

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CORRECTIVE ACTION REQUEST

CAR No: 2002-04

Associated AR, SR, NCR No: CNWRA 2002-1

PART A: DESCRIPTION OF CONDITION ADVERSE TO QUALITY

QAP-014, the procedure for verification of calculations (3.2), requires the Element Manager to specify the extent and type of calculation over checks required to be performed by the reviewer (from 4 or 5 options).

- Instructions to Technical Reviewers (re: QAP-002) for the RSSA scoping analysis report and for the TSPA external peer review report did not specify the extent and types of over checks to be performed. Note that these were the only two reports audited that involved calculations.

QAP-014, paragraph 3.2.4, requires that technical reviewers indicate how the calculation verifications were accomplished and the conclusions regarding the correctness of the calculations.

- Review documentation for the two previously mentioned reports did not indicate how the verifications were accomplished, and did not always explicitly indicate the results.

A possible contributing factor to this condition is that the QAP-002 (the review process) Instructions to Technical Reviewers form does not provide for identifying the specific types of over checks or their extent.

In addition, this form does not instruct the reviewer to document how the verifications were accomplished and the results.

Initiated by: R. Brient

Date July 30, 2002

PART B: PROPOSED ACTION

Responsible EM: B. Sagar

Response Due: 8/27/2002 *Bem*

1) Extent of Condition:

SEE ATTACHED TEXT

2) Root Cause:

SEE ATTACHED TEXT

3) Remedial Action:

SEE ATTACHED TEXT

Proposed Completion Date:

12/31/2002

4) Corrective Action to Preclude Recurrence:

SEE ATTACHED TEXT

Proposed Completion Date:

12/31/2002

Element Manager:

B. Sagar

Date:

10/17/2002

PART C: APPROVAL

Comments/Instructions

10/18/02

Director of QA:

B. Sagar

Date:

10/18/2002

PART D: VERIFICATION OF CORRECTIVE ACTION IMPLEMENTATION

See attached page with backup documentation

Distribution:

*All Element managers**All Directors**W. Patrick**M. Ehnstrom/30**original, complete packages to**CAR 16/100/B. MARRITO**(Distribution w/o individual worksheets)*

Verified by:

M. Ehnstrom

Date:

2/20/03

CAR 2002-04: Part B: Proposed Action

Extent of Condition: Review packages for three, randomly-selected CNWRA reports delivered to the NRC in FY2002 were examined to determine the extent of the condition. The quality assurance file tracking numbers for the three reports are: (i) Q200204080026, (ii) Q200208200019, and (iii) Q20028200014. Similar problems were not found in the three review packages. Report (i) is a journal paper on Pleistocene and Holocene ground-water recharge estimates. The technical reviewer of report (i) stated on the TOP-3 form that the calculations were verified. Report (ii) is a technical report on hazards affecting the YM repository operations area. The element or program manager clearly identified the type of over checks (controlled software) to be conducted for report (ii) on the QAP-12 form and the technical reviewer properly documented the results of the verification on the TOP-3 forms. Report (iii) is a technical report on fault displacement at Yucca Mountain. The element or program manager did not describe the type of over checks to be conducted for report (iii) on the QAP-12 form. The technical reviewers of report (iii) indicated on the TOP-3 form that the calculations were verified.

Root Cause: The extent to which calculations are to be checked is sometimes determined by the cognizant manager and at other times by the assigned technical reviewer(s). In addition, even when calculations are checked, objective evidence of the checks is not being provided in some reviews. The root cause for this condition is that the portion of the QAP-012 form that directs the technical reviewer(s) to conduct a QAP-014 verification of calculations, does not provide specific instructions requiring the cognizant manager to explicitly specify the extent and type of calculation over checks.

Remedial Action: Review records for reports/papers generated in FY2002 that have both calculations and calculation over checks identified on the QAP-012 form. Those reports/papers found to be lacking adequate descriptions of the over checks on the TOP-3 form should be sent back to the original reviewer(s), or the cognizant manager, to better document the over checks. If additional calculation errors are identified and documented during this process, the report will be returned to the authors for correction, revision, and re-submission to the client.

Corrective Action to Preclude Recurrence: Revise the QAP-12 form so that when a program or element manager directs a technical reviewer to verify the correctness of calculations by checking the box, the manager must also complete additional items that identify the types of calculation over checks required and describe the extent. After evaluating criteria (i), (ii) and (iii) in section 3.2 of QAP-014, the manager will check one or more boxes that correspond to the four types of calculations: (i) Calculations Performed Using Controlled Software; (ii) Calculations Performed Using Uncontrolled Software; (iii) Calculations Performed Using Commercial-off-the-Shelf Software; and (iv) Other Calculations. The manager will also write a brief statement in the blank provided next to each of the checked boxes describing the extent to which the calculations must be checked. For example the manager might state that, "based on the intended use of the calculated results, the technical reviewer must check 50% of the numbers listed in column D of Tables 4-1 and 4-2." In addition, the comment that instructs the technical reviewer to make a statement about the calculation check on the TOP-3 form will be revised to make clear that the reviewer must specify which calculations were checked, and explain how they were checked. The reviewer will also be instructed to either record the calculation checks on the TOP-3 form, identify where in which scientific notebook the calculation checks are recorded, or attach additional sheets or computer printouts.

Corrective Action 2002-04
Verification of Corrective Action Implementation

CNWRA reports/papers requiring calculation over checks issued on FY-02 have been reviewed. The review was performed to determine if original calculation over checks were adequate and in compliance with procedural requirements. Out of the 51 reports reviewed, 6 were determined to have inadequate calculation over checks. Additional over checks were performed on these 6 reports by appropriate CNWRA staff members. The reports now have had a sufficient calculation over check performed in accordance with procedural requirements. (See attached review documentation).

Form QAP-012 was revised in October 2002 and incorporates additional questions which identify the type of calculation over checks required.

Mark R. Ehnstrom
2/20/03

Reviewed: *James Mahule*
Approved: 2/21/2003



CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

INSTRUCTIONS TO TECHNICAL REVIