVMO-98-C-002 (CAR-002), VAMO-98-C-005 (CAR-005), LVMO-98-C-006 (CAR-006), and LVMO-98-C-010 (CAR-010). These CARs relate to deficiencies found in technical data, procurement, software, and model development and use, respectively.

Work Scope Change Description

Process Validation and Re-engineering (PVAR) – Initiated to accomplish the following objectives:

1. Standardize procedures for all program participants
2. Eliminate procedure redundancy
3. Provide clear, concise guidance to end-users
4. Establish ownership of processes and procedures, and
5. Establish effective, formal training program.

Additional work scope includes:

1. PVAR management associated with additional integration reviews and resources to plan, coordinate and conduct validation reviews of selected PVAR procedures according to accepted nuclear industry standards.
2. Additional resources required compensating for full-time dedication of Subject Matter Experts to the PVAR effort.
3. Conduct full regimen of formal training on the PVAR procedures.
4. Support the implementation of the new PVAR procedures.

Tiger Teams (Data and Model Qualification) – Initiated to ensure traceability and defensibility of data used to support the SR.

Additional work scope includes:

1. Identification of models and data sets requiring qualification.
2. Prioritization of models and data sets for qualification based on support to AP-3.10Q analyses and PMR development.
3. Qualification of prioritized models and data sets according to approved program procedures.

CAR Closure – Initiated project approach to CAR closure for focusing resources and integrating across all deficiency closures.

Additional work scope includes:

1. Additional resources to compensate for focusing existing resources full-time on CAR and deficiency closure.
2. Establishing and maintaining a Corrective Action Board (CAB) to monitor and integrate all deficiency related efforts.
3. Integration of CAR closure activities with PVAR and data and model qualification.

Justification

Justification for work scope includes:

1. Closure of CARs and other deficiencies in a timely manner while integrating and incorporating lessons learned into the PVAR development effort.
2. Implementing an approach for data and model qualification based and prioritized on specific data needs for SR and LA, e.g. AP-3.10Q analyses and PMRs.
3. Development and implementation of an integrated program infrastructure for science and engineering processes that fully support the requirements of the Quality Assurance Requirements Document.

3.2 Process Model Reports (PMR)

Summary

The purpose of a PMR is to document a synthesis of the necessary and sufficient technical information that the Project will be relying upon to support its site suitability evaluation and the licensing safety case pertaining to a particular process model. The technical information consists of data, analyses, models, software, and supporting documentation used to defend the applicability of the model for its intended purpose of evaluating the post-closure performance of the Yucca Mountain repository system.

The following nine (9) topics have been identified for PMR development:

1. Integrated Site Model
2. Unsaturated Zone Flow and Transport
3. Saturated Zone Flow and Transport

4. Near Field Environment
5. Waste Package Degradation
6. Waste Form Degradation
7. Engineered Barrier System Degradation and Flow/Transport
8. Biosphere
9. Tectonic Hazards

The development of the PMRs is integrated with the data, model, and code validation / qualification and traceability efforts described in section 3.1 of this Narrative. The PMR references supporting analyses and modeling documentation produced through Administrative Procedure (AP)-3.10Q, Analyses and Models, the Technical Data Management System (TDMS), the Software Library, documents developed outside the Project, and other regulatory documents (e.g., Topical Reports and other PMRs). This documentation is summarized in the PMR, but is not physically part of the report.

Work Scope Change Description

The work scope change associated with the PMRs is related to the higher level of rigor that will be applied to the documentation of the basis for the process models that support the total system performance assessment for the SR and LA.

Additional work scope includes:

1. Preparation, reviews, and control of each of the analyses and model reports supporting the PMRs.
2. Systematic evaluation of existing Project documentation to determine how these documents can be used in the PMR development process.
3. Preparation, reviews, and control of the nine PMRs.
4. Establishment of a PMR management structure to ensure integration and control of the PMR effort.

To accommodate this refocus, several Level 3 deliverables that are in the current baseline are proposed to be deleted, with the information in those deliverables to be directly captured in the analyses and model reports, and the data submitted to the TDMS. This is primarily the case for the deliverables in the Natural Environment Program Operations area. Other deliverables would be deferred or revised (e.g., deletion of Chapters 3 and 8 of the Working Draft LA).

The disposition of each of the affected deliverables is identified in Table 11 c) ix).

The work scope associated with development of the PMRs and supporting analyses and model reports is not all new work. Much of the technical work is already part of the existing baseline and would be performed with already-budgeted resources. As indicated above, the key change is the emphasis placed on the documentation process to ensure traceability and transparency.

Justification

The reprioritization of work scope to focus on the development of PMRs will strengthen the traceability and transparency of the technical basis for the process models that form the building blocks of the total system performance assessment for the SR and LA.

3.3 License Application Design Selection (LADS) Enhanced Design Alternative 2 (EDA2)

Summary

The recommended repository concept (EDA2) can be characterized as a low thermal impact design, a significant contrast to the current Viability Assessment (VA) Repository Reference Design. This design uses more extensive thermal management techniques than the VA design to limit the impacts of the heat released by the waste. These thermal techniques include thermal blending of spent nuclear fuel assemblies, closer spacing of the waste packages, wider spacing of the waste emplacement tunnels (drifts), and pre-closure ventilation. While the recommended design and the VA design both use a two-layer waste package, the recommended design places the corrosion-resistant material on the outside rather than the inside to provide long-term protection to more corrosive-susceptible structural material. The recommended design also adds defense-in-depth with a drip shield, potentially covered by backfill, to protect the waste packages from dripping water while they are hot enough to be susceptible to localized corrosion. Finally, the recommended design uses steel materials in the drift for ground support instead of the concrete evaluated in the VA design in order to avoid the possible impacts of the chemicals in the concrete on mobilization and movement of radionuclides.

In focusing on the remainder of FY99, the LADS Team has recommended work stoppage / redirection of activities that do not support the recommended design, and commencement of work that directly influences the characteristics described in the previous paragraph.

Work Scope Change Description

Work Scope Stoppage/Reduction

Ceramics: The LADS study determined that no further work is required in the near term on Ceramics for the recommended design.

Getter Testing: The LADS study determined that no further work is required on Getter Testing for the recommended design.

Waste Package Optimization: The number of designs, and their level of detail, that will be prepared for SR will be reduced.

New Work Scope and Redirection of Existing Work

Short Term Testing for Titanium and Alloy 22: Additional testing aimed at providing data to support long-term protection of the waste package and drip shield.

Short Term Corrosion Testing: Additional testing aimed at addressing long-term key corrosion mechanism issues to help confirm materials performance.

Waste Acceptance and Storage Requirements Document (WASRD): Updates the WASRD to reflect EDA2 as the reference design after approval by the Director, Office of Civilian Radioactive Waste (OCRWM).

Update SR/LA Product List: Provides a comprehensive design products list that will support first the design necessary for Site Recommendation and provide continuity towards the design necessary to support the License Application.

SR/LA Interface Control Documents (ICDs): Provides the necessary ICDs to support SR and provide continuity towards the ICDs necessary to support the LA.

Reference Design Description (RDD): Updates the RDD to reflect EDA2 as the reference design after approval by the Director, OCRWM.

Invert Diffusion Test: Commences the necessary testing for the invert diffusion data needed early for process models to support Site Recommendation.

Drip Shield Design: Commences the necessary design of the drip shield in order to support Site Recommendation.

Justification

Per direction of the PORB, we are revising work to encompass LADS EDA2. The current official reference design is the VA based on existing design control documents. OCRWM management recognizes that design efforts continue to evolve and it is prudent to shift from the VA reference design high thermal approach to a cooler design. The PORB directed the M&O to process a project CR to accommodate the current recommended design (EDA2). The CR directs the M&O to 1) incorporate EDA2 design into the current planning baseline; 2) prepare work packages and plans consistent with EDA2 design guidelines; and 3) prepare a Level 1 Baseline Change Proposal for the Director's approval in July.

3.4 Revision of Milestones Related to Replan CR 99/003 (M&O-99-004)

This CR includes the deletion of Level 2 Milestones and revision of a Level 3 Milestone related to CR 99/003 Revision to the Project Cost and Schedule Baseline Document to Incorporate the Detailed Re-planning for FY1999 - FY2002 in the YMP Multiyear Cost and Schedule Baseline (M&O-99-004). Two Level 2 milestones, M2MP Initial Licensing Case Selection and M2MR Proposed SR/LA Licensing Case Selection are deleted. Deletion of these milestones was originally intended for CR 99/003, but were inadvertently omitted.

This CR also includes a change in the due date of Level 3 Milestone BM205OM3 Year 2000 Business Continuity Plan. This revision is in response to changes in DOE plans and concerns associated with the

timing of Y2K end-to-end testing, and the development of a quality Plan that integrates all issues relating to the information architecture, and incorporates current DOE mission goals and objectives for this area.

4. Reference Summary

1. Letter LV.NS.JKC.02/99-003, D. R. Wilkins to J. R. Dyer, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated February 9, 1999.

2. Letter OPS:NSG-0814, J. J. Adams to D. R. Wilkins, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated February 12, 1999.

3. Letter LV.PP&C.CJN.2/99-021, C. J. Nesbitt to J. R. Dyer, Response to U. S. Department of Energy (DOE) Letter, dated February 12, 1999, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated March 4, 1999.

4. Letter OPC:JRS-1012, J. R. Dyer to D. R. Wilkins, U. S. Department of Energy (DOE) Guidance for Refocus Change Request (CR), dated March 25, 1999.

5. Briefing 1999-043cjn Rev. 1, prepared by C. J. Nesbitt, III, PMR, Data Qualification and LADS Change Request Status, dated April 13, 1999.

6. Management Plan and Response to Corrective Action Requests (CARs) LVMO-98-002 (CAR-002), LVMO-98-005 (CAR-005), LVMO-98-006 (CAR-006), and LVMO-98-010 (CAR-010), Revision 2, dated November 30, 1998.

7. Data, Model and Code Qualification/Validation and Control Plan, dated December 1998.

8. Project Operations and Review Board (PORB) Minutes & Actions, dated April 15, 1999.

5. Budget

A total Project budget increase in the amount of $11,681K in FY99 is proposed in this CR. Table A below itemizes the budget changes by Subproduct. These budget changes are shown on the affected Subproduct Plan Sheets (SPSs) in a later section. A more detailed cost breakout, estimated at the control account and categorized (CAR, DQ, PMR, PVAR, LADS), is provided in the cost backup section of this CR package. In addition, the cost backup outlines $12,471K of existing budget associated with refocused work scope. Total Budget for increased and refocused work scope affected by this CR is $24,152K.

Table A Performance Measurement Budget (PMB) Table (Thousands $)				
Subproduct ID	**Subproduct Title**	**FY 99 Approved Budget**	**FY99 Proposed Budget**	**FY99 Delta**
AMJX	Documentary Record for SR	$27,900	$31,916	$4,016
AMMQ	SR Design Alternatives	$20,864	$21,198	$334
AMNL	Site Recommendation Report	$6,855	$7,455	$600
AMNT	Repository Design and Waste Form Revision - SR	$36,096	$40,064	$3,968
AMNW	TSPA-SR Document	$41,803	$43,846	$2,043
AMPP	Technical Support for SR/Designation	$78,698	$79,899	$1,201
AMCW	EIS	$8,258	$8,258	$0
AMPS	Post EIS Completion Activities	$0	$0	$0
AMPU	DOE SNF and Fissile Materials	$5,684	$5,684	$0
AMMW	LA Design and Verification	$2,611	$2,730	$119
AMNE	Draft LA	$1,612	$1,612	$0
AMNN	Working Draft LA	$5,224	$4,424	($800)
AMNS	Documentary Record for LA	$0	$0	$0
AMPT	Technical Support for LA	$0	$0	$0
AMRF	Construction Authorization	$2,138	$2,138	$0
AMPW	Project Support for SR/LA	$25,915	$26,115	$200
	TOTAL	**$263,658**	**$275,339**	**$11,681**

6. Funding

New funding of $11,366K for the M&O and $315K for the United States Geologic Survey (USGS) is required to accomplish the tasks identified in this CR. Note that the current site staffing study and ensuing scope and staffing actions are not accounted for in this CR. DOE will need to identify the source of funding and provide an Approved Funding Program change.

7. Milestones

This CR does not impact Level 0 Milestones.

The following are recommended changes to Level 1 and Level 2 Milestones:

Level 2 Milestones YMSCO Requested Changes - (Inadvertent Omissions from Replan CR)						
Recommended Action	**Milestone ID**	**Current Title**	**Current Completion Date**	**Recommended Title**	**Recommended Completion Date**	**Comments**
Delete	M2MP	Initial Licensing Case Selection		N/A	N/A	Delete per YMSCO request. Omitted from Replan CR.
Delete	M2MR	Proposed SR/LA Licensing Case Selection		N/A	N/A	Delete per YMSCO request. Omitted from Replan CR.

Level 2 Milestones Recommended Changes Resulting from PMDQ/LADS						
Recommended Action	**Milestone ID**	**Current Title**	**Current Completion Date**	**Recommended Title**	**Recommended Completion Date**	**Comments**
Delete	M2JE	Drift Scale Test Report to SR	15 Oct 99			Delete milestone. DST Report will be an AP-3.10Q in NF PMR
Revision	M2HC	Decide UZ Flow & Transport Models for SR	15 Feb 00	UZ PMR for SR	26 May 00	
Revision	M2HD	Decide SZ Flow & Transport Models for SR	29 Feb 00	SZ PMR for SR	07 Jul 00	
Revision	M2JC	Decide Near Field Models for SR		NF PMR for SR	09 Jun 00	
Revision	M2GH	Waste Form Characteristics Report Rev 2	1 Aug 00	Waste Form Process Model Report. Change criteria accordingly.	No Change	Title change only.
Revision	M2GY	Engineered Materials Characteristics Rep. Rev 2	1 Aug 00	Waste Package Degradation Process Model Report. Change criteria accordingly.	No Change	Title change only.
New	N/A	N/A	N/A	Tec PMR for SR	26 Jun 00	
New	N/A	N/A	N/A	ISM PMR for SR	17 Jan 00	
New	N/A	N/A	N/A	YM Site Description for SR	29 May 00	

The following Level 1 and 2 milestones appear in the SR Detail Production Schedule, and are recommended for addition to the baseline:

Level 2 Milestones Recommended Changes Resulting from Integration of SR Strategy into Schedule						
Recommended Action	**Milestone ID (See Note)**	**Current Title**	**Current Completion Date**	**Recommended Title**	**Recommended Completion Date**	**Comments**
New	P1CH	N/A	N/A	RW-1 Forward Consideration Hearings FR Notice	01 Nov 00	Preceding Milestone SLCH01M3 (M&O Provide Draft SR Hearing Notice to YMSCO) on 04 Oct 00.
New	SLBR50M 1	N/A	N/A	DOE Concur on Revised Final 10CFR960	05 Oct 99	Preceding Milestone M1AD OCRWM Pub .Supp Not .Prop. Rulemaking on 28 Dec 98. Note: M1AD is already past overdue. The entire string of Upper level milestones for the 10CFR960 / 10CFR963 need to be revisited subsequent to RW-1 formal decision on the proposed rule to go forward with.
New	M2DP	N/A	N/A	YMSCO Approve SR Distribution and Public Information Plan	25 Sep 00	Similar to the EIS process, the above document needs to be developed for SR. This has been discussed with OCRWM senior staff in numerous meetings held for the development of the SR detailed schedule. The Plan will have to be developed by the Institutional and External Affairs Department, under Support Operations.
New	M2CR	N/A	N/A	Submit Consideration Hearings Comment Summary Document for HQ Approval	25 May 01	While the DOE proposes that no formal response to the Hearings comments will be provided to the Public, a Comment Summary Document will be developed to facilitate the decision making process.

Note: The Milestone IDs are not final but are simply placeholders in the schedule. Correct milestone IDs to be assigned later upon DOE acceptance of the recommendations.

New FY99 Level 3 Milestones associated with PMPQ/LADS EDA2 are shown in Table B1 below. Revised and deleted Level 3 Milestones associated with the PMDQ portion of this CR are shown in the table of Section 11 c) ix) Deliverable Deletion Rationale Matrix.

Table B1
New PMDQ Level 3 Milestones

Status	Milestone ID	Title (may be abbreviated)	Date
New	SLSR7FM3	Submit Draft SR V1S1 to DOE	30 Sep 99
New	SE1930M3	Submit SR/LA Products List to DOE for Approval	30 Sep 99
New	SLDI05M3	Submit Level of Design Detail Paper for LA to DOE	10 Jun 99

Other affected FY99 Level 3 Milestones are shown in Table B2 at the end of this section.

Table B2
Other Level 3 Milestones

Status	Milestone ID	Title	Date
Revised	BM2050M3	Year 2000 Business Continuity Plan	30 Jun 99

8. Performance Evaluation and Measurement Plan (PEMP)

This CR affects the following key PEMP deliverables:

PEMP Deliverables

Status	Milestone ID	Title	Date
Deleted	SLWD02M3	M&O Provide WDLA QAP6.2 Draft to DOE	N/A
Revised	SP399CM3	NF/AZ Environ Rpt, Rev 2	03/03/00
Revised	BM205OM3	Year 2000 Business Continuity Plan	08/13/99

No other impacts to the PEMP have been identified, nor the ability of the M&O to meet the PEMP criteria is affected. The PEMP will require revision to address the changes identified above.

9. QA Support

The M&O and the Quality Assurance Technical Support Services contractor (QATSS) identified the need for additional support in FY 1999 for procedure integration and procurement engineering which resulted from the PVAR initiative.

In March 1999, QATSS estimated the resources to be in excess of their plan for the current fiscal year. QATSS developed an estimate for additional resources and provided the information to both the M&O and OCRWM for consideration. OCRWM provided guidance that the QATSS support contract would

not be increased. The M&O and QATSS evaluated an alternative solution whereby the M&O would provide QA engineers for the tasks. The resources would take direction from the assigned QATSS line manager.

The alternative was presented to the M&O contract office and was found to be contractually viable. The M&O contract has, within its contract, scope for QA tasks. The QA Program oversight role performed by QATSS is not compromised as the QA engineering and inspection function is separated from the oversight function.

The M&O has included in this CR the necessary QA engineering staffing for the balance of FY99. This arrangement is a short-term solution and is expected to end on September 30, 1999.

10. Implementation

Resource Implementation

There are no significant new staffing requirements as a result of this CR. A combination of Home Office, Laboratory, TDY, consultant, and Manpower temporary services are to be utilized to implement the majority of the increased work scope. Onsite staff will be utilized in a combination of delaying potential layoffs and utilization of Extended Work Weeks (EWWs). The M&O will implement the onsite portion of the work utilizing existing office facilities, information technology, and telecommunications that exist or are covered under current and proposed budgets.

Baseline Implementation into the Planning and Control System (PACS)

May PACS Update (due June 19, 1999): PACS will be updated with May actuals only, no earned value will be taken or reported.

- Complete integration of the PMDQ/LADS EDA2 CR schedule into the Integrated Project Schedule (IPS) for milestone/deliverable reporting.
- PACS will reflect the old Performance Measurement Baseline (PMB) and updated with actuals only.

June PACS Update (due July 19, 1999): Detailed control account and work package planning will be completed and data available in PACS.

- Revised IPS will be updated.
- Earned value will be updated using revised PMB.
- Reconciliation will be made to insure cumulative performance to date is as accurate as possible.
- PACS will reflect the new PMB and new schedule.

The control accounts, work packages, and IPS activities are to be maintained and controlled by the Affected Organization in coordination with the M&O Project Planning and Control organization. The Subproduct Plan Sheets (SPSs) and Level 2 and Level 3 Milestones are maintained and controlled by the Yucca Mountain Site Characterization Office (through the PORB) in coordination with Office of Project Control.

Reference 1

Letter LV. NS. JCK.02/99-003, D.R. Wilkins to J.R. Dyer, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated February 9, 1999.

Proposal for Redefining and Focusing Work Efforts for SR/LA

2-4-99

Topics for Discussion

- Aggressive attention to QA deficiencies
- Maintain focus on meeting PVAR goals
- Place highest priority on documenting traceability for TSPA Process Models
- Focus new work on "Process Model Reports"
- Next steps

QA Deficiencies: Focus on Accountability

- Staff assigned to work deficiencies should be relieved of other responsibilities
  - Full time commitment to resolving deficiencies
- Biweekly status to DOE senior management should expand to cover ALL deficiencies
  - Status: Require DOE & M&O responsible line managers to personally explain any slippage
  - New deficiencies: Require DOE & M&O responsible line managers to discuss problem

Meet PVAR Goals: Simplified and Streamlined Processes

- Full time commitment needed for Subject Matter Experts and key support staff to complete analyses and develop draft procedures
- Substantial commitment needed from OQA to work with PVAR teams as needs for process revisions are identified
- Continue SME involvement, as "process owners", to expedite review, approval and training to new processes
- Plan for surveillances/audits of revised processes

Traceability for TSPA Process Models

Traceability defined by Tiger Team to include:

- Links between records and data base entries
- Parameter input values used to develop process models and codes
  - Identify data that are "directly relied upon" vs. corroborative
  - Determine Q pedigree of acquired data
- Documentation of "developed data" that shows steps from acquired data to inputs to process models

Note: traceability will need to be established for design products supporting SR/LA

Data Qualification Tied to Tiger Team Products

- Pedigree of input values/source data/ models documented by Tiger Team review
  - Apply data qualification strategy to determine if data need to be qualified
- Initiate actions as soon as non-Q data sets that need qualification are identified
- Validation status for models also established by Tiger Team documentation
  - Actions needed to validate models also can be identified and scheduled

Reducing Risks for SR/LA

Redefine and Focus our Key Licensing Products

- Develop Process Model Reports (PMR)
  - Stand alone reports containing relevant information to make licensing arguments
    - » These are end products of model validation and traceability efforts
  - PMRs would reference
    - » Technical Data Base
    - » Software Library
    - » Model Warehouse
    - » Other regulatory products
    - » External publications

Contents of Process Model Reports

- Description of Model
- Verification of QA status of codes
- Data supporting codes/models
- Abstraction of model into TSPA
- Uncertainties related to model parameters
- Model validation information
- Opposing views
- Assumptions and basis

Preliminary List of Proposed Process Model Reports

- Integrated Site Model
- Unsaturated Zone Flow and Transport
- Saturated Zone Flow and Transport
- Near Field Environment
- Waste Package Degradation
- Waste Form Degradation
- Engineered Barrier Degradation and Flow/Transport Model
- Biosphere

Will Need Limited Number of Non-Process Model Reports

Potential for short-list of supporting documents

- Site Description Document (abridged)
- Disruptive Events
  - Volcanic Hazard Assessment
  - Seismic Hazard Assessment
  - Criticality Assessment
- Natural Analogues

What About Existing Internal and External Documents?

Three potential categories are proposed:

1. Information in document is relevant and needed to support argument for a specific process model
   - Include information in PMR and ensure data/models/codes are documented & traceable

2. Information in document is not relevant or superceded - do not include information in report and document in memo to file (?)

3. Information in document provides differing view that does not support licensing argument
   - Include in PMR and explain why this view is not supported - ensure data/models/codes adequately documented for internal work

Recommended Plan for Development of PMRs

- Develop draft PMRs as soon as possible and use TBVs for data/models/codes as necessary
  - Establish baseline for process models
- Focus future work on addressing these TBVs
  - Ensure data gets into TDMS and is traceable
  - Aggressively validate models
  - Conduct V&V on codes
- Consider peer reviews for each PMR
- Determine if candidates for Topical Reports

Next Steps

- Scrub existing plans for Level 3 work products to determine if content can be directly captured in TDMS, Software Library, and/or Model Warehouse
  - If yes, reevaluate need for separate report
- Develop modified approach for DOE review and acceptance
  - Draft PMRs
  - Transmittals to TDMS
  - Software V&V record packages
  - Model Validation record packages
- Rethink SR strategy to determine impact of relying directly on TDMS/Software Library/Model Warehouse and PMRs

Next Steps (continued)

- Identify selected scientific and engineering topics where journal articles should be prepared
  - Gain credibility in broader scientific and engineering community

Status of Cost Impact Information

Area	Status
Qualification & CAR's	
Data Identification (CAR 2)	ROM Estimate
Data Qualification (CAR 2)	TBD
Remediation of References (CAR 99-01)	Current Plan
Remediation of Notebooks	Current Plan
Process Software & Models (CAR 6 & 10)	ROM Estimate
TSPA Abstracted Software & Models	ROM Estimate
CAR 5, Procurement	Current Plan
Process Model Reports	TBD (adder)
PVAR	
Procedures	TBD
Upgrades to TDMS	TBD (adder)
Impacts on Deliverables	
Hold SR dates w/less detail	Current Plan
Delay/Delete Level 3's	TBD (credit)

Schedule Status

Qualification & CAR's	
Data Identification (CAR 2)	Yes
Data Qualification (CAR 2)	TBD
Remediation of References (CAR 99-01)	Yes
Remediation of Notebooks	Yes
Process Software & Models (CAR 6&10)	Yes
TSPA Abstracted Software & Models	Yes
CAR 5, Procurement	Yes
Process Model Reports	TBD
PVAR	
Procedures & Training	Yes
Upgrades to TDMS	TBD
Impacts on Deliverables	
Hold SR dates w/less detail	Yes
Delay/Delete Level 3's	TBD

Proposed Level 3s to be Reviewed

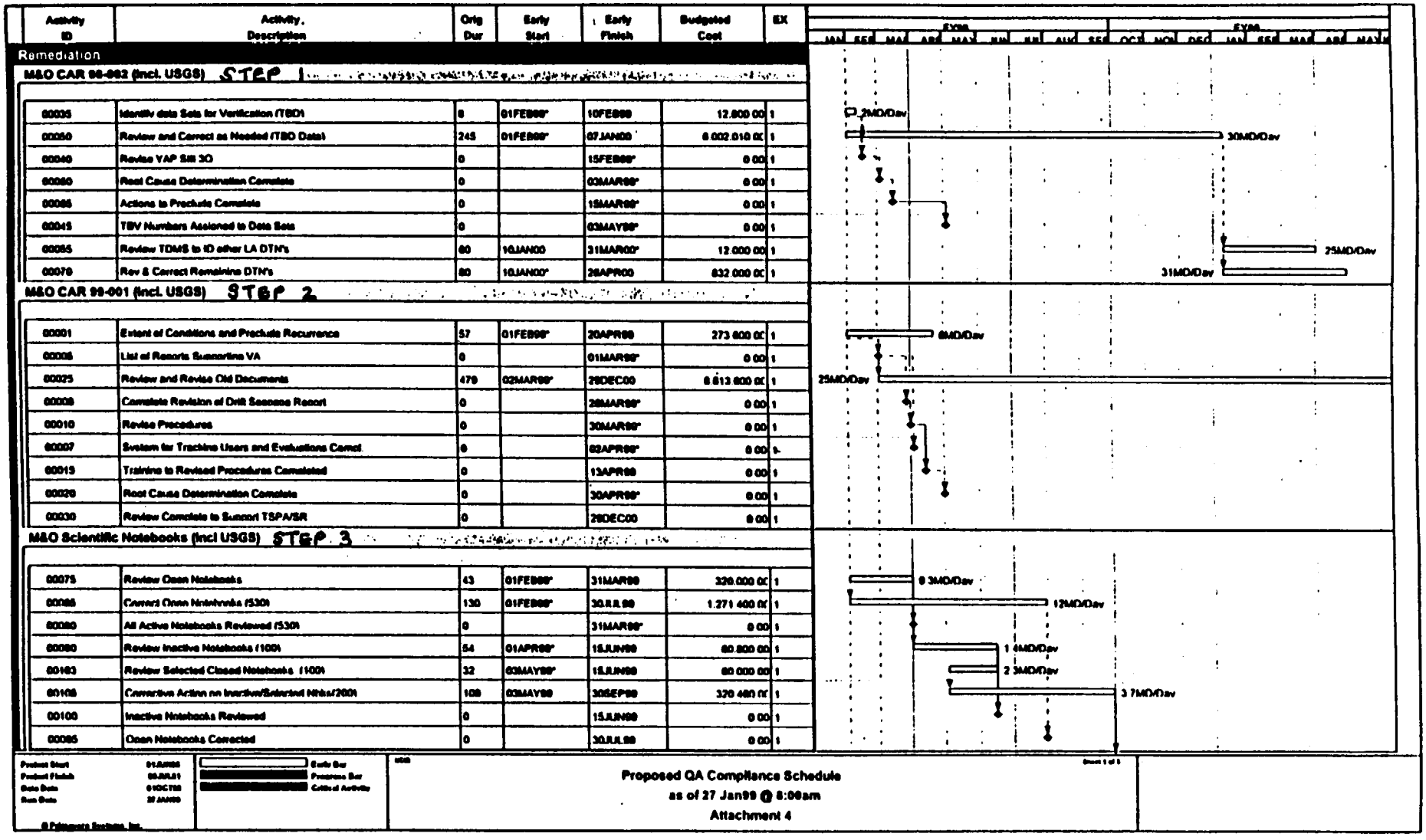
- 6 supporting ISM
- 4 supporting UZ Flow and Transport
- 10 supporting SZ Flow and Transport
- 7 supporting Near Field Environment
- 4 supporting Disruptive Events

Additional work in FY00 is $10MM
Additional work in FY01 is $1MM

FY99 ROM Funding Analysis

Area	(A) Total Required Funding	(B) Covered from Exist Resources	(C) New Funding Required (A - B)	(D) Current Baseline	(E) Deferred/ Delayed (B - D)
Qualification & CARS					
Science	$15MM	$12MM	$3MM	$4MM	$8MM
TSPA	$ 5MM	$ 4MM	$1MM	$1MM	$3MM
WP	$ .8MM	$ .2MM	$ .6MM	$.2MM	$ 0MM
EBS			$ 0MM		$ 0MM
CAR Closure	$ 4.2MM	$ 4.2MM	$ 0MM	$ 4.2MM	$ 0MM
Process Model Reports					
Reg.	$ .7MM	$.4MM	$ .3MM	$ 0MM	$ .4MM
MGR	TBD				
Support	$ .8MM	$ .3MM	$ .5MM	$ .3MM	$ 0MM
PVAR					
Procedures	$ .4MM	$.4MM	$ 0MM	$ .4MM	$ 0MM
TDMS	TBD				
Contingency	$7.1MM(25%)	$ 5.5MM(25%)	$ 1.6MM	$ 0MM	$ 5.5MM
R.O.M. Total	$ 34MM	$ 27MM	$ 7MM	$10.1MM	$ 16.9MM

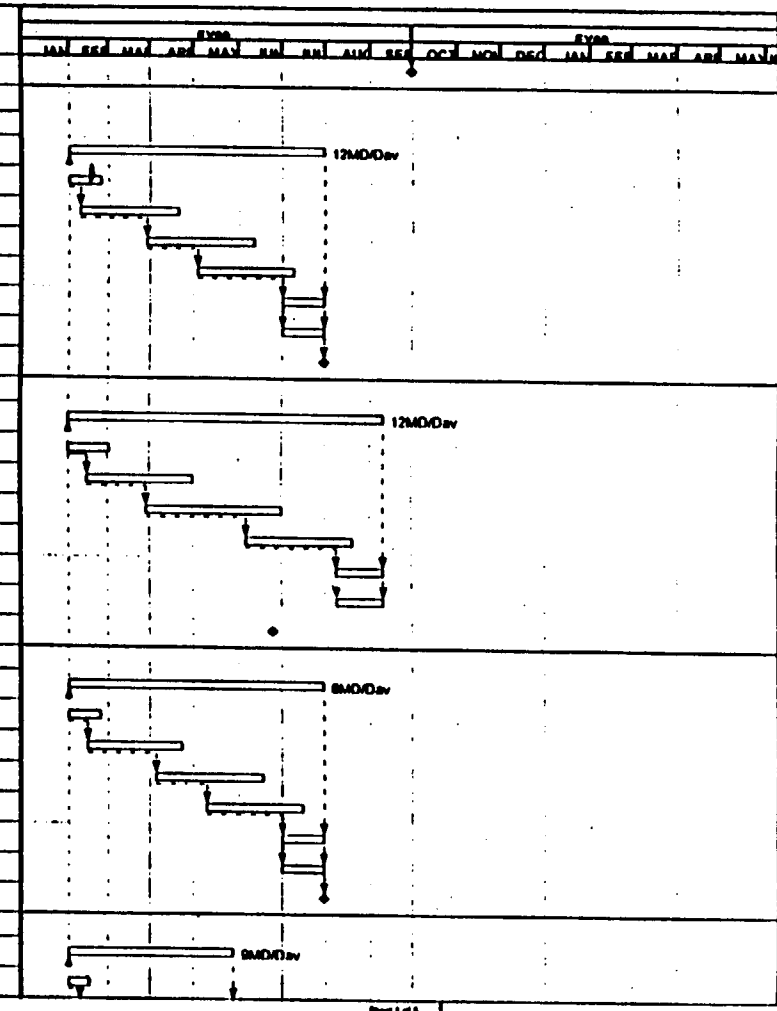
ENCLOSURE 2 DRAFT--Subject to DOE Direction and M&O Integration



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Budgeted Cost	EX
Remediation						
M&O CAR 98-002 (Incl. USGS) STEP 1						
00035	Identify data Sets for Verification (TBD)	0	01FEB99*	10FEB99	12,800.00	1
00050	Review and Correct as Needed (TBD Data)	245	01FEB99*	07JAN00	6,002,010.00	1
00040	Revise YAP SIII 3Q	0		15FEB99*	0.00	1
00060	Root Cause Determination Complete	0		03MAR99*	0.00	1
00065	Actions to Preclude Complete	0		15MAR99*	0.00	1
00045	TBV Numbers Assigned to Data Sets	0		03MAY99*	0.00	1
00055	Review TDMS to ID other LA DTN's	60	10JAN00	31MAR00*	12,000.00	1
00070	Rev & Correct Remaining DTN's	80	10JAN00*	28APR00	832,000.00	1
M&O CAR 99-001 (Incl. USGS) STEP 2						
00001	Extent of Conditions and Preclude Recurrence	57	01FEB99*	20APR99	273,600.00	1
00005	List of Reports Supporting VA	0		01MAR99*	0.00	1
00025	Review and Revise Old Documents	479	02MAR99*	28DEC00	6,613,600.00	1
00008	Complete Revision of Drift Scoping Report	0		26MAR99*	0.00	1
00010	Revise Procedures	0		30MAR99*	0.00	1
00007	System for Tracking Users and Evaluations Const.	0		02APR99*	0.00	1
00015	Training to Revised Procedures Completed	0		13APR99	0.00	1
00020	Root Cause Determination Complete	0		30APR99*	0.00	1
00030	Review Complete to Support TSPA/SR	0		28DEC00	0.00	1
M&O Scientific Notebooks (Incl USGS) STEP 3						
00075	Review Open Notebooks	43	01FEB99*	31MAR99	320,000.00	1
00085	Correct Open Noteb[illegible] (530)	130	01FEB99*	30JUL99	1,271,400.00	1
00080	All Active Notebooks Reviewed (530)	0		31MAR99*	0.00	1
00090	Review Inactive Notebooks (100)	54	01APR99*	15JUN99	80,800.00	1
00103	Review Selected Closed Notebooks (100)	32	03MAY99*	15JUN99	80,000.00	1
00105	Corrective Action on Inactive/Selected Nbks/200)	108	03MAY99	30SEP99	320,480.00	1
00100	Inactive Notebooks Reviewed	0		15JUN99	0.00	1
00095	Open Notebooks Corrected	0		30JUL99	0.00	1

Proposed QA Compliance Schedule
as of 27 Jan99 @ 8:00am
Attachment 4

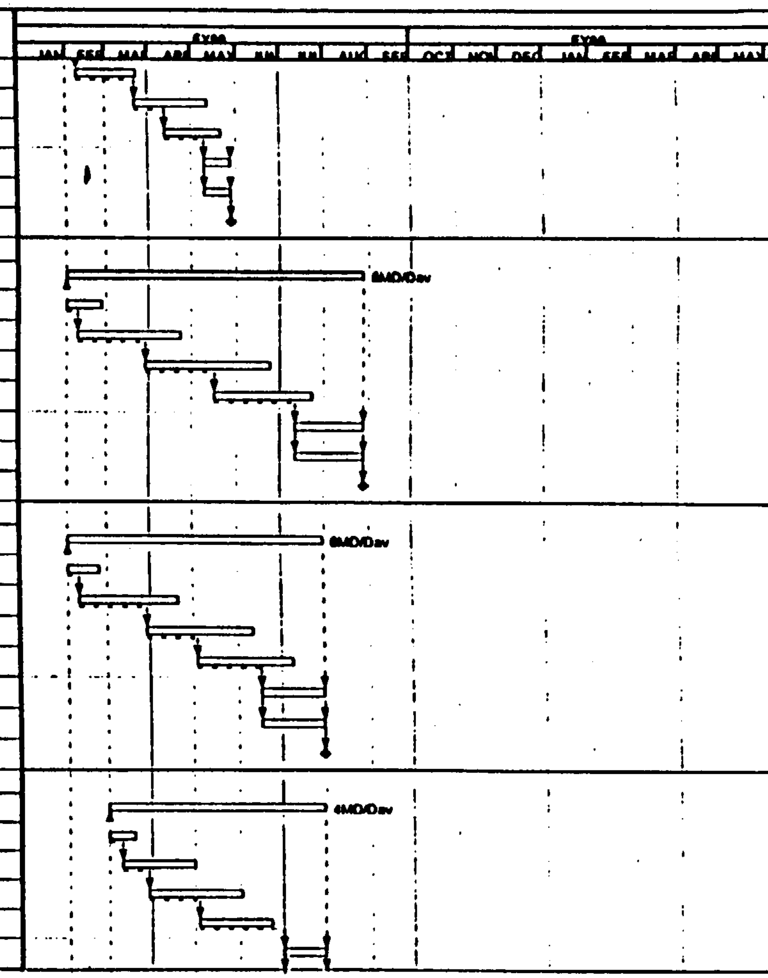
Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Budgeted Cost	EX
00110	Inactive Notebooks Corrected	0		30SEP99	0.00	1
Process Model Verification and Traceability						
UZ Site Scale Flow and Transport Model STEP 4						
00115	UZ Site Scale Flow & Transport Model	130	01FEB99*	30JUL99	1,248,000.00	1
00120	Prep Write Disc/ID Data Flow/Train Pers	17	01FEB99*	23FEB99	0.00	2
00125	ID Params/Values/Define Sources/Contrl Values	40	10FEB99*	19APR99	0.00	2
00130	Prepare Metadata Package	55	26MAR99*	11JUN99	0.00	2
00135	Review and Concurrence	40	03MAY99*	08JUL99	0.00	2
00140	Prepare Database Entry for TDMS	22	01JUL99*	30JUL99	0.00	2
00145	Entry in Run Controlled SMS	22	01JUL99	30JUL99	0.00	2
00146	Process Verified and Compliant	0		30JUL99	0.00	2
Integrated Site Model STEP 5						
00150	Integrated Site Model	160	01FEB99*	10SEP99	1,536,000.00	1
00155	Prep Write Disc/ID Data Flow/Train Pers	21	01FEB99*	01MAR99	0.00	2
00160	ID Params/Values/Define Sources/Contrl Values	55	15FEB99*	30APR99	0.00	2
00165	Prepare Metadata Package	66	26MAR99*	30JUN99	0.00	2
00170	Review and Concurrence	55	07JUN99*	20AUG99	0.00	2
00175	Prepare Database Entry for TDMS	25	09AUG99*	10SEP99	0.00	2
00180	Entry in Run Controlled SMS	25	09AUG99*	10SEP99	0.00	2
00182	Process Verified and Compliant	0		24JUN99	0.00	2
Net Infiltration/Surface Infiltration STEP 6						
00185	Net Infiltration/Surface Infiltration	130	01FEB99*	30JUL99	624,000.00	1
00190	Prep Write Disc/ID Data Flow/Train Pers	17	01FEB99*	23FEB99	0.00	2
00195	ID Params/Values/Define Sources/Contrl Values	40	15FEB99*	22APR99	0.00	2
00200	Prepare Metadata Package	55	05APR99*	18JUN99	0.00	2
00205	Review and Concurrence	40	10MAY99*	15JUL99	0.00	2
00210	Prepare Database Entry for TDMS	22	01JUL99*	30JUL99	0.00	2
00215	Entry in Run Controlled SMS	22	01JUL99*	30JUL99	0.00	2
00217	Process Verified and Compliant	0		30JUL99	0.00	2
UZ Drift Scale Flow/Seepage Model STEP 7						
00220	UZ Drift Scale Flow/Seepage Model	85	01FEB99*	28MAY99	612,000.00	1
00225	Prep Write Disc/ID Data Flow/Train Pers	11	01FEB99*	15FEB99	0.00	2



Early Bar
Progress Bar
Critical Activity

Proposed QA Compliance Schedule
as of 27 Jan99 @ 8:00am
Attachment 4

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Budgeted Cost	EX
00230	ID Params/Values/Define Sources/Deriv of Values	30	10FEB99*	23MAR99	0.00	2
00235	Prepare Metadata Package	37	22MAR99*	11MAY99	0.00	2
00240	Review and Concurrence	30	12APR99*	21MAY99	0.00	2
00245	Prepare Database Entry for TDMS	15	10MAY99*	28MAY99	0.00	2
00250	Entry to Run Controlled SMS	15	10MAY99	28MAY99	0.00	2
00252	Process Verified and Compliant	0		28MAY99	0.00	2
SZ Site Scale Flow & Transport Model STEP 8						
00255	SZ Site Scale Flow & Transport Model	150	01FEB99*	27AUG99	730,000.00	1
00260	Prep Wiring Diag/ID Data Flow/Train Pers	20	01FEB99*	26FEB99	0.00	2
00265	ID Params/Values/Define Sources/Deriv of Values	52	10FEB99*	22APR99	0.00	2
00270	Prepare Metadata Package	64	29MAR99*	24JUN99	0.00	2
00275	Review and Concurrence	50	17MAY99*	23JUL99	0.00	2
00280	Prepare Database Entry for TDMS	35	12JUL99*	27AUG99	0.00	2
00285	Entry to Run Controlled SMS	35	12JUL99	27AUG99	0.00	2
00287	Process Verified and Compliant	0		27AUG99	0.00	2
UZ Drift Scale Thermo Hydrology Model STEP 9						
00290	UZ Drift Scale Thermo Hydrology Model	130	01FEB99*	30JUL99	624,000.00	1
00295	Prep Wiring Diag/ID Data Flow/Train Pers	17	01FEB99*	23FEB99	0.00	2
00300	ID Params/Values/Define Sources/Deriv of Values	49	10FEB99*	19APR99	0.00	2
00305	Prepare Metadata Package	55	29MAR99*	11JUN99	0.00	2
00310	Review and Concurrence	49	03MAY99*	08JUL99	0.00	2
00315	Prepare Database Entry for TDMS	32	17JUN99*	30JUL99	0.00	2
00320	Entry to Run Controlled SMS	32	17JUN99	30JUL99	0.00	2
00322	Process Verified and Compliant	0		30JUL99	0.00	2
NF Chemical Water Composition Model STEP 10						
00325	NF Chemical Water Composition Model	110	01MAR99*	30JUL99	352,000.00	1
00330	Prep Wiring Diag/ID Data Flow/Train Pers	15	01MAR99*	19MAR99	0.00	2
00335	ID Params/Values/Define Sources/Deriv of Values	38	10MAR99*	30APR99	0.00	2
00340	Prepare Metadata Package	47	29MAR99*	01JUN99	0.00	2
00345	Review and Concurrence	38	03MAY99*	23JUN99	0.00	2
00350	Prepare Database Entry for TDMS	22	01JUL99*	30JUL99	0.00	2



Project Start [illegible]
Project Finish [illegible]
Data Date [illegible]
Run Date [illegible]

Early Bar
Progress Bar
Critical Activity

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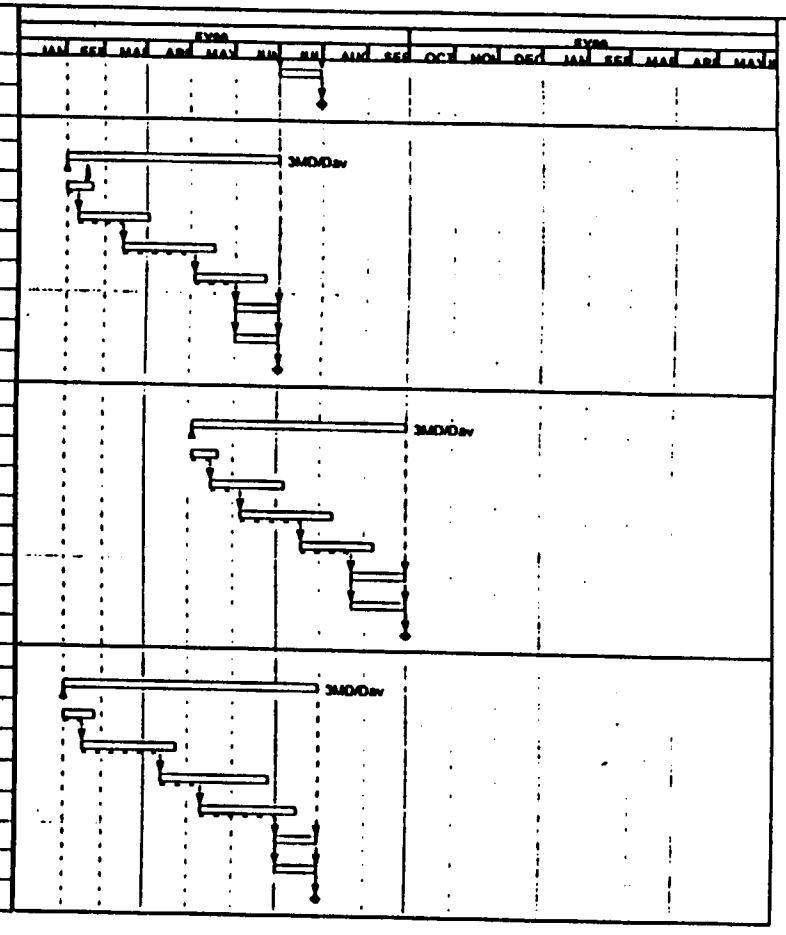
Proposed QA Compliance Schedule
as of 27 Jan99 @ 8:00am
Attachment 4

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Budgeted Cost	EX
00355	Entry to Run Controlled SMS	22	01JUL99	30JUL99	0.00	2
00357	Process Verified and Compliant	0		30JUL99	0.00	2
NFIAZ Radionuclide Retardation Solu Model STEP 11						
00360	NFIAZ Radionuclide Retardation/ASB Solu Model	108	01FEB99*	30JUN99	250,200.00	1
00365	Prep Wstnx Disp/ID Data Flow/Train Pers	15	01FEB99*	19FEB99	0.00	2
00370	ID Params/Values/Define Sources/Deriv of Values	37	19FEB99*	01APR99	0.00	2
00375	Prepare Metadata Package	46	15MAR99*	17MAY99	0.00	2
00380	Review and Concurrence	37	03MAY99*	22JUN99	0.00	2
00385	Prepare Database Entry for TDMS	22	01JUN99*	30JUN99	0.00	2
00380	Entry to Run Controlled SMS	22	01JUN99	30JUN99	0.00	2
00382	Process Verified and Compliant	0		30JUN99	0.00	2
Coupled THM Model STEP 12						
00400	THM Coupled Model	109	03MAY99*	30SEP99	261,800.00	1
00405	Prep Wstnx Disp/ID Data Flow/Train Pers	15	03MAY99*	21MAY99	0.00	2
00410	ID Params/Values/Define Sources/Deriv of Values	37	17MAY99*	08JUL99	0.00	2
00415	Prepare Metadata Package	46	07JUN99*	09AUG99	0.00	2
00420	Review and Concurrence	37	19JUL99*	07SEP99	0.00	2
00425	Prepare Database Entry for TDMS	20	23AUG99*	30SEP99	0.00	2
00430	Entry to Run Controlled SMS	20	23AUG99	30SEP99	0.00	2
00432	Process Verified and Compliant	0		30SEP99	0.00	2
GEMBOCHs & EQ36 STEP 13						
00437	GEMBOCH & EQ36	130	01FEB99*	30JUL99	312,000.00	1
00450	Prep Wstnx Disp/ID Data Flow/Train Pers	17	01FEB99*	23FEB99	0.00	2
00455	ID Params/Values/Define Sources/Deriv of Values	49	15FEB99*	22APR99	0.00	2
00460	Prepare Metadata Package	55	12APR99*	25JUN99	0.00	2
00465	Review and Concurrence	49	10MAY99*	15JUL99	0.00	2
00470	Prepare Database Entry for TDMS	22	01JUL99*	30JUL99	0.00	2
00475	Entry to Run Controlled SMS	22	01JUL99	30JUL99	0.00	2
00480	Process Verified and Compliant	0		30JUL99	0.00	2



Proposed QA Compliance Schedule
as of 27 Jan99 @ 8:00am
Attachment 4

DRAFT- Enclosure 3: Crosswalk from CR 99-00[illegible] to Proposed Licensing Support Reports-DRAFT

	Existing CR99-003 M3 Milestones				Proposed New Reports							
	ID No.	Ti	Due Date	Status / Work Package	Int. Site Model July 1999	UZ F&T Model March 2000	SZ F&T Model April 2000	NFE Models March 2000	Site Description February 2000	Disrupt. Events* June 2001	Nat'l Resources June 2001	Comments / Recommended Action
FY98	SP23GM3	Natural Resources Final Report	02-Jun-97	rejected							1	A
	SP3982M3	Predictive Report for USW SD-6 Borehole	29-Aug-97	rejected								A
	SP24M3	Seismic Design Inputs for a Geol. Repos. At YM	25-Feb-98	in review DOE						1		A
	SPG28LM3	Deterministic Evals for Type 1 faults at YM	19-Dec-97	in review DOE						1		A
	SP3983M3	Analysis of Predictions for USW WT-24 Borehole	14-Aug-98	Incomplete								A
	SPG720M3	Report: Geodetic Network Survey	18-Sep-98	in review DOE								Will complete
	SP3CKJM3	Update UZ Hydrologic Flow Model	30-Sep-98	Relief Ltr pending		0						A
	SP33PBM3	Fracture Flow & Seepage testing in ESF	31-Mar-99	Relief Ltr pending		0						A
FY99	SPQ301M3	Rpt: R1 Draft EBF Geology/Hydrology	23-Dec-98	14016105M2								Completed
	SP3515M3	Ghost Dance Fault Data Pkg and Testing Report	30-Mar-99	81912025U1								In USGS review, will complete
	SPG258M3	Preliminary Geologic Map for SZ Site Area	05-Mar-99	81912210U1								In USGS review, will complete
	SPG630M3	Submit UZ-7a & UZ-14 Rpt for Director's Approval	15-Mar-99	81912210U1	0							A
	SPQ303M3	Rpt: R1 EBF Geology/Hydrology	23-Mar-99	14016105M2								Will be completed to support EIS
	SP32K5M3	Rpt: Integrated Site Model 3 0 Report	31-Mar-99	14012210M1								A
	SPG42GM3	Geo/Geotech Data Im X-Block Drift Project	31-Mar-99	81912050U2	0				0			A
	SP32E1M3	Rpt: Prow Pass Reactive Tracer Test	01-Apr-99	14012029M1			0					A
	SP3120M3	Rpt: Single Heater Test Final Report (L3)	14-Apr-99	14012270M1				0				A
	SP32P4M3	Rpt: ISM3.1 Addendum to ISM3.0 report	28-May-99	14012210M1	0							A
	SP327KM3	Rpt: Prelim WHB Geotechnical Rpt	28-May-99	14012210M3								Will complete to support SFO
	SP9904M3	Rpt: Final LBT Report	12-Aug-99	14012033M1				0				A
	SP399CM3	Rpt: NF/AZ Environment Rpt Volume 1, Rev 2	30-Aug-99	14012035M2				0				A
	SPQ224M3	Rpt: R1 Seismic Design Basis Inputs	31-Aug-99	14016105M2						1		A
	SP3880M3	Rpt: Drift Scale Test Progress Report #2	29-Sep-99	14016107M2				0				A
	SPG452M3	Report: Geometry & Chars of Fault Zones at YM	30-Sep-99	81912210U1	1				0			A
	SPG640M3	Report: Correlation of Litho & Geophysical Data	30-Sep-99	81912210U1	1							A
FY00	SP8183M3	Rpt: Natural Analogue Synthesis report for LA	19-Oct-99	14016105M4		0	0	0				A
	SP33K2M3	Rpt: Subsurf Dist of Natural, Bomb-Pulse Radion	15-Dec-99	140120522P		0						A
	SP243M3	Rpt: NF/AZ Models Rpt Rev 1	19-Jan-00	140122532L				0				A
	SP33K3M3	Rpt; Ambient Drift Scale Model for SR	31-Jan-00	140120272P		0						A
	SP3538M3	UZ F&T Model for SR	18-Jan-00	140120272M		0						A
	SP8310M3	Rpt: Natural Analogues for Perform Confirm	31-Mar-00	140161052P		1	1	1				A
	SPQ317M3	Rpt: R1 YMSD	03-Apr-00	140161052M					0			A
	SPV248M3	Rpt: SZ F&T Model for SR	28-Jan-00	140120312L			0					A
	SP33T9M3	Rpt: Moisture Monitoring & Plume Evaluation	31-Aug-00	140120522P		1						A
	SPC315M3	Rpt: Dyn/Static Testing for FF Seepage & Pondage	29-Sep-00	140120522P		1						A
	SP3882M3	Rpt: Drift Scale Test Report to LA	29-Sep-00	140161072M				1				A
	SP45JM3	UZ Update Model for LA	29-Sep-00	140186072M								A
FY01	SPU80M3	Rpt: Summ/Synth Geochem Lab & Trsnprt Tst	06-Oct-00	1401860522					1			A
	SP3489M3	Rpt: Busted Butte LA Results	12-Dec-00	1401860522		1						A
	SPL505M3	NF/AZ Models Report Rev 2	28-Feb-01	140186152I				1				A
	SP3883M3	Rpt: Drift Scale Test Progress Report #4	28-Sep-01	1401612022				1				A
	SP45KM3	UZ Site Flow & Transp Model	28-Sep-01	1401860722		1						A

* NEPO responsibilities for disruptive events includes PVHA & PSHA only.

0 - indicates data and analyses will be incorporated into one or more of the proposed new reports in time to support TSPA-SR r0. Existing M3 (CR99-003) will be deleted.

1 - indicates data and analyses will be incorporated into one or more of the updated proposed new reports in time to support TSPA-LA r2. Existing M3 (CR99-003) will be deleted.

A. Discontinue work on these reports; submit existing data as appropriate to DMS; refocus future work on preparation of the PMRs; delete Level 3 deliverable requirements from ba

M&O-99-008: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative (EDA) II

Reference Summary

1. Letter LV.NS.JKC.02/99-003, D. R. Wilkins to J. R. Dyer, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated February 9, 1999.

2. Letter OPS:NSG-0814, J. J. Adams to D. R. Wilkins, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated February 12, 1999.

3. Letter LV.PP&C.CJN.2/99-021, D. R. Wilkins to J. R. Dyer, Response to U. S. Department of Energy (DOE) Letter, dtd. February 12, 1999, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated March 4, 1999.

4. Letter OPC:JRS-1012, J. R. Dyer to D. R. Wilkins, U. S. Department of Energy (DOE) Guidance for Refocus Change Request (CR), dated March 25, 1999.

5. Briefing 1999-043cjn Rev. 1, prepared by C. J. Nesbitt, III, PMR, Data Qualification and LADS Change Request Status, dated April 13, 1999.

6. Management Plan and Response to Corrective Action Requests (CARs) LVMO-98-002 (CAR-002), LVMO-98-005 (CAR-005), LVMO-98-006 (CAR-006), and LVMO-98-010 (CAR-010), Revision 2, dated November 30, 1998.

7. Data, Model and Code Qualification/Validation and Control Plan, dated December 1998.

8. Project Operations and Review Board (PORB) Minutes & Actions, dated April 15, 1999.

Reference 2

Letter OPS:NSG-0814, J.J. Adams to D.R.Wilkins, Request for Approval to Upgrade Plans for Addressing High Priority Tasks, dated February 12, 1999.

Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, NV 89036-0307

FEB 12 1999

QA: N/A

D. R. Wilkins
Acting President and General Manager
TRW Environmental Safety Systems, Inc.
1261 Town Center Drive, M/S 423
Las Vegas, NV 89134-6352

REQUEST FOR APPROVAL TO UPGRADE PLANS FOR ADDRESSING HIGH PRIORITY TASKS

Your letter of February 9, 1999 requested approval to implement changes to address redefining and focusing your work efforts including quality assurance deficiencies and improve process validation and reengineering activities at the Civilian Radioactive Waste Management System Management and Operating Contractor. In general, we believe the proposed approach will benefit the program, but we are not yet prepared to approve deletion of Level 3 deliverables. Instead, you are hereby granted a two-week extension for the specific Level 3 deliverables that are proposed for deletion. You are also authorized to begin the interim work identified in your February 9, 1999 letter on condition that you also provide Yucca Mountain Site Characterization Office (YMSCO) with a detailed plan, including final cost and schedule, for the proposed Change Request, no later than February 26, 1999. The plan must also include a justification for the proposed deletion of each Level 3 deliverable. In addition, your plan should provide how you would propose to provide assurance to YMSCO as to the progress and adequacy of Process Model Reports being developed.

In addition, we wish to provide the enclosed comments. These comments need to be discussed and resolved with YMSCO staff between now and February 26, 1999, such that your plan incorporates resolution of these concerns.

No decisions regarding additional funding will be made until YMSCO has evaluated the plan requested above.

Jerri J. Adams
Contracting Officer

OPS:NSG-0814

YMP-5

Enclosures:
1. Comments on Wilkins to Dyer letter, dated February 9, 1999
2. Agreements Reached

cc w/encls:
Richard Toft, MTS, Las Vegas, NV
J. N. Bailey, M&O, Las Vegas, NV
J. K. Clark, M&O, Las Vegas, NV, Room 407
E. J. McDonnell, M&O, Las Vegas, NV
C. J. Nesbitt III, M&O, Las Vegas, NV
R. G. Vawter, M&O, Las Vegas, NV
J. L. Younker, M&O, Las Vegas, NV
A. B. Benson, DOE/YMSCO, Las Vegas, NV
Stephan Brocoum, DOE/YMSCO, Las Vegas, NV
R. W. Clark, DOE/YMSCO, Las Vegas, NV
J. R. Compton, DOE/YMSCO, Las Vegas, NV
W. R. Dixon, DOE/YMSCO, Las Vegas, NV
J. R. Dyer, DOE/YMSCO, Las Vegas, NV
D. G. Horton, DOE/YMSCO, Las Vegas, NV
V. F. Iorii, DOE/YMSCO, Las Vegas, NV
W. N. Kozai, DOE/YMSCO, Las Vegas, NV
J. M. Replogle, DOE/YMSCO, Las Vegas, NV
S. L. Rives, DOE/YMSCO, Las Vegas, NV
R. E. Spence, DOE/YMSCO, Las Vegas, NV
V. W. Trebules, Jr., DOE/YMSCO, Las Vegas, NV
M. E. Van Der Puy, DOE/YMSCO, Las Vegas, NV
D. R. Williams, DOE/YMSCO, Las Vegas, NV
Records Processing Center = "3"

COMMENTS ON WILKINS TO DYER LETTER DATED FEBRUARY 9, 1999

1. We agree in principal to the concept of development of the Process Model Reports (PMR). The government needs assurance that the data originally intended to be contained in the proposed canceled deliverables is in fact included in the PMRs with appropriate quality and traceability pedigrees or if not included, the reason for not including. However, you should develop a strategy and schedule that includes periodic reporting on the progress of putting the Technical Data directly into the TDMS. This could be in the form of draft PMR chapters or sets of chapters for DOE's review.

2. The proposed incorporation of technical data directly into the Technical Data Management System, Model Warehouse and Software Library without benefit of level three deliverables is not objectionable. No direct prerequisite for a Level 3 to do this was ever intended. The level three's were intended to provide rollups of data and analyses such that other labs and team mates could use them, the government could measure progress and our constituencies could see early results of our work.

3. The proposed work at the ECRB and SD-6 should be pursued only if data collection and analysis continues and does not impact other major field projects. (Since we have authorized early starts on both of these activities, this determination needs to be made quickly.) This includes Busted Butte, SZ testing in support of Nye County, and the thermal testing program. The detailed scope and schedules should provide these assurances.

4. The proposed time line for creating this effort appears to be appropriate. The scope and schedules will need to be prepared to an appropriate level of detail to provide confidence in the execution and completion of this planned approach.

5. Past fiscal year deliverables should be submitted with acceptable content in accordance with the deliverable acceptance criteria.

6. Current fiscal year reports, such as borehole reports (i.e., SPG 630M0), should be completed because they contain basic geologic and operational information that is not conducive to incorporation into PMRs.

7. No specific deliverable can be deleted until we have detailed assurances that the scope and schedule of the PMRs is complete and will satisfy the requirements of the site recommendation and License Application.

8. We would need rationale prior to considering deletion of RPA 256M3. Based on the highly prioritized principal factors, specifically seepage into drifts and corrosion of the waste package, this deliverable should be very important.

9. Without Chapter 3 and Chapter 8 of the Working Draft License Application (WDLA), how can you consider the document a working draft of the LA? It is suggested you rename the deliverable so as not to imply that a working draft of the LA is being prepared.

10. Under Support Operations, there were three deliverables identified for deletion. You will need to have discussions and provide rationale for deletion of these deliverables.

11. Under Support Operations, there were five deliverables identified to review to determine if alternate documentation methods improve efficiency. Without appropriate and adequate justification, we recommend these deliverables remain as they are. Some of these have been directed either by the Department or by law to be implemented.

12. You indicated using a draft Table of Contents (TOC) for the proposed PMRs to allow you to further focus attention on the data, models and codes that need to be fully traceable and transparent to support the Site recommendation and License Application. When would you propose sharing these draft TOCs with YMSCO?

13. The proposed changes must fully document and support the deletion or delay of work and refocus of other efforts in scope, schedule and cost.

14. In addition to working with the YMSCO staff, you should include the OQA in appropriate discussions and meetings.

15. Included is a brief set of questions and concerns dated February 8, 1999, from the Office of Licensing and Regulatory Compliance. Please assure these items, if not included specifically above, are addressed during the next two weeks.

February 8, 1999 Q.A. Discussion: OLRC

Agreements Reached

1. It is of utmost importance to fix the problem.

2. Presentation Sufficiency Questions.

Unknown: How long?
How much?
QA criteria/process.
PMR process.
What work is deferred?
Data needs SR/LA.
Crosswalk on commitments.

Concerns: Concern on sufficiency of resources.
~Won't be done this year.
~Interpretation question—May need level 3 deliverables.
~Impact on current LA strategy unknown. Implies a different strategy. Topical Reports—2 years start to finish.
~Need more QA assistance.
~Concern on whether the M&O has knowledge and commitment and will provide the oversight to preclude recurrence.
~Need to inform lower levels of the problem.
~Public Affairs need to provide support to deal with external issues.
~Some new work is an essential and should not be deferred, i.e., Calico Hills and SZ models are not sufficient—need new data rather than fix old models.
~Perhaps we should focus on new models with the right vigor rather than a top to bottom review of VA models which may be out-dated.

Reference 3

Letter L.V.PP&C.CJN.2/99-021, C.J. Nesbitt to J.R. Dyer, Response to U.S. Department of Energy (DOE) Letter, dated February 12, 1999, Request for Approval to Upgrade Plans for Addressing High Priority Task, dated March 4, 1999.

W Environmental
sty Systems Inc.

1261 Town Center Drive
Las Vegas, NV 89134
702.295.5400

QA: N/A

Contract #: DE-AC08-91RW00134
LV.PP&C.CJN.2/99-021

March 4, 1999

J. R. Dyer, Project Manager
U.S. Department of Energy
Yucca Mountain Site
Characterization Office
P.O. Box 30307
North Las Vegas, Nevada 89036-0307

Dear Dr. Dyer:

Subject: Response to U.S. Department of Energy (DOE) Letter, dtd. February 12, 1999, Request for Approval to Upgrade Plans for Addressing High Priority Tasks

As directed in the referenced letter, the Civilian Radioactive Waste Management System (CRWMS) Management and Operating Contractor (M&O) has initiated interim work that will be reflected in a future Change Request, pursuant to Yucca Mountain Site Characterization Office (YMSCO) guidance.

This letter provides information that we hope will be useful as you develop guidance for our replanning effort. The M&O is committed to developing the Baseline Change Request and submitting the necessary paperwork four weeks after receipt of your guidance. In the same time frame, we also plan to develop Change Requests for SD-6, for new work in the cross-drift, and for additional waste package materials testing.

Included in this letter are updated, yet still preliminary, schedules and estimates of the costs to refocus the Fiscal Year 1999 (FY99) M&O work plan on high priority tasks that are essential for developing the documentation and traceability for the Site Recommendation (SR) and License Application (LA). Although you requested that we provide <u>final</u> cost and schedule by February 26, 1999, we are unable to do so at this time because Tiger Team and Process Model Report activities, which will ultimately define the full scope of our efforts, have not been completed. We have, however, been able to refine our FY99 cost estimates and anticipate narrowing the uncertainties by the time the formal Change Request is submitted.

You will note that our earlier claims that we would gain substantial "credits" for deletion of Level 3 Deliverables, deferral of work, and other efficiencies has not been supported after more detailed analyses. The reason for this appears to be three-fold: 1) reluctance to eliminate or defer work scope due to potential impacts on major milestones; 2) recognition that preparation of the AP-3.10Q Analyses and Models documents that are the building blocks for the Process Model Reports will require substantially more effort than in our original concepts for these Reports; and, 3) inadequate definition of upgrades to the Technical Information Management System that are needed to place controls on data, models and codes that are used for SR and LA.

The enclosure to this letter contains the M&O's responses to the comments in your February 12, 1999, letter. Additional information is provided in eight attachments to the enclosure.

The goal of this replanning effort is to focus our work activities on resolving important quality deficiencies and developing and implementing a more efficient set of work control processes. The ultimate objective is to ensure that we have a credible, defensible technical basis for SR/LA. You will note in Attachment 1 that impacts of this reprioritization include delays in analysis of data and upgrades to some process models. In some cases, bounding analyses will replace more uncertain aspects of process models. We recognize that concerns have been raised that deviations from the work scope defined in Volume 4 (License Application Plan) of the Viability Assessment will be viewed as weakening the basis for the SR/LA. While this is a valid concern, we believe the value of strengthening the traceability and transparency of the technical basis for the SR/LA far outweighs the risks of proceeding with uncertainties in some aspects of site and engineering performance. The safety case that is developed for SR/LA will need to explicitly address these uncertainties.

We look forward to your guidance and are ready to begin work on the Change Request immediately. In an effort to ensure good communications and timely disposition, we propose that our key managers brief you and your designated staff at the soonest available opportunity on the details of this letter.

If you have further questions, please call me at 295-5143.

Sincerely,

Jean L Younker for

Daniel R. Wilkins, Assistant General Manager
Monitored Geologic Repository
Management and Operating Contractor

DRW/cw

Enclosure:
Responses to Comments
- Attachment #1 - Deliverable Table and Impact Assessment Summary
- Attachment #2 - Schedule
- Attachment #3 - Schedule Activity Descriptions
- Attachment #4 - Cost Estimate
- Attachment #5 - Description of Process Model Report Concept
- Attachment #6 - Annotated Table of Contents/Outline, Process Model Report (Typical)
- Attachment #7 - Model and Analysis Hierarchy Example
- Attachment #8 - Response to Questions and Concerns from Office of Licensing and Regulatory Compliance

cc w/encls:
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J. N. Bailey, M&O, Las Vegas, NV, M/S 423
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•Tony Brothers, M&O, Las Vegas, NV, M/S 423
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C. E. Hampton, DOE/YMSCO, Las Vegas, NV, M/S 523
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•R. G. Helms, M&O, Las Vegas, NV, M/S 423
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cc e/encls: (continued)
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H. C. White, DOE/YMSCO, Las Vegas, NV, M/S 523
C. A. Willard, M&O, Las Vegas, NV, M/S 423
J. L. Younker, M&O, Las Vegas, NV, M/S 423
RPC = 43 pages

Enclosure to March 4, 1999 ltr., Wilkins to Dyer

RESPONSES TO COMMENTS IN DOE'S LETTER OF FEBRUARY 12, 1999

COMMENT #1 (Main body of DOE letter)
"The plan must also include a justification for the proposed deletion of each deliverable "

RESPONSE: The M&O has prepared a detailed response covering each deliverable. Attachment #1 contains the matrix of affected deliverables and workscope and our recommended disposition.

COMMENT #2 (Main body of DOE letter)
"In addition, your plan should provide how you would propose to provide assurance to YMSCO as to the progress and adequacy of Process Model Reports (PMRs) being developed "

RESPONSE: Preparation of Process Model Reports will require a significant amount of integration among the M&O Operations and between the M&O and DOE. In order to assure visibility and timely reporting of progress, we have established a reporting structure that aligns with our Product/Sub-Product configuration. Process Model Reports will be managed as one of the Sub-Products to the License Application, with each Process Model Report produced as a specific Sub-Product Element, as shown below.* This process will also be coordinated with the Site Recommendation schedule.

Product	Sub-Product	Sub-Product Element *
LA	Process Model Reports	1. Integrated Site Model (ISM 3.1) 2. Unsaturated Zone Flow and Transport 3. Saturated Zone Flow and Transport 4. Near Field Environment 5. Waste Package Degradation 6. Waste Form Degradation 7. Engineered Barrier System Degradation and Flow/Transport Model 8. Biosphere

We propose to conduct joint DOE/M&O status meetings every two weeks to assist in the integration and resolution of issues. These meetings, which will be initiated after DOE approves the Change Request, will be conducted by the M&O LA Product Manager and the Process Model Report Sub-Product Manager. The frequency of these status meetings will be adjusted depending on the progress of the efforts.

COMMENT #3 (DOE Enclosure item #1)
"The government needs assurance that the data originally intended to be contained in the proposed cancelled deliverables is in fact included in the PMRs with the appropriate quality and traceability pedigrees or, if not included, the reason for not including. However, you should develop a strategy and schedule that includes periodic reporting on the progress of putting the

* These Sub-Product Elements will be at the same level for reporting purposes as the current PSS activities.

technical data directly into the Technical Data Management System (TDMS). This could be in the form of draft PMR chapters or sets of chapters for DOE's review "

RESPONSE: A tabulation of the deliverables that have been proposed for cancellation with correlations to PMRs is provided in Attachment #1. The strategy for developing PMRs is embedded in the schedule logic for each of the eight (8) proposed PMRs and is provided in Attachment #2; an explanation for each of the scheduled activities is provided in Attachment #3. A concept for tracking and reporting progress was described in our response to comment #2 above.

COMMENT #4 (DOE Enclosure item #2)
"The proposed incorporation of technical data directly into the Technical Data Management System, Model Warehouse and Software Library without benefit of level 3 deliverables is not objectionable. No direct prerequisite for a level 3 to do this was ever intended. The level three's were intended to provide rollups of data and analyses such that other labs and teammates could use them, the government could measure progress and our constituents could see early results of our work "

RESPONSE: We expect data, models and codes to be obtained from controlled sources to ensure traceability and revision control for all documents supporting the Site Recommendation and License Application. The current concept for the "Model Warehouse" is a compilation of AP-3.10Q Analyses and Models. These analyses and models are documented and controlled according to the AP-3.10Q procedure.

COMMENT #5 (DOE Enclosure item #3)
"The proposed work at the ECRB and SD-6 should be pursued only if data collection and analysis continues and does not impact other major field projects. (Since we have authorized early starts on both of these activities, this determination needs to be made quickly). This includes Busted Butte, SZ testing in support of Nye County, and the thermal-testing program. The detailed scope and schedules should provide these assurances "

RESPONSE: Field schedules for ECRB construction/drilling/testing and surface-based drilling/testing have been coordinated, and these activities will have no impact on other field construction or data collection activities during the remainder of FY99 and FY00. Working schedules for the ECRB and SD-6 are being developed and can be shared with your staff. Integration in FY01 and beyond would be a part of the annual update of the program in those out-years.

During preparation of more detailed working schedules, a window of opportunity was identified on the schedule for aquifer testing at SD-6. While aquifer testing is conducted, the drilling crew could be used for a month to breakdown the test bed at the c-wells complex. This will allow recovery of downhole instrumentation and allow for closing calibrations. We propose that this extra, minimal effort be added to the SD-6 CR. If the breakdown at c-wells was not approved, we would have to locate work elsewhere for the drillers during the active aquifer testing at SD-6. During this period, we still need full time availability in case a need arises, but normally, minimal labor support is necessary.

Data collection activities in the ECRB and SD-6 will have minimal impact on other ongoing activities, including the focused work on quality assurance deficiencies and PVAR. For the USGS, subcontractors and technicians would collect the data. USGS staff would not analyze the data collected until they are released from the higher priority activities. Staff from LBNL would also delay any analysis until the tiger team traceability efforts are complete.

The M&O has initiated preparation of Change Requests for SD-6 and ECRB testing and will be coordinating them with the Quality Assurance refocus effort during the month of March 1999.

COMMENT #6 (DOE Enclosure item #4)
"The proposed time line for creating this effort appears to be appropriate. The scope and schedules will need to be prepared to an appropriate level of detail to provide confidence in the execution and completion of this planned approach "

RESPONSE: We have prepared schedules for this effort as identified in the response to Comment #3. When guidance to proceed is received, we will further develop the logic to show discrete activities, such as individual 3.10Q analyses, feeding each PMR. This schedule will be part of the CR submission.

COMMENT #7 (DOE Enclosure item #5)
"Past fiscal year deliverables should be submitted with acceptable content in accordance with the deliverable acceptance criteria "

RESPONSE: We concur with this comment and will submit deliverables per prescribed acceptance criteria. Any exceptions are addressed in Attachment #1.

COMMENT #8 (DOE Enclosure item #6)
"Current fiscal year reports, such as borehole reports (i.e. SPG 630M0), should be completed because they contain basic geologic and operational information that is not conducive to incorporation into PMRs "

RESPONSE: The report in question is mislabeled as SPG630M0 - it should be labeled as SPG630M3. This deliverable does not appear in Attachment #1 and USGS will complete this deliverable as planned.

COMMENT #9 (DOE Enclosure item #7)
"No specific deliverable can be deleted until we have detailed assurances that the scope and schedule of the PMRs is complete and will satisfy the requirements of the Site Recommendation and License Application "

RESPONSE: The table in Attachment #1 and schedule in Attachment #2 provide the general logic from data verification and traceability through PMR development with links to SR and LA.

COMMENT #10 (DOE Enclosure item #8)
"We would need rationale prior to considering deletion of RPA256M3. Based on the highly prioritized principal factors specifically seepage into drifts and corrosion of the waste package, this deliverable should be very important."

RESPONSE: The scope for this deliverable RPA256M3 was to prepare a report that documented the results of laboratory tests and the tests performed in the EBS test facility for the determination of water movement through emplacement drifts at Yucca Mountain. The tests are being performed in accordance with appropriate quality assurance procedures. The conduct of the tests is being documented in scientific notebooks. The data generated by these tests are being submitted, following data submittal procedures, to the Technical Database Management System (TDMS) where they can be traced using their data tracking number (DTN).

This deliverable would have compiled test results (already transmitted to the TDMS) into a single document. A deliverable report would contain no new information beyond that previously submitted to the TDMS. All analyses and modeling that uses these data will be conducted under AP-3.10Q. Upon completion of testing, a letter documenting that test results have been transmitted to the TDMS will be sent to DOE in lieu of RPA256M3.

COMMENT #11 (DOE Enclosure item #9)
"Without Chapter 3 and Chapter 8 of the Working Draft License application (WDLA), how can you consider the document a working draft of the LA? It is suggested that you rename the deliverable so as not to imply that a working draft of the LA is being prepared."

RESPONSE: The new name for the deliverable will be Working Draft License Application Outline (WDLAO). This has been discussed with and agreed to by the YMSCO Assistant Manager for Licensing and Regulatory Compliance and the LA Team Lead.

COMMENT #12 (DOE Enclosure item #10)
"Under Support Operations, there were three deliverables identified for deletion. You will have to have discussions and provide rationale for deletion of these deliverables."

RESPONSE: Deliverable BM205IM3 (CRWM Internet/Intranet Guidelines) was completed and accepted by the Document Control Center on February 23, 1999. Deliverable BM203AM3 (Complete Implementation of Public Access) is a certification letter not subject to YAP-30.12 review. Deliverable BM207BM3 (Update and Re-Issue the Computer Protection Program Plan) is required by DOE Order 1360.2B and is not subject to YAP-30.12 review. Upon further analysis, including discussions with the client, it has been determined that no cost savings would be achieved by changing the status of these deliverables. They are recommended to remain as Level 3 Deliverables.

COMMENT #13 (DOE Enclosure item #11)
"Under Support Operations, there were five deliverables identified to review to determine if alternate documentation methods improve efficiency. Without appropriate and adequate justification, we recommend these deliverables remain as they are. Some of these have been directed either by the Department or by law to be implemented."

RESPONSE: Deliverable BM205NM3 (Y2K Certification Letter for OCRWM Systems) is a simple certification letter not subject to YAP-30.12 review. Similarly, Deliverables BM207CM3 (Planning Procedure for IT Capital Investments); BM207DM3 (IT Architecture Baseline Document); and BM205OM3 (Year 2000 Business Continuity Plan) are not subject to YAP-30.12 reviews. Finally, deliverable BM2071M3 (IT Investment Portfolio for FY 2000) is required by the Clinger-Cohen Act and is not subject to YAP 30.12 review. Upon further

analysis, including discussions with the client, it has been determined that no cost savings would be achieved by changing the status of these deliverables. They are recommended to remain as Level 3 Deliverables.

COMMENT #14 (DOE Enclosure item #12)
"You indicated using a draft Table of Contents (TOC) for the proposed PMRs to allow you to further focus attention on the data, models and code that need to be fully traceable and transparent to support the Site Recommendation and License Application. When would you propose sharing these TOCs with YMSCO?"

RESPONSE: A generic annotated TOC is provided in Attachment #6. All Process Model Reports will have a similar format, and as the schedules in Attachment #2 show, a more detailed TOC will be developed for each Process Model Report as one of the first activities. These TOCs will provide format and content information that is specific to each Process Model Report.

COMMENT #15 (DOE Enclosure item #13)
"The proposed changes must fully document and support the deletion or delay of work and refocus on other efforts in scope, schedule and cost."

RESPONSE: We have provided information in Attachments #1 through #3 documenting the deletion, delay or modification of baseline work scope; general schedules for data verification and traceability; PVAR; corrective actions; and PMR development. We have provided additional fidelity in the preliminary cost estimate that will be further refined in the upcoming CR. The current estimate for this effort is provided in Attachment #4.

COMMENT #16 (DOE Enclosure item #14)
"In addition to working with the YMSCO staff, you should include the OQA in appropriate discussions and meetings."

RESPONSE: We have included OQA in this replanning effort. As part of the ongoing coordination and integration, OQA has evaluated its internal support requirements to meet the milestones and commitments being developed by the M&O. OQA's evaluation indicates that an estimated $550 K of additional funding for FY99 is needed to support the M&O in the remediation and PVAR efforts. We will include more detailed backup as an attachment to our proposed CR to be submitted after receipt of your guidance. The backup will provide a definition of the additional scope and rationale for increased resource needs. For purposes of providing you with a total estimate of the costs of this replanning effort, the $550 K has been identified as a line item in Attachment #4.

COMMENT #17 (DOE Enclosure 2, dated February 8, 1999 titled: <u>Agreements Reached</u>)

RESPONSE: Enclosure 2 presents several questions and concerns that have already been addressed in one or more of our responses to comments #1 through #16 above, as well as some new ones. Attachment #8 provides a response to each of the questions and concerns raised. Where these questions or concerns have been addressed elsewhere in this transmittal, Attachment #8 directs the reader to that location.

ADDITIONAL INFORMATION, NOT DIRECTLY MAPPED TO DOE LETTER

1. PVAR:

We conducted an assessment of PVAR efforts remaining through the end of FY99. The assessment included requirements for PVAR Management, focused Subject Matter Expert (SME) support, procedure development and revision support, training and other implementation needs. It also included PVAR activities for a second set of administrative and support processes scheduled for completion prior to the end of this FY. The current approved budget does not cover the full scope of the proposed effort. We will include the rationale, scope and schedule for the additional effort in the upcoming CR. Attachment #4 provides the estimated increased cost for PVAR resulting from the assessment.

2. CAB (CORRECTIVE ACTION BOARD)

The CAB was not in our original work scope for FY 99. We have developed an estimate for the CAB function and a line item is provided for CAB in the Cost Estimate, Attachment #1.

3. WBS STRUCTURE

We recommend that YMSCO consider modifying the current WBS structure to incorporate a new Subproduct under the LA product titled "Process Model Reports." The M&O would then assign each of the eight (8) proposed PMRs to Subproduct Elements that would be at the same level as the current PSS activities. This approach would provide YMSCO detailed insight into the progress of cost and schedule for each PMR. This recommendation ties to our recommended approach to progress reporting provided in our response to Comment #2 above.

4. MODEL AND ANALYSIS HIERARCHY EXAMPLE

We have developed a model and analysis hierarchy example for the unsaturated zone, which is provided in Attachment #7. This hierarchy extends from the abstracted models used as inputs to TSPA, down to the process models, and ultimately to the data and software used to support the process model. This level of detail will be developed and provided in the detailed schedules that will be incorporated in the upcoming CR for all eight (8) proposed PMRs.

Attachment 1: Impacts to M&O and USGS FY99 Workscope and Deliverables Resulting from Refocus on High Priority Quality Assurance Initiatives

Account	Impacted Work	Deliverable	Deliverable Abbreviated Title	Deliverable Current Date	Planned Deliverable Disposition Under QA Refocus Initiative
NEPO					
2021 Design Alternatives	No impact	NA	NA	NA	NA
2025 Seepage/UZ Flow & Transport	No impact	None planned for FY99	NA	NA	NA
2027 UZ Flow & Transport	Inputs and improvements to mineralogy, THC, geostatistical and two and three dimensional radionuclide transport modeling delayed until FY00	None planned for FY99			
2029 SZ Data Collection and Analysis	No impact	SP32E1M3	Rpt: Prow Pass Reactive Tracer Test	01-Apr-99	Discontinue work on report, submit existing data to TDMS, incorporate test results directly into SZ PMR, delete Level 3 requirement from baseline.
2031 SZ Flow and Transport	Radionuclide transport model development and calibration process delayed by about 4 months	None planned for FY99	NA	NA	NA
2033 NFE Results to Support TSPA	Delay most planned work until final design selected. Focus restart on support of LA Design	SP9904M3	Rpt: Final LBT Report	12-Aug-99	Discontinue work on report, submit existing data to TDMS, incorporate test results directly into NFE PMR, delete Level 3 requirement from baseline.
2035 NF Results, Waste Package & EBS Transport	Same as above	None planned for FY99	NA	NA	NA
2253 NFE Data and Analysis Update	Same as above	SP399CM3 **PEMP 13-1**	Rpt: NF/AZ Environment rpt Volume 1, Rev 2	30-Aug-99	Discontinue work on report, submit existing data to TDMS, incorporate test results directly into NFE PMR, delete Level 3 requirement from baseline.
2050 Cross-drift Testing to Support LA	Defer detailed analysis of moisture monitoring data until FY00	None planned for FY99	NA	NA	NA
2210 Geologic Framework and Geoengineering	Accelerate data qualification supporting ISM model	SP32K5M3 **PEMP 13-1**	Rpt: Integrated Site Model 3.0 Report	31-Mar-99	Discontinue work on report, submit existing data to TDMS, refocus on preparation of PMR, delete Level 3 deliverable. Incorporate test results directly into ISM PMR. Due 29 Oct 99.

Account	Impacted Work	Deliverable	Deliverable Abbreviated Title	Deliverable Current Date	Planned Deliverable Disposition Under QA Refocus Initiative
		SPG42GM3	Geo/Geotech Data fm X-Block Drift Project	31-Mar-99	Discontinue work on report, submit existing data to TDMS, incorporate test results directly into ISM PMR, delete Level 3 requirement from baseline
		SP32P4M3	Rpt: ISM3.1 Addendum to ISM3.0 report	28-May-99	Discontinue work on report, submit existing data to TDMS, incorporate min/pet data from WT-24 and SD-6 into ISM PMR, delete Level 3 requirement from baseline.
		SPG640M3	Report: Correlation of Litho & Geophysical Data	30-Sep-99	Discontinue work on report, submit existing data to TDMS, incorporate test results directly into ISM PMR, delete Level 3 deliverable requirement from baseline.
2215 Data Analysis Update Seepage & UZ Flow and Transport (Busted Butte)	Defer some analysis and modeling until FY00; defer fault and fracture characterization until FY00	None planned for FY99	NA	NA	NA
2245 SZ Flow and Transport Investigation	Delay alluvium/geochem data analysis	None planned for FY99	NA	NA	NA
2270 Single Heater Test Cool Down	No Impact	SP3120M3	Rpt: Single Heater Test Final Report (L3)	14-Apr-99	Discontinue work on report, submit existing data to TDMS, incorporate test results directly into NFE PMR, delete Level 3 requirement from baseline.
6105 Support SR, WDLA, EIS, Technical Interactions, Closeout Activities	Reduced support to technical interactions; considerably reduced support to closeout activities; and eliminate support to Chapter 3 of WDLA	SPQ224M3	Rpt: R1 Seismic Design Basis Inputs	31-Aug-99	Incorporate data and results with FY98 report SP24IM3, combine SP24IM3 and SPQ224M3 into one report that will be completed 30 Sep 99.
6107 ST215 Drift Scale Heater Test	Reduce data analysis and reporting	SP3880M3	Rpt: Drift Scale Test Progress Report #2	29-Sep-99	Discontinue work on report, submit data to TDMS, incorporate test results directly into NFE PMR, delete Level 3 requirement from baseline.
7027 Performance Confirmation and Seismic and Water Level Monitoring	No Impact	None planned for FY99	NA	NA	NA

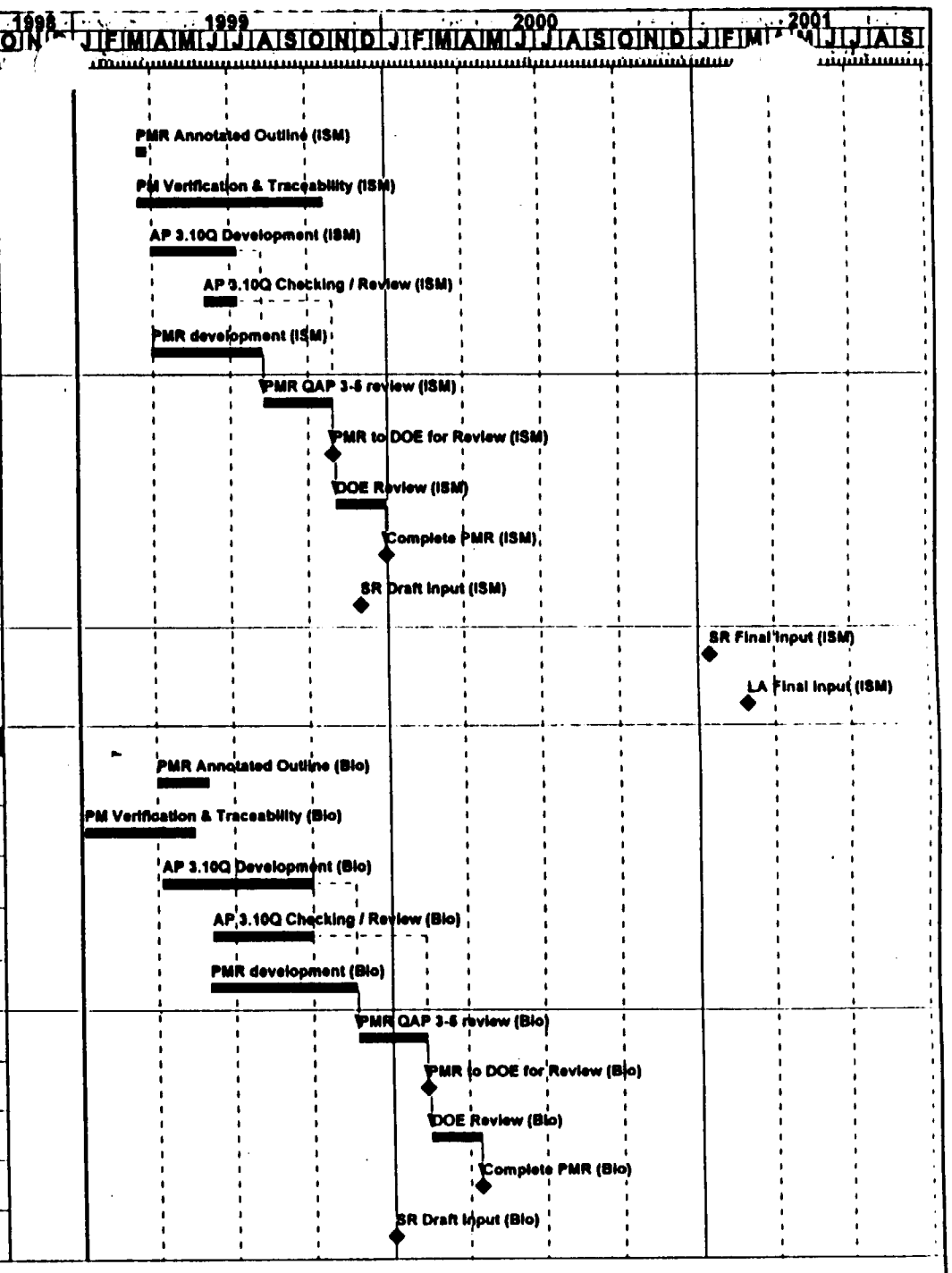
Account	Impacted Work	Deliverable	Deliverable Abbreviated Title	Deliverable Current Date	Planned Deliverable Disposition Under QA Refocus Initiative
8621 Test Coordination and Sample Management	TCO staff refocus support to data and document QA compliance, traceability and documentation	None planned for FY99	NA	NA	NA
9090 Site Investigation Base Support	Refocus additional base support efforts to support data and document QA compliance, traceability, and documentation	None planned for FY99	NA	NA	NA
Performance Assessment					
1122 TSPA-VA Documentation	No Impact	N/A	N/A	N/A	N/A
2021 Alternatives/Options Evaluation	No Impact	N/A	N/A	N/A	N/A
2186 Regulatory Support	No Impact	N/A	N/A	N/A	N/A
2175 Develop Abs/Test Disruptive Events	1. Several analyses activities identified in the VA (volume 3 and 4) and/or issues raised by the TSPA-VA Peer Review Panel will not be addressed in the SR Rev 0. Bounding analyses will replace more uncertain aspects of the process model .	N/A	N/A	N/A	N/A
	2. Some abstractions will not be significantly different than those in the VA; however they will be more traceable and transparent and controlled.				
	3. Some aspects of the acceptance criteria for the IRSR will be necessarily bounded.				
2176 Develop Abs/Test SZ & Biosphere	See items 1. & 3.of 2175	N/A	N/A	N/A	N/A
2184 Process Control & Management	No impact – greater level of fidelity in plan	N/A	N/A	N/A	N/A
2185 Design Analysis SR	No Impact	N/A	N/A	N/A	N/A
2190 Develop Abs/Test WF & EBS Transport	See 2175	N/A	N/A	N/A	N/A
2195 Develop Abs/Test WP degradation	See items 1. & 3.of 2175	N/A	N/A	N/A	
2220 Develop Abs/Test UZ Flow & Transport	See 2175	N/A	N/A	N/A	
2235 Develop Abs/Test NFE	See 2175	N/A	N/A	N/A	N/A
2396 TSPA Approach & Model Development	No impact	SL9051M3	Repository Design Feed to TSPA	28-May-99	N/A

Account	Impacted Work	Deliverable	Deliverable Abbreviated Title	Deliverable Current Date	Planned Deliverable Disposition Under QA Refocus Initiative
		SL915M3	TSPA SR/LA Methodology & Assumptions	13-Aug-99	N/A
		SL9050M3	Complete Info Feeds for Science and Design to TSPA	30-Sep-99	Information feeds will be less
2397 TSPA for SR	See 2175 .	SL921M3	TSPA-SR Rev. 00	14-Jul-00	Less content than planned
		SL924M3	TSPA-SR Rev. 01	29-Feb-01	More bounding analyses
3040 DEIS		SL916M3	PA Input to DEIS	26-Feb-99	Delay completion of deliverable to 31 March 99 to accommodate DOE/MTS comments on SL916M4
2115 Prepare WDLA	Work to be terminated effective with CR				N/A
Waste Package					
7030 LT Waste Form Testing and Modeling SR	While long term testing will continue, there will be a delay in gathering and analysis of all but key data between 4/99 and 2/00. The number of data, software, and model TBVs that can be cleared will be reduced, as well as the number of bounding models that can be replaced by more realistic models.	WP110M3	Submit WFCR Update to DOE for SR	31-Mar-00	Cancel - will rename and change content to Modeling Report Add - deliverable replaces WFCR Update
7040 LT WP Materials Testing and Modeling for SR		WP20CM3	Submit EMCR Update to DOE for SR	24-Apr-00	Cancel - will rename and change content to Modeling Report Add - deliverable replaces WFCR Update
Engineered Barrier System					
12012383MT EBS Testing Program	Letter reports will be submitted instead of consolidated technical report.	RPA256M3	N/A	30-Sep-99	Delete this deliverable. The data originating from this activity will submitted to the TDMS by letter reports.
12012383ML Shafts and Ramp Design	No Impact	N/A	N/A	N/A	The completion of the 2 design analysis that support this activity will be delayed until FY00. There will not be an overall impact to the product by deferring this work provided that the work is not deleted and is started at the beginning of FY00.

Account	Impacted Work	Deliverable	Deliverable Abbreviated Title	Deliverable Current Date	Planned Deliverable Disposition Under QA Refocus Initiative
12012383M3 Radiation Monitoring – 99	No Impact	N/A	N/A	N/A	The completion of 2 design products, the Radiation Limits for Repository Material and the Minimum Detectable Waste Package Leak will be deferred until FY00. There will not be an overall impact to the product by deferring this work provided that the work is not deleted and is started at the beginning of FY00.
Support Operations					
2470 Tech Data Mgmt 2475 Interface Config Mgmt 9197 Doc Mgmt Svcs	The Technical Data Management, Configuration Management, and Document Management Services organizations will not be staffed to completely accommodate both work originally planned and the refocus initiatives. If additional funding is not available at the time requests for support are made, lower priority work will not be performed. If additional dollars are available, there will be delays in support while staff are reassigned tasks or brought in from teammates/outside sources.	None	N/A	N/A	N/A
Surface Facilities					
2392 Surf/Subsurf Mgmt & Design	Progress toward resolving some DR's against Engineering will be slowed	None	N/A	N/A	N/A

Account	Impacted Work	Deliverable	Deliverable Abbreviated Title	Deliverable Current Date	Planned Deliverable Disposition Under QA Refocus Initiative
Systems Engineering & Integration					
16012013 – Design Requirements Development	SDDs will be issued without or with very little TBX resolution (even for things important to LA). Other organizations surface, sub-surface, WP, etc. are also not working to resolve TBX resolutions.	N/A	N/A	N/A	N/A
16012013 – Design Requirements Development	Project Description Document (PDD) Revision 1 scheduled for 8/30/99 will be deferred until 2000	N/A	N/A	N/A	N/A

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
Process Mo[illegible]ports				
Integrated Site Model				
100	PMR Annotated Outline (ISM)	10	15MAR99*	26MAR99
110	PM Verification & Traceability (ISM)	157	15MAR99*	19OCT99
120	AP 3.10Q Development (ISM)	75	29MAR99*	09JUL99
130	AP 3.10Q Checking / Review (ISM)	30	31MAY99*	09JUL99
140	PMR development (ISM)	95	29MAR99*	06AUG99
150	PMR QAP 3-5 review (ISM)	60	09AUG99	29OCT99
160	PMR to DOE for Review (ISM)	0		29OCT99
170	DOE Review (ISM)	44	01NOV99	30DEC99
180	Complete PMR (ISM)	0		30DEC99
182	SR Draft Input (ISM)	0		30NOV99*
184	SR Final Input (ISM)	0		15JAN01*
186	LA Final Input (ISM)	0		28FEB01*
Biosphere				
190	PMR Annotated Outline (Bio)	43	01APR99*	31MAY99
200	PM Verification & Traceability (Bio)	95	04JAN99*	14MAY99
210	AP 3.10Q Development (Bio)	129	05APR99*	30SEP99
220	AP 3.10Q Checking / Review (Bio)	85	04JUN99*	30SEP99
230	PMR development (Bio)	124	01JUN99*	19NOV99
240	PMR QAP 3-5 review (Bio)	60	22NOV99	11FEB00
250	PMR to DOE for Review (Bio)	0		11FEB00
260	DOE Review (Bio)	44	14FEB00	13APR00
270	Complete PMR (Bio)	0		13APR00
272	SR Draft Input (Bio)	0		31DEC99*



Project Start	01OCT98
Project Finish	28FEB01
Data Date	01JAN99
Run Date	03MAR99

Early Bar
Progress Bar
Critical Activity

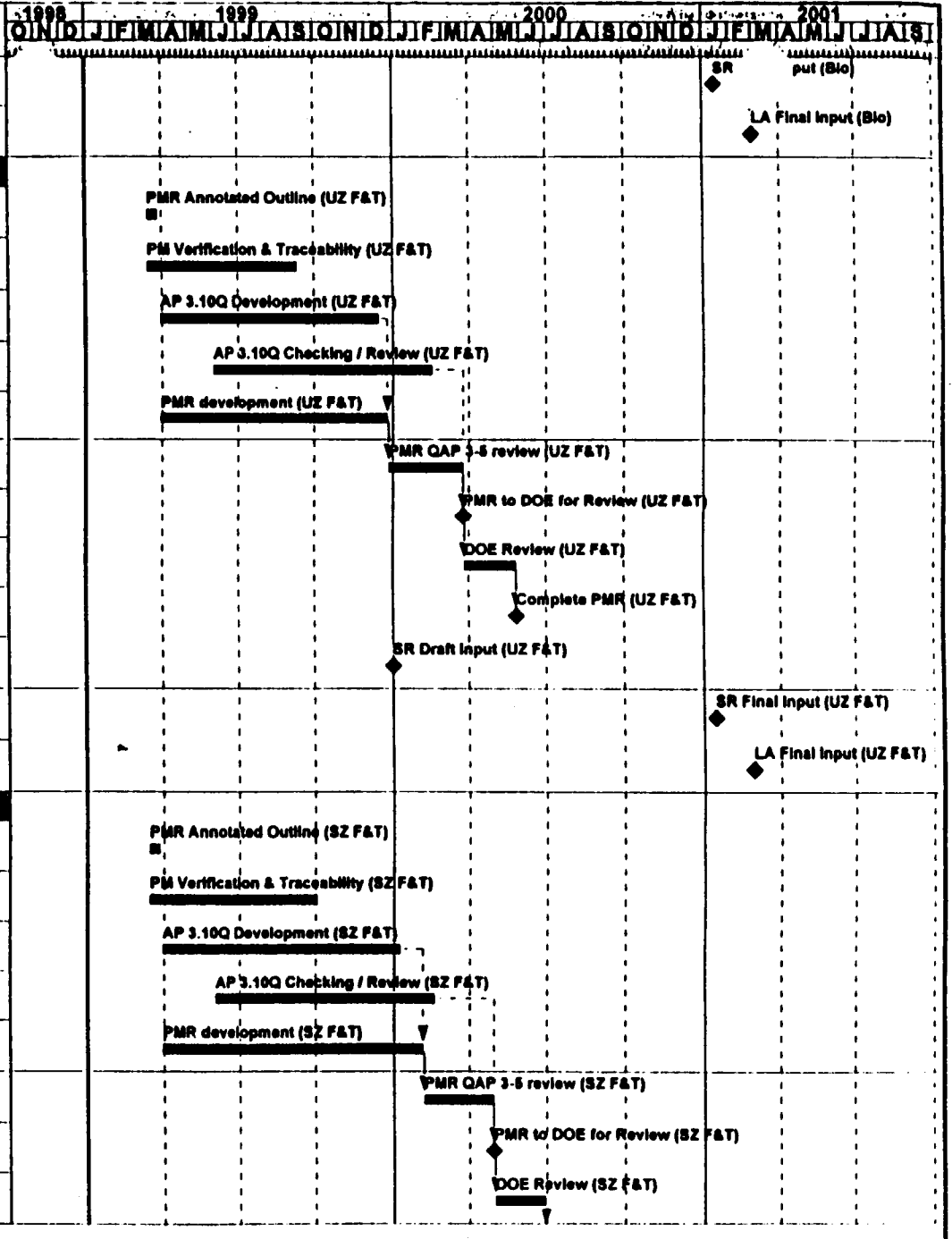
PMR5

Sheet 1 of 6

Schedule

Attachment 2

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
274	SR Final Input (Bio)	0		15JAN01*
276	LA Final Input (Bio)	0		28FEB01*
	UZ Flow and Transport			
280	PMR Annotated Outline (UZ F&T)	10	15MAR99*	26MAR99
290	PM Verification & Traceability (UZ F&T)	129	15MAR99*	09SEP99
300	AP 3.10Q Development (UZ F&T)	188	29MAR99*	15DEC99
310	AP 3.10Q Checking / Review (UZ F&T)	187	31MAY99*	15FEB00
320	PMR development (UZ F&T)	195	29MAR99*	24DEC99
330	PMR QAP 3-5 review (UZ F&T)	65	27DEC99	24MAR00
340	PMR to DOE for Review (UZ F&T)	0		24MAR00
350	DOE Review (UZ F&T)	44	27MAR00	25MAY00
360	Complete PMR (UZ F&T)	0		25MAY00
362	SR Draft Input (UZ F&T)	0		31DEC99*
364	SR Final Input (UZ F&T)	0		15JAN01*
366	LA Final Input (UZ F&T)	0		28FEB01*
	SZ Flow and Transport			
370	PMR Annotated Outline (SZ F&T)	10	15MAR99*	26MAR99
380	PM Verification & Traceability (SZ F&T)	145	15MAR99*	01OCT99
390	AP 3.10Q Development (SZ F&T)	205	29MAR99*	07JAN00
400	AP 3.10Q Checking / Review (SZ F&T)	189	31MAY99*	17FEB00
410	PMR development (SZ F&T)	225	29MAR99*	04FEB00
420	PMR QAP 3-5 review (SZ F&T)	60	07FEB00	28APR00
430	PMR to DOE for Review (SZ F&T)	0		28APR00
440	DOE Review (SZ F&T)	44	01MAY00	29JUN00



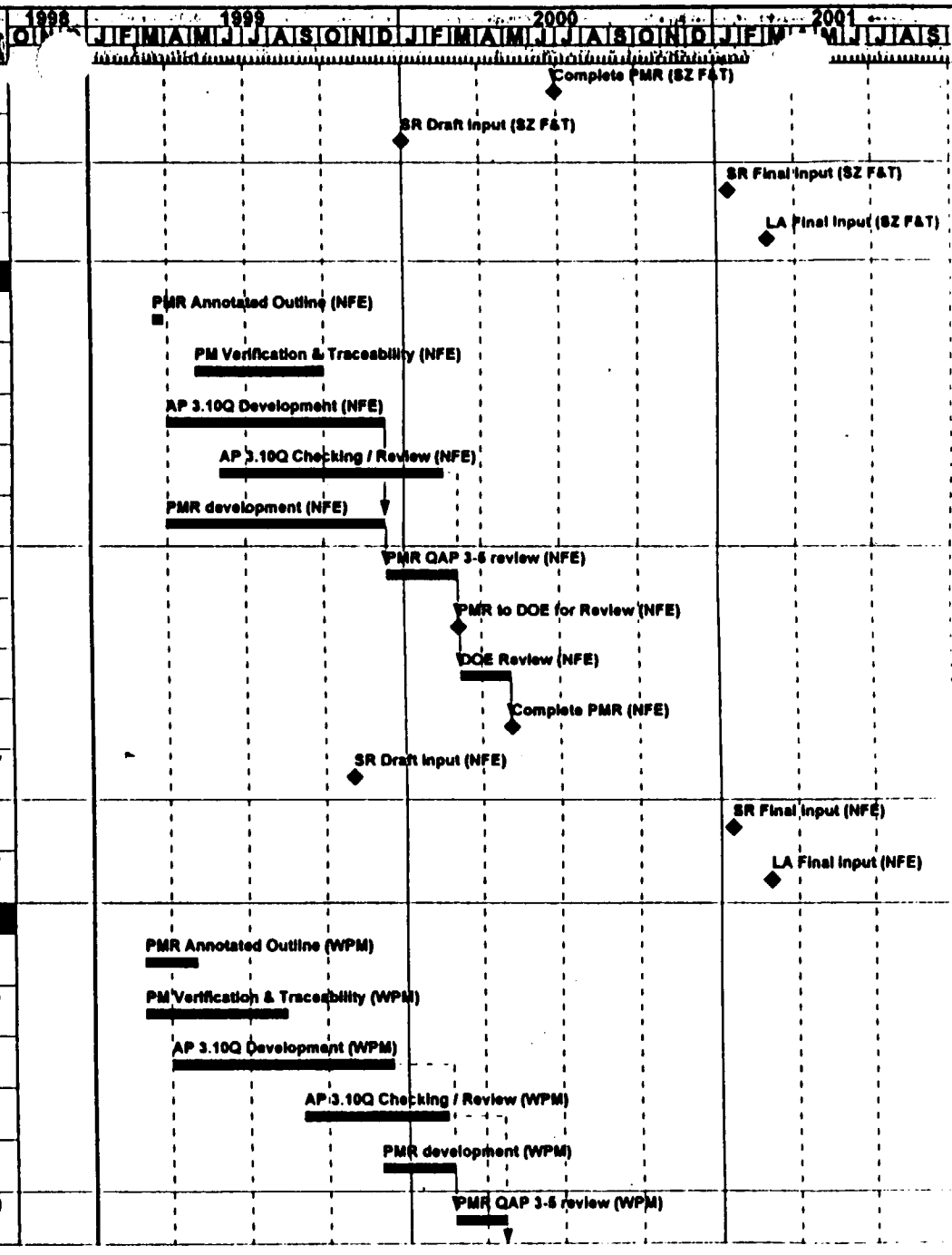
Project Start	01OCT98
Project Finish	28FEB01
Data Date	01JAN99
Run Date	03MAR99

Early Bar
Progress Bar
Critical Activity

Schedule

Attachment 2

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
450	C PMR (SZ F&T)	0		29JUN00
452	SR Draft Input (SZ F&T)	0		31DEC99*
454	SR Final Input (SZ F&T)	0		15JAN01*
456	LA Final Input (SZ F&T)	0		28FEB01*
	NO DEFICIENCY			
460	PMR Annotated Outline (NFE)	10	15MAR99*	26MAR99
470	PM Verification & Traceability (NFE)	109	03MAY99*	30SEP99
480	AP 3.10Q Development (NFE)	185	29MAR99*	10DEC99
490	AP 3.10Q Checking / Review (NFE)	187	31MAY99*	15FEB00
500	PMR development (NFE)	185	29MAR99*	10DEC99
510	PMR QAP 3-5 review (NFE)	60	13DEC99	03MAR00
520	PMR to DOE for Review (NFE)	0		03MAR00
530	DOE Review (NFE)	44	06MAR00	04MAY00
540	Complete PMR (NFE)	0		04MAY00
542	SR Draft Input (NFE)	0		01NOV99*
544	SR Final Input (NFE)	0		15JAN01*
546	LA Final Input (NFE)	0		28FEB01*
	WPM PACKAGE			
550	PMR Annotated Outline (WPM)	45	01MAR99*	30APR99
560	PM Verification & Traceability (WPM)	120	01MAR99*	13AUG99
570	AP 3.10Q Development (WPM)	185	01APR99*	15DEC99
580	AP 3.10Q Checking / Review (WPM)	120	01SEP99*	15FEB00
590	PMR development (WPM)	60	01DEC99*	22FEB00
600	PMR QAP 3-5 review (WPM)	43	23FEB00	21APR00



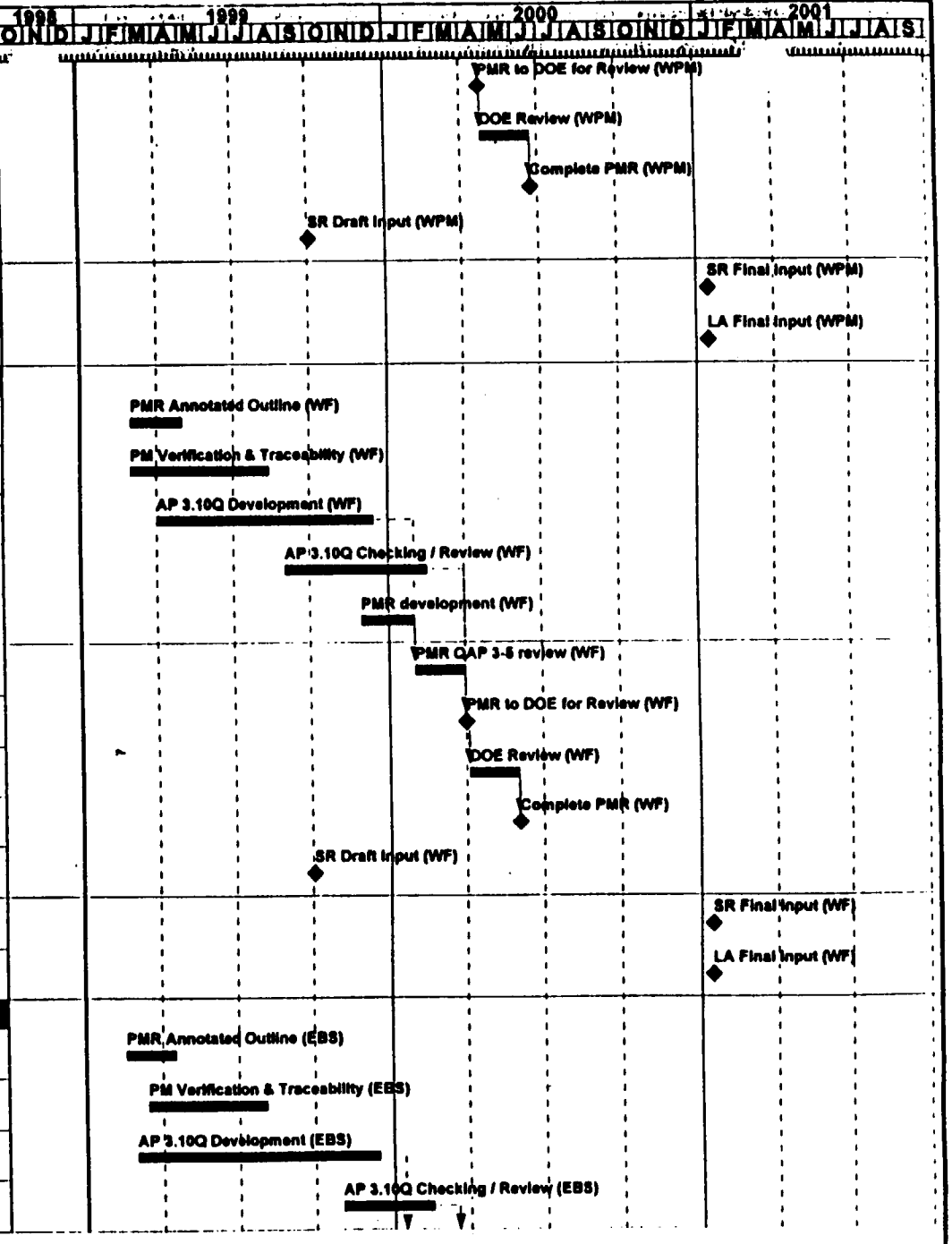
Project Start	01OCT98
Project Finish	28FEB01
Data Date	01JAN99
Run Date	03MAR99

Early Bar
Progress Bar
Critical Activity

Schedule

Attachment 2

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
610	PM DOE for Review (WPM)	0		21APR00
620	DOE Review (WPM)	44	24APR00	22JUN00
630	Complete PMR (WPM)	0		22JUN00
632	SR Draft Input (WPM)	0		01OCT99*
634	SR Final Input (WPM)	0		15JAN01*
636	LA Final Input (WPM)	0		15JAN01*
	Work Package			
640	PMR Annotated Outline (WF)	45	01MAR99*	30APR99
650	PM Verification & Traceability (WF)	120	01MAR99*	13AUG99
660	AP 3.10Q Development (WF)	185	01APR99*	15DEC99
670	AP 3.10Q Checking / Review (WF)	120	01SEP99*	15FEB00
680	PMR development (WF)	44	01DEC99*	31JAN00
690	PMR QAP 3-5 review (WF)	44	01FEB00	31MAR00
700	PMR to DOE for Review (WF)	0		31MAR00
710	DOE Review (WF)	44	03APR00	01JUN00
720	Complete PMR (WF)	0		01JUN00
722	SR Draft Input (WF)	0		01OCT99*
724	SR Final Input (WF)	0		15JAN01*
726	LA Final Input (WF)	0		15JAN01*
	Engineered Barrier System			
730	PMR Annotated Outline (EBS)	41	17FEB99*	14APR99
740	PM Verification & Traceability (EBS)	101	15MAR99*	02AUG99
750	AP 3.10Q Development (EBS)	208	01MAR99*	15DEC99
760	AP 3.10Q Checking / Review (EBS)	77	01NOV99*	15FEB00



Project Start 01OCT99
Project Finish 28FEB01
Data Date 01JAN99
Run Date 03MAR99

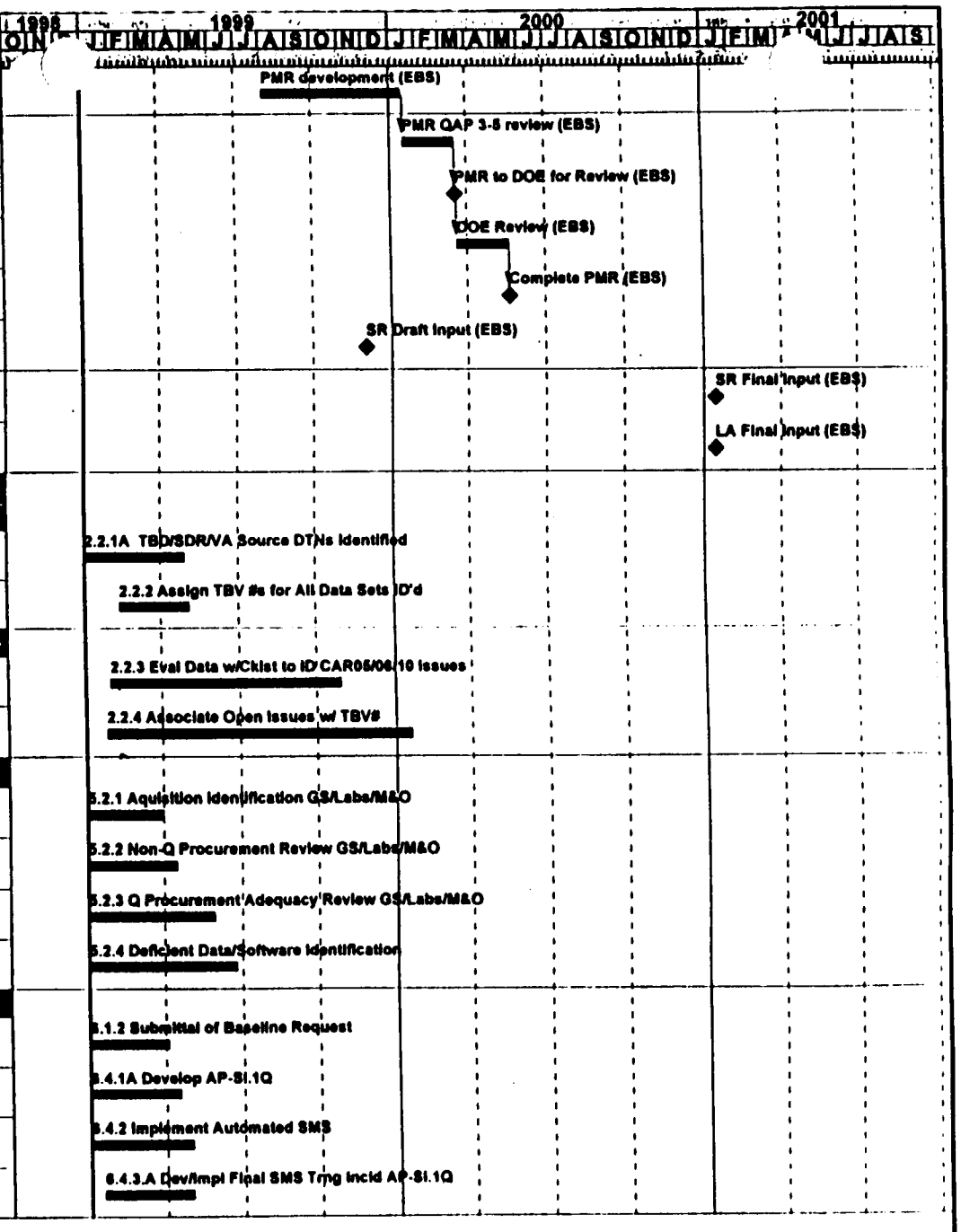
Early Bar
Progress Bar
Critical Activity

PMR8

Schedule

Attachment 2

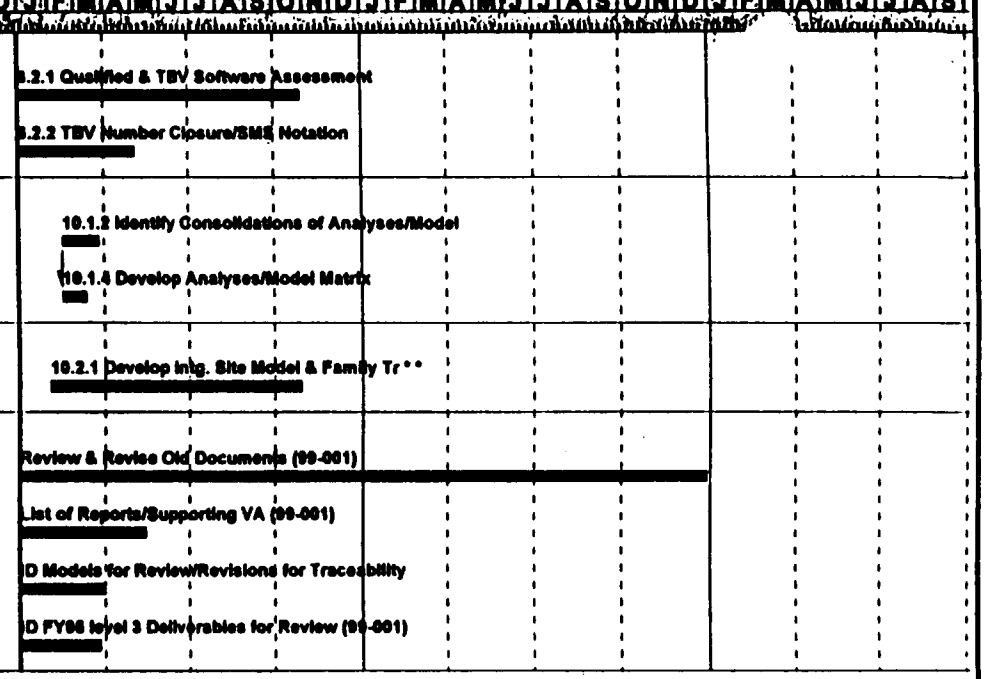
Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
770	PM[illegible]opment (EBS)	119	03AUG99*	14JAN00
780	PMR QAP 3-5 review (EBS)	45	17JAN00	17MAR00
790	PMR to DOE for Review (EBS)	0		17MAR00
800	DOE Review (EBS)	44	20MAR00	18MAY00
810	Complete PMR (EBS)	0		18MAY00
812	SR Draft Input (EBS)	0		01DEC99*
814	SR Final Input (EBS)	0		15JAN01*
816	LA Final Input (EBS)	0		15JAN01*
CARs				
CAR 98-002 Closure				
931	2.2.1A TBD/SDR/VA Source DTNs Identified	84	01JAN99	28APR99
932	2.2.2 Assign TBV #s for All Data Sets ID'd	59	10FEB99*	03MAY99
CAR 98-002 Remediation				
933	2.2.3 Eval Data w/Cklst to ID CAR05/06/10 Issues	196	29JAN99*	29OCT99
934	2.2.4 Associate Open Issues w/ TBV#	259	25JAN99*	20JAN00
CAR 98-003 Closure				
921	5.2.1 Aquisition Identification GS/Labs/M&O	64	01JAN99	31MAR99
922	5.2.2 Non-Q Procurement Review GS/Labs/M&O	75	01JAN99	15APR99
923	5.2.3 Q Procurement Adequacy Review GS/Labs/M&O	106	01JAN99	28MAY99
924	5.2.4 Deficient Data/Software Identification	124	01JAN99	23JUN99
CAR 98-004 Closure				
900	6.1.2 Submittal of Baseline Request	66	01JAN99	02APR99
908	6.4.1A Develop AP-SI.1Q	76	01JAN99	16APR99
909	6.4.2 Implement Automated SMS	86	01JAN99	30APR99
910	6.4.3.A Dev/Impl Final SMS Trng Incld AP-SI.1Q	76	15JAN99*	30APR99



Schedule

Attachment 2

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
906	6.2.1 Qualified & TBV Software Assessment	216	01JAN99	29OCT99
907	6.2.2 TBV Number Closure/SMS Notation	87	01JAN99	03MAY99
960	10.1.2 Identify Consolidations of Analyses/Model	35	15FEB99*	26MAR99
961	10.1.4 Develop Analyses/Model Matrix	20	15FEB99*	12MAR99
962	10.2.1 Develop Intg. Site Model & Family Tr**	195	01FEB99*	29OCT99
950	Review & Revise Old Documents (99-001)	521	01JAN99	29DEC00
960	List of Reports/Supporting VA (99-001)	150	01JAN99	14MAY99
965	ID Models for Review/Revisions for Traceability	64	01JAN99	31MAR99
970	ID FY98 level 3 Deliverables for Review (99-001)	61	01JAN99	26MAR99



Project Start	01OCT98	Early Bar	
Project Finish	28FEB01	Progress Bar	
Data Date	01JAN99	Critical Activity	
Run Date	03MAR99		

PMRS

Schedule

Attachment 2

Attachment 3

SCHEDULE ACTIVITY DESCRIPTIONS

PMR Annotated Outline

This task bar represents the development of the process model report (PMR) annotated outline. This annotated outline applies and expands the generic outline provided in Attachment 6, for each specific process model. The annotated outline's purpose is to initiate the process to identify the objective, scope, relationship of this specific model report to the other reports, and to provide an overview description of the supporting models and abstractions and how they fit into the regulatory arguments to be presented in the License Application.

PM Verification and Traceability

As part of CAR-99-001, Process Model Verification and Traceability teams are being established to identify and control the input data sets for each model that will support the SR/LA. These teams will help establish the retrievability, reproducibility, traceability, and transparency necessary for regulatory review. One of the primary roles of these teams, in the PMR process, is to establish the model analysis hierarchy, similar to the "typical" example provided in Attachment 7.

AP-3.10Q Development

This task bar represents the development of the documentation of the analyses and models identified by the PM Verification and Traceability teams. At the end of this task bar, the last AP-3.10Q product is ready for the checking and reviewing phase of the process as defined in AP-3.10Q. It should be noted that multiple AP-3.10Q products may be developed for each PMR and that each product would follow the rigid check and review process identified by this procedure.

AP-3.10Q Checking/Review

This task bar represents the check and review of the analyses and model documentation provided in the AP-3.10Q development step defined above. Product check and review cycles will be complete prior to PMR completion. (See PMR QAP-3-5 review task description below).

PMR Development

This task includes the development of the process model report in accordance with QAP-3-5. The report will follow the annotated outline defined above and the Technical Document Preparation Plan developed as required by QAP-3-5. All AP-3.10Q products used in the PMR will be in the check and review phase of development prior to being referenced in the PMR. It is permissible for an AP-3.10Q product to be in check and review at the same time as the PMR is being reviewed; however, this practice should be limited due to the potential schedule impact that could result from the check and review processes.

PMR QAP 3-5 review

This task represents the formal M&O (and informal DOE) check and review of the PMR. At this stage, most of the references should be complete and signed, however, a small set of references (AP-3.10Qs) could be finishing their check and review process (this reference flexibility increases schedule risk). However, the QAP-3-5 review cannot be considered complete until the last reference is complete (signed-off in accordance with the controlling procedure).

PMR to DOE for Review

This task represents the submittal of the PMR as a Level 3 deliverable to initiate the concurrent YMSCO acceptance review and the DOE QAP 6.2 review.

DOE Review

This task includes the acceptance review and the QAP 6.2 review conducted by DOE and the resolution of the comments provided during the reviews.

Complete PMR

This task represents the incorporation of the DOE comments received during the acceptance and QAP 6.2 reviews into the PMR as required.

SR Draft Input

This milestone represents the date that the reference information should be available to the SR authors for incorporation in the associated SR chapter. In many cases this is the AP-3.10Q documentation; in other cases it is the PMR documentation. This will vary from section to section and chapter to chapter of the SR. However, it should be noted that there is a schedule risk associated with the use of AP-3.10Q and PMR documentation prior to / or during the check and review cycles. This schedule risk will have to be managed due to the tight schedule for the SR and the abstractions being completed in late 1999. Presently, there are at least three instances of schedule disconnects between the development of the reference material and the date the information is needed for the SR. These three specific areas include the SR draft input request and the development of the 3.10Q products and PMRs for the Near Field Environment, the Waste Package Material and the Waste Form. These schedule disconnects are associated with the abstraction process and documentation and are not as a result of the PMR effort. Additional information regarding the resolution of these disconnects will be provided at a latter date.

SR Final Input and LA Final Input

As described above, these milestones are the dates at which the reference material to be used in the SR and LA must be available to the authors for inclusion in the final version of the SR or LA as applicable. At this time, the revision schedule for each PMR beyond Revision 0 has not been developed; however, each organization is cognizant of the required SR and LA dates and each organization has must address these dates as applicable in their upcoming planning process.

CARs

The activities provided for CARs 98-002, 98-005, 98-006, and 98-010 are identified by the corresponding CAR management plan paragraph numbers. Therefore, for a description of each CAR related activity, please review the appropriate section of the CAR management plan.

CAR 99-001

The activities presented in the schedule are consistent with the remedial actions for this deficiency. A more detailed schedule is available upon request.

REFOCUS OF WORK EFFORT ON HIGH PRIORITY QUALITY ASSURANCE INITIATIVES
ESTIMATED FY99 FUNDING REQUIREMENTS

Millions of Dollars

Category	A Total Required Funding	B=A-C New Funding Required	C=D+E+F Covered from Exist. Resources	D Current Baseline Plan	E Reduce Scope and Eliminate Level 3's	F Work to be Deferred
Qualification						
Science	3.0	0.1	2.9	1.1	0.2	1.6
TSPA	0.6	0.0	0.6	0.3	0.3	0.0
WP	1.0	0.6	0.4	0.1	0.0	0.3
EBS	0.0	0.0	0.0	0.0	0.0	0.0
Support Ops	0.9	0.0	0.9	0.3	0.3	0.3
CAR Closure						
Science	2.5	1.1	1.4	0.3	0.0	1.1
TSPA	0.7	0.0	0.7	0.4	0.3	0.0
WP	0.1	0.0	0.1	0.0	0.1	0.0
EBS	0.0	0.0	0.0	0.0	0.0	0.0
Procurement	0.8	0.0	0.8	0.8	0.0	0.0
Support Ops	1.0	0.3	0.7	0.4	0.1	0.2
CAB	0.3	0.3	0.0	0.0	0.0	0.0
Process Model Reports						
R&L	0.6	0.4	0.2	0.0	0.2	0.0
Science	7.2	0.4	6.8	2.8	0.7	3.3
TSPA	1.4	0.2	1.2	0.3	0.9	0.0
WP	1.1	0.5	0.6	0.0	0.0	0.6
EBS	1.1	0.3	0.8	0.6	0.0	0.2
Support Ops	1.4	0.4	1.0	0.2	0.4	0.4
PVAR						
Mgmt	0.8	0.3	0.5	0.5	0.0	0.0
Procedures						
R&L	0.3	0.3	0.0	0.0	0.0	0.0
Science	0.1	0.1	0.0	0.0	0.0	0.0
TSPA	0.4	0.1	0.3	0.1	0.2	0.0
WP	0.1	0.0	0.1	0.0	0.1	0.0
EBS	0.1	0.1	0.0	0.0	0.0	0.0
Sys Eng	0.4	0.2	0.2	0.1	0.1	0.0
Surf Fac	0.7	0.6	0.1	0.0	0.0	0.0
Support Ops	0.5	0.5	0.0	0.0	0.0	0.0
Info Architecture	1.9	1.9	0.0	0.0	0.0	0.0
M&O Total	**29.0**	**8.7**	**20.3**	**8.3**	**3.9**	**8.0**
OQA	0.6	0.6	0.0	0.0	0.0	0.0

Attachment 4

Cost Table Explanatory Notes

The rough-order-of magnitude funding analysis that accompanied our 2/9/99 letter has been revised.

Cost estimates (Total Required Funding) previously reported by functional group have now been more rigorously built up from, and are reported in, lower-level activity categories (Table rows), consistent with the project schedule. The Qualification category includes activities needed to qualify the scientific notebooks, technical data, software, and models that will be used in SR and LA. CAR Closure is comprised of activities outlined in the CAR Management Plan, Revision 2. The Process Model Report line items encompass both the work to define the content of the Reports (Tiger Teams) as well as the report-writing effort itself. The PVAR category has been expanded to include design of the Technical Information Management System and activities in support organizations that will be required to implement new procedures.

In addition to updating estimates of the total costs associated with refocusing the M&O work plan on high-priority quality assurance initiatives, the amount of the effort that can be covered with existing resources was reanalyzed (Table columns). The amount that can be covered from existing resources (Column C) was determined from the sum of: (1) what was estimated to have been in the original FY99 baseline plan (Column D); (2) what could be gained by eliminating Level 3 deliverables and/or reducing the scope of other FY99 project work (Column E), and (3) the FY99 savings realized by deferring (lower-priority) work into future years. Scope reductions, deliverable elimination, and work deferrals are detailed in other attachments to this letter. In particular, that the same, key individuals must be involved in all elements of the quality assurance initiatives forces the work originally planned for them to perform in FY99 to be down-scoped, eliminated, or deferred.

New Funding Required (Column B) is calculated as the difference between the Total Required Funding (Column A) and what is expected to be Covered from Existing Resources (Column C).

On top of the M&O effort, it is now estimated that additional support will be required from OQA.

Attachment 5

DESCRIPTION OF PROCESS MODEL REPORT CONCEPT

Purpose

The purpose of a Process Model Report is to document in one place, as a stand-alone report, a synthesis of all the necessary and sufficient technical information that the Project will be relying upon to make its site suitability evaluation and ultimately the licensing argument pertaining to a particular process model. The technical information consists of data, analyses, models, software, and supporting documents used to defend the applicability of the model for its intended purpose of evaluating the postclosure performance of the Yucca Mountain repository system.

Scope of Reports

A Process Model Report will be developed for each of the eight topics identified below:

1. Integrated Site Model
2. Unsaturated Zone Flow and Transport
3. Saturated Zone Flow and Transport
4. Near Field Environment
5. Waste Package Degradation
6. Waste Form Degradation
7. Engineered Barrier System Degradation and Flow/Transport Model
8. Biosphere

The Process Model Reports will incorporate the results of the model validation and traceability effort currently underway, as well as reflect the analyses and modeling documentation to be developed under the new AP-3.10Q process, Analyses and Models. Each Process Model Report will address the following aspects related to the particular process model being addressed:

- Description of the model
- Verification of QA status of code(s) used
- Data supporting the codes/models
- Abstraction of the model into TSPA
- Uncertainties related to model parameters
- Model validation information
- Opposing views
- Assumptions and basis

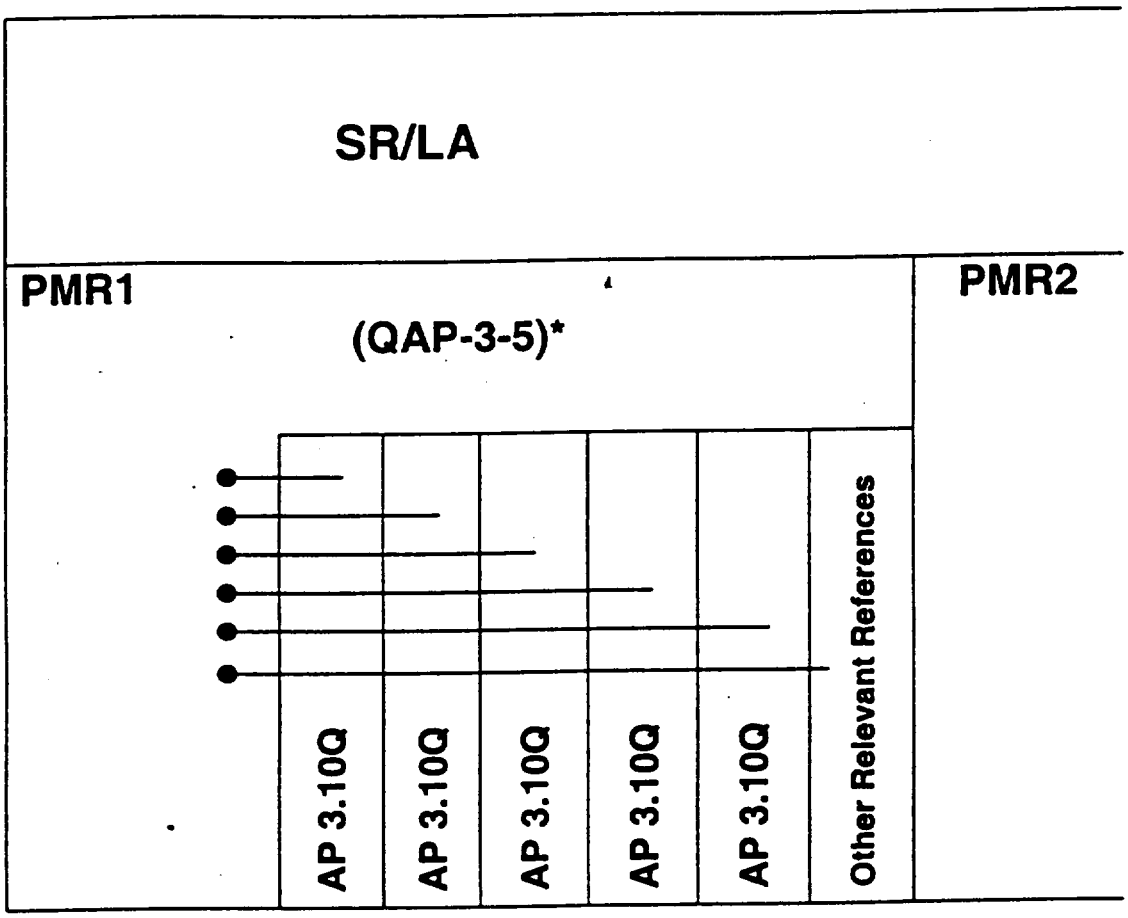
Key Points Regarding Process Model Reports

As indicated in the purpose statement above, each Process Model Report will be a stand-alone synthesis report. That is, the technical information relevant to supporting the site suitability evaluation and ultimately the licensing argument on a particular process model will be presented in the Report. The Report will reference supporting AP-3.10Q analyses and modeling

documentation, the Technical Data Management System (TDMS), the Software Library, documents developed outside the Project, and other regulatory documents (e.g., Topical Reports and other Process Model Reports). However, the intent is to minimize reference to other internal Project reports, to the extent practicable. Such reports may be considered for referencing on a case-by-case basis.

The schematic below illustrates the general concept of the Process Model Reports:

PMR CONCEPT



* This may be elevated to an AP-level procedure

Each of the analyses and models that are related to a particular Process Model Report will be documented in accordance with AP-3.10Q. This documentation will be summarized in the Process Model Report, but will not be physically part of the report. The Process Model Report itself will be developed using M&O procedure QAP-3-5, Development of Technical Documents (or its equivalent, which may ultimately be an AP-level procedure).

In developing each Process Model Report, and the supporting analyses and models, the subject matter experts will be cognizant of existing documentation (internal and external) that is related to the process model being addressed. The information in these related documents will be dispositioned in one of the following ways:

- The information in the document is relevant and needed to support the licensing argument for the process model [INCLUDE THIS INFORMATION IN THE PROCESS MODEL REPORT OR THE AP-3.10Q DOCUMENTATION].
  - Ensure that the data and codes used are properly documented in the TDMS and the Software Library.

- The information in the document is not relevant (e.g., it has been superseded or is not important to supporting the licensing argument) [DO NOT INCLUDE THIS INFORMATION IN THE PROCESS MODEL REPORT].
  - This conclusion should be documented separately (e.g., in a memo to file).

- The information in the document provides a different view or interpretation that does not support the licensing argument [INCLUDE THIS INFORMATION IN THE PROCESS MODEL REPORT OR THE AP-3.10Q DOCUMENTATION, ALONG WITH THE RATIONALE FOR WHY THIS VIEW OR INTERPRETATION WAS DISCARDED].
  - For internal documents, ensure that the data and codes used are properly documented in the TDMS and the Software Library.

These Process Model Reports will be developed using the "To Be Verified (TBV)" tag for that information that needs further work (e.g., data that need to be qualified). The Process Model Reports will contain TBVs primarily because the subordinate AP-3.10Q analyses and models contain TBV information. The principal task in going from Rev. 00 of the analyses and models to Rev. 01 will be removing the TBVs and conducting appropriate controlled impact analyses per AP-3.10Q. We will eliminate these TBVs as much as possible by the time the Site Recommendation is submitted to the President (July 2001).

Each Process Model Report may ultimately be subjected to an independent peer review, after which it may be converted to a Topical Report for submittal to the NRC.

Other Documents Providing Regulatory Focus

In addition to the Process Model Reports, other supporting documents will be needed to provide a regulatory focus on selected technical work. These documents include: Yucca Mountain Site Description, Disruptive Events Report, Natural Analogues Report, Disposal Criticality Analysis Topical Report, and Seismic Hazards Topical Reports. These reports will be referenced, as appropriate, in the Process Model Reports or the AP-3.10Q documentation.

Attachment 6

ANNOTATED TABLE OF CONTENTS/OUTLINE
PROCESS MODEL REPORT
(TYPICAL)

Chapter 1.0 Introduction

This chapter provides the "up front" information necessary for the reader to understand the purposes of the report, its basic organization, and related issues. It also supports the reader who desires a quick look at the document without reviewing it in great detail.

1.0 Introduction

Section 1.0 contains introductory text that briefly describes the goal of the Yucca Mountain Project, which is to determine suitability of the Yucca Mountain site for disposal of high-level nuclear waste. If it is found suitable, the goal is to then seek a license to construct and subsequently to operate and close a high-level waste disposal facility.

This section also explains in general why the Process Model Reports (PMR) are being developed, and why this specific PMR is being developed. This discussion includes a summary of previous treatment of the subject issue (background of previous modeling).

Finally, the section summarizes the layout of the PMR.

1.1 Objective

This section provides the objective (or objectives) of the PMR (what its production is intended to accomplish). Briefly and generically, the objective is to document in one place, as a stand-alone report, a synthesis of all the necessary and sufficient technical information that the Project will be relying upon to make its site suitability evaluation and ultimately the licensing argument pertaining to a particular process model. The technical information consists of data, analyses, models, software and supporting documents used to defend the applicability of the model for its intended purpose of evaluating the post-closure performance of the Yucca Mountain repository system. The PMR serves as an important reference to the license application and has a similar readership (primarily knowledgeable persons in technical and regulatory fields). Many of the objectives are common to all the PMRs, though one or more may also be specific to a given PMR.

1.2 Scope

This section explains the information presented in and the content of the PMR. It will likely use one or more flowcharts to show the evolution of information from data to TSPA output, showing in the flowcharts what parts of the evolution are included in the PMR. The section also describes where to find relevant subject matter not included in the PMR. The discussion includes a brief description of the relationship between the PMR and the constituent sub-process models,

abstraction models, and analyses (as applicable) developed under AP-3.10Q. Finally, it provides a description of how the PMR will be used in addressing its subject in the Site Recommendation Report (SRR) and the License Application.

1.3 Quality Assurance

This section explains the quality assurance controls under which the PMR was developed. The PMR is expected to be determined to be quality-affecting through QAP-2-0 analysis. As such, it is to be developed under QAP-3-5. The section also discusses the method through which non-Q data and references have been upgraded for incorporation in the PMR via the constituent models and analyses developed in compliance with AP-3.10Q. And, in the case of the first version of the PMR, it discusses how non-Q data referred to in the document are tracked with "TBVs." This section provides a general discussion, with the more specific demonstrations of compliance with quality assurance requirements to follow in later chapters and to be discussed in the referenced AP-3.10Q analyses.

1.4 Relationship to Other Process Model Reports and Project Documents

This section discusses how this PMR relates to the others in terms of interfaces and overlaps. It includes a list of all the PMRs and a summary-level purpose and description of each. The section explains how: 1) the PMR relates to documents such as the Yucca Mountain Site Description, the SRR, the LA, and other documents as considered applicable and appropriate by the PMR authors and 2) other contributory or subsequent process models. This discussion may overlap with some of the information under Section 1.2, "Scope" above.

1.5 Overview Description and Results of Models and Abstraction

This section provides a high-level description of the models, the abstractions of the models, the results of abstractions, and application of the models in the PMR. It basically summarizes the information that is provided in somewhat more detail in chapters 3 through X and in much greater detail in the reference AP-3.10Q analyses. This is intended to support the reader who wants to get the gist of the report without examining it in great detail. The section also contains a summary of the chapter that integrates the PMR models, abstractions, and analyses.

Chapter 2.0 Regulatory Perspective

This chapter provides the regulatory context within which the PMR is being written.

2.0 Introduction

Section 2.0 provides a summary of the purpose of the chapter and its conclusions.

2.1 Applicable Regulations

This section describes the regulations applicable to the subject of the PMR.

2.2 Licensing Approach

This section provides an overall description of the licensing approach the Project plans to use. This description is common among all the PMRs. A specific description of how this PMR supports the licensing strategy is also provided. The section summarizes the Repository Safety Strategy, discusses how the Project's approach to analyzing the process that is the subject of the PMR relates to the Strategy, and explains the role the PMR plays in supporting the Strategy.

2.3 Summary of Compliance

This section is a summary-level description of how the PMR supports demonstration of compliance with regulations. The actual compliance demonstration that uses results of the models will be in the License Application, but that demonstration will be underpinned in major part by the PMR. The PMR shows that the regulations regarding quality assurance and measures used to support models are met.

Chapters 3.0 through X.0 Models and Abstraction

Chapter 3 and those that follow provide summary descriptions of the models, abstractions, and analyses that address the process that is the subject of the PMR. The number of such chapters will vary, so the "X" is a placeholder. It is contemplated that each chapter will discuss a top-level model and/or abstraction that addresses the subject of the PMR. However, the relationships among models, abstractions, data, and analyses are often complex and different from one PMR process to another. Therefore, the chapter and section organization provided in this outline is nominal. PMR authors will be at liberty to organize Chapter 3 and subsequent chapters to most clearly present the information.

X.0 Introduction

Section X.0 introduces the model and/or abstraction that is the principal subject of the chapter and shows the relationship among the various components that are discussed in the chapter. It also describes the layout of the chapter discussion of those components.

X.1 Model or Abstraction Description

This section provides a description of each model and/or abstraction consistent with the corresponding AP-3.10Q report, including its supporting codes, components, sub-models, and/or analyses. Sub-models that make up the model are identified.

X.2 Discussion of Uncertainties in the Model or Abstraction

This section discusses the uncertainties in the model/sub-models and/or abstractions and the assumptions and bases thereof associated with the uncertainties. It also describes the approach taken to dealing with the uncertainties in the performance assessment (PA).

X.3 Model Validation

This section demonstrates the validity of the model and its sub-models for their intended application. It includes demonstration of the validity of the data used to support the model validation, as well as demonstration of the validity of the codes that support the models. Results of expert elicitation(s) used to support model validation are included. The discussion summarizes use of natural and man-made analogues in the model validation as appropriate.

X.4 Abstraction of the Models

This section describes the method of abstracting the model and its sub-models into the PA (if the abstraction is not discussed in a separate chapter).

X.5 Validity of the Abstraction

This section contains a demonstration of the validity of the abstraction (if the abstraction is not discussed in a separate chapter). Results of expert elicitation(s) and abstraction workshops are included as appropriate. The discussion summarizes use of natural and man-made analogues in validating the abstraction as appropriate.

X.6 Results of the Model and its Sub-models and their Abstraction

This section provides the output of the model and its sub-models, as well as their abstraction; this output is what serves as input to the TSPA analysis.

X.7 Data Qualification

This section demonstrates the qualification of any data necessary to support use of the model and its sub-models whose qualification has not been demonstrated in the previous sections.

X.8 Other Views

This section documents credible opposing views to the approaches and methods described in the PMR for the model under discussion. Depending on the best manner of addressing the subject as determined by the PMR authors, this section may be a separate chapter that addresses the PMR as a whole rather than as a section in each chapter.

The chapter or section consists of a relatively brief summary of the opposing view or position, accompanied by an explanation of why the Project does not subscribe to the opposing view or position. To the extent that compensatory measures have been or will be taken to deal with the opposing view, those measures are also described in this section.

The chapter or section also discusses findings of reviewers external to the Project of the models and processes associated with the PMR, and it describes how the findings have been satisfactorily addressed.

Finally, the chapter or section discusses expert elicitation(s) applicable to the model and/or its abstraction, cross-referencing discussions in previous sections as appropriate.

Y.0 Synthesis of Models and Abstractions

This chapter follows the chapters discussing individual models, abstractions, and analyses. It synthesizes the information from the various chapters into a discussion of how the process that is the subject of the PMR is satisfactorily addressed. (The Y is a placeholder.)

Y.0 Introduction

The chapter begins with a section Y.0 that introduces the chapter and briefly describes the organization of the components (models, abstractions, and analyses) that support overall compliance demonstration. Cross-references are made to the locations in the document where these components are discussed in more detail.

Y.1 Results of Synthesis

This section provides a detailed description of how the component parts (models, abstractions, and analyses) of the Project's approach to addressing the process are used together to predict the effect of the process on repository performance. This is not the compliance demonstration, which is in section 2.3. Instead, it focuses on the technical description that shows the process is addressed with acceptable levels of uncertainty. Some aspects of showing the validity of the overall method may need to be captured in subsections. The organization and purpose of these subsections would nominally be similar to that in the preceding chapters. Again, the need for and complexity of such discussions is likely to vary among PMRs, so the PMR authors are at liberty to organize this information as they see fit to most clearly present the information.

Chapter Z.0 Relationship with the NRC's Issue Resolution Status Reports (IRSR)

The NRC has determined that resolution of several designated Key Technical Issues is crucial to licensing the repository. The NRC staff has issued various IRSRs that describe the status of the Key Technical Issues from the NRC's perspective and provide subissues and acceptance criteria. Some of the Key Technical Issues may correspond to or overlap with the issues and processes that the PMR addresses. This chapter of the PMR describes how each Key Technical Issue and its constituent subissues and acceptance criteria have been addressed through the PMR. It includes a section Z.0 (Z is a placeholder) that describes the NRC's Key Technical Issue and IRSR effort. The sections that follow discuss, for each Key Technical Issue, its subissues, and its acceptance criteria have been addressed through the PMR. In many cases a given PMR only partially addresses a given Key Technical Issue, and that fact is noted as appropriate.

Chapter (Z+1).0 References

This chapter contains the complete reference list for the document.

Appendices

The appendices contain supporting information deemed appropriate for inclusion in the PMR but at too great a level of detail for the body of the report.

Attachment 7

MODEL AND ANALYSIS HIERARCHY EXAMPLE

A first step in identifying the analyses and models required to support the postclosure compliance demonstration to be documented in Volume 2 of the SR as well as the TSPA-SR Technical Document, is to decompose the abstracted models used as inputs to the TSPA into the process models, subprocess models and analyses of data that are used as a basis for the abstraction. This effectively creates a model and analysis hierarchy that extends from the abstracted model down to the process models and ultimately to the data and software used to support the process model.

Varying levels of detail of such hierarchies were included in the VA (Volume 3 and the TSPA-VA Technical Basis Document). However, these illustrations were mainly for communicating the interrelationships between data and process models and abstracted models.

We now need to create model and analysis hierarchies for each process model used as a feed into TSPA-SR. These hierarchies will be used as the basis for controlling information flow as well as for revision control and analyses of potential impacts when revisions are made. These hierarchies will also serve as a basis for defining the required AP-3.10Q analyses and models products that need to be developed, baselined and controlled. Previously, this information has been contained in scientific notebooks and/or in process model technical reports.

As an example application of such a hierarchy, we have taken the draft outline of the technical work to be performed in the UZ Flow and Transport model, as documented in the draft report outline developed by NEPO and PAO staff prior to the workshop on this subject held last December. This outline has been decomposed into an appropriate level of AP-3.10Q analyses and models products. The level of detail in each analysis or model varies, but the following provides an outline of the products in the hierarchy. In many cases, a single AP-3.10Q product will have multiple uses.

1) PA model abstraction for UZ flow
   a) 3D mountain-scale process flow model (integrated UZ flow model)
      i) mountain-scale fracture/matrix flow model
      ii) Paintbrush nonwelded flow model
      iii) flow in faults model
      iv) Calico Hills nonwelded flow model
      v) perched water flow model
      vi) inverse flow model
      vii) infiltration model
   b) sensitivity/abstraction analyses for:
      i) different climate sequences
      ii) different infiltration ranges
      iii) weeps conceptual model
      iv) durable properties changes due to THCM effects

v) grid refinement
vi) refinement of EBS/UZ interface

2) PA model abstraction for drift seepage
   a) PA model for percolation into repository zones
      i) see 1)
      ii) 3D drift-scale process model for seepage
      iii) drift collapse analysis
   b) sensitivity/abstraction analyses for:
      i) different climate sequences
      ii) different infiltration ranges
      iii) weeps conceptual model
      iv) durable properties changes due to THCM effects

3) PA model abstraction for UZ transport
   a) see 1)
   b) matrix diffusion model abstraction
   c) sorption model abstraction
   d) colloid transport model abstraction
   e) decay model abstraction analysis
   f) gas-phase radionuclide release analysis
   g) evaluation of radionuclide inventory tracked
   h) analysis of PA transport model compared with alternate process models
      i) mountain-scale advection-dispersion model
      ii) Laplace inversion model
   i) sensitivity/abstraction studies for:
      i) different climate sequences
      ii) different infiltration ranges
      iii) durable properties changes due to THCM effects

4) PA model abstraction for climate to define climate cycles (timing)
   a) climate process model for yearly average conditions
      i) paleoclimate analysis

5) PA model abstraction of coupled process effects
   a) Coupled process model (used for PA model abstractions for UZ flow, drift seepage, and UZ transport)

Attachment 8

RESPONSE TO QUESTIONS AND CONCERNS FROM THE OFFICE OF LICENSING AND REGULATORY COMPLIANCE (OLRC) (Dated February 8, 1999)

Each of the OLRC items are shown below in italics, followed by the M&O response.

1. *It is of utmost importance to fix the problem.*

Response:

We agree that the problems associated with the implementation of the QA program need to be fixed. We believe that the proposal presented to YMSCO management on February 4, 1999, and discussed in our letter of February 9, 1999 (Wilkins to Dyer), addresses a path for redefining and focusing our work efforts to fix these problems and to upgrade the technical products supporting the Site Recommendation and License Application.

2. *Presentation Sufficiency Questions.*
   Unknown: How Long?

Response:

The activities associated with this proposal are multi-year activities, with the main efforts being focused on FY 1999 and FY 2000. For a summary schedule of these efforts (Work associated with addressing QA deficiencies, Process Validation and Reengineering activities, and development of Process Model Reports), see Attachment #2. A more detailed schedule for PVAR activities and for work addressing QA deficiencies is statused weekly for the Office of Project Execution and can be provided upon your request.

How Much?

Response:

The rough order of magnitude (ROM) cost estimates associated with implementing this proposal are addressed in Attachment #4. These estimates will be further refined when we submit the Change Request for this proposal.

QA criteria/process.

Response:

The QA criteria/process to be followed for the development of the Process Model Reports (PMRs) will be in accordance with QARD requirements and quality-affecting procedures that implement these requirements. The PMRs will be developed under M&O procedure QAP-3-5,

Development of Technical Documents (this may be elevated to an AP-level procedure). The analyses and modeling activities that support these PMRs will be conducted and documented in accordance with procedure AP-3.10Q, Analyses and Models, which was recently issued. For more information on this topic, see Attachment #5.

PMR process.

Response:

The description of the PMR concept, including the process to be followed for development of these reports is discussed in Attachment #5. The schedules for each PMR are shown in Attachment #2.

What work is deferred?

Response:

The work that is being proposed for deferral or deletion is discussed in Attachment #1.

Data needs SR/LA.

Response:

The information needed for the SR and LA are identified in the SR Annotated Outline and the LA Technical Guidance Document, both currently being developed. The schedules shown in Attachment #2 show how the proposed Process Model Reports relate to when inputs are needed for the SR and LA schedules.

Crosswalk on commitments.

Response:

We agree with the need to identify what commitments have been made to external parties that may affect the Site Recommendation. We have initiated work to identify these commitments, with the primary focus being the NRC, NWTRB, and the State of Nevada.

Concerns: Concern on sufficiency of resources.

Response:

We share your concern on the sufficiency of resources. As we discussed with you at the February 4, 1999 meeting, we plan to obtain the resources needed to perform this work by deferring/deleting some current work scope (see Attachments #1) and by requesting additional budget to obtain new resources (see Attachment #4).

Won't be done this year.

Response:

We agree that the work discussed with you on February 4, 1999 will not all be done this year. This is a multi-year effort, as shown on the schedules contained in Attachment #2.

Interpretation question – May need level 3 deliverables.

Response:

We understand that Level 3 deliverables provide a vehicle for the interpretation of the data contained in the deliverables. We believe that such interpretations can also be captured directly in the Technical Data Management System. The proposed Process Model Reports, including the supporting AP-3.10Q analyses and modeling documentation would also provide for interpretation of data.

Impact on current LA strategy unknown. Implies a different strategy. Topical Reports – 2 years to finish.

Response:

We agree that this is a modification of the current LA strategy, one that we believe will enhance the LA defensibility and traceability. We do not expect an impact on the LA schedule (see Attachment #2). With respect to Topical Reports, these Process Models Reports will be written in such a manner as to facilitate converting them to Topical Reports, if DOE chooses to do that.

Need more QA assistance.

Response:

We agree. This was discussed during our presentation of this proposal at our February 4, 1999, meeting. Attachment #4 contains a line item for the additional resources required by OQA.

Concern on whether the M&O has knowledge and commitment and will provide the oversight to preclude recurrence.

Response:

We believe that we have sufficient understanding of where the problems are, and this will be further supported by completion of the root cause determinations being conducted. We have made an explicit management commitment to both the DOE and NRC to focus on addressing these QA implementation issues and we stand behind that commitment. This commitment, as well as what the management expectations of the staff are, have been communicated to the M&O staff through various vehicles, including explicit inclusion of key nuclear culture principles in each employee's performance appraisal.

Need to inform lower levels of the problem.

Response:

These QA implementation problems have been and will continue to be communicated to the staff via the all-hands meetings held, Licensing Training, and ongoing staff meetings. As indicated above, each M&O employee's performance appraisal form now contains key nuclear culture principles that will be used to evaluate employees' performance.

Public Affairs need to provide support to deal with external issues.

Response:

We agree. As we get ready to discuss this concept with external parties, we will seek support from Public Affairs.

Some new work is essential and should not be deferred, i.e., Calico Hills and SZ models are not sufficient – need new data rather than fix old models.

Response:

We do plan to continue this work, while maybe not at the full level planned under the current baseline. We will adequately incorporate Busted Butte data into the UZ flow and transport model, and will incorporate Nye County data into the SZ flow and transport model.

Perhaps we should focus on new models with the right vigor rather than a top to bottom review of VA models which may be out-dated.

Response:

Through implementation of the new AP-3.10Q process, our analyses and modeling activities will incorporate new information, not just review of the VA models. These activities will reflect new data, as well as changes to current models that would be needed to address the LA Design Selection (LADS) process.

Reference 4

Letter OPC:JRS-1012, J.R. Dyer to D.R. Wilkins, U.S. Department of Energy (DOE) Guidance for Refocus Change Request (CR), dated March 25, 1999.

Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, NV 89036-0307

QA:N/A

MAR 25 1999

D. R. Wilkins, Technical Project Officer
for Yucca Mountain Site
Characterization Project
TRW Environmental Safety Systems, Inc.
1261 Town Center Drive, M/S 423
Las Vegas, NV 89134-6352

U.S. DEPARTMENT OF ENERGY (DOE) GUIDANCE FOR REFOCUS CHANGE REQUEST (CR)

Reference: Ltr, Wilkins to Dyer, dtd 3/4/99

The purpose of this letter is to direct initiation of a CR to implement Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O) recommendations for upgrading plans to address high priority tasks in order to put in place full traceability of models, software, as well as full qualified data, implement improved work control processes, and ensure a credible and defensible basis for Site Recommendation (SR) and License Application (LA).

In general, we believe the CRWMS M&O's proposed approach would benefit the Project. We endorse the CRWMS M&O's efforts to improve the processes used to ensure the quality, traceability, and defensibility of products that support preparation of the SR Report and LA. However, certain information, as noted below, needs to be included in the CR to ensure that DOE has adequate technical bases for SR and the LA.

1. DOE endorses the general philosophy of the Process Model Reports (PMR) as a synthesis of the technical information and models that are deemed to be necessary and sufficient to support postclosure performance assessment, evaluation of postclosure site suitability, and preparation of those portions of the SR Report and LA related to the process models and postclosure system performance. The PMRs should focus only on the documentation of the technical basis for the process models used in postclosure performance assessment. They should contain no regulatory conclusions or compliance arguments, and they should not be prepared for conversion to topical reports.

2. The depth and breadth of scientific and engineering work that relates to the assessment of postclosure performance and that will be used in preparing the SR Report and LA must be adequately represented in the PMRs, and in supporting

Administrative Procedure (AP) 3.10Q analyses and other documents. The PMRs and the AP-3.10Q analyses, as appropriate, must take full advantage of and adequately reflect the body of existing scientific work on the Project by direct reference, as is normally done within the scientific and technical community. The PMRs must provide sufficient support for the conclusions and models presented to be credible and defensible, and to withstand rigorous technical review. The PMRs should be based on the best available information and provide a roadmap to that information, both in the Technical Data Management System (TDMS) and available reports.

3. In order to adequately define the scope of the PMR effort, the CR needs to: contain an outline of each PMR that is sufficiently detailed to convey the scope of the document; identify the number and scope of the AP-3.10Q analyses that may be required to support each PMR; identify the data, including existing data, analyses, and interpretations, that are likely to be considered in preparing the PMRs and supporting AP-3.10Q analyses; to the extent possible, indicate which data, analyses, and interpretations contained in existing references are likely to require qualification or other action prior to use and provide a detailed plan for this effort; and provide a list of other documentation, data, and models that may be addressed or a schedule for providing the information in each PMR.

4. An appropriately detailed cost estimate for the work required in preparing each PMR and the associated AP-3.10Q documentation must be provided so that there is a basis to evaluate the scope of the proposal. A schedule for development of the PMRs and the associated AP-3.10Q analyses and supporting data also needs to be provided. The linkages between each PMR and its supporting AP-3.10Q analyses, existing scientific data and analyses, and other information should be defined to the extent possible. The schedule needs to display the relationships among the PMRs, and between the PMRs and the Total System Performance Assessment/Analysis (TSPA), the SR/LA design, and the Site Description, so that the sequencing and timing of product development can be adequately evaluated. The relationship of the CR and the PMRs to plans for development or completion of other documents, including the Seismic Hazard Topical Reports, the Disposal Criticality Topical Report, and separate reports on disruptive events and natural analogs, also needs to be described. The schedule must indicate how the PMRs will support the process and schedule for development of the draft SR Report and draft LA chapters. DOE review of the CR will focus heavily on the details of the logic in the schedule.

5. The CRWMS M&O should provide a matrix showing how the PMRs support preparation of the relevant postclosure sections of the SR Report and LA. The matrix should also indicate where other documents are required to provide the necessary information (e.g., TSPA, Site Description). Since the proposed PMR process focuses

entirely on the documentation needed for postclosure evaluations, the CR should indicate how the PMR process and other proposed changes relate to existing plans to provide the other information (e.g., on design and pre-closure radiological safety) that is required for the SR Report and LA. The CR should clearly note any changes in the work planned to provide the information needed for design and preclosure safety analyses.

6. The CR needs to provide DOE with a detailed schedule and specific goals of the Tiger Team efforts related to each PMR, and an estimate of the costs associated with these efforts for each PMR so that there is a basis to understand the scope of the effort and to identify those areas that require the greatest expenditure of resources. The Tiger Team schedules need to be integrated with the PMR development schedule so that the overall PMR schedule can be evaluated. Additional technical reviews, data qualification activities, and formal peer reviews that may be required, as identified by the Tiger Teams, should not be planned as part of this CR, but should be included in future CRs as the needs are identified.

7. The deletion or disposition of planned fiscal year (FY) 1998 and FY 1999 Level 3 Deliverables should be discussed with and must be agreed upon by the Yucca Mountain Site Characterization Office (YMSCO) Assistant Manager (AM) affected as part of CR development. A rationale for each Level 3 deliverable deletion agreed upon by the affected YMSCO AM needs to be included in the CR. The rationale should include a discussion of where the data or information will be captured, a schedule for when this event will occur, and an estimate of the cost savings associated with deliverable deletion (i.e., a cost-benefit analysis for the deletion as opposed to completing it according to the present plan). Absent a clear benefit to deleting the deliverable, the work should be completed as originally planned.

8. Rather than accept the proposed treatment of the PMRs as a new sub-product, with a separate sub-product element for each PMR, as a basis for CR development, DOE prefers that the CR effort focus on the detailed integration of the schedule and scope for PMR development, and the relationship of the PMRs to other project documents and activities. Once this effort has begun, it should be possible for the planning team to identify where the proposed activities logically fall in the Project Work Breakdown Structure. Two weeks after the receipt of this guidance, the planning team should report to Victor W. Trebules, Director, Office of Project Control, with a proposal for DOE approval regarding the planning structure for reporting and monitoring work related to these new activities.

9. We remain concerned that the cost estimate to re-focus the FY 1999 CRWMS M&O work plan on high priority tasks needed to develop the documentation and traceability required for the SR Report and the LA has grown since the original proposal presented on February 4, 1999. We suggest that the final cost associated with the CR be constrained to the $8.7 million estimate contained in the above-referenced letter.

10. The CR needs to contain a detailed schedule which shows all necessary and appropriate technical feeds to the final Environmental Impact Statement (EIS) under the new construct, and most importantly, demonstrates how the CRWMS M&O will assure technical and design consistency between the final EIS and SR.

The proposed schedule for PMR development (as indicated in the above-referenced letter) shows that verification and traceability activities will be completed by the end of FY 1999. Before approving the FY 2000 plan, the DOE will need to have a good understanding of what additional information must be collected or other work completed to support the PMRs. To approve the CR, DOE will also need to understand, in detail, the differences, if any, in scope, cost, or schedule, between the work discussed in Volume 4 of the VA and the work planned for FY 1999, 2000, and the out years to achieve SR and LA under this new construct. The CRWMS M&O should plan to provide this information as part of its FY 2000 planning documentation.

If you have any questions please contact Victor W. Trebules at 794-5068 or Jane R. Summerson 794-1493.

J. Russell Dyer
Project Manager

OPC:JRS-1012

cc:
J. N. Bailey, M&O, Las Vegas, NV
J. K. Clark, M&O, Las Vegas, NV
C. J. Nesbitt III, M&O, Las Vegas, NV
J. L. Younker, M&O, Las Vegas, NV
Richard Toft, MTS, Las Vegas, NV
R. W. Clark, DOE/OQA, Las Vegas, NV
J. J. Adams, DOE/YMSCO, Las Vegas, NV
Stephan Brocoum, DOE/YMSCO, Las Vegas, NV
S. A. Carter, DOE/YMSCO, Las Vegas, NV
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J. R. Summerson, DOE/YMSCO, Las Vegas, NV
V. W. Trebules, DOE/YMSCO, Las Vegas, NV
M. E. Van Der Puy, DOE/YMSCO, Las Vegas, NV
Records Processing Center = "10"

Reference 5

Briefing 1999-043cjn Rev. 1, prepared by C.J. Nesbitt, III, PMR, Data Qualification and LADS Change Request Status, dated Apri; 13, 1999.

Civilian Radioactive Waste Management System

Management & Operating Contractor

TRW Environmental Safety Systems Inc.

PMR, Data Qualification and LADS Change Request Status

C. J. Nesbitt, III

April 13, 1999

1999-043cjn Rev 1

TRW Environmental Safety Systems Inc.
B&W Services, Inc.
Duke Engineering & Services, Inc.
Fluor Daniel, Inc.
Framatome Cogema Fuels
JAI Corporation

JK Research Associates, Inc.
Lawrence Berkeley Laboratory
Lawrence Livermore National Laboratory
Los Alamos National Laboratory
Morrison-Knudsen Corporation
Sandia National Laboratories

Science Applications International Corporation
Science & Engineering Associates, Inc.
Winston & Strawn
Woodward-Clyde Federal Services
Cooperating Federal Agency:
U.S. Geological Survey

Work Status

- All work associated with PMRs, Data Qualification & LADS Design Option 2 is underway per direction of M&O General Manager.
- Pending CR action is not holding up any work.

Work Status (Continued)

- **PMRs**
  - PMR work logic is completed - April 13, 1999.
  - Logic undergoing check.
  - Schedule being developed based on logic.
- **Data Qualification**
  - Tiger Teams engaged and working to determine state of remedial action.
  - Work on schedule provided to DOE in Wilkins letter dated March 4, 1999.

Work Status (Continued)

- **PVAR**
  - Draft procedures complete.
  - Review completed on April 9, 1999.
  - Comment resolution underway, completion scheduled April 16, 1999.
- **Product WBS/RAM**
  - M&O has developed a proposed revision to the Product Hierarchy in line with the briefing at the Colorado Off-Site.
  - Briefing being prepared for DOE per direction in Dyer letter dated March 25, 1999 . M&O functional hierarchy also being updated.

Work Status (Continued)

- **LADS**
  - Per draft DOE direction April 9, 1999, work proceeding on LADS Option 2.
  - Current VA design workscope being evaluated for possible changes.
  - Work on ceramics has been suspended.
  - Orderly suspension of work on Richards Barrier will be proposed.
  - Recommendation to continue Backfill studies.
- **MR Disposition**
  - M&O has reviewed listing of workscope to be considered for CRs. Recommendation to be briefed to PORB on Thursday, April 15, 1999.

Next Steps

- **PMRs**
  - Complete Schedule by end of April as briefed at Colorado Springs Off-Site.
  - Prepare budget estimate for PMRs.
    - Multi-year estimate to be in sync with the schedule.
- **Data Qualification**
  - Integrate Tiger Team and PMR schedules.
  - Prepare budget estimates.

Next Steps (Continued)

- **PVAR**
  - Integrate PVAR procedures (e.g. AP 3-10Q) into PMR schedules.
  - Prepare budget estimates.
- **Product WBS/RAM**
  - Gain DOE approval.
    - Needed for Annual Planning Guidance.
- **LADS**
  - Obtain DOE approval to suspend work.
    - Residual budget rollover.
  - Complete design workscope review.
    - Develop schedule & estimates.

Next Steps (Continued)

- **MR Disposition**
  - DOE review of M&O proposed list.
  - DOE decision and direction for new FY99 workscope.

Situation

- Work underway on PMDQ CR.
- Work starting on LADS.
- Potential work about to start on new CR (MR Disposition).
- Work to start on FY00 multi-year plan as soon as possible to support an August PORB approval of plan.

Problem

- **Using the current planning approach the completion of PMDQ, LADS Option 2 & MR CR actions into the next six weeks would not be possible.**
  - Resulting delay would push start of annual planning out beyond May 15, 1999.
  - Resulting delays would put us into the same position we were in last year when critical end of year CRs took precedence over annual plan start.
  - A virtual replan of the baseline would be required touching over half of all work packages and control accounts.

Solution

- **Implement revised annual planning process (as briefed at Colorado Springs Off-Site) now.**
- **Provide DOE two top level CR packages.**
  - PMDQ/LADS
    - Mid-May, Combine two CRs into one.
  - MR Disposition
    - Mid-June, Contingent on quick DOE direction.

Solution (Continued)

- **CR Packages to contain:**
  - Detailed logic driven schedule (P3).
  - Added/Deleted deliverables with rationale.
  - Cost Estimates at Sub-Product level (By month by labor/ODC).
  - Sub-Product Scope (New or Revisions to existing scope).

Special Notes

- **Revised WBS/RAM will be implemented with approval of annual plan CR (August 1999).**
- **The M&O would continue to perform and control work in accordance with the forward looking decisions provided at the Colorado Springs Offsite.**

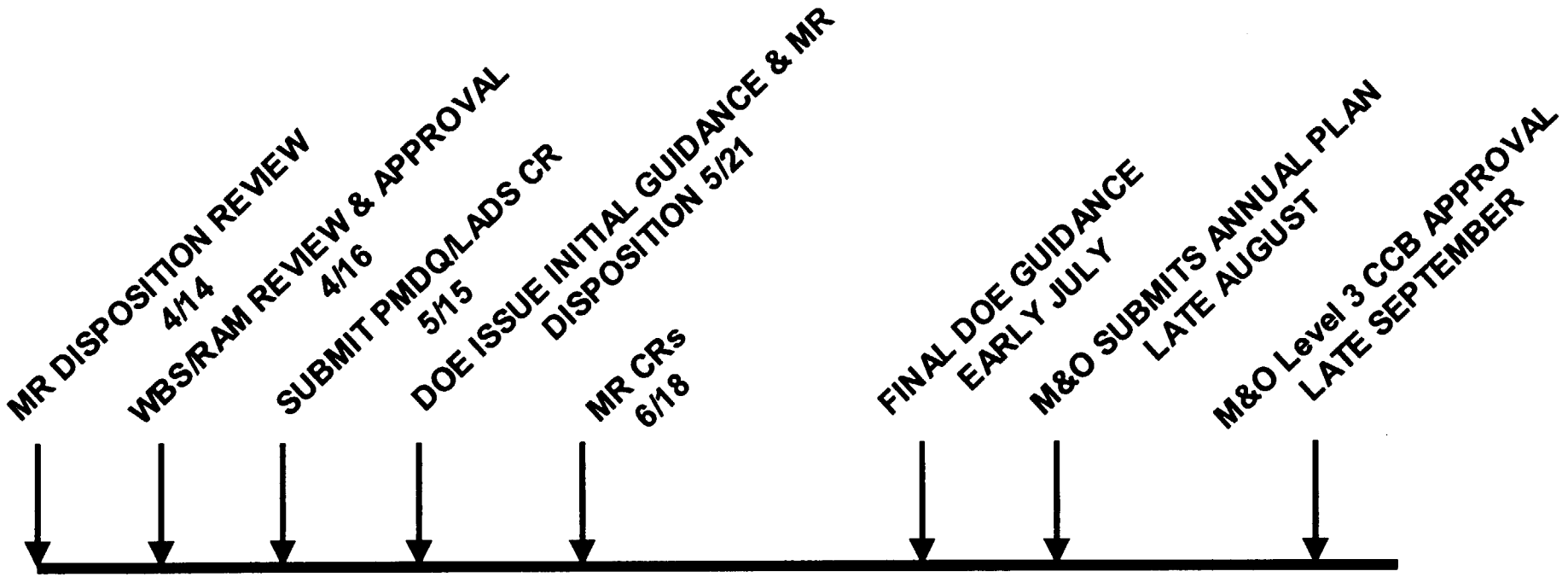
Key Understandings

- M&O will continue reporting to current baseline until PMDQ/LADS CR is approved.
- M&O will report to new schedule once CRs are approved.
- M&O will continue to report earned value at Inception to Date (ITD) by Sup-Product for the balance of the Fiscal Year once CRs are approved.
- M&O will also provide spend report by month, ITD, FTC, and FAC along with FTE reports.

Key Understandings (Continued)

- **M&O will modify work packages and control accounts only to the degree necessary to control and report work for the balance of the Fiscal Year.**
  - WP/CA revision will not be included with CRs (Per new planning process).
  - Functional Monitors will be privy to WP/CA modifications as soon as available.
- **Special requirements in Dyer direction dated March 25, 1999, to be provided after CR submissions.**
  - VA Crosswalks.

Preliminary Timeline



Closing Summary

- We can't get there from here using the existing planning process.
- We need to learn from our FY98 planning problems and apply the revised paradigm now.
- Bi-weekly planning status to DOE.
- Recommend PORB approval ASAP.

Reference 6

Management Plan and Response to Corrective Action Request (CARs) LVMO-98-002 (CAR-002), LVMO-98-005 (CAR-005), LVMO-98-006 (CAR-006), LVMO-98-010 (CAR-010), Revision 2, dated November 30, 1998.

MANAGEMENT PLAN and RESPONSE to CORRECTIVE ACTION REQUESTS (CARS) LVMO-98-C-002 (CAR-002) VAMO-98-C-005 (CAR-005) LVMO-98-C-006 (CAR-006) LVMO-98-C-010 (CAR-010)

YUCCA MOUNTAIN PROJECT (YMP) MANAGEMENT AND OPERATING CONTRACTOR (M&O)

Revision 2

November 30, 1998

Prepared by:

_____
Ed Miller
CAR Technical Lead
Date_____

Reviewed by:

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David Calloway
CAR Project Manager
Date_____

Checked by:

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Jim Gardiner, DOE
YMSCO Office of Program Execution
Date_____

Approved by:

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Bob Marler, M&O
Support Operations Manager
Date_____

Approved by:

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Dan R. Wilkins, M&O
AGM, Monitored Geologic Repository
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Approved by:

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Colin Heath, M&O
AGM, Waste Management & Integration
Date_____

Approved by:

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R. L. Strickler, M&O
General Manager
Date_____

Approved by:

_____
Robert Craig, USGS
Technical Project Officer
Date_____

EXECUTIVE SUMMARY

This Management Plan and Response identifies actions by the Management and Operations (M&O) contractors and other affected organizations in response to Corrective Action Requests (CARs) LVMO-98-C-002 (CAR-002), VAMO-98-C-005 (CAR-005), LVMO-98-C-006 (CAR-006) and LVMO-98-C-010 (CAR-010). These CARs relate to deficiencies found in technical data, procurement, software, and model development and use respectively. Each of the individual CARs defines specific problems that have some degree of overlap with the other three areas. Due to the interconnected nature of the CARs, this plan provides an M&O-wide, coordinated approach to remedial actions, action to determine the extent of the conditions, root cause(s) determination, and actions to preclude recurrence.

The CARs are interrelated in that at least one of the potential affects of inadequate procurement controls may be to directly affect the quality status of data and software/models. Data and software code of indeterminate quality status, in turn, may impact the adequacy of analyses/models and their outputs. Data is the focal point because of its current or eventual use in licensing documents, licensing-like documents (e.g., the Viability Assessment and Site Recommendation), or design documents. The identification of deficiencies in any one of these CARs will involve corrective actions that will help to identify the quality status and the extent of the deficiencies associated with one or more of the CARs, for example, a CAR-002 data item identification and qualification process would support and aid in the qualification of a CAR-006 software item and/or CAR-010 model item validation. Completion of planned or yet to be planned actions to preclude recurrence may also apply to one or more of the other CARs.

The actions already taken or planned include remedial actions designed to prevent similar deficiencies while corrective actions are being developed and implemented. Using a method of "global" flagging, i.e. "To Be Verified" (TBV) provides a positive control over the status and use of data and software. This ensures their verification/qualification at a point in time when the data or software is going to be used for future decisions. To ensure identification and resolution of affected data, remedial actions provide short-term compensatory measures to assure that the qualification status of data is verified and any identified issues are tracked until resolved. A system will be developed to ensure that data and software, and the point(s) of their usage will be identified. This will include assigning a TBV number to the data and software with traceability to and/or from the point of use. In this manner, data or software with known qualification deficiencies or whose qualification status is indeterminate can still be used for various applications and included in various reports or draft/preliminary documents without having those conditions fully resolved. The assignment of the TBV number once the data or software has been used or identified for use in the Site Recommendation (SR) or License Application (LA) establishes a priority for evaluation/resolution. This will ensure that all points of usage are flagged and tracked and will not be unknowingly relied on for SR and LA document submittal or, in the case of designs, be relied on for their safety or waste isolation function.

Other actions will include methods to determine the extent of the identified conditions and the setting of priorities for correcting the identified deficiencies. Priority will focus on data, software, and the models required in support of, or in the preparation of, the SR and LA.

Due to the complexity of the actions required to address these CARs, training for those involved in the actions to determine the extent of the conditions will be performed prior to initiation of

such complex actions. Whenever a commitment is made to develop or revise a procedure, training is required as a part of the OCRWM process for making a procedure effective.

Also due to the complexity of these corrective actions, the M&O will perform independent assessments at appropriate intervals or milestones to confirm that actions taken are adequately completed and effective. Progress for each CAR will be reported by the CAR Project Manager to the Yucca Mountain Site Characterization Office (YMSCO) and OQA periodically as deemed appropriate. Upon completion of the actions to determine extent of conditions for each of the CARs, amended CAR responses will be submitted that will identify the extent of conditions, corrective actions taken, and impacts.

CORRECTIVE ACTION REQUEST CONDITIONS

CAR-002 Summary

CAR-LVMO-98-C-002 has identified data-related procurements as deficient or of indeterminate quality. These deficiencies also render the resulting data and related downstream documentation/documents where the data were used of indeterminate quality. Some of these data reside in databases and are labeled as qualified. Quality Assurance Requirements and Description (QARD) Supplement III controls of data are inadequate as depicted by the cited examples of the inadequate procurements involving the services that affect data.

CAR-005 Summary

CAR-VAMO-98-C-005's deficiencies are summarized as follows:

1) Controls over the content and review of procurement documents are ineffective or of an indeterminate quality. Per QARD criterion 4 procurement document controls and associated activities were not effective and the items or services acquired as well as downstream items, documents, or activities where the acquired items or services were used are of an indeterminate quality.

2) Controls over the qualification and use of suppliers are deficient or of an indeterminate quality. Per QARD criterion 7 controls over procured items and services were ineffective and the items or services acquired as well as downstream items, documents, or activities where the acquired items or services were used are of an indeterminate quality.

3) Previous actions to determine the extent of procurement-related conditions adverse to quality have been in part ineffective (this includes actions to determine the direct quality of items or services acquired and of downstream items or activities impacted by the acquired items or services). QARD criterion 16 controls were not effectively implemented and the items, services, documents, data, software, models or activities and products of activities involved in prior documented procurement deficiencies are of an indeterminate quality.

4) Previous actions to preclude recurrence of conditions adverse to quality have been deficient. Per QARD criterion 16 controls were not ineffectively implemented with regard to ultimately correcting and precluding procurement program deficiencies at the M&O Laboratories that

had been identified and documented in several prior Deficiency Reports and Corrective Action Requests.

CAR-006 Summary

CAR-LVMO-98-C-006 has identified that M&O software programs are being developed and used for quality affecting activities throughout the CRWMS M&O without the implementation of specific software life cycle baseline, and/or controls. The ability to assess the effectiveness of these processes is rendered indeterminate due to an inadequate process and/or lack of implementation. Not all M&O software programs have been identified, baselines established, or placed under configuration management.

CAR-010 Summary

CAR-LVMO-98-C-010 has identified that M&O models are being developed and used for quality affecting activities throughout the M&O without the implementation of sufficient model development processes, scientific investigation and configuration management controls. The M&O has no established system for external interface controls related to affected organizations or internal interfaces within an M&O organization utilizing models. There is no published baseline list of models that delineates ownership, integration, flow or controls for the various models, and models have not been placed under model configuration management version control.

INTEGRATED CAR MANAGEMENT

This plan has been developed to coordinate and integrate the M&O's responses to the CARs. The overlapping nature of CARs 002, 005, 006 and 010 requires extensive coordination and communication within the M&O and between the M&O, the U.S. National Laboratories, the U.S. Geological Survey (USGS), and the U.S. Department of Energy's (DOE) Office of Civilian Radioactive Waste Management (OCRWM) and the Office of Quality Assurance (OQA).

A CAR Project Support Team has been established and is headed by the CAR Project Manager who reports to M&O Support Operations Manager. The M&O's Configuration Management Manager has been assigned as the CAR Project Manager. The CAR Project Manager is provided with technical support from the Natural Environment Program Office (NEPO), Performance Assessment Operations (PAO), Support Operations, Engineered Barrier Systems Operations, M&O Procurement, Surface Facilities Operations, Waste Package Operations, Repository Design Program, USGS, and others as necessary to assist with managing CAR resolution.

The CAR Project Manager's role is to coordinate between the designated points of contact for the various departments and groups that are involved in the investigation and corrective actions for the identified conditions. The CAR Project Manager is responsible for the planning, integration and coordination of the M&O Integrated CAR related activities. This role includes:

1. Managing the overall CAR response effort
2. Coordinating communication between the M&O organizations and the Process Validation and Re-engineering (PVAR) working groups
3. Planning and scheduling M&O CAR response activities

4. Consolidating Operations Managers' (OMs) CAR responses/planned actions
5. Reporting status of the CAR activities
6. Identifying appropriate methodologies for investigating the extent of the conditions and for ensuring proper completion of actions and integration between the CARs and the various responsible organizations
7. Coordinating CAR closure actions with OQA.

The Operations Managers (OMs) and the USGS Technical Project Officer (TPO) have the primary responsibilities for the execution of the CAR activities in accordance with the action, commitments and completion dates provided in this plan. The OMs/TPO will direct the conduct of the actions described in this plan for their respective organizations.

Actions will be managed at a sufficient level of consistency and detail beyond this plan to provide clear guidance to members of their respective organizations on the actions required, and on required status reporting to the CAR Project Manager. The OMs/TPO will each designate a Point Of Contact (POC) to assure common and complete understanding within each operation of what is required by the implementation of this plan.

Additional integration will be accomplished through the use of common tools such as integrated schedules, common guidance and reporting formats, and OM/TPO actions based on this plan. The CAR Project Manager has established guidance for reporting of action completion status. Planning, information exchange, and status reporting meetings will be scheduled as necessary to ensure timely completion of the identified actions.

CAR RESPONSES

A number of the remedial actions described below were taken as immediate actions to identify and track to resolution deficient conditions and to prevent additional deficiencies while corrective actions are being implemented. The immediate actions were included in a memorandum from D.R. Wilkins (Subject: M&O Policy for Closure of QA Deficiencies LVMO-98-C-002, VAMO-98-C-005 and LVMO-98-C-006, dated June 17, 1998) to all OMs and TPO.

2.0 CAR-002

This CAR involves two issues, procurement controls and controls affecting data. This response covers the data quality aspects of the CAR. The response to CAR-005 covers all of the procurement program aspects identified in this CAR.

2.1 Remedial Actions

2.1.1 Data currently identified in the Technical Data Management System (TDMS) as qualified will be flagged as "TBV". Until YAP SIII.3Q, *Processing of Technical Data on the Yucca Mountain Site Characterization Project*, is modified as identified in remedial action 2.1.2 any data submitted to the TDMS and identified as qualified will continue to be flagged as TBV when entered into TDMS.

Responsibility: Technical Data Management Manager

Due Date: Completed. Existing data identified as qualified were flagged as TBV on September 30, 1998.

2.1.2 YAP SIII.3Q, *Processing of Technical Data on the Yucca Mountain Project* will be modified to include checklist(s) designed to identify procurement, software, or modeling issues that potentially affect the qualification status of the data and provide traceability to related records, such as scientific notebooks or technical procedures, procurement documents, source data, or reports. Once this procedure modification is effective, all data submittals will be accompanied by the completed checklist(s) from the data submitter/originator. Based on the results of the checklist, Qualified - " Q" data initially generated under the Quality Assurance (QA) program as "Q" will either be identified as qualified or identified as qualified with a TBV and any indeterminate issues identified (e.g. PO, software, model) in the TBX system and TDMS. If no issues are identified as a result of completing the checklists, no TBV number will be issued to this incoming data.

Responsibility: Technical Data Management Manager

Due Date: February 15, 1999

2.1.3 Methods and procedures for tracking data point(s) of use (data to document traceability) and appropriate interface with the TBV system will be established. Data flagged with a global TBV will be required to have a TBV number assigned at the time the data are initially identified for use (i.e. use refers to any data that is identified from VA to SR/LA) and the number referenced to the "point of use" document(s). While the TBV number is open, it will be referenced in any subsequent document where the data may be used.

Responsibility: Configuration Management Manager

Due Date: Completed November 4, 1998 with the issuance of NLP 3-15.

2.1.4 YAP SIII.3Q will be modified to require all data used to be obtained from the TDMS, to be identified by the Data Tracking Number and to identify the qualification status of the data.

Responsibility: Program Information Management Office Manager

Due Date: February 15, 1999

2.2 Actions to Determine Extent of the Conditions

Remedial actions when implemented will provide positive controls to ensure that issues identified in the subject CAR are evaluated for potential impact on any data identified for use and will require that the qualification status of the data be confirmed on an ongoing basis. This approach allows the determination of extent of condition to focus on data previously used and anticipated for use in support of the SR and LA. The following actions will be taken to determine the extent of condition.

2.2.1 The managers responsible for Volumes 2 and 3 of the Viability Assessment (VA) document, the Technical Basis Document (TBD), and Site Description Report will identify all quality affecting data/references used in support of VA and anticipated for use in the SR and LA. The results will be documented in a list that is provided to the CAR Project Manager for inclusion in the CAR closure package.

Responsibility: Natural Environment Program Operations Manager; Performance Assessment Operations Manager; Surface Facilities Operations Manager; Waste Package Operations Manager; Engineered Barrier System Operations Manager; Repository Design Program Manager.

Due Date: Completed October 30, 1998

2.2.2 Data and or data sets identified, as a result of extent of condition action 2.2.1 will be assigned individual TBV number (s). The qualification status of any data submitted to the TDMS will be reviewed as part of the submittal process. This will prevent data with open issues requiring further evaluation from being labeled qualified without noting the indeterminate quality status of the data.

Responsibility: CAR Technical Lead

Due Data: May 3, 1999

2.2.3 Checklist(s) will be established to guide the evaluation of data to identify procurement, software, or modeling issues that potentially affect the qualification status of the data and provide traceability to related records, such as scientific notebooks or technical procedures, procurement documents, source data, reports, etc. The owner/generator of the data identified to be used from VA to SR//LA from extent of condition action 2.2.1 above will perform a documented evaluation using these checklists for each of the identified data sets. This evaluation and qualification process will be performed for all current "newly developed" data and data to be submitted to the TDMS. The checklist will be completed by the data and/or data sets owner/generator and forwarded to the CAR Project Manager for inclusion in the CAR closure package. To ensure the effectiveness of this action, the evaluations will be independently verified.

Responsibility: Natural Environment Program Operations Manager; USGS Technical Project Officer; Performance Assessment Operations Manager; Waste Package Operations Manager, others as identified

Due Date: October 29, 1999 – for completion of re-verification of data identified in 2.2.1 as being needed for SR and LA

2.2.4 If the results of item 2.2.3 identify additional issues requiring further evaluation (e.g., software issue, model issue, procurement deficiencies), the issues will be identified in the appropriate tracking system(s) such as the TDMS, Software Management System (SMS) and TBV system. The TBV number will remain open until required actions are complete. Any data having open issues and/or a TBV number will be corrected or qualified using approved alternate methods according to the revised YAP SIII.1Q, *Qualification of Unqualified Data (made effective November 18, 1998)*. For those data having no open issues after completion of the evaluation, the TBV number will be closed.

Responsibility: CAR Technical Lead

Due Date: May 3, 1999

2.3 Root Cause Determination

The apparent cause is:

Corrective action taken in response to previous procurement deficiencies (e.g., CAR 97-001 – closed, CAR 98-005) did not include commitment to assess impact on data for those suppliers who did not have sufficient QA and technical requirements passed down to them.

2.3.1 Root cause determination will be performed and documented according to the requirements of AP-16.4Q, Root Cause Determination.

Responsibility: CAR Project Manager

Due Date: March 5, 1999

2.4 Actions to Preclude Recurrence

2.4.1 Actions to preclude recurrence and associated schedules for completion will be provided after root cause determination.

Responsibility: CAR Project Manager

Due Date: March 15, 1999

The following actions are being taken based on the apparent cause:

2.4.2 YAP SIII.1Q, *Qualification of Unqualified Data* will be revised to improve the process for data qualification.

Responsibility: Assistant Manager for OPE

Due Date: Completed November 18, 1998

2.4.3 YAP SIII.3Q, *Processing of Technical Date on the Yucca Mountain Project* will be revised to improve the process to ensure adequate objective evidence is available to support the qualification of submitted data.

Responsibility: Assistant Manager for OPE

Due Date: February 15, 1999

5.0 CAR-005

5.1 Remedial Actions

During OQA Audit M&O-ARC-98-06, it was identified that the M&O were not effectively implementing M&O QAPs 7-3, 7-5, and 7-6 procedures. The audit report stated that remedial action to resolve these issues was referenced to CAR-005. The following four remedial actions strictly apply to those identified audit deficiencies:

5.1.1 The FY'99 statement of work for UNLV and ANL were issued containing acceptance criteria.

Completed: October 15, 1998

5.1.2 M&O QAP-7-5 will incorporate specific responsibilities for submittal of QA records generated or accepted by this procedure to be reflected in the new recommended AP.

Responsibility: M&O Procurement Engineer

Due Date: February 26, 1999

5.1.3 M&O QAP-7-6 will be deleted and replaced by QAP-7-5. QAP-7-5 will no longer contain a requirement to notify the supplier that the service has been accepted. This is a requirement of the QARD and the fact that a supplier receives payment for the service is adequate notification of acceptance of the service.

Responsibility: M&O Procurement Engineer

Due Date: February 26, 1999

5.1.4 Based on DOE correspondence dated 10/30/98 from Alan Brownstein to Mr. Michael J. Bell, Subject: Office of Civilian Radioactive Waste Management Administrative Procedure AP 32.6, *Reporting of Defects and Noncompliance to meet the intent of 10 CFR Part 21,* the CRWM Program is postponing its voluntary implementation of 10 CFR, Part 21. M&O-QAP-7-3 will be revised to delete the application of 10 CFR, Part 21 in future procurement documents.

Responsibility: M&O Procurement Engineer

Due Date: February 26, 1999

The following remedial actions address the specific deficiencies addressed in CAR-005.

With the exception of remedial action 5.1.5 below, no other remedial actions are planned at this time for the USGS. If, through completion of other actions it is determined that remedial actions are needed, then such actions will be planned, taken, and this response modified.

5.1.5 Issue a policy letter stating that procurements are not to be made on the Civilian Radioactive Waste Management (CRWM) Program unless in accordance with applicable procurement procedures to determine if the item or service is Q.
If determined to be Q, the procurement will be processed according to approved CRWM Program procedures. A part of the objective here is to ensure that credit card and electronic purchasing on the CRWM Program is stopped. This policy letter will be sent to the USGS Technical Project Officer (TPO) and YM Project Lead at each of the National Laboratories. Each copy will contain a statement for acknowledging receipt, understanding of the policy, and personal commitment to ensure compliance that must be signed, dated and returned by the TPO or YM Project Lead to the DOE Director, Office of Civilian Radioactive Waste Management.

Responsibility: DOE Director, Office of Civilian Radioactive Waste Management and the USGS TPO and the YMP Project Lead at each of the National Laboratories

Due Date: December 21, 1998

5.1.6 Establish within the M&O Las Vegas Procurement Department a position of Procurement Engineer with responsibilities to ensure the adequacy of the M&O procurement process and the adequacy of new M&O procurements. The Procurement Engineer will assure the adequacy of the procurement documents by coordinating the development and review of the technical and quality requirements included in those procurement documents.

Responsibility: Procurement Manager

Due Date: Completed September 30, 1998

5.1.7 M&O QAP-7-3 will be revised to incorporate an enhanced procurement process that meets the QARD and has appropriate quality controls incorporated to ensure built-in quality.

Responsibility: M&O Procurement Manager

Due Date: February 26, 1999

5.1.8 Revise the National Laboratories' procurement procedures as necessary for their application to the new procurement process in order to reference M&O QAP-7-3 for new procurements.

Responsibility: NEPO Manager and Laboratory Leads

Due Date: February 15, 1999

5.1.9 The Procurement Engineer (PE) and the OQA representatives respectively will review the current open Q procurements in accordance with applicable procurement procedures at the National Laboratories to ensure that appropriate technical and quality requirements are established and applied. Any needed changes will be processed to incorporate the change according to applicable procedures.

Responsibility: Procurement Engineer and responsible OQA Representatives

Due Date: January 22, 1999

5.1.10 The Procurement Engineer (PE) and/or responsible OQA representative, as appropriate, will review all currently open procurements classified as non-Q to ensure the classification is correct in accordance with a documented methodology. If the classification is incorrect, the procurement will be re-classified and re-processed under the Q procurement process. This documented methodology will be included in the M&O QAP-7-3 revision to ensure that all future procurement classifications have been made correctly.

Responsibility: PE and responsible OQA Procurement Representatives

Due Date: January 31, 1999

5.1.11 Revise M&O QAP-7-5 to include a fully compliant process for the acceptance of quality-related services. The M&O QAP-7-5 will require the M&O Procurement Engineer to coordinate the review of supplier deliverables to ensure compliance with the requirements of the procurement document. The M&O Procurement Engineer will solicit the assistance of the requester in this review.

Responsibility: M&O Procurement Manager

Due Date: February 26, 1999

5.2 Actions to Determine Extent of the Conditions

NOTE: The assessment and review process of current and closed procurements is integrated with CAR-002, 006 and 010 in qualified procurements for data, software and models that have been identified as necessary for SR or LA will be reviewed and resolved as the first priority. Procurements involving the acquisition of Q items will be worked as the second priority. Any procurement not worked as a part of the first two priorities will be evaluated and identified issues resolved using the following priorities:

- Procurements of design services
- Procurements of calibration services involving Q data
- Procurements of analytical services where Q data is provided
- Procurements of data collection services
- Procurements of vendor qualified software used in Q applications
- Any other Q procurements

The following were referenced in the CAR-005 write up and result in the following identified issues that will be covered by the CAR-005 actions.

Deficiency Document No.	Issues Included In CAR-005	Comment
YM-97-C-001 (LVMO)	CAR-005 actions to preclude recurrence will address the following: 1. University Systems subcontracting services without the knowledge of the M&O and without QA controls being applied 2. Use of credit cards to procure where the QA procurement process controls are by-passed	Closure partially based on reference to CAR-005 for additional actions to preclude recurrence
LVMO-98-C-001 (LVMO/SNL)	None	Citation in CAR-005 was to show that these issues have been identified previously, but without effective corrective actions that precluded recurrence

YM-97-D-047 (M&O, LLNL)	CAR-005 remedial actions and action to determine the extent of conditions will address the following: 1. Still using suppliers not on the QSL 2. Processing Q procurements as non-Q	Closure partially based on reference to CAR-005 for additional remedial actions and actions to determine extent of conditions. CAR-005's actions to preclude recurrence must also address these conditions
YM-97-D-068 (M&O, SNL)	None	Citation in CAR-005 was to show that these issues have been identified previously, but without effective corrective actions that precluded recurrence
YM-97-D-046 (K/PB)	None	Citation in CAR-005 was to show that these issues have been identified previously, but without effective corrective actions that precluded recurrence
YM-97-D-025 (LVMO)	Actions to preclude recurrence of the procurement programmatic issues involving subcontracting by suppliers not having an approved procurement program	Closed partially based on reference to CAR-005 for actions to correct the programmatic deficiencies in order to preclude recurrence
YM-97-D-074 (LANL)	LANL passed on technical & quality requirements to the SNL Primary Standards Laboratory without a controlling procedure	Closure partially based on reference to CAR-005 for actions necessary to address the remaining identified issue
LLNL-98-D-085	Ineffective corrective actions on 5 of 7 verified prior deficiency documents. These are related to areas not dealing with procurement.	Closure partially based on reference to CAR-005 for actions to preclude recurrence of ineffective corrective actions
LLNL-98-D-092	Q procurement made as non-Q and procurement made to a supplier not on QSL	Response to DR refers to CAR-005 for the corrective actions for these two issues. This DR is still open for other unrelated issues, but may be closed without further actions with regard to these two procurement issues that will be covered by the CAR-005 corrective actions

YM-97-C-004 (M&O, SNL)	None	Citation in CAR-005 was to show that these issues have been identified previously, but without effective corrective actions that precluded recurrence
YM-97-C-002 (LVMO/PNL)	None	Citation in CAR-005 was to show that these issues have been identified previously, but without effective corrective actions that precluded recurrence

5.2.1 Where possible, identify all M&O, National Laboratory, and USGS acquisitions that were active or made after the initial OQA acceptance date of the respective AO's QA program provided in Attachment I. This process is to identify closed as well as currently open procurements. As such, the procurement should include designation as "Q" and "Non-Q" and may include documents termed as procurements, augmented staff procurements, U. S. National Laboratory agreements, task agreements, Memorandums of Agreement, Memorandums of Understanding and any other terms applied to procurement methods for acquisition of quality-affecting items or services. A listing of these acquisitions identifing the procurement document identifier, the supplier's name and location, a summary of the work statement/scope of supply, the issue date, and the closure date (if applicable) will be provided to the CAR Project Manager for inclusion in the CAR closure package.

Responsibility: M&O Procurement Manager and USGS TPO

Due Date: March 31, 1999

5.2.2 The Procurement Engineer and/or responsible OQA Representative will review, in accordance with a documented methodology, each non-Q procurement identified in action 5.2.1 to determine if the acquisition was, or should have been Q. The results of the reviews will be used to up-date the above listing.

Responsibility: Procurement Engineer and National Laboratory Leads

Due Date: April 15, 1999

5.2.3 Each Q procurement will be reviewed for adequacy using a documented methodology The review will determine the quality status of the procurement with regard to the requirements of the Quality Assurance Requirements and Description (QARD). This review will include verifying the quality status of any lower-tier procurement in meeting the appropriate QARD requirements if work was subcontracted. Documented results of the reviews will be provided to the CAR Project Manager for CAR integration activities and inclusion in the CAR closure package.

Responsibility: Responsible Manager of each AO with assistance of the respective OQA representative.

Due Date: May 30, 1999

5.2.4 Potentially deficient items will be identified through the initiation of a Nonconformance Report (NCR) according to OCRWM YAP-15.1Q. Potentially deficient data or software will be identified as having procurement issues in the TBX system, Software Management System (SMS) or TDMS as applicable.

Responsibility: Initiation of NCRs for items – OQA
Management of YAP SIII.1Q – Technical Data Management Manager
AP-SI.1Q – Configuration Management Manager

Due Date: June 15, 1999

5.2.5 Review and verify the adequacy of the current Qualified Suppliers List (QSL) to determine that it correctly reflects the qualification status of each supplier listed and contains up to date, accurate, and complete information needed for the proper procurement of Q items and services. The results of this action will be reported in writing to the CAR Project Manager for inclusion in the CAR closure package.

Responsibility: OQA

Due Date: Complete, see letter, Richard G. Peck to Catherine E. Hampton (DOE OQA), dated February 6, 1998, letter number RGP:kh:L98-18.

5.3 Root Cause Determination

The apparent cause is:

Insufficient and inconsistent implementation of procedures for procurement process and supplier selection.

5.3.1 Root cause determination will be performed and documented according to the requirements of AP-16.4Q, Root Cause Determination.

Responsibility: CAR Project Manager

Due Date: March 5, 1999

5.4 Actions to Preclude Recurrence

5.4.1 Based on the apparent cause, revise M&O QAP-7-3, *Procurement Process* and M&O QAP- 7-5, *Acceptance of Items and Services and Supplier Performance Monitoring* procedures, as described above in actions 5.1.7 and 5.1.11, to provide enhanced processes.

Responsibility: M&O Procurement Manager
Due Date: February 26, 1999

5.4.2 Any additional actions to preclude recurrence and associated schedules for completion will be provided upon root cause determination. Additional actions will correct prior ineffective corrective actions taken for previous similar deficiencies and will ensure future root cause determinations and actions to preclude recurrence are thorough and effective.

Responsibility: CAR Project Manager

Due Date: February 19, 1999

6.0 CAR-006

6.1 Remedial Actions

6.1.1 A program wide inventory of all qualified, unqualified, and undocumented software subject to the QARD will be conducted. The inventory will flag that software used in support of VA and/or anticipated for use in the SR or LA. The inventory will include software routines and macros subject to the requirements of QARD section I.2.1.C, but will not include administrative support software such as MS Word or Excel. This inventory will be reported to the CAR Project Manager for CAR integration activities and inclusion in the CAR closure package.

Responsibility: OMs & CM Manager

Due Date: Completed September 30, 1998

6.1.2 A baseline request for unqualified software identified for use in the SR or LA will be submitted according to AP-SI.1Q, *Software Configuration Management* to initiate and track the qualification process.

Responsibility: Software Owners

Due Date: April 2, 1999

6.1.3 The software identified as qualified on the inventory will be included in the M&O Software Management System (SMS) status accounting program and reflected in the M&O Software Baseline Report. This software will be labeled to be verified (TBV) and will be evaluated according to action 6.2.1 below to determine extent of conditions.

Responsibility: CM Manager

Due Date: February 2, 1999

6.2 Actions to Determine Extent of the Conditions

6.2.1 Software identified as qualified and as TBV will be assessed using the software qualification procedure, QAP-SI-0, Software Qualification procedure, Rev. 4 checklists to verify that an accurate and complete qualification process has been completed and documented. The verification process will review the supporting documentation (i.e. SCR, LCP, CSD, User Manual, V/V Plan and the SQR) to ensure the development of the software, data used in the development of the software, and support documentation developed for the qualification of the software in accordance with applicable procedures. The verification process will confirm by citing the records accession numbers that all required software records have been submitted to Records Management, including the review records of the software qualification documentation as required by the actions transferred to this CAR from DR LVMO-98-D-053. If review documentation does not exist, this review under CAR-006 will provide documentation of the review required by LVMO-98-D-053.

A report identifying documentation evaluated (e.g. notebooks, logs, applicable departmental procedures, software documentation) and the results of the assessment – whether the qualification is confirmed or whether issues requiring resolution remain -will be prepared and forwarded to the CAR Project Manager for inclusion in the CAR closure package.

Responsibility: Software Owners and CM Manager

Due Date: October 29, 1999 - for completion of re-verification of software in 6.1.3 identified as being needed for SR and LA

6.2.2 Based on the results of action 6.2.1 to determine extent, if the software qualification is confirmed with no outstanding issues requiring further evaluation/action the TBV number will be closed. If the results identify issues requiring further actions, such as CAR LVMO-98-C-002 data evaluation or user manual preparation, the issues and TBV number will be identified in the SMS until resolved.

Responsibility: CM Manager

Due Date: May 3, 1999

6.3 Root Cause Determination

The apparent causes are:

- Some software users did not follow procedures and ensure the software they used was from qualified and controlled sources
- Some affected organizations did not have procedures sufficient to ensure software was adequately qualified and placed under configuration management

6.3.1 Root cause determination will be performed and documented according to the requirements of AP-16.4Q, Root Cause Determination.

Responsibility: CAR Project Manager

Due Date: February 19, 1999

6.4 Actions to Preclude Recurrence

The following actions to preclude recurrence are being taken in advance of completing the root cause determination based on the identified apparent causes. Upon completion of the root cause analysis if the following actions do not completely or sufficiently address the root cause the actions to preclude recurrence will be amended by March 15, 1999.

6.4.1 An AP-SI.1Q, *Software Configuration Management* procedure will be developed to standardize the software development life cycle and centralize the configuration management of CRWMS M&O and USGS software. AP-SI.1Q will be developed and implemented in a phased approach: the initial phase will institute a centralized software configuration management process and the final phase will institute a standardized software development life cycle, including qualification process.

Initial Phase
Responsibility: CM Manager

Due Date: February 12, 1999

Final Phase
Responsibility: CM Manager

Due Date: April 16, 1999

6.4.2 An automated Software Management System (SMS) will be implemented for the identification, control, testing, change control capabilities, library functions, distribution of software and supporting documentation. The Software Management System (SMS) will provide real time Internet/Web Page capabilities and provide the capability to control developed, acquired software routines so that development, changes, modifications and enhancements may be applied to controlled software programs. The M&O will also provide the SMS utilities that can be accessed by an event/issue tracking system so that program access can be tracked, change control tracking and specific generations of source code can be retrieved by the event/issue tracking system.

Responsibility: CM Manager

Due Date: April 9, 1999

6.4.3 SMS workshop style training will be developed and implemented. This course will be used to raise the awareness of the M&O software developers, users and managers of the importance of identifying, qualifying, and controlling software in compliance with the QARD as well as providing instruction on the V&V process contained in AP-SI.1Q, Software Configuration Management procedure.

Responsibility: CM Manager & Training Manager

Due Date: March 12, 1999

10.0 CAR-010

This CAR cites deficiencies related to scientific investigation and performance assessment modeling functions. The CAR recommends in part, that model ownership and integration be improved and procedural controls are implemented that meet the QARD requirements for these activities. Design analyses/modeling is controlled according to M&O QAP-3-9, Design Analysis, which was not cited as deficient in this CAR. Corrective actions for this CAR will focus on those modeling activities that have not been conducted and documented under adequate procedural controls. Specifically, these actions will address NEPO's modeling, Performance Assessment Operations' modeling, and the Waste Package Materials Department's material and waste form degradation modeling that were not performed according to M&O QAP-3-9, Design Analysis.

Additionally, this CAR cited deficiencies concerning QARD, Supplement V, *Control of the Electronic Management of Data*. Specifically, the CAR cited a lack of control of file transfer protocols used to transfer Q data electronically. Although additional actions are being taken under other open deficiency documents with regard to the overall electronic data management program, the following specific actions are being taken as well:

- Procedure YAP-SV.1Q, *Control of the Electronic Management of Data* is being developed to address these concerns.

- This procedure will require Responsible Managers to evaluate all of their processes to determine the use of any forms of electronic media used within the process. The evaluation will be documented.

- Processes identified as using a form of electronic media to store, maintain, or transmit data will be revised to include those portions of QARD, Supplement V that are applicable.

10.1 Remedial Actions

10.1.1 Within the scope identified above, an inventory of the applicable models will to be conducted. The inventory will identify the model owner (i.e. organization and individual's name), analysis title, description, the associated code, and the products supported by the model. This inventory will be reported to the CAR Project Manager for CAR integration and inclusion in the CAR closure package.

Responsibility: NEPO Manager, PA Operations. Manager, and Waste Package Operations Department Manager

Due Date: Completed October 30, 1998

10.1.2 The completed inventory will be reviewed to identify any appropriate consolidations of models and provided to the M&O Configuration Management Manager. Models expected to support the SR or LA will be identified. The inventory will be updated as appropriate.

Responsibility: NEPO Manager, PA Operations. Manager, and Waste Package Operations Department Manager

Due Date: May 3, 1999

10.1.3 The inventory will be compared to the interfaces identified in the Interface Control Documents (ICDs) and any differences will be resolved and reflected in the matrix developed in action 10.1.4 below or in the ICDs as appropriate.

Responsibility: Configuration Management Manager and Systems Engineering & Integration Manager

Due Date: February 12, 1999

10.1.4 A model matrix (i.e. database) will be developed from the inventory to identify the results of the comparison made to the ICDs and will identify the model, description, owner(s), and current development stage and model version.

Responsibility: CM Manager

Due Date: March 12, 1999

10.2 Actions to Determine Extent of the Conditions

10.2.1 A family tree (traceability to origins and derivatives) for each PA model and supporting site models will be developed that will identify related models, associated codes and engineering analysis packages that provide input to the PA analysis.

While engineering analyses were not found to be deficient in the CARs, they are an integral part of PA support and as such will be included in the construction of the family trees. These family trees will be used to coordinate and prioritize software qualification, verification of data qualification status tracking, etc.

Responsibility: NEPO Manager and Performance Assessment Operations Manager

Due Date: October 29, 1999 - for completion of re-verification of software qualification and data qualification identified as being needed for SR and LA

10.3 Root Cause Determination

The apparent cause is:

Insufficient controls to assure data was qualified prior to use.

10.3.1 Root cause determination will be performed and documented according to the requirements of AP-16.4Q, Root Cause Determination.

Responsibility: CAR Project Manager

Due Date: February 19, 1999

10.4 Actions to Preclude Recurrence

The following action to preclude recurrence is being taken in advance of completing the root cause determination based on the identified apparent cause. After the root cause analysis, if the following actions do not completely or sufficiently address the root cause, the actions to preclude recurrence will be amended by March 12, 1999.

10.4.1 AP-3.10Q, *Analyses and Models* will be developed to standardize the model development process and establish controls for analysis/model use that will then supercede QAP-3.9. The procedure will provide for the identification, integration, problem resolution, flow and control of models.

Responsibility: PA Operations Manager

Due Date: December 22, 1998

REFERENCES

Corrective Action Reports (CARs):

LVMO-98-C-002, Suspect data where data-related services were procured

VAMO-98-C-005, M&O procurement program deficiencies and prior corrective actions not effective

LVMO-98-C-006, Software development and software configuration management deficiencies

LVMO-98-C-010, Program deficiencies in the development and use of models

LVMO-98-C-001, Supplier not implementing QA program; failure to pass QA requirements to suppliers; and SNL procurement procedures inadequate

LVMO-97-C-004, GEOKON QA program not implemented; M&O and SNL not adequately controlling procurement activities

YM-97-C-002, Lack of control of PNL and ineffective prior corrective actions

YM-97-C-001, M&O not adequately controlling procurement of quality-affecting services

Program Documents and Procedures:

DOE/RW-0333P, *Quality Assurance Requirements and Description*

AP-16.4Q, *Root Cause Determination*

YAP-SIII-1Q, Qualification of Unqualified Data

YAP-SIII.3Q, *Processing of Technical Data on the Yucca Mountain Project*

Viability Assessment Document

Site Description Report

M&O QAP-7-3, *Procurement Process*

M&O QAP-7-5, *Supplier Performance*

M&O QAP-2-0, *Conduct of Activities*

AP-SI.1Q (DRAFT), *Software Configuration Management*

YAP-SV.1Q, *Control of the Electronic Management of Data*

M&O QAP-3-9, *Design Analysis*

AP-3.10Q (DRAFT), *Analyses and Models*

Letters and Memorandums:

Memorandum from D.R. Wilkins (Subject: M&O Policy for Closure of QA Deficiencies LVMO-98-C-002, VAMO-98-C-005 and LVMO-98-C-006, dated June 17, 1998) to all OMs and TPO.

Letter from Richard G. Peck to Catherine E. Hampton (DOE OQA), dated February 6, 1998, letter number RGP:kh:L98-18.

Correspondence, dated 10/30/98, from Alan Brownstein to Mr. Michael J. Bell, Subject: Office of Civilian Radioactive Waste Management Administrative Procedure AP 32.6, *Reporting of Defects and Noncompliance to meet the intent of 10 CFR Part 21.*

Correspondence, dated 10/02/92, from Richard E. Spence to Distribution, Subject: Participant Qualified Quality Assurance (QA) Programs

Deficiency Reports (DRs):

YM-97-D-025, Problems with measuring and test equipment used in Alcove 5 test (LVMO)

YM-97-D-046, K/PB PO to Terracon did not require the work to be done to their approved QA program

YM-97-D-047, Use of supplier not on QSL; processing Q procurements as non-Q

YM-97-D-068, Ineffective control of outside calibration services at the Sandia National Laboratory

YM-97-D-074, LANL procurements have been made that did not fully meet the LANL YMP QA program requirements

LVMO-98-D-053, Software HYPOINVERSE V1.0, MCLCALC V1.0, and CALIB V1 not qualified

LVMO-98-D-055, Activities to determine controls for electronic data management and the administration of the Site and Engineering Properties databases being done without a procedure

LLNL-98-D-085, Implementation of AP-16.1Q is not adequate to ensure timely and effective corrective actions

ATTACHMENT I

CRWMS AFFECTED ORGANIZAITON QUALITY ASSURANCE (QA) PROGRAM QUALIFICATION BASELINE DATES

	OCRWM ISSUED QA PROGRAM ACCEPTANCE LETTER TO NRC	OCRWM RESOLUTION OF EXCEPTIONS
FSN}RSN H&N}RSN	09/12/90	08/01/91
LLNL	09/12/90	N/A
REECO	09/12/90	06/17/91
SNL	09/12/90	N/A
USGS	09/12/90	06/03/91
LANL	01/22/91	N/A
T&MSS	01/22/91	08/01/91
LBNL	10/25/95	N/A
OCRWM	12/11/90	08/21/91

Reference 7

Data, Model and Code Qualification/Validation and Control Plan, dated December 1998.

Civilian Radioactive Waste Management System
Management & Operating Contractor

Data, Model and Code Qualification/Validation and Control Plan

December 1998

Prepared for

U.S. Department of Energy
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, Nevada 89036-0307

Prepared by

TRW Environmental Safety Systems Inc.
1261 Town Center Drive
Las Vegas, Nevada 89134-6352

Under Contract Number
DE-AC08-91RW00134

DISCLAIMER

CONTENTS

FIGURES

1. INTRODUCTION

The Data, Model and Code Qualification/Validation and Control Plan is in response to the Technical Directive Letter dated November 20, 1998 from Horton to Wilkins. Its purpose is to outline the Civilian Radioactive Waste Management System (CRWMS M&O) strategy for identifying the minimum set of data that needs to be qualified for Site Recommendation/License Application (SR/LA) and the method and timetable for qualification. While this plan primarily addresses the qualification of technical data, a similar approach will be used in a simultaneous effort to qualify the models and codes used to support SR/LA.

According to the *Quality Assurance Requirements and Description* (QARD), DOE/RW-0333P, Supplement III, data directly relied upon "to resolve safety or waste isolation issues" shall be identified in a manner that facilitates traceability to associated documents and to its qualification status. Establishing the traceability and qualification of both the directly relied upon data and other associated elements such as the relevant codes and models, is essential to the development of a quality Site Recommendation (SR) and License Application (LA). Thus, a successful strategy must recognize defensibility will extend beyond the singular aspect of qualifying data. The plan describes a Data Management and Control System approach that identifies the data sets to be qualified and controlled.

This Data Qualification Plan relies on an ongoing integrated set of activities composed of Corrective Action Request (CAR) resolution, data checks and reviews, the Process Validation and Reengineering (PVAR) effort, and training for implementation. The integrated set of activities provides the vehicle for successful implementation of the Data Qualification Plan.

2. STRATEGY

The data qualification strategy discussed below is comprised of three key functions providing a comprehensive approach to a robust SR and LA. The three key functions of this strategy are:

Identify–Using a systematic "top-down" approach; identify the elements and interfaces of models, codes and associated data anticipated as relied upon in the SR and LA.

Qualify–Apply existing methods of qualification to the previously identified models, codes and data, and build upon the current "Tiger Team" approach for implementation.

Control–Place qualified data and the associated models and codes under a system of integrated databases providing rigorous data management, configuration management and change control. Additionally, document development controls will ensure data traceability for SR/LA needs.

Beyond the immediate goal of data qualification, this strategy provides a number of other benefits, including a roadmap of necessary work activities which facilitates efficient management, an affirmation of the nuclear culture aspect of control, facilitating internal development and external review of regulatory products, enhancing defensibility and transparency through explicit documentation of associated models, codes and data.

Each of these key functions of the overall strategy is discussed in greater detail below. As with most strategies, certain details of implementation remain to be worked.

2.1 IDENTIFICATION

In the strategy to identify relied upon versus other data, the goal is to ensure a high probability that all needed data will be correctly identified early in the process, i.e., a complete, accurate, timely process.

The identification strategy is based upon a classic "top-down" approach. Starting from known or anticipated elements directly supporting the SR and LA (e.g. the Total Systems Performance Assessment, the Safety Analysis Report, etc.), continue to identify the specific supporting elements of those upper-tier elements (e.g. the process models, analyses, abstractions, etc.). This process of associating upper-tier (parent) elements with specific lower-tier supporting (daughter) elements can be extended as far down as necessary to establish the traceability lineage.

Once the network of SR and LA elements is established and documented, the associated data inputs and outputs are identified for each element. Once potential data sets are identified, specific data that is considered directly relied upon may be determined by any of several potential criteria including but not limited to:

1. The data are used in characterizing or modeling the natural environment, hydrologic flow, radionuclide transport, thermal behavior, or system performance of the repository and associated accessible environment.

2. The data are used as input to or are used to establish boundary conditions or parameters for performance assessment models.

3. The data are used to directly support design analysis used to establish design basis.

4. The data are directly used as design inputs for structures, systems, and components that are important to waste isolation or safety.

The result of the identification strategy is a complete schematic or input/output diagram of the system of associated data, codes, models, etc. which are relied upon, directly or indirectly, in the SR and LA. This input/output diagram provides a roadmap for prioritizing and managing subsequent work to classify and qualify the elements.

Data residing in controlled data bases, not determined to be relied upon, will maintain its TBV designation. Should this data become relied upon in the future, it will be validated in the same fashion as the data currently identified as relied upon.

2.2 QUALIFICATION

The objective of this plan is to qualify only the data necessary to support SR/LA. In the strategy to qualify data (and other associated elements), the goal is to ensure the qualification is defensible, documented and maintained. The specific methods and governing procedures for qualification are included in procedures such as YAP-SIII.1Q, *Qualification of Unqualified Data*, YAP-2.1Q, *Technical Assessment*, QAP 2.5, *Peer Review*, etc.

An objective of the qualification strategy is to enhance the defensibility, traceability and transparency of models, codes, and data. Consequently, other actions are necessary beyond the qualification of a data set. Since defensibility of the SR and LA is contingent upon the system of associated codes, models, and data, this strategy will capture a baseline configuration as a concurrent function of the qualification effort. Concurrent baselining of associated codes, models, data and other elements, provides for a comprehensive and robust approach to defensibility, by enforcing the nuclear culture concepts of traceability, configuration management, and change control.

The overall qualification strategy, including baselining, will accomplish several goals, such as:

1. Development of information management functions specifically designed to capture and maintain directly relied upon qualified data and the associated codes and models,

2. Classification and categorization of data to facilitate and prioritize the qualification effort,

3. Simultaneous capture of both data and the associated process model, code, etc., into configuration and data management systems,

4. Facilitate validation of models and qualification of codes and data,

5. Establish the basis for change control within configuration and data management systems.

Presently, it is envisioned the physical process of qualification and the development of supporting documentation (data forms, concurrence, etc.) will be accomplished in a manner similar to the existing Data Qualification Tiger Team, which recently prototyped the overall effort described above. Implementation guidance is under development by the Tiger Team that will be provided to the "owners" of the various elements identified in the input/output diagram. The existing Tiger Team will then provide assistance to owner-based and additional Tiger Team qualification efforts, and act as a central point of contact and coordinating resource throughout the effort.

2.3 CONTROL

The key goal of the control strategy is to provide change control within a configuration and data management system. This will provide for the automatic maintenance of defensibility by requiring model, code and data owners to work within a controlled process. The controlled process consists of procedures and information management systems that are designed to distinguish between the "official" data, codes and models directly relied upon in the SR and LA, and all other forms of information such as interim code revisions, corroborating data, work in progress, alternative models, etc.

Strict control of read and write access to the configuration and data management systems and the audit trails provided by a change control process will ensure the security, integrity and traceability of information supporting the SR and LA. Once the baseline configuration is established for models, codes and data as described above, updates will be entered under change

control procedures designed to provide management oversight, decision-point documentation, and impact analysis.

In addition, the official configuration and data management systems can be electronically linked to create a centralized run-control system which will better ensure the results of calculations, such as the Performance Assessment, are fully qualified and are accurately conveyed in related documentation, by providing a single point source for official inputs, analyses, and results.

3. METHODOLOGY FOR IMPLEMENTATION

3.0 APPROACH

The approach is to take the applicable processes and procedures resulting from the implementation of the Integrated Project Structure (Working Toward LA) and apply them toward identification, qualification and control of the data, models, and software. The following sections provide a brief description of the Integrated Project Structure and the integration and application of applicable processes and procedures.

3.1 INTEGRATED PROJECT STRUCTURE

An Integrated Project Structure is currently in place that is working toward implementation of processes and procedures that provide the necessary traceability, reproducibility and control required in a nuclear regulatory environment. The overall objective is to develop a set of processes and procedures that ensure defensibility of information and data supporting SR and LA. Figure 1 represents the Integrated Project Structure.

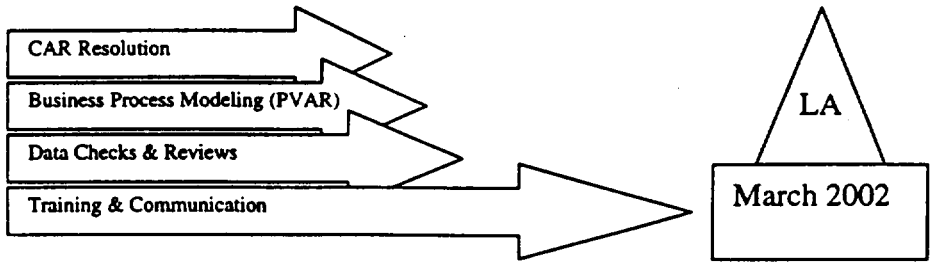

Figure 1. Integrated Project Structure

Corrective Action Report (CAR) resolution–Deals with resolution of outstanding CARs relating to data, model, and software quality and defensibility. It also deals with establishing the prototype for qualifying codes and data supporting SR and LA (Data Qualification Tiger Team). This effort continues until process improvements are in place that assures no reoccurrence of deficiencies.

Business Process Modeling (PVAR)–Provides a standardized, disciplined approach to reviewing and validating existing Yucca Mountain Site Characterization Project (YMP)

processes, procedures, and training curricula. A defined set of technical and administrative processes are reviewed, validated as-is, or improved. The end products of this effort are validated work processes, a consolidated set of procedures reflecting the validated work processes and training curricula tailored to the procedures. This effort continues until a sound project infrastructure is developed, approved and implemented.

Data Checks and Reviews–Includes technical and administrative reviews of documents and supporting data for SR and LA. Process and procedure improvements for data and document management are a part of this effort. The checks continue throughout preparations for SR and LA. Process improvements developed through conducting the data checks feed into the Business Process Modeling.

Training and Communication–Includes training, outreach, recognition and personnel performance assessment efforts that foster a work culture of integration, compliance and accountability. This effort interfaces with lessons learned from CARs resolution and interim quality checks and is based on compliance with the sound processes and procedures that results from PVAR. Culture change efforts continue through the submission of the SR and LA.

3.2 APPLICATION OF RELAVENT PROCESS AND PROCEDURES

The elements of the integrated project structure discussed above provide the basis for implementation of the Data, Model and Code Qualification/Validation and Control Plan. The following discusses the relationship between elements of the Data, Model and Code Qualification/Validation and Control Plan and the Integrated Project Structure.

Identification/CAR Resolution/PVAR–An integrated CAR resolution team is identifying and inventorying data sets and codes during resolution of five CARs. A data qualification Tiger Team that is part of the CAR resolution effort is developing a prototype of the top-down approach for identifying the minimum data required by the SR and LA. The PVAR effort includes validation and development of processes for identification of data.

Qualification/Data Checks and Reviews/PVAR–CRWMS M&O personnel conduct checks and reviews on LA supporting documents prior to submittal. The reviews check data references and traceability as well as document format and content. PVAR also addresses processes such as modeling, software, and technical verification for qualifying data.

Controls/PVAR/Training and Communication–Procedures such as technical data control, configuration control, and software are near term products of the PVAR process that provides the means of controlling data. Training supports control of data by providing personnel with the knowledge and tools to maintain compliance with approved project processes and procedures.

Figure 2 represents the integration of the Integrated Project Structure, and Data Identification, qualification and Control.

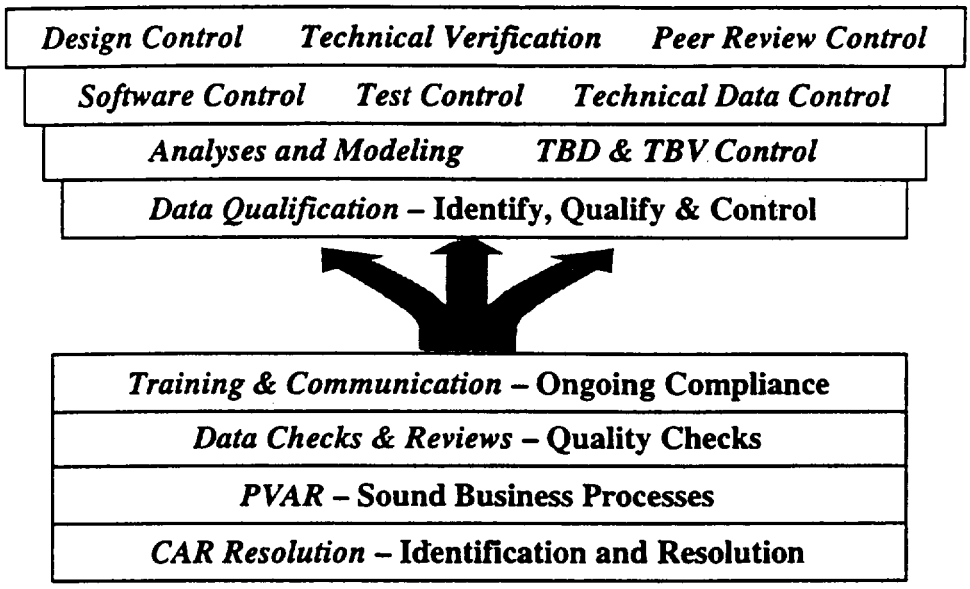

Figure 2. Integration of Data Qualification and Integrated Project Structure

As stated in the introduction, while this plan primarily addresses the qualification of technical data, a similar approach will be used in a simultaneous effort to qualify the models and codes required to support SR/LA.

Figure 3 identifies which PVAR process models directly apply to the identification, qualification and control of the data, models and codes that are the subject of this plan.

Business Process Models	Data Qualification	Model Validaton	Software Qualification
Procedures Control	X	X	X
Training, Indoc., Quali. & Cert			
Model Control		X	
Reviews Control			
Configuration Management	X	X	X
Software Control			X
TBV & TBD Control	X		
Technical Data Control	X		
Design Record Control			
Scientific Notebook Control	X		
Technical Report Control			
Design Control			
Test Control			
Technical Verification			
Deficiencies, CA, RCA, & LL			
Peer Review Control		X	
Expert Elicitation		X	
Procurement Control	X	X	X

Figure 3. Business Process Validation for Data, Models and Codes

4. TIMETABLE

A resource loaded Integrated Project Structure Schedule is being prepared and will be published by the end of February 1999. The schedule is integrated with significant project milestones like SR and LA. It includes activities, logic, and resource loading for the following:

1. CAR resolution
2. Business process modeling (PVAR)
3. Data checks and reviews
4. Training and communication

Resource estimates for each of the above four items will be published with the integrated schedule in February. The bases for estimate and planning assumptions are being documented during estimate preparation and will be provided with the estimates.

Reference 8

Project Operations and Review Board (PORB) Minutes & Actions, dated April 15, 1999.

[redacted]

Meeting Minutes & Actions

Date:04/15/99
Time:3:30pm - 5:00pm
Location:Hillshire Atrium

Approved for issue_____ Date_____

Decisions

PORB regular weekly meetings to be held on Wednesdays at 1:00 P.M. to 3:00 P.M.

Dennis Royer is to serve as PORB Executive Secretary as Wayne Kozai is alternate for OPC member and serves as the Change Secretary.

Action Items Closed/Recommendations for Project Manager:

None

General Information and Announcements

Note that there will be no meeting next Wednesday, 4/21/99. It has been postponed until Monday 9 A.M. 4/26/99, due to availability of the members.

Position papers, presentations and information to be addressed in agenda for future meetings must be forwarded through the sponsoring member to the Executive Secretary at least one day in advance of the meeting to ensure inclusion in the agenda and proper advance distribution to the PORB prior to the meeting.

Meeting Summary

Chairman open meeting; review minutes/actions from previous meeting; Chairman approve minutes:
None
Review action status, discuss/present previously assigned actions due this meeting:
None - No old business or actions, first meeting
Update issues, group provide any new concerns or issues, assign actions:
The Chairman opened the meeting with a discussion on the PORB Charter and Draft PORB procedure. The Chair and several members noted that the charter should be changed to eliminate the Robert's Rules of Order; determined that the need for member alternates to be provided in writing would be served by the documentation in the minutes; and the global reference to the CCB is incorrect as the PORB would serve as the CCB board. The Chair announced that Dennis Royer has been selected to serve as the PORB Executive Secretary as Wayne Kozai already is an alternate for the OPC member and also serves as the Change Secretary.

The alternates were as follows: Dennis Williams for Don Horton (DPM); Wendy Dixon for Steve Brocoum (OLRC); Ram Murthy for Bob Clark (OQA); Birdie Hamilton-Ray for Jerri Adams (OPS); Wayne Kozai for Vic Trebules (OPC); Jim Replogle for Dick Spence (OPE); Scott Wade for Mark Van der Puy (SASM).

ACTION: Executive Secretary (D. Royer) Change the PORB Charter to eliminate Robert's Rules of Order, modify wording for alternate member nomination, and change globally the incorrect references to CCB. Due 4/23/99.

R. Spence presented the M&O position paper for the upper bound for surface storage. He noted that he had not enough time to review and correct editorial errors, but did agree with the recommendation. PORB discussion included the true need for the EIS, revisited the Colorado Off-site discussions, a concern for how the documentation of the rationale would occur; and possible influence from the changing design. It was decided that the position paper would serve as the rational documentation and should be reformatted in accordance with the draft PORB procedure, fix the editorials, internal review, and present to the PORB for approval at the next meeting.

ACTION: OPE (R. Spence): Make corrections, review, reformat into PORB draft procedure format, provide advance copy to PORB secretary for distribution on 4/23 and present to the PORB for approval. Due 4/23/99.

Ric Craun for OLRC made a presentation entitled "FY 2000 Planning Goal" attached below. PORB discussion included final decision authority through the PORB on the Products, Sub-Products and Scope. The Project Manager's desire and understanding is that DOE will be responsible for the guidance. A concern for the aggressive schedule was raised and noted that the RAMs were needed. OLRC will provide their RAM in two weeks for PORB review and approval. The M&O RAMs are under development and very close to being complete. The new RAM WBS basis would not be implemented until

10/1/99. Suggestion that the off-site decisions be put into the decision database and sent to the planning guidance writers, note that this action was already being accomplished within the product organizations. The PORB noted that the steering committee should continue through the review of the guidance and provide a lessons learned presentation at the end of the planning year. Also a presentation is needed to identify the structure and process needed for the two day PORB review and approval of the guidance. All members approved of the process with outstanding comments regarding the products, crosswalk, and schedule.

ACTION: OPC (Planning Steering Committee): Identify the structure and process needed for two day PORB review and approval of the planning guidance. Due TBD.

ACTION: OPC (Planning Steering Committee): Present planning lessons learned at end of planning year. Due TBD.

ACTION: OLRC (S. Brocoum): Develop and present to PORB for approval, OLRC RAMs. Due 4/28/99

Jack Nesbitt (M&O) for OPC and Planning Steering Committee made a presentation entitled "PMR, Data Qualification and LADS Change Request Status" attached below. PORD discussion, comments, concerns included time lines, 10CFR 960 and 63 planning inclusion, table rework, M&O proceeding at risk, and VA change crosswalks. The elimination of a March 99 CR and remaining 2 CRs was explained by the M&O. The associated logic to a very low level and October RAM transition date was explained. Clarification regarding the DOE working of the tables and crosswalk concerns was accomplished. The process was approved by all PORB members with comments by OPS that the M&O was proceeding at risk, without C.O. authority, and resulting fee could be impacted. The M&O acknowledged the risk and that the scope is basically unchanged only repackaged into the products. OLRC had the condition that DOE had a week to review prior to PORB approval. The process was approved and the VA crosswalk would be provided at a later date. Mike Voegele took the action to provide the crosswalk by 5/24/99 or sooner.

Mike Voegele (M&O) for OPC and Planning Steering Committee made a presentation on the M&O priorities on the unfunded work for FY99. The handout was changed from what was included on the agenda, copies will be forwarded by separate distribution. OPC recommended that the PORB not approve this list, but instead review the list and identify those items that would not be impacted by the upcoming CR. The list should include only the FY99 work, and safety related items should be separated. Mike Voegele said he would provide OPC with an updated package showing all of the safety related items. All new input to this list will be provided to Jane Summerson (OPC) by noon Monday, 4/19/99.

Chairman Horton recommended that all decisions from the Colorado Off-Site should be entered into the decisions database. All members voted in favor of this recommendation. Brocoum had a final comment that senior M&O members should be empowered to make commitments to the Board.

ACTION: ALL PORB; Review M&O Priority listing and resolve comments and concerns prior to PORB approval 4/26 meeting and presentation to RW-1 4/27. Due 4/23/99

Adjournment

The Executive Secretary reviewed the action assignments; meeting adjourned at 6:10 P.M.

Attachments

1999-043cjn Rev 1.p

PORB 00 Planning.

Updated: 04/28/99 12:33:40 PM Updated By: CN=Dennis Royer/OU=YD/O=RWDOE Form Meeting Information

M&O-99-008: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative (EDA) 2

Summary of Subproduct Plan Sheet (SPS) Changes

Subproduct Plan Sheets (SPSs) have been created for this CR for the 16 existing FY99 subproducts. The SPS structure is to replace the control account structure in the current Performance Measurement Baseline. As stated in the CR narrative, the SPSs are structured similar to the Control Account Plan (CAP) sheet used to date in FY99. The SPSs present cost data by fiscal year, but do not show monthly spreads. Statements of Work for the SPSs are based on the Product Guidance Documents and are presented in a broad, general manner.

Deliverables (Level 3 Milestones), including the deliverable ID and title, are listed on each SPS. A note is included in the SPS deliverable section stating that the deliverables are considered baseline items, with deliverable details to be included in an appendix for each SPS. For this CR, only new or revised deliverable sheets are included in the appendices. Existing deliverables in the Baseline that are not affected by this CR are not included. However, when the CR is implemented into the Baseline document the unaffected deliverable sheets will be included.

The following SPSs were created by this CR:

	SPS ID	SPS Title
1	AMJX	Documentary Record for SR
2	AMMQ	SR Design Alternatives
3	AMNL	Site Recommendation Report
4	AMNT	Repository Design and Waste Form Revision - SR
5	AMNW	TSPA-SR Document
6	AMPP	Technical Support for SR/Designation
7	AMCW	EIS
8	AMPS	Post EIS Completion Activities
9	AMPU	DOE SNF and Fissile Materials
10	AMMW	LA Design and Verification
11	AMNE	Draft LA
12	AMNN	Working Draft LA
13	AMNS	Documentary Record for LA
14	AMPT	Technical Support for LA
15	AMRF	Construction Authorization
16	AMPW	Project Support for SR/LA

Subproduct Plan Sheet

1 AMJX Documentary Record for SR

Subproduct: AMJX Documentary Record for SR
Product: 2 Site Recommendation

	Fiscal Year Distribution											
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	31916	0	0	0	0	0	0	0	0	0	0	31916

Description

The documentary record for the SR subproduct provides the information technology and management needed to develop, process, control, and disseminate the requirements, data and documents needed to support the SR.

AMJX Documentary Record for SR (continued)

Deliverables

Deliv ID	Title	Due Date
BM203AM3	Complete Implementation of Public Access	
BM205IM3	OCRWM Internet/Intranet Guidelines	
BM205NM3	Y2K Certification Letter for OCRWM Systems	
BM205OM3	Year 2000 Business Continuity Plan (Date change) JJP	
BM2071M3	IT Investment Portfolio for FY 2000	
BM207BM3	Update and Re-Issue the CPPP	
BM207CM3	Planning Procedure for IT Capital Investments	
BM207DM3	IT Architecture Baseline Document	
SLTDAM3	1st Qtr Data Submittal/Incorp Report	
SLTDBM3	2nd Qtr Data Submittal/Incorp Report	
SLTDCM3	3rd Qtr Data Submittal/Incorp Report	
SLTDDM3	4th Qtr Data Submittal/Incorp Report	
SLTDNM3	GIS CD Update	
SPG28LM3	Deterministic Evals. For Type 1 Faults at YM (Date Change) JJP	
~~SP24IM3~~	~~Seismic Design Inputs for a Geol. Repos.at YM~~ (TO BE DELETED)	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

J.N. Bailey 5/17/99 — Ops. Manager Date

Stephan Brocoum 6/10/99 — DOE Manager Date

MultiYear Planning System

Version 2.0

DELIVERABLE

	ID	TITLE
Deliverable	SP24IM3	Seismic Design Inputs for a Geol. Repos. at YM
CCB Level: 3	**Finish Date:** 02/25/1999 08/31/1999	

QARD Applies: ○ Yes ○ No	**OSTI Applies:** ○ Yes ○ No
YAP3012 "Pub Review, App and Dist." Applies: ○ Yes ○ No	**YAP-SIII3Q "Proc. of Tech. Data on YMP" Applies:** ○ Yes ○ No

DELETED

Description:

The report will document seismic design inputs for fault displacement and vibratory ground motion for the Geologic Repository Operations Area at Yucca Mountain. For fault displacement, representative displacement inputs will be provided for a limited number of locations for Frequency Categories 1 and 2 with associated annual frequencies of being exceeded that are described in the Topical Report "Seismic Design Methodology for a Geologic Repository at Yucca Mountain". Vibratory ground motion inputs (e.g., peak horizontal acceleration and velocity, design response spectra, time histories, strain) will also be provided for the defined design categories. Ground motion inputs will be calculated for a 300-m-deep interface, taking into account the overlying rock, and at a rock (tuff) outcrop at the surface. If determined to be necessary because of the variation in overlying rock thickness, ground motions will be given for the interface at depth for two overlying rock thicknesses. A method to address the effects of surficial alluvium deposits, including an example, will be discussed, but ground motion values will not take this effect into account. Seismic design inputs will be developed on the basis of the results of the Probabilistic Seismic Hazard Assessment for Yucca Mountain, and considering other relevant information.

The report will include a description of its objectives and scope; input data, their sources, and whether they are qualified; the assumptions that are used; the methodology for development of seismic design inputs; the resulting seismic design inputs; computer software used in developing the inputs and its quality assurance status; conclusions; limitations; and references.

This deliverable will be prepared in accordance with OCRWM approved quality assurance procedures implementing requirements of the QARD. Q and non-Q data used and cited in this deliverable will be appropriately noted and clearly identified. Every effort will be made to assure

that qualified data are used in this deliverable as specified in Supplement III, Section 2.5, Data Usage, of the current revision QARD. Technical data contained within the deliverable and not already incorporated in the Geographic Nodal Information Study and Evaluation System (GENISES) will be submitted, if appropriate, for incorporation into GENISES in accordance with YAP-SIII.3Q. Verification of technical data submittal compliance will be demonstrated by including as part of the deliverable: 1) a copy of the Technical Data Information Form generated identifying the data in the Automated Technical Data Tracking System, and 2) a copy of the transmittal letter attached to the technical data transmittal to the GENISES Administrator. Record accession numbers and Automated Tracking numbers will be included, as appropriate, for all data used and/or cited in this deliverable.

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-5.1Q and logged into the TPM database.

Acceptance Criteria:
This deliverable shall include all information identified in the Deliverable Description on this PPS sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agrees to by the COR). This constitutes the "completion criteria" identified in section 5.4.3 (b) of YAP 5.1Q. The COR will review the deliverable and process in accordance with YAP 5.1Q.

WBS Information

ID	1.2.3.2
Description	Geology

Open WBS

Product Information

ID	1155
Description	ST23DA - Conduct Probabilistic Seismic Hazards Ass

Open Product Form

Control Account Information

ID	12321155
Description	Prepare Seismic Design Inputs
DOE Manager	Sullivan , Tim

DOE Organization	AML - Stephan Brocoum

Open Control Account

Work Package Information

ID	12321155M1
Description	Prepare Seismic Design Inputs
Product	M&O
Product Description	CRWMS/M&O
M&O Organization	140 - Natural Environment Program Operations
Work Package Manager	Quittmeyer , Richard
Estimator	Quittmeyer , Richard

Open Work Package

Modification Information

Last Updated By: Ralph Rogers

Last Update: 11/03/97 10:27:53 AM

This Form has been updated by:

MultiYear Planning System

Version 2.0

DELIVERABLE

	ID	TITLE
Deliverable	SPG28LM3	Deterministic Evals. for Type 1 Faults at YM
CCB Level: 3	**Finish Date:** ~~12/19/1997~~ 09/30/99	

QARD Applies: ○ Yes ○ No	**OSTI Applies:** ○ Yes ○ No
YAP3012 "Pub Review, App and Dist." Applies: ○ Yes ○ No	**YAP-SIII3Q "Proc. of Tech. Data on YMP" Applies:** ○ Yes ○ No

Description:

This report will contain identification of Type 1 faults within five kilometers of the site and will evaluate a maximum earthquake for each fault and credible fault scenario. Deterministic ground motion estimates will be provided for each maximum earthquake. The maximum earthquake will be based on fault parameters such as length and geometry, and on collected paleoseismic data on rupture length, and maximum displacements. Mmax will also be examined by examining the 50th and 84th fractiles presented in the aggregated Mmax curves from the PSHA seismic source characterization final results. Ground motions will be evaluated at the 16th, 50th, and 84th fractiles for each Mmax, and spectral characteristics will be provided for each of those fractiles.

This deliverable will be prepared in accordance with OCRWM approved quality assurance procedures implementing requirements of the QARD. Q and non-Q data used and cited in this deliverable will be appropriately noted and clearly identified. Every effort will be made to assure that qualified data are used in this deliverable as specified in Supplement III, 2.5, Data Usage, of the current revision QARD. Technical data contained within the deliverable and not already incorporated in the Geographic Nodal Information Study and Evaluation System (GENISES) will be submitted, if appropriate, for incorporation into the GENISES in accordance with YAP-SIII.3Q. Verification of technical data submittal compliance will be demonstrated by including as part of the deliverable: 1) a copy of the Technical Data Information Form generated identifying the data in the Automated Technical Data Tracking System, and 2) a copy of the transmittal letter attached to the technical data transmittal to the GENISES Administrator. Record accession numbers and Automated Tracking numbers will be included, as appropriate, for all data used and /or cited in this deliverable. This deliverable shall be processed in accordance with YAP-5.1Q.

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-5.1Q and logged into the TPM database.

Acceptance Criteria:
This deliverable shall include all information identified in the Deliverable Description on this PPS sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agrees to by the COR). This constitutes the "completion criteria" identified in section 5.4.3 (b) of YAP 5.1Q. The COR will review the deliverable and process in accordance with YAP 5.1Q.

WBS Information

ID	1.2.3.2
Description	Geology

Open WBS

Product Information

ID	1155
Description	ST23DA - Conduct Probabilistic Seismic Hazards Ass

Open Product Form

Control Account Information

ID	12321155
Description	Prepare Seismic Design Inputs
DOE Manager	Sullivan , Tim
DOE Organization	AML - Stephan Brocoum

Open Control Account

Work Package Information

ID	12321155U1
Description	Prepare Seismic Design Inputs

Product	USGS
Product Description	United States Geological Survey
M&O Organization	140 - Natural Environment Program Operations
Work Package Manager	Parks , Bruce
Estimator	Arnold , Raye

Open Work Package

Modification Information

Last Updated By: Jeffrey Gromny

Last Update: 10/20/97 03:07:24 PM

This Form has been updated by:

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	BM205OM3	Year 2000 Business Continuity Plan
Finish Date: ~~06/30/99~~		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
A business continuity plan relative to Year 2000 activities will be submitted to DOE ~~by June 30, 1999.~~

Completion Criteria:
The Year 2000 Business Continuity Plan will be submitted to DOE in accordance with YAP-30.63. This Level 3 milestone is considered complete when a copy of the M&O letter transmitting the Year 2000 Business Continuity Plan data to YMSCO is submitted (without enclosures) to the M&O Document Control center and the accompanying YMP Deliverable Acceptance Review form is stamped with the "received" date by the Document Control center.

Evaluation Criteria:
The deliverable will be reviewed and processed by YMSCO in accordance with YAP-30.63. This deliverable is approved when the YMSCO COR or TM verifies that the Year 2000 Business Continuity Plan implements a process for Year 2000-related activities that satisfies the goals and objectives of the Department of Energy Chief Information Office as they relate to the Year 2000 issue. Evaluation criteria may include the following:

1. Comply with DOE CIO issued directives for Year 2000 Continuity Planning.

2. Address all safety and health issues and minimal, essential business processes as prioritized

in compliance with the CIO's directive.

3. The continuity plan will address the following:
- Industry standard scenarios
- Scenarios which could significantly impact operations
- The schedule for License Application or Site Recommendation
- Areas directly impacting the M&O.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMJX
Title	Documentary Record for SR
Performing Org. Manager	CN = David Dobson/OU = YM/O = RWDOE
DOE Manager	CN = Claudia Newbury/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	150
Description	Support Operations
Manager	Bob Marler
Project Participant:	
M&O	CRWMS/M&O

Open OM

Control Account Information

ID	15019130
Description	Information Technology
DOE Manager	
DOE Organization	OPS - Jerri Adams
PSS	9130
PSS Description	Information Technology SR

Open Control Account

Work Package Information

ID	15019130M3
Description	Information & Database Systems Mgmt
WBS Element	1.2.12
Work Package Manager	James Low
Estimator	Jason Gray

Open Work Package

Modification Information

Last Updated By: John Slocum **Last Update:** 01/27/99 09:07:11 AM

This Form has been updated by:

Jason Gray, Ron Helms, Alan Blackston, Ken Maddrey, John Slocum

Subproduct Plan Sheet

2 AMMQ SR Design Alternatives

Subproduct: AMMQ SR Design Alternatives
Product: 2 Site Recommendation

	Fiscal Year Distribution											
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	21198	0	0	0	0	0	0	0	0	0	0	21198

Description

Evaluate and analyze repository design features and alternatives necessary to support a recommendation of a selected reference design fo Site Recommendation/License Application. (SR/LA)

AMMQ SR Design Alternatives (continued)

Deliverables

Deliv ID	Title	Due Date
RP740DM3	Cask Cooldown Component Analysis	
RPA118M3	Modular/Phased Construction Design Evaluation	
RPA128M3	Assembly Transfer System Analysis	
RPA140M3	LLW Treatment Strategy Analysis	
RPA384M3	Concrete Mechanical Test Report	
RPA451M3	LA Design Selection - Report	
SL05X7M3	Submit Draft Repository Safety Strategy Rev. 3	
SL05XM3	Submit Post Cl Rep Defense In Depth Design Bases	
SL06X7M3	Submit Repository Safety Strategy Rev. 3	
SE1930M3	Submit SR/LA Products List to DOE for Approval (NEW DELIVERABLE)	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

5/19/99 6/10/99 6/10/99

Ops. Manager Date DOE Manager Date

R D SNELL 6/10/99 R. E. Spence

MultiYear Planning System

NEW

DELIVERABLE

	ID	TITLE
Deliverable	SE1930M3	Submit SR/LA Products List to DOE for Approval

Finish Date: 09/30/99

Description:

A revision of the License Application Design Products List will be developed, reviewed, and approved to include the philosophy reflected in the preliminary draft of the white paper entitled "Criteria for Design Information Needed for the License Application for Construction Authorization." The revision will be based on the inclusion of Enhanced Design Alternative II.

Completion Criteria:

The deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the TPM database.

Evaluation Criteria:

The document shall include a list of the minimum products necessary to support License Application construction authorization based on the Level of Detail white paper identified above. It shall be an integrated M&O product as evidenced by approval signatures from Surface Design, Subsurface Design, Waste Package, Regulatory & Licensing, and Systems Engineering & Integration.

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SL06X7M3	Submit Repository Safety Strategy Rev. 3
Finish Date: ~~05/28/99~~ 07/28/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
The Repository Safety Strategy will be revised (Rev. 3) to reflect new site information, evaluations of design alternatives and options, updated TSPA model abstractions, and additional development of regulations and standards. Submit final Rev. 3 of Repository Safety Strategy to DOE following incorporation of DOE comments on the draft document.

Completion Criteria:
This deliverable will be complete when it is submitted to the DOE in accordance with YAP-5.1Q and is logged into the Technical Publications Management database.

Evaluation Criteria:
This deliverable will be reviewed by DOE in accordance with YAP-30.63 to ensure that it is complete and conforms to all aspects of the deliverable description.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMMQ
Title	SR Design Alternatives
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Paul Harrington/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	300
Description	Regulatory & Licensing
Manager	Jack Bailey
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	30016101
Description	Repository Safety System Engineering
DOE Manager	Richard Craun
DOE Organization	OLRC - Steve Brocoum
PSS	6101
PSS Description	Licensing Case Development Initial SR Design

Open Control Account

Work Package Information

ID	30016101M2
Description	Repository Safety Strategy Rev 3
WBS Element	1.2.5
Work Package Manager	Dennis Richardson
Estimator	Mark Wisenburg

Open Work Package

Modification Information

Last Updated By: John Slocum **Last Update:** 03/09/99 11:08:38 AM

This Form has been updated by:

Mark Wisenburg, John Slocum, Ken Maddrey, Chris Weiss, Joyce Huston, Chris Weiss, Joyce Huston, Ken Maddrey, Peter Burke, Mark Wisenburg, Peter Burke, Mark Wisenburg, Peter Burke, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Ken Ashe, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Chris Weiss, John Slocum, Marshall Weaver, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum, Peter Burke, Linda Harmon, John Slocum, Ken Maddrey, John Slocum, Tom Ferguson

Subproduct Plan Sheet

3 AMNL
Site Recommendation Report

Subproduct: AMNL Site Recommendation Report
Product: 2 Site Recommendation Report

	Fiscal Year Distribution											
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	7455	0	0	0	0	0	0	0	0	0	0	7455

Description

The SR Report will serve as the "comprehensive statement of the basis of the recommendation" required by NWPA Section 114.

AMNL Site Recommendation Report (continued)

Deliverables

Deliv ID	Title	Due Date
SL29GM3	Submit Quarterly Interaction Summary Report	
SL29HM3	Submit Quarterly Interaction Summary Report	
SL29KM3	Submit Quarterly Interactions Summary Report	
SL29LM3	Submit Quarterly Interaction Summary Report	
SL36X2M3	Submit TGD Update No. 1 for YMP Review	
SL36X3M3	Submit Final TGD Update Rev 1	
SLDD01M3	Submit Documenting Decisions Assessment	
SLDD02M3	Submit Documenting Decisions Supplement	
SLSR51M3	Submit SR AO Rev 0 for DOE QAP-6.2 Review	
SLSR53M3	Complete SR AO Rev 0 for Acceptance Review	
SLSR6JM3	Submit Drft Vol 2, Sec 1 f/DOE QAP 6.2 Rvw	
~~SLSR7AM3~~	~~Submit Draft SR Vol 1, Sec 1 for DOE QAP 6.2 Rvw~~ (TO BE DELETED)	
SLSR7FM3	Submit Draft SR V1S1 to DOE (NEW DELIVERABLE)	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

J.N. Bailey 5/17/99
Ops. Manager Date

Stephan Brocaw 6/10/99
DOE Manager Date

MultiYear Planning System

NEW

DELIVERABLE

	ID	TITLE
Deliverable Finish Date: 09/30/99	SLSR7FM3	Submit Draft SR, V1S1 to DOE

Description:

This deliverable will contain the CRWMS M&O approved draft of the Site Recommendation Report Volume 1 Section 1 (Introduction) in accordance with the YMSCO approved SR Management Plan and the SR Annotated Outline, as modified per mutual agreement between the M&O's SR Product Manager and the YMSCO. The SR Author Team and Senior Management would have reviewed it, and their comments resolved and incorporated prior to submission to YMSCO.

Completion Criteria:
This deliverable is considered complete when a copy is submitted to the M&O Document Control center and the accompanying Deliverable Acceptance Review form is stamped with the received date by DC

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on this CAP sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP-30.63.

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SLSR7AM3	Submit Draft SR Vol 1, Sec 1 for DOE QAP 6.2 Rvw
Finish Date: 09/30/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETE

Description:
After review and comment resolution of the draft Site Recommendation Report Volume 1 Section 1 by the CRWMS M&O, the revised draft report is submitted to YMSCO for a QAP 6.2 review and comment.

Completion Criteria:
This deliverable is considered complete when a copy is submitted to the M&O Document Control center and the accompanying Deliverable Acceptance Review form is stamped with the received date by DC

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on this CAP sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP-30.63.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNL
Title	Site Recommendation Report
Performing Org. Manager	CN = David Dobson/OU = YM/O = RWDOE
DOE Manager	CN = Tim Sullivan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	300
Description	Regulatory & Licensing
Manager	Jack Bailey
Project Participant:	
M&O	CRWMS/M&O

Open OM

Control Account Information

ID	30012020
Description	Site Recommendation Support for SR
DOE Manager	Tim Sullivan
DOE Organization	OLRC - Steve Brocoum
PSS	2020
PSS Description	Site Recommendation Support for SR

Open Control Account

Work Package Information

ID	30012020M1
Description	FY99 Site Recommendation Report Preparation
WBS Element	1.2.5
Work Package Manager	David Dobson
Estimator	

Open Work Package

Modification Information

Last Updated By: John Slocum **Last Update:** 03/09/99 10:56:39 AM

This Form has been updated by:

Linda Harmon, John Slocum, Ken Maddrey, John Slocum, Tom Ferguson

Subproduct Plan Sheet

4 AMNT

Repository Design and Waste Form Revision - SR

Subproduct: AMNT Repository Design and Waste Form Revision - SR
Product: 2 Site Recommendation

	Fiscal Year Distribution											
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	40064	0	0	0	0	0	0	0	0	0	0	40064

Description

The Repository Design and Waste Form Report subproduct captures those aspects of engineering and design relevant to the SR, including support to the SR Report and process, as well as the technical work performed to continue development of the final repository design.

AMNT Repository Design and Waste Form Revision - SR (continued)

Deliverables

Deliv ID	Title	Due Date
RP740AM3	Waste Package Remediation Analysis	
RPA170M3	Waste Handling Thru-put Sensitivity Study	
RPA172M3	Non-Standard Waste Material Handling Study	
RPA254M3	Fire Hazards Analysis	
~~RPA256M3~~	~~Hydraulics and Water Flow In the Drifts~~ (TO BE DELETED)	
SEA100M3	Complete DOE Criteria Acceptance Review	
SEA105M3	Complete DOE Verification Review	
SEA115M3	Complete MGR-RD Revision	
WP05AM3	WP Draft Update to EIS Engr Files Letter	
WP05M3	WP Final Updates to EIS Engineering Files	
WP233AM3	Resolution of DOE 6.2 Review Comments Letter	
WP235M3	Disposal Criticality Topical Report Supplement	
~~WP275M3~~	~~Summary Rept of Degraded WP Crit Evaluations~~ (TO BE DELETED)	
WP942M3	Pre-closure Criticality Analysis Process Report	

Deliverables are baselined with the descriptions, completion and evaluation criterias and due dates contained in the appendix for each SPS

Approvals

5/17/99 6/10/99 6/10/99 6/10/99

Ops. Manager Date DOE Manager Date

RD SNELL 6/10/99 R E Spence

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	RPA256M3	Hydraulics and Water Flow In the Drifts
Finish Date: 09/30/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETE

Description:
This report will document results of laboratory tests and tests performed in the EBS test facility for the determination of water movement through emplacement drifts at Yucca Mountain, and how well the movement can be controlled by engineered features. It will include the results of applying existing models to design tests and predict test results, and comparison of predictions with actual data. Performance of EBS alternatives will be measured by the degree to which water is diverted from contact with the surrogate waste package in the EBS facility. Sensitivity to material properties will be assessed by both data and analyses, and used to develop performance criteria for the design and construction of EBS features and systems. Final results will include any model refinements warranted by the data and engineering correlations for use by EBS design and PA.

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the TPM database.

Evaluation Criteria:

This deliverable shall be processed in accordance with YAP-30.63. The acceptance date is the date that DOE accepts the product

Prepare a report for the DOE acceptance that describes the numerical models used or developed and analytical results based on the tests performed in the laboratories and in the EBS test

facility. The report will provide information regarding the flow pathways of water through the Yucca Mountain emplacement drifts. M&O will ensure that the report contains results of models, column tests in the Laboratories and the results from the EBS tests. As a minimum following information will be included in the report:

- Descriptions of models and parameter values used to scope the test.
- Laboratory test procedures, conditions, and results.
- EBS test facilities, procedures, conditions, and results.
- Comparison of pre-test predictions with test results, where applicable.

Descriptions of model refinements and engineering correlations developed.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNT
Title	Repository Design and Waste Form Revision - SR
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Paul Harrington/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	120
Description	Engineered Barrier System Operations
Manager	Kalyan Bhattacharya
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	12012383
Description	Complete Proposed SR Design
DOE Manager	
DOE Organization	OPE - Dick Spence
PSS	2383
PSS Description	Complete Proposed SR Design

Open Control Account

Work Package Information

ID	12012383MT
Description	[illegible] Testing Program - 99
WBS Element	1.2.1
Work Package Manager	John Pye
Estimator	Bruce Stanley

Open Work Package

Modification Information

Last Updated By: Bruce Stanley **Last Update:** 02/03/99 12:55:36 PM

This Form has been updated by:

Bruce Stanley, John Slocum, Jill Gibbons, Ken Maddrey, Bruce Stanley, Ken Maddrey, Chris Weiss, Joyce Huston, Chris Weiss, Joyce Huston, Daniel McKenzie, Bruce Stanley, Daniel McKenzie, Ken Maddrey, Peter Burke, Diego Suarez, Peter Burke, John Slocum, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Bruce Stanley, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	WP275M3	Summary Rept of Degraded WP Crit Evaluations
Finish Date: 09/30/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-5.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETED

Description:
Ref Work Package 1101 2380 M1

This deliverable is Rev 01 to the "Probabilistic Criticality Analysis". It documents the results of comprehensive probabilistic evaluations of external criticality for preliminary waste package designs to support License Application (LA). These results include criticality consequences. Analyses include the probability and consequences of criticality internal to the waste package. This is a preliminary documentation of all potential critical configurations and resulting consequences. Summaries of related environmental parameter information provided by Performance Assessment are also included.

This report supplements the reports of previous years. The most significant new items are: 1) Evaluations with respect to new waste package designs, 2) Evaluations of criticality control alternatives, 3) Refinement of scenarios, and 4) Demonstration of non-criticality for some external criticality scenarios and resulting configurations.

Completion Criteria:

This deliverable and Level-3 milestone is considered complete as of the date it is stamped in at

Document Control. An electronic copy of the deliverable is required at completion.

Evaluation Criteria:

This deliverable will be evaluated and processed by YMSCO in accordance with YAP-30.63. This deliverable shall include all information identified in the Deliverable Description on the Control Account Planning Sheet (CAPS) unless specifically exempted in writing by YMSCO.

DELETE

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNT
Title	Repository Design and Waste Form Revision - SR
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Paul Harrington/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	110
Description	Waste Package Operations
Manager	Hugh Benton
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	11012380
Description	Neutronics Methodology Development - SR
DOE Manager	Paige Russell
DOE Organization	OLRC - Steve Brocoum
PSS	2380
PSS Description	Neutronics Methodology Development - SR

Open Control Account

DELETE

Work Package Information

ID	11012380M1
Description	Neutronics Methodology - SR
WBS Element	1.2.2
Work Package Manager	Dan Thomas
Estimator	Dan Thomas

Open Work Package

Modification Information

Last Updated By: Carl Chagnon **Last Update:** 02/06/99 04:18:42 PM

This Form has been updated by:

Carl Chagnon, Martin Lewis, Carl Chagnon, Peter Burke, Carl Chagnon, Martin Lewis

Subproduct Plan Sheet

5 AMNW
TSPA-SR Document

Yucca Mountain Site Characterization Project
Planning and Control System (PACS)
Subproduct Planning Sheet (PSA01)

Subproduct: AMNW TSPA - SR Document
Product: 2 Site Recommendation

	Fiscal Year Distribution											
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	43846	0	0	0	0	0	0	0	0	0	0	43846

Description

The TSPA-SR subproduct includes all of the testing, analyses and documentation requried to complete a transparent, traceable, and defensible TSPA for the SR.

AMNW TSPA - SR Document

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
SL9050M3	Cmpl Infor Feeds from Science & Design to TSPA	
SL9051M3	Repository Design Feed to TSPA	
SL915M3	TSPA SR/LA Methodology & Assumptions Document	
SLSR5M3	Comment Response on the TSPA Peer Review	
SP3120M3	Single Heater Test Final Report (L3)	
SP327KM3	Prelim Geotech Site Characterization for WHB	
~~SP32E1M3~~	~~Report on Prow Pass Reactive tracer Test~~ (TO BE DELETED)	
~~SP32P4M3~~	~~Rept: ISM3.1; Addendum to ISM3.0 Report~~ (TO BE DELETED)	
SP3515M3	Ghost Dance Fault Testing Rpt	
~~SP3880M3~~	~~Drift Scale Test Progress Report No. 2 (L3)~~ (TO BE DELETED)	
~~SP399CM3~~	~~NF/AZ Environ Rpt , Rev 2~~ (TO BE DELETED)	
~~SP9904M3~~	~~Final LBT Report~~ (TO BE DELETED)	
SPG258M3	Preliminary Geologic Map for SZ Site Area	
SPG452M3	Rpt: Geometry & char of fault zones at Yucca Mtn	
SPG630M3	Rpt: Lithologic Logs USW UZ-7a & USW UZ-14	
~~SPG640M3~~	~~Rpt: Corr. Litho/Geophys Data for Dir. Approval~~ (TO BE DELETED)	
~~SPQ224M3~~	~~Rpt R1: Seismic Design Basis Inputs~~ (TO BE DELETED)	
SPQ301M3	Drft Rpt R1: EBF for Geology/Hydrology	
SPQ303M3	Rpt R1: EBF for Geology/Hydrology	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

5/17/99 6/10/99

Ops. Manager Date DOE Manager Date

R. W Andrews R. E. Spence

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SP32E1M3	Report on Prow Pass Reactive Tracer Test
Finish Date: 04/01/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
Due: 1 Apr 1999
Report on Prow Pass Testing that combines the results (as a joint participant report including LANL & USGS) that provides PA with flow and transport parameters and an assessment of the validity of conceptual flow and transport models in the Prow Pass Tuff. This level 3 will be the fully reviewed and accepted version of milestone SP32E7M4 : Reactive Tracer Test in the Prow Pass due February 12, 1999, and completed in work package 14012029M1. The Prow Pass Report will support TSPA-SR/LA (through the SZ Flow and Transport Process Model work package 14012031M1), the Site Description Report SPQ317M3 (M2NU), and Chapter 3 of the LA.

This deliverable will be developed, reviewed, and submitted in accordance with YMSCO's "Policy on Development of Documents that will be Available to the License Proceeding."

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Nevada Document Control database.

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on the CAPS unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process

in accordance with YAP30.63.

The quality assurance pedigree of data in the deliverable will be clearly and correctly identified and maintained with the data. The deliverable will be reviewed and evaluated to verify that, for all technical data (as defined in YAP SIII.3Q) in the deliverable.

a) The data are labeled as to whether or not they were collected and maintained in accordance with the YMP quality assurance.
b) There is a process in place to verify that any source data for the data in the deliverable are similarly labeled
c) The labeling of the source is consistent with the labeling of the data in the deliverable or there is sufficient explanation of the difference (e.g. data in the deliverable are labeled as qualified while the source data are labeled accepted)

Note: When there are more than 15 data sets included or used in the deliverable, a random sampling based on statistically valid sampling practices or at least 10 of the references will be used to assess compliance with these criteria.

All documentation required by applicable procedures for the deliverable is complete, meets procedural requirements, and is retrievable. Procedures used in the development, review and approval of the deliverable (e.g. YAP 5.8Q, YAP SIII.3Q, AP 6.1Q) require that certain documentation be submitted to the records processing center.

All software code used in development and/or control of resulting models or manipulation of data presented in the deliverable is qualified and maintained under a configuration management system AP-SI.1Q. This deliverable will be reviewed and evaluated to verify that:

a) All software code that was used in development of models that are documented in the deliverable has been assigned a unique identifier and is maintained in a configuration management system
b) All software code used to develop or manipulate the data presented in the deliverable has been assigned a unique identifier and is maintained in a configuration management system
c) The software code is retrievable and usable, and the results reported in the deliverable are reproducible.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	140
Description	Natural Environment Program Operations
Manager	Larry Hayes
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	14012029
Description	Data/Analy Eval Dilution Pthwys-SZ for TSPA-SR
DOE Manager	
DOE Organization	OLRC - Steve Brocoum
PSS	2029
PSS Description	Data/Analy Eval Dilution Pathways-SZ for TSPA-SR

Open Control Account

Work Package Information

ID	14012029M1
Description	SZ Data Analysis - SR - FY99
WBS Element	1.2.3
Work Package Manager	Paul Dixon
Estimator	Paul Dixon

Open Work Package

Modification Information

Last Updated By: Elora Nudd **Last Update:** 02/05/99 02:18:46 PM

This Form has been updated by:

Roger Henning, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Paul Dixon, Ken Maddrey, Chris Weiss, John Slocum, Jeffrey Gromny, John Slocum, Jeffrey Gromny, Elora Nudd, Peter Burke, Elora Nudd

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SP32P4M3	Rept: ISM3.1; Addendum to ISM3.0 Report
Finish Date: 05/28/99		

☐ Q Assumption	☐ OCRWI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
This report will present the changes to ISM3.0 through the addition of stratigraphic and properties data from the USW SD-6 and USW WT-24 boreholes, and from the ECRB Cross-Drift. Other minor changes that improve the portrayal of the Geologic Framework Model, as of December 1998, will also be incorporated. The report will list the input changes that differentiate the ISM3.1 from its predecessor, ISM3.0, and provide an assessment of these changes on the ISM model output.

An update to the qualification status (of input data and computer software used in constructing the models), assumptions, uncertainties of the Integrated Site Model ISM3.0, and the methodolgy used in the development of the model components (the geologic framework, mineralogic, and rock properties models) will be presented only to the extent that the above information has changed from that presented in Deliverable SP32K5M3 (Integrated Site Model ISM3.0). Illustrations demonstrating output of the model will also be provided.

ISM3.1 will be constructed using Q procedures and qualified software. Use of Q input data will be maximized to the extent possible, and the source and Q status of new (relative to ISM3.0) input data will be identified. Updates of the properties models provided by SNL and LANL will be integrated into the geologic framework to form the Integrated Site Model version ISM3.1. All input data, the completed ISM3.1, and model components will have been submitted to the TDMS, or the Numerical Model Warehouse, as appropriate, prior to submittal of the deliverable.

This deliverable will be developed, reviewed, and submitted in accordance with YMSCO's "Policy on Development of Documents that will be Available to the License Proceeding."

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Nevada Document Control database.

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on the CAPS unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP30.63.

The quality assurance pedigree of data in the deliverable will be clearly and correctly identified and maintained with the data. The deliverable will be reviewed and evaluated to verify that, for all technical data (as defined in YAP SIII.3Q) in the deliverable.

a) The data are labeled as to whether or not they were collected and maintained in accordance with the YMP quality assurance.
b) There is a process in place to verify that any source data for the data in the deliverable are similarly labeled
c) The labeling of the source is consistent with the labeling of the data in the deliverable or there is sufficient explanation of the difference (e.g. data in the deliverable are labeled as qualified while the source data are labeled accepted)

Note: When there are more than 15 data sets included or used in the deliverable, a random sampling based on statistically valid sampling practices or at least 10 of the references will be used to assess compliance with these criteria.

All documentation required by applicable procedures for the deliverable is complete, meets procedural requirements, and is retrievable. Procedures used in the development, review and approval of the deliverable (e.g. YAP 5.8Q, YAP SIII.3Q, AP 6.1Q) require that certain documentation be submitted to the records processing center.

All software code used in development and/or control of resulting models or manipulation of data presented in the deliverable is qualified and maintained under a configuration management system AP-SI.1Q. This deliverable will be reviewed and evaluated to verify that:

a) All software code that was used in development of models that are documented in the deliverable has been assigned a unique identifier and is maintained in a configuration management system
b) All software code used to develop or manipulate the data presented in the deliverable has been assigned a unique identifier and is maintained in a configuration management system
c) The software code is retrievable and usable, and the results reported in the deliverable are reproducible.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	140
Description	Natural Environment Program Operations
Manager	Larry Hayes
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	14012210
Description	Dev Hydrog Frmwrk/Eval Disruptive Events for SR
DOE Manager	
DOE Organization	OLRC - Steve Brocoum
PSS	2210
PSS Description	SR-Develop Hydrog Frmwork/Eval Disruptive Events

Open Control Account

Work Package Information

ID	14012210M1
Description	ISM Update & Maintenance-SR-FY99
WBS Element	1.2.3
Work Package Manager	Norma Biggar
Estimator	Norma Biggar

Open Work Package

Modification Information

Last Updated By: Elora Nudd **Last Update:** 02/05/99 02:18:56 PM

This Form has been updated by:

Norma Biggar, John Slocum, Norma Biggar, Jeffrey Gromny, John Slocum, Jeffrey Gromny, Norma Biggar, Elora Nudd, Norma Biggar, Peter Burke, Elora Nudd

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SP3880M3	Drift Scale Test Progress Report No. 2 (L3)
Finish Date: 09/15/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETE

Description:
Drift Scale Test Progress Report No. 2, SP3880M3, Due 09-30-99
This deliverable shall include all information identified herein unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). This milestone will be met upon submission of the Drift Scale Test Progress Report No. 2. The report will document measuements, numerical analyses, and corresponding interpretations of the four processes under consideration in the Drift Scale Test.

This deliverable will be developed, reviewed, and submitted in accordance with YMSCO's "Policy on Development of Documents that will be Available to the License Proceeding."

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Nevada Document Control database.

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on the CAPS unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP30.63.

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b) There is a process in place to verify that any source data for the data in the deliverable are similarly labeled
c) The labeling of the source is consistent with the labeling of the data in the deliverable or there is sufficient explanation of the difference (e.g. data in the deliverable are labeled as qualified while the source data are labeled accepted)

Note: When there are more than 15 data sets included or used in the deliverable, a random sampling based on statistically valid sampling practices or at least 10 of the references will be used to assess compliance with these criteria.

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c) The software code is retrievable and usable, and the results reported in the deliverable are reproducible.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	140
Description	Natural Environment Program Operations
Manager	Larry Hayes
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	14016107
Description	ST215 Drift Scale Heater Test - Heat up Phase
DOE Manager	Steve Brocoum
DOE Organization	OLRC - Steve Brocoum
PSS	6107
PSS Description	Drift Scale Heater Test - Heat-Up Phase SR

Open Control Account

Work Package Information

ID	14016107M2
Description	Drift Scale Test: Analyze & Report-SR-FY99
WBS Element	1.2.3
Work Package Manager	Ralph Wagner
Estimator	Ralph Wagner

Open Work Package

Modification Information

Last Updated By: Ralph Wagner **Last Update:** 02/06/99 10:00:21 AM

This Form has been updated by:

Jeffrey Gromny, Ralph Wagner, Chris Weiss, Jack Scheer, John Slocum, Mark Peters, Roger Henning, Jeffrey Gromny, Ken Maddrey, Chris Weiss, Joyce Huston, Chris Weiss, Joyce Huston, Ken Maddrey, Peter Burke, John Slocum, Peter Burke, Robin Datta, Candace Lugo, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, Ralph Wagner, Peter Burke, Candace Lugo, Ralph Wagner, Roger Henning, Peter Burke, Candace Lugo, Peter Burke, Joyce Huston, Peter Burke, John Slocum, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Ralph Wagner, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum, Jeffrey Gromny, Elora Nudd, Peter Burke, Elora Nudd

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SP399CM3	NF/AZ Environ Rpt, Rev 2
Finish Date: 08/30/99		

☐ Q Assumption	☐ OCRWM Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
Produce a revised NFE report that contains a description of the evolution of the NF/AZ environment over time. Include THC simulations of CO_2 redistribution due to repository heating. Describe and quantify the effects of CO_2 fugacity and other environmental conditions on the alteration of concrete, and the composition of water in the near field geochemical environment. Present the status of integrated testing, introduced materials testing, and microbial process testing. Quantitively describe the influence of the NFCE on waste package corrosion, as a function of time and assuming reference WP materials. Describe the geochemical environment for transport of released radionuclides through introduced or EBS materials, along transport pathways to the host rock. Include EBS design options in consideration of these topics. The report content and format will meet the requirements of the 12/22/97 NEPO guidance on deliverables, including the requirements on electronic publishing. All data cited, developed, or reported as acquired data in this report will be submitted to the Technical Data Management System.

This deliverable will be developed, reviewed, and submitted in accordance with YMSCO's "Policy on Development of Documents that will be Available to the License Proceeding."

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Nevada Document Control database.

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c) The software code is retrievable and usable, and the results reported in the deliverable are reproducible.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation

DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	140
Description	Natural Environment Program Operations
Manager	Larry Hayes
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	14012035
Description	NFE Rslts to Eval WP Life & EBS Trans for SR/LA
DOE Manager	
DOE Organization	OLRC - Steve Brocoum
PSS	2035
PSS Description	NFE Results to Eval WP Life/EBS Trnspt for SR

Open Control Account

Work Package Information

ID	14012035M2
Description	Revise NF/AZ Environ. Report for SR (FY99)
WBS Element	1.2.3

Work Package Manager	Dwight Hoxie
Estimator	Dwight Hoxie

Open Work Package

Modification Information

Last Updated By: Elora Nudd **Last Update:** 02/05/99 02:13:53 PM

This Form has been updated by:

Jeffrey Gromny, Dwight Hoxie, Chris Weiss, Jack Scheer, John Slocum, Roger Henning, Jeffrey Gromny, Ken Maddrey, Chris Weiss, Joyce Huston, Chris Weiss, Joyce Huston, Ken Maddrey, Peter Burke, John Slocum, Peter Burke, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Roger Henning, Chris Weiss, Roger Henning, Peter Burke, Roger Henning, Ernest Hardin, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum, Ernest Hardin, John Slocum, Jeffrey Gromny, Dwight Hoxie, Roger Henning, Elora Nudd, Peter Burke, Elora Nudd, Dwight Hoxie, Elora Nudd

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SP9904M3	Final LBT Report
Finish Date: 08/12/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETE

Description:
Large Block Test Final Report, SP9904M3, Due: 8-12-99
Reduce data and perform analyses of the data collected during the test. Identify processes, particularly geochemical, that were present during the conducting of the LBT. Conduct final model studies, including fracture network models and other representations of the heterogeneity of the block, for comparison with different stages of the experiment. Integrate all data on fractures, including fracture maps, video logs, and permeability tests. Address differences between predictive modeling and observations, and identify any laboratory scale experiments needed to explain the discrepancies, if any. Determine whether the processes that were identified should be considered in the Drift Scale Test, WP and repository design, and PA analyses of the repository, and whether other processes may be present at the repository that were not present at the LBT, but which should be included in the design and PA efforts. Document alternative conceptual and numerical models that are consistent with the data. Develop recommendations for incorporating thermo-hydrologic-mechanical-chemical-biological and other coupled phenomena in PA models.

The Large Block Test Final Report will support TSPA-LA (through the Near Field Environment Process Models package), LA Design, and Chapter 3 of the LA.

This deliverable will be developed, reviewed, and submitted in accordance with YMSCO's "Policy on Development of Documents that will be Available to the License Proceeding."

Completion Criteria:

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Evaluation Criteria:
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c) The software code is retrievable and usable, and the results reported in the deliverable are reproducible.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	140
Description	Natural Environment Program Operations
Manager	Larry Hayes
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	14012033
Description	NFE Results to support TSPA-SR
DOE Manager	
DOE Organization	OLRC - Steve Brocoum
PSS	2033
PSS Description	NFE Results to Support TSPA-SR

Open Control Account

Work Package Information

ID	14012033M1
Description	Large Block Test: Charact. & Analysis-SR-FY99
WBS Element	1.2.3
Work Package Manager	Ralph Wagner
Estimator	Ralph Wagner

Open Work Package

Modification Information

Last Updated By: Ralph Wagner **Last Update:** 02/06/99 10:09:47 AM

This Form has been updated by:

Candace Lugo, Peter Burke, Chris Weiss, Ralph Wagner, Candace Lugo, Peter Burke, Ralph Wagner, Roger Henning, Peter Burke, Candace Lugo, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum, Jeffrey Gromny, Dwight Hoxie, Jeffrey Gromny, Elora Nudd, Peter Burke, Elora Nudd, Ralph Wagner

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SPG640M3	Rpt: Corr Litho/Geophys Data for Dir Approval
Finish Date: 09/30/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☑ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETE

Description:
This milestone report will provide the overview of the recent effort to correlate lithostratigraphic features and geophysical log data, describe lithostratigraphic units and associated contacts, and illustrations and discussions of reference sections. Types of data used to determine the contacts will be described, and the Q- and non Q-status of these data will be listed and discussed. The data package for eighty boreholes will be submitted in July 1998, and this report will include the data for these boreholes as an appendix. This USGS Open-File Report will provide the overview of the recent effort to correlate lithostratigraphic features and geophysical log data, describe lithostratigraphic units and associated contacts, and illustrations and discussions of reference sections. Types of data used to determine the contacts will be described, and the Q- and non Q-status of these data will be listed and discussed. The data package for eighty boreholes will be submitted in July 1998, and this report will include the data for these boreholes as an appendix. The milestone will be met when the report has completed all technical and quality assurance reviews and has been submitted to the USGS Director's office for approval.

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Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Nevada Document Control database.

Evaluation Criteria:
This deliverable shall be processed in accordance with YAP-30.63

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	819
Description	United States Geological Survey
Manager	Robert Craig
Project Participant:	
USGS	United States Geological Survey

Open OM

Control Account Information

DELETED

ID	81912210
Description	ISM Data Update for SR
DOE Manager	
DOE Organization	OLRC - Steve Brocoum
PSS	2210
PSS Description	SR-Develop Hydrog Frmwork/Eval Disruptive Events

Open Control Account

Work Package Information

ID	81912210U1
Description	Geologic Studies-FY99
WBS Element	1.2.3
Work Package Manager	Michael Chornack
Estimator	Raye Arnold

Open Work Package

DELETE

Modification Information

Last Updated By: John Slocum **Last Update:** 04/08/99 08:49:39 AM

This Form has been updated by:

Shannon Reisler, Norma Biggar, Raye Arnold, Jack Scheer, Raye Arnold, Ken Maddrey, Chris Weiss, Shannon Reisler, Joyce Huston, Chris Weiss, Joyce Huston, Ken Maddrey, Peter Burke, John Slocum, Candace Lugo, Peter Burke, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Raye Arnold, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum, Peter Burke, Raye Arnold, John Slocum, Ken Maddrey, John Slocum, Tom Ferguson, John Slocum, Ken Maddrey

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SPQ224M3	Rpt R1: Seismic Design Basis Inputs
Finish Date: 08/31/99		

☐ Q Assumption	☐ QSTI Distribution
☐ Internet Distribution	☑ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

DELETE

Description:
Update the report, Seismic Design Basis Inputs for a Geologic Repository at Yucca Mountain, Nevada (Rev 0) to include site-specific ground motion design inputs for the surface facilities important to radiological safety. Incorporate the results of site-specific soil and rock properties investigations and available results on site attenuation (kappa). Provide design response spectra for vertical and horizontal ground motion for Frequency Category 1 and Frequency Category 2. Provide spectra for acceleration and velocity. Provide spectra for the surface and for the proposed waste emplacement depth. Provide time histories with characteristics consistent with the design spectra. Provide values of strain as a function of depth from the surface to the depth of the proposed waste emplacement level.

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DELETE

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	2
Description	Site Recommendation
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE

Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNW
Title	TSPA - SR Document
Performing Org. Manager	CN = Richard Snell/OU = YM/O = RWDOE
DOE Manager	CN = Mark Tynan/OU = YD/O = RWDOE

Open SubProduct Form

DELETE

Organization Information

Organization	140
Description	Natural Environment Program Operations
Manager	Larry Hayes
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	14016105
Description	Science Support to License Application
DOE Manager	April Gil
DOE Organization	OLRC - Steve Brocoum
PSS	6105
PSS Description	Science Support to SR

Open Control Account

Work Package Information

ID	14016105M2
Description	Review of Literature & Special Studies-SR-FY99
WBS Element	1.2.3
Work Package Manager	Richard Quittmeyer
Estimator	Richard Quittmeyer

Open Work Package

Modification Information

Last Updated By: Elora Nudd **Last Update:** 02/05/99 02:15:17 PM

This Form has been updated by:

Richard Quittmeyer, Roger Henning, Richard Quittmeyer, Jeffrey Gromny, Terry Grant, Jeffrey Gromny, Ken Maddrey, Chris Weiss, Joyce Huston, Chris Weiss, Joyce Huston, Ken Maddrey, Peter Burke, John Slocum, Peter Burke, Terry Grant, Peter Burke, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, Peter Burke, Roger Henning, Peter Burke, Roger Henning, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Richard Quittmeyer, Ken Maddrey, John Slocum, Ken Maddrey, John Slocum, Jeffrey Gromny, Roger Henning, Jeffrey Gromny, Elora Nudd, Peter Burke, Elora Nudd

DELETE

Subproduct Plan Sheet

6 AMPP Technical Support for SR/Designation

Subproduct: AMPP Technical Support for SR/Designation
Product: 2 Site Recommendation

		Fiscal Year Distribution										
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	79899	0	0	0	0	0	0	0	0	0	0	79899

Description

This subproduct comprises activities that provide infrastructure and support for work identified under the other SR subproducts. This subproduct also covers work activities and related subproduct elements that address requirements or commitments not specifically covered under the other subproducts.

AMPP Technical Support for SR/Designation

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
RPA302M3	Provide Updated SS Draft Eng. File	
RPA304M3	Provide SS Final Eng. File Update	
SLPR19M3	Submit PR19 to YMSCO AMs for Review	
SLPR20M3	Submit PR20 to YMSCO AMs for Review	
SLPRAMM3	Documentation of Prgm Chg to YMSCO AMs for Rev	
SLPRBMM3	Submit PR19 HQ Concurrence Draft to YMSCO	
SLPRCMM3	Submit PR20 HQ Concurrence Draft to YMSCO	
SS128AM3	Annual DOI Federal Archaeology Questionnaire	
SS128BM3	Ann Report on Compl w/Prgrm Agree on Hist Si	
SS128CM3	Annual Inventory of Collect Arch. Mtrls.	
SS128DM3	Ann Nv Comb Agen Haz Sub Infor Fac Rpt	
SS128EM3	Annual Waste Min Rpt Notification	
SS128FM3	Annual EPCRA Section 313 Report	
SS128GM3	Ambient Air Quality Report	
SS128HM3	Ambient Air Quality Report	
SS128IM3	Ambient Air Quality Report	
SS128JM3	Ambient Air Quality Report	
SS128KM3	SMP Quarterly Employment Data Report	
SS128LM3	SMP Procurement Data Report	
SS128MM3	SMP Quarterly Employment Data Report	
SS128NM3	SMP Quarterly Employment Data Report	
SS128OM3	SMP Quarterly Employment Data Report	
SS128PM3	SMP Procurement Data Report	
SS983AM3	Quarterly UIC Permit Report	
SS983BM3	Quarterly UIC Permit Report	
SS983CM3	Quarterly UIC Permit Report	
SS983M3	Quarterly UIC Permit Report	
SS985AM3	Env. Regulatory Compl. Plan	
SS985M3	Annual Site Environment Report	
SSH14HM3	Ltr Rpt: 4th Qtr FY98	
SSH14IM3	Ltr Rpt: 1st Qtr FY99	
SSH14JM3	Ltr Rpt: 2nd Qtr FY99	
SSH14KM3	Ltr Rpt: 3rd Qtr FY99	

AMPP Technical Support for SR/Designation

Deliverables

Deliv ID	Title	Due Date
SSH14NM3	Summary Monitoring Through Calendar Year 1998	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

J.N. Bailey 5/17/99
Ops. Manager Date
J.N. Bailey

R.E. Spence 6/10/99
DOE Manager Date
R.E. Spence

Subproduct Plan Sheet

7 AMCW EIS

Subproduct: AMCW EIS
Product: 3 EIS, Environment, Safety, and Health

	Fiscal Year Distribution											At
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	Complete
Annual Budget	0	8258	0	0	0	0	0	0	0	0	0	0	8258

Description

This subproduct includes development of an EIS in compliance with the NWPA, CEQ, and DOE regulations and preparation of a technically adequate EIS that can be adopted, to the extent practicable, by the NRC.

AMCW EIS (continued)

Deliverables

Deliv ID	Title	Due Date
RPA105M3	Draft RSD Engineering Files Report	
RPA106M3	Final RSD Engineering Files Report	
SEA135M3	Evolution of the MGR Reference Design	
SEB135M3	EIS Cost Estimate Report	
SL916M3	PA Input to DEIS	
SS12AM3	Updated Draft Env. Baseline Files	
SS12BM3	Design Alternatives Report	
SS12CM3	Submit Final Env. Baseline Files	
SS19DM3	Distribute DEIS	
SSJ193M3	Deliver PDEIS for the EIS Manager Review	
SSJ29M3	Public Comment Period Starts	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

5/17/99
Ops. Manager Date
Glen T. Hanson

6/16/99
DOE Manager Date
R E Spence

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SL916M3	PA Input to DEIS
Finish Date: ~~02/26/99~~ 03/31/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
The M&O PA will provide a report documenting the approach and results for the EIS cases including 3 thermal loads (25, 60, and 85 MTHM/acre), 3 waste inventories (base case, module 1 and module 2), and 4 locations (5, 20, 30, and 80 km). The results will be presented as expected value runs for all cases and as CCDF's for all but the module 2 cases. The draft will be deivered as an M4 on 02/01/99. The document will be delivered on 02/26/99. All RIP files will be electronically transferred to the EIS contractor. All files will be transmitted to the DBMS. M&O QC procedures will be followed.

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Technical Publications Management database.

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on this CAP sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP-30.63.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	3
Description	EIS, Environment, Safety, and Health
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	

Open Product Form

SubProduct Information

Code	AMCW
Title	EIS
Performing Org. Manager	CN = Lee Morton/OU = YM/O = RWDOE
DOE Manager	CN = Kenneth Skipper/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	130
Description	Performance Assessment Operations
Manager	Robert Andrews
Project Participant:	
M&O	CRWMS/M&O

Open OM

Control Account Information

ID	13013040
Description	DEIS Prepare & Issue
DOE Manager	Kenneth Skipper

DOE Organization	OLRC - Steve Brocoum
PSS	3040
PSS Description	NE1024 - DEIS Prepare and Issue

Open Control Account

Work Package Information

ID	13013040M9
Description	EIS Analyses FY99
WBS Element	1.2.5
Work Package Manager	Jerry McNeish
Estimator	Sharon Rice

Open Work Package

Modification Information

Last Updated By: John Slocum **Last Update:** 03/09/99 07:54:26 AM

This Form has been updated by:

Bartlett Mann, John Slocum, Ken Maddrey, John Slocum, Tom Ferguson, John Slocum

Subproduct Plan Sheet

8 AMPS Post EIS Completion Activities

Subproduct: AMPS Post EIS Completion Activities
Product: 3 EIS, Environment, Safety, and Health

	Fiscal Year Distribution												
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	0	0	0	0	0	0	0	0	0	0	0	0

Description

The post EIS Issuance Activities subproduct encompasses all work activities planned to support completion of the Draft and Final EIS Administrative Record, the issuance of the Mitigation Action Plan, and development of materials needed to support a decision document.

AMPS Post EIS Completion Activities

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
	Deliverables are baselined with the descriptions, completion and evaluation criterias and due dates contained in the appendix for each SPS	

Approvals

5/17/99
Ops. Manager Date
Glen T. Hanson

6/10/99
DOE Manager Date
Stephan Brocoum

Subproduct Plan Sheet

9 AMPU DOE SNF and Fissile Materials

Subproduct: AMPU DOE SNF & Fissile Materials
Product: 4 DOE SNF & Fissile Material

	Fiscal Year Distribution												At
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	Complete
Annual Budget	0	5684	0	0	0	0	0	0	0	0	0	0	5684

Description

The DOE SNF & Fissile Materials subproduct includes performance analyses and waste acceptance criteria development to include DOE-owned SNF and surplus fissile materials disposition for inclusion into the safety and waste isolation case for the SR/LA.

AMPU DOE SNF & Fissile Materials

Deliverables

Deliv ID	Title	Due Date
SEA1A9M3	DBE Anal of Immobilized Pu Waste Form	
SEAA21M3	Crit Anal of Pu Waste Forms in a Geologic Repos	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

Ops. Manager Date: J. S. Clouet 5/17/99

DOE Manager Date: R E Spence 6/10/99

Subproduct Plan Sheet

10 AMMW LA Design and Verification

Subproduct: AMMW LA Design & Verification
Product: 6 License Application

	Fiscal Year Distribution												At
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	Complete
Annual Budget	0	2730	0	0	0	0	0	0	0	0	0	0	2730

Description

This subproduct element defines the work scope required to develop and revise design criteria controlled by the M&O and accepted by DOE for LA. Revisions and updates to the project requirements documents and SDD's that are required in connection with the resolution of TBXs items identified in the "Verification of Requirements for LA Design" milestone will be performed in this activity. The resolved TBX's and initial design work will be integrated into the System Engineering Products and completed in support of the WDLA/ADLA. This work will continue until the requirements/criteria are mature enough to support the development of procurement specifications and support the basis for the LA design.

AMMW LA Design & Verification

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
SEA021M3	OATI/YMSCO Integrated ICD	
SEA225M3	Complete MGR Con-Ops Revision	
SEA226M3	WASRD Revision	

Deliverables are baselined with the descriptions, completion and evaluation criterias and due dates contained in the appendix for each SPS

Approvals

5/17/99 — Ops. Manager Date — RD SNELL

6/10/99 — DOE Manager Date — R.E. Spence

Subproduct Plan Sheet

11 AMNE Draft LA

Subproduct: AMNE Draft LA
Product: 6 License Application

	Fiscal Year Distribution											At
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	Complete
Annual Budget	0	1612	0	0	0	0	0	0	0	0	0	0	1612

Description

This element comprises the work activities that directly support the preparation, review (M&O and DOE), and verification of draft LA input (chapters and sections) and the assembled document. Adequate resources must be allocated to conduct the scope of work within the time frame defined for the Draft LA sub-product in the PSS. Adequate involvement by all organizations from which input is required must be indicated as part of the plan.
The basis for planning must clearly indicate the level of effort required as a function of time to develop the document under the process and controls described in the LA Management Plan and following the guidance on format and content provided in the Technical Guidance Document. A schedule for the delivery of draft LA chapters and sections will be developed showing the links to the development of the underlying support documents and delivery of the assembled document for DOE-wide review consistent with the LA development schedule in the baseline PSS.

AMNE Draft LA

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
SLSTRBM3	Submit STR III Draft for QAP6.2/YAP 30.12 Rvws	
SPG42GM3	Geology of ECRB Cross Drift	
SLD105M3	Submit Level of Design Detail Paper for LA to DOE (NEW DELIVERABLE)	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS

Approvals

Dennis Richardson 5/17/99
Ops. Manager Date

R E Spence 6/10/99
DOE Manager Date

DENNIS RICHARDSON

R.E. Spence

MultiYear Planning System

New

DELIVERABLE

	ID	TITLE
Deliverable	SLDI05M3	Submit Level of Design Detail Paper
Finish Date: 06/10/99		For LA to DOE

Description:
Convene a multidiscipline team consisting of M&O, MTS and YMSCO to develop guidance on the level of design detail required to support the development of the License Application for Construction Authorization. Provide the guidance to YMSCO via letter to support the next revision of the Technical Guidance Document for the Preparation of a License Application.

This deliverable shall be prepared in accordance with OCRWM approved quality assurance procedures implementing requirements of the QARD as required. Q and non-Q data used and cited in this deliverable shall be appropriately noted and clearly identified. Every effort shall be made to assure that qualified data is used in this deliverable as specified in Section: Supplement III, 2.5, Data Usage, of the current revision QARD as required. Technical data contained within the deliverable and not already incorporated in the Geographic Nodal Information Study and Evaluation System (GENISES) shall be submitted, if appropriate, for incorporation into the GENISES in accordance with YAP-SIII.3Q. Verification of technical data submittal compliance shall be demonstrated by including as part of the deliverable: 1) a copy of the Technical Data Information Form generated identifying the data in the Automated Technical Data Tracking System, and 2) a copy of the transmittal letter attached to the technical data transmittal to the GENISES Administrator as required. Record accession numbers and Automated Tracking numbers will be included, as appropriate, for all data used and /or cited in this deliverable.

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Technical Publications Management database.

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on this PPS sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP-30.63.

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SPG42GM3	Geology of ECRB Cross Drift
Finish Date: ~~03/31/99~~ 05/16/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:
This milestone report will consist of a compilation and summary of mapping data collected in the cross block drift. It will include data delivery for the same interval into the GENISES data base. The report will integrate all mapping and other data, including, as appropriate, maps at a scale of 1:125, geologic units and subunits, fractures, faults, and other important structural features (as appropriate), the location of all samples collected for mineralogical or geochemical analysis and as-constructed installed ground support and type. The deliverable will supply fracture analysis for the cross block drift in the form of tabulated data sets, stereo plots, and statistical treatment of fracture information (by stratigraphic unit, or some selected interval along the course of tunnel excavation). A cross section comparing the predicted geology of the cross block drift and as-determined structural and stratigraphic interpretations will be presented. Predicted and actual stratigraphic, structural and other key features will be discussed in the report. Important sampling and testing activities will be identified and discussed, as appropriate. A general discussion of the stratigraphy and structure will be provided that will include characterization of predicted locations of known or suspected fault features. The report also will include a description of rock characteristics associated with features that do not lend themselves well to graphical presentations contained in the report such as fault gouge and breccia.

Results of the detailed line survey and appropriate graphical and tabular presentation of data will be included in the report. The report will briefly describe any unusual features observed in the mapping, detailed line survey, or sampling exercises. Results of the RQD and Q & RMR analyses will also be provided and integrated into map or other graphical presentations of related data. Simple statistical treatment or qualitative assessment of the results of the subject survey will be provided.
This deliverable will be developed, reviewed, and submitted in accordance with YMSCO's "Policy on Development of Documents that will be Available to the License Proceeding."

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Nevada Document Control database.

Evaluation Criteria:
This deliverable shall be processed in accordance with AP 30.63.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	6
Description	License Application
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNE
Title	Draft LA
Performing Org. Manager	CN = Mike Lugo/OU = YM/O = RWDOE
DOE Manager	CN = April Gil/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	819
Description	United States Geological Survey
Manager	Robert Craig
Project Participant:	

USGS United States Geological Survey

Open OM

Control Account Information

ID	81912050
Description	Enhanced Charact. of Repository Block
DOE Manager	
DOE Organization	OPE - Dick Spence
PSS	2050
PSS Description	Testing Enhanced Characteriz of Repos Block LA

Open Control Account

Work Package Information

ID	81912050U2
Description	Geologic Testing in the ECRB-FY99
WBS Element	1.2.3
Work Package Manager	Michael Chornack
Estimator	Raye Arnold

Open Work Package

Modification Information

Last Updated By: John Slocum **Last Update:** 04:08:99 08:48:31 AM

This Form has been updated by:

Shannon Reisler, Raye Arnold, Jack Scheer, Raye Arnold, Jeffrey Gromny, Ken Maddrey, Chris Weiss, Joyce Huston, Chris Weiss, Joyce Huston, Raye Arnold, Ken Maddrey, Peter Burke, Raye Arnold, Peter Burke, Raye Arnold, Peter Burke, John Slocum, Peter Burke, Vickie Richardson, Peter Burke, Chris Weiss, Peter Burke, Joyce Huston, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, Chris Weiss, John Slocum, Ken Maddrey, John Slocum, Raye Arnold, Peter Burke, Raye Arnold, John Slocum, Ken Maddrey, John Slocum, Tom Ferguson

Subproduct Plan Sheet

12 AMNN Working Draft LA

Subproduct: AMNN Working Draft LA
Product: 6 License Application

	Fiscal Year Distribution												
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	4424	0	0	0	0	0	0	0	0	0	0	4424

Description

The Working Draft License Application (WDLA) subproduct includes coordination and development of chapters and sections in the WDLA, including reviews and comment resolution. This subproduct will establish the template and identify any missing or incomplete information expected to be necessary to develop the License Application. The WDLA subproduct is the preliminary attempt to establish the format and content of a license application, including the identification of the safety case for the Monitored Geologic Repository.

AMNN Working Draft LA

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
SEA282M3	Performance Confirmation Plan Rev. 1	
SLWDO2M3	M&O Provide WDLA QAP6.2 Draft to DOE	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and the due dates contained in the appendix for each SPS

Approvals

Dennis Richardson 6/12/99
Ops. Manager Date

DENNIS RICHARDSON

R.E. Spence 6/10/99
DOE Manager Date

R.E. Spence

MultiYear Planning System

DELIVERABLE

	ID	TITLE
Deliverable	SLWDO2M3	M&O Provide WDLA QAP6.2 Draft to DOE
Finish Date: 07/30/99		

☐ Q Assumption	☐ OSTI Distribution
☐ Internet Distribution	☐ YAP-6.2Q 'Document Review' Applies
☐ YAP-30.12 'Pub. Review App and Dist' Applies	☐ YAP-SIII.3Q 'Proc. of Tech. Data on YMP' Applies

Description:

This deliverable is to submit the Working Draft License Application to YMP for a QAP 6.2 review. The Working Draft will conform to the applicable guidance provided by the License Application Management Plan and the Technical Guidance Document for the Preparation of a License Application, except as authorized by the YMP Assistant Manager for Licensing. It will incorporate licensing information called for in the Technical Guidance Document for License Application Preparation available at the time the WDLA is developed. Placeholders for missing information will also be provided. The WDLA is a work in progress and not a licensing submittal to the NRC.

This deliverable shall be prepared in accordance with OCRWM approved quality assurance procedures implementing requirements of the QARD as required. Q and non-Q data used and cited in this deliverable shall be appropriately noted and clearly identified. Every effort shall be made to assure that qualified data is used in this deliverable as specified in Section: Supplement III, 2.5, Data Usage, of the current revision QARD as required. Technical data contained within the deliverable and not already incorporated in the Geographic Nodal Information Study and Evaluation System (GENISES) shall be submitted, if appropriate, for incorporation into the GENISES in accordance with YAP-SIII.3Q. Verification of technical data submittal compliance shall be demonstrated by including as part of the deliverable: 1) a copy of the Technical Data Information Form generated identifying the data in the Automated Technical Data Tracking System, and 2) a copy of the transmittal letter attached to the technical data transmittal to the GENISES Administrator as required. Record accession numbers and Automated Tracking numbers will be included, as appropriate, for all data used and /or cited in this deliverable.

Except for Chapter 3 (Site Characteristics) and Chapter 8 (Performance of the Repository after permanent closure.)

Completion Criteria:
This deliverable is complete when it is submitted to the DOE in accordance with YAP-30.63 and logged into the Technical Publications Management database.

Evaluation Criteria:
This deliverable shall include all information identified in the Deliverable Description on this PPS sheet unless specifically exempted in writing by the COR at least 60 days before the scheduled due date (30 days in special cases agreed to by the COR). The COR will review the deliverable and process in accordance with YAP-30.63.

Project Information

ID	1
Title	Yucca Mountain Site Characterization Project
Manager	Russ Dyer/YD/RWDOE

Open Project Form

Product Information

ID	6
Description	License Application
DOE Organization	OLRC - Steve Brocoum
DOE Manager	Steve Brocoum/YD/RWDOE
Performing Org. Manager	Jack Bailey/YM/RWDOE

Open Product Form

SubProduct Information

Code	AMNN
Title	Working Draft LA
Performing Org. Manager	CN = Mike Lugo/OU = YM/O = RWDOE
DOE Manager	CN = April Gil/OU = YD/O = RWDOE

Open SubProduct Form

Organization Information

Organization	300

Description	Regulatory & Licensing
Manager	Jack Bailey
Project Participant: M&O	CRWMS/M&O

Open OM

Control Account Information

ID	30012115
Description	LA200 - Prepare Working Draft LA
DOE Manager	April Gil
DOE Organization	OLRC - Steve Brocoum
PSS	2115
PSS Description	LA200 - Prepare Working Draft LA

Open Control Account

Work Package Information

ID	30012115M1
Description	Development of the WDLA
WBS Element	1.2.5
Work Package Manager	Ken Ashe
Estimator	Ken Ashe

Open Work Package

Modification Information

Last Updated By: John Slocum **Last Update:** 03/09/99 10:57:40 AM

This Form has been updated by:

Gayle Lowther, Peter Burke, Wayne Gregory, Peter Burke, Joyce Huston, John Slocum, Peter Burke, Chris Weiss, Peter Burke, Chris Weiss, John Slocum, Ken Ashe, John Slocum, Peter Burke, Chris Weiss, Joyce Huston, John Slocum, Chris Weiss, Ken Maddrey, John Slocum, Ken Maddrey, John Slocum, Peter Burke, Linda Harmon, John Slocum, Ken Maddrey, John Slocum, Tom Ferguson

Subproduct Plan Sheet

13 AMNS Documentary Record for LA

Subproduct: AMNS Documentary Record for LA
Product: 6 License Application

	Fiscal Year Distribution												
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	0	0	0	0	0	0	0	0	0	0	0	0

Description

The Documentary Record for LA subproduct comprises the following:

Provide resources and technical services to support the development, placement, update and maintenance of electronic versions of key products and deliverables for LA onto the Internet/Intranet. Using the "Policy for Placing Selected DOE Documents on the Internet" as a basis, identify specific products that will directly support LA that will be released to the Internet. Key objectives are to provide public access to relevant programmatic/policy and technical documents in a timely manner and provide linkages to supporting information.

Perform all activities necessary for the operation, maintenance, update and population of an electronic information system consistent with the requirements of 10 CFR 2, Subpart J. Perform all necessary activities to meet the annual re certification of the system in accordance with 10 CFR 2, Subpart J. Provide electronic access to the DOE's documentary material as defined.

Provide resources and technical services to support the placement, update, and maintenance of the project technical databases onto the Internet/Intranet.

Provide resources and technical services to support the development, placement, update and maintenance of an electronic version of LA related comments on the Internet/Intranet.

Provide the necessary resources and services to support the printing and publication of documents to be released to the public, including other required forms of media such as CD, tape, etc. For major LA products ensure coordination and planning with the Government Printing Office (GPO) regarding estimated cost for printing, including production schedules.

AMNS Documentary Record for LA

Deliverables

Deliv ID	Title	Due Date
	Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS	

Approvals

Dennis Richardson 6/17/99 — Ops. Manager Date

DENNIS RICHARDSON

Jerry J Adams 6/10/99 — DOE Manager Date

JERRY J ADAMS

Subproduct Plan Sheet

14 AMPT Technical Support for LA

Subproduct: AMPT Technical Support for LA
Product: 6 License Application

	Fiscal Year Distribution												At
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	Complete
Annual Budget	0	0	0	0	0	0	0	0	0	0	0	0	0

Description

Using up-to-date scientific knowledge, the DOE is required to demonstrate to the NRC that the geologic repository performance objectives after permanent closure, as mentioned in the LA, will be met. The Technical Support for LA subproduct includes Performance Confirmation (PC), a set of activities including monitoring, testing, and analyses required to demonstrate that post closure performance of the proposed geologic repository at Yucca Mountain will comply with the requirements as presented in the License Application (LA

AMPT Technical Support for LA

Deliverables

Deliv ID	Title	Due Date
	Deliverables are baselined with the descriptions, completion and evaluation criterias, and due dates contained in the appendix for each SPS	

Approvals

Dennis Richardson 5/17/99 — Ops. Manager Date

DENNIS RICHARDSON

RE Spence 6/10/99 — DOE Manager Date

RE Spence

Subproduct Plan Sheet

15 AMRF Construction Authorization

Subproduct: AMRF Construction Authorization
Product: 8 Construction Authorization

	Fiscal Year Distribution												
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	At Complete
Annual Budget	0	2138	0	0	0	0	0	0	0	0	0	0	2138

Description

The Construction Authorization subproduct includes work necessary to support the CA in 2005.

AMRF Construction Authorization

Deliverables

Deliv ID	Title	Due Date
	Deliverables are baselined with the descriptions, completion and evaluation criterias, and the due dates contained in the appendix for each SPS NO FY99 DELIVERABLES	

Approvals

Ops. Manager	Date	DOE Manager	Date		
RD SNELL	5/17/99	R.E. Spence	6/10/99		

Subproduct Plan Sheet

16 AMPW Project Support for SR/LA

Subproduct: AMPW Project Support for SR/LA
Product: 9 Administration and Asset Management

	Fiscal Year Distribution												At
	Prior	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	Future	Complete
Annual Budget	0	26115	0	0	0	0	0	0	0	0	0	0	26115

Description

The Project Support SR/LA subproduct comprises administrative support, safeguards and security services, information technology planning and compliance, training support, institutional interactions, project control, integrated safety management system, payment equal to taxes, safety and health core program support, and program litigation support.

AMPW Project Support for SR/LA

Deliverables

Deliv ID	Description/Completion Criteria	Due Date
BM9500M3	Submit Initial FY00 YMP Plan Update to YMSCO	
BM9560M3	Submit CR to Baseline FY00 YMP Plan Update	
BMSPM3	Submit Updated LA-10 Plan to YMSCO	

Deliverables are baselined with the descriptions, completion and evaluation criterias, and the due dates contained in the appendix for each SPS

Approvals

TDTait 5-17-99
Ops. Manager Date
TERRY D. TAIT

Jerry Adams 6/15/99
DOE Manager Date
JERRY J ADAMS

M&O-99-008: Revise the Project Baseline to Add and Delete Work Scope, Budget, and Milestones for Process Models and Data Qualification (PMDQ), and Enhanced Design Alternative 2 (EDA2)

Summary of Cost Back-up

Following are cost back-up data associated with this Change Request. The cost breakout is presented by control account/category of change and is grouped by Subproduct Code. The categories are as follows:

CAR - Response to Integrated Corrective Action Requests
DQ - Data qualification initiative
LADS - License Application Design Selection Enhanced Design Alternative 2 implementation
PMR - Process Model Development
PVAR - Process Validation and Re-engineering initiative

Below is a listing of codes, titles, and identification of the Subproducts affected by this CR.

	SPS ID	SPS Title	Changed By CR
1	AMJX	Documentary Record for SR	X
2	AMMQ	SR Design Alternatives	X
3	AMNL	Site Recommendation Report	X
4	AMNT	Repository Design and Waste Form Revision - SR	X
5	AMNW	TSPA-SR Document	X
6	AMPP	Technical Support for SR/Designation	X
7	AMCW	EIS	
8	AMPS	Post EIS Completion Activities	
9	AMPU	DOE SNF and Fissile Materials	
10	AMMW	LA Design and Verification	X
11	AMNE	Draft LA	
12	AMNN	Working Draft LA	X
13	AMNS	Documentary Record for LA	
14	AMPT	Technical Support for LA	
15	AMRF	Construction Authorization	
16	AMPW	Project Support for SR/LA	X

Description of Cost Summary Table Entries

Subproduct Code - The subproduct code assigned within Planning and Control System to the subproduct.
CAT - The category of work scope (see above).
PMR # - used for the cost estimating of each of the PMRs in response to YMSCO direction.

ISM - Integrated Site Model PMR

UZ- Unsaturated Zone Flow and Transport PMR
SZ - Saturated Zone Flow and Transport PMR
NF - Near Field Environment PMR
WP - Waste Package Degradation PMR
WF - Waste Form Degradation PMR
EB - Engineered Barrier System Degradation and Flow/Transport PMR
Bio - Biosphere PMR
Tec - Tectonic Hazards PMR
M&I - PMR management and integration/documentation support services
N/R - Non - PMR
N/A - not applicable line item for PMR estimate

CA # - Control Account number.
CA Current (k$) - The current CA baseline budget total. The total current CA budget is listed for only the first occurrence of a CA under a subproduct.
Rescoped Within CA (k$) - The budget estimate associated with work refocused within a CA.
CA Delta (k$) (+/-) - The budget estimate associated with reduced or increased work scope for the CA.
Adjusted CA (k$) - The budget estimate for the CA as adjusted to incorporate the particular line item. Note: Each CA may be affected by one or more line items. The total adjusted CA budget is listed for only the last occurrence of a CA under a subproduct.
Scope Statements - Notes regarding the affected work scope as related to both refocused, reduced, and/or increased work scope.

Sub Product Code	CAT	PMR #	CA #	CA Current (k$)	Rescoped Within CA (k$)	CA Delta (k$) (+/-)	Adjusted CA (k$)	Scope Statements
AMJX	CAR		15012475	1,627		570	2,197	Increased work to support Integrated CAR Closure and Corrective Action Board (CAB).
AMJX	PVAR		15019130	8,174		1,900	10,074	increased work scope for Information Systems Architecture supporting PVAR initiatives.
AMJX	PMR	M&I	15019197	9,105		300		Increased work scope to provide increased PMR documentation support services.
AMJX	PVAR		15019197			650		Increased work scope to support PVAR procedure development.
AMJX	QA		15019197			596	10,651	Increased work scope for QA procedure integration and procurement engineering.
AMJX, Doc Rec for SR, Totals				**18,906**	**0**	**4,016**	**22,922**	
AMMQ	LADS		13012021	2,200		60	2,260	Increased work scope to include Defense In Depth analyses of EDA2 to support prioritization effort lead by Regulatory and Licensing.
AMMQ	PVAR		24012392	3,649		274	3,923	Increased work scope to support PVAR activities for design input transmittal database, impact evaluation tracking, Project-wide tracking of submittals, Additional services for organizations as Safety, NEPO, Licensing and others, and compliance with Clinger/Cohen requirements.
AMMQ, SR Dgn Alt, Totals				**5,849**	**0**	**334**	**6,183**	
AMNL	PMR	M&I	30012186	5,434	0	600	6,034	Increased work scope to include PMR management and integration.
AMNL, SR Report, Totals				**5,434**	**0**	**600**	**6,034**	
AMNT	CAR		11012371	524	100	0		Refocus of work scope to support CAR Closure activities in Waste Package Operations.
AMNT	PVAR		11012371		100	0	524	Refocus of work scope to support PVAR activities in Waste Package Operations.
AMNT	LADS		11012377	2,398	230	20	2,418	Refocus of and increased work scope to initiate Drip Shield design and material selection process and interface with EBS Operations.
AMNT	DQ		11017030	5,222	217	136		Refocus of and increased work scope to analyze & qualify data and software being used in the AP-3.10Q analyses for the Waste Form Process Model Report.
AMNT	PMR	WF	11017030		987	284	5,642	Refocus of and increased work scope to prepare AP-3.10Q analyses on Waste Form to support preparation of the Waste Form PMR.
AMNT	DQ		11017040	9,384	221	464		Refocus of and increased work scope to analyze & qualify data and software being used in the AP-3.10Q analyses for the Waste Package Degradation Process Model Report.

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AMNT	LADS		11017040		989	1,500		Work scope reduction of ceramics (-$340K); Work scope increase to perform short term materials testing at LLNL ($434K) and perform term materials testing at an outside laboratory ($1,090K).
AMNT	PMR	WP	11017040		1,104	216	11,564	Refocus of and increased work scope to prepare AP-3.10Q analyses on Waste Package materials to support preparation of the WP Degradation PMR
AMNT	PMR	EBS	12012383	6,087	800	300	6,387	Refocus of and increased work scope to prepare AP-3.10Q analyses on Engineered Barrier to support preparation of the Engineered Barrier System PMR.
AMNT	LADS		16012310	4,567		226		Increased work scope to: Support update of SR/LA Products List ($91K); Update SR/LA Design Criteria ICDs ($45K), Update the Waste Acceptance and Storage Requirements Document (WASRD) to reflect EDA2 ($90K).
AMNT	PVAR		16012310		200	200	4,993	Refocus of and increased work scope to support PVAR activities in Systems Engineering and Integration Operations.
AMNT	PVAR		24012403	2,150		322	2,472	Increased work scope to support PVAR activities for design input transmittal database, impact evaluation tracking, Project-wide tracking of submittals, Additional services for organizations as Safety, NEPO, Licensing and others, and compliance with Clinger/Cohen requirements.
AMNT	PVAR		30016102	375	0	300	675	Increased work scope to support PVAR procedure development.
AMNT, SR Rep Dgn & WF, Totals				**30,707**	**4,948**	**3,968**	**34,675**	
AMNW	CAR		13012175	684	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012175		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.
AMNW	PMR	Tec	13012175		50	200		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Tectonics PMR.
AMNW	PVAR		13012175		50	0	884	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures.
AMNW	CAR		13012176	1,332	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012176		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.
AMNW	PMR	SZ	13012176		25	75		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for SZ PMR.
AMNW	PMR	Bio	13012176		25	25		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Biosphere PMR.

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AMNW	PVAR		13012176		50	0	1,432	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures.
AMNW	CAR		13012184	2,289	400	0		Definitization of existing work scope in support of CAR closure, in particular CAR 10 actions to preclude recurrence.
AMNW	PVAR		13012184		100	100	2,389	Refocus of technical scope to support revision of PVAR procedures (especially AP-3.10Q) and integration of all procedures with data control procedures.
AMNW	CAR		13012190	985	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012190		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.
AMNW	PMR	WF	13012190		50	100		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Waste Form PMR.
AMNW	PVAR		13012190		50	0	1,085	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures.
AMNW	CAR		13012195	719	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012195		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.
AMNW	PMR	WP	13012195		50	100		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Waste Package PMR.
AMNW	PVAR		13012195		50	0	819	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures.
AMNW	CAR		13012220	3,446	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012220		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.
AMNW	LADS		13012220			-90		Work scope reductions in Climate & Infiltration ($30K); Seepage ($30K); and UZ Flow ($30K).
AMNW	PMR	NF	13012220		25	75		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Near Field PMR.
AMNW	PMR	UZ	13012220		25	75		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for UZ PMR.
AMNW	PVAR		13012220		50	0	3,506	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures.
AMNW	CAR		13012235	1,033	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012235		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.

Sub Product Code	CAT	PMR #	CA #	CA Current (k$)	Rescoped Within CA (k$)	CA Delta (k$) (+/-)	Adjusted CA (k$)	Scope Statements
AMNW	PMR	EB	13012235		50	150		Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Engineered Barrier System PMR.
AMNW	PVAR		13012235		50	0	1,183	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures.
AMNW	CAR		13012396	1,493	50	0		Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	DQ		13012396		50	0		Work scope refocus of efforts on the traceability and qualification of data. Increase of work scope for Tiger Teams and tracebacks to information sources.
AMNW	PVAR		13012396		50	0	1,493	Work scope reduction in technical scope; Work scope increase for review/training/implementation of PVAR procedures
AMNW	DQ		14012027	2,720	663			Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	PMR	UZ	14012027		586		2,720	Work scope reductions in technical scope; Work scope increase for AP-3.10Qs to support the UZ PMR.
AMNW	DQ		14012029	775		15	790	Additional work scope to close c-wells database
AMNW	DQ		14012031	1,231	320			Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	PMR	SZ	14012031		280		1,231	Work scope reductions in technical scope; Work scope increase for AP-3.10Qs to support the SZ PMR.
AMNW	DQ		14012033	2,101		-264		Work scope reductions in technical scope.
AMNW	PMR	N/A	14012033			-176	1,661	Work scope reductions in technical scope.
AMNW	DQ		14012035	1,422		-307		Work scope reductions in technical scope.
AMNW	PMR	N/A	14012035			-441	674	Work scope reductions in technical scope.
AMNW	PMR	ISM	14012210	1,243	371	138	1,381	Work scope increase for AP-3.10Qs to support the ISM PMR.
AMNW	DQ		14012253	241		-122		Work scope reductions in technical scope.
AMNW	DQ		14012253			693		Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	PMR	N/A	14012253			-81		Work scope reductions in technical scope.
AMNW	PMR	NF	14012253			663	1,394	Work scope increase for AP-3.10Qs to support the NF PMR.
AMNW	DQ		14016105	3,684		530		Work scope increase for software qualification, model traceability and control and data traceability.
AMNW	PMR	Tec	14016105			350		Work scope increase for AP-3.10Qs to support the Tec PMR.
AMNW	PMR	N/A	14016105			-1,810		Work scope reductions in technical scope.
AMNW	PMR	N/R	14016105			900		Work scope increase for Site Description.
AMNW	PMR	N/R	14016105			550		Work scope increase for Natural Analogues.
AMNW	PMR	N/R	14016105			295		Work scope increase for Natural Resources.
AMNW	PMR	N/R	14016105			150	4,649	Work scope increase for Seismic Design Basis.
AMNW	PMR	ISM	81912210	31		150	181	Work scope increase for AP-3.10Qs to support the ISM PMR.
AMNW, TSPA-SR Doc, Totals				**25,429**	**4,070**	**2,043**	**27,472**	

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AMPP	LADS		12019086	3,915	800	0		Work scope reduction of Backfill/Richards Barrier and Getter test; Work scope increase for Backfill/Drip Shield and Invert Diffusion tests.
AMPP	PVAR		12019086		0	100	4,015	PVAR procedure development support from Engineered Barrier Operations.
AMPP	CAR		14019090	7,245	643	767		Work scope reductions in technical scope; Work scope increase for Integrated CAR Closure.
AMPP	DQ		14019090		2,010			Work scope reductions in technical scope; Work scope increase for software qualification, model traceability and control and data traceability.
AMPP	PVAR		14019090			85	8,097	Increased work scope to support PVAR procedure development.
AMPP	PMR	Bio	15016260	3,298		42	3,340	Work scope refocus of and new work scope for efforts on the AP-3.10Q analyses and development of text for Biosphere PMR.
AMPP	CAR		15019121	8,871		42	8,913	Increased work scope in suport of Integrated CAR closure.
AMPP	CAR		81919090	1,861		100		Increased work scope in suport of Integrated CAR closure.
AMPP	DQ		81919090			50		Work scope increase for software qualification, model traceability and control and data traceability.
AMPP	PVAR		81919090			15	2,026	Increased work scope to support PVAR procedure development.
AMPP, Tech Sup for SR, Totals				**25,190**	**3,453**	**1,201**	**26,391**	
AMMW	LADS		16012023	2,350		119	2,469	Increased work scope to: Update the Reference Design Description (RDD) to reflect EDA2 ($70K); Support update of SR/LA Products List to reflect EDA2 in the SR ($49K).
AMMW, LA Dg and Verif, Totals				**2,350**	**0**	**119**	**2,469**	
AMNN	PMR	N/A	13012115	750		-600	150	Work scope reduction of Chapter 8 from WDLA.
AMNN	PMR	N/A	30012115	1,135	0	-200	935	Work scope reduction of Chapters 3 and 8 from WDLA.
AMNN, Working Draft LA, Totals				**1,885**	**0**	**-800**	**1,085**	
AMPW	PVAR		15019111	2,600		200	2,800	Increased work scope to develop and conduct PVAR training and support PVAR development program.
AMPW, Sup for SR/LA, Totals				**2,600**	**0**	**200**	**2,800**	
Grand Totals				**118,350**	**12,471**	**11,681**	**130,031**	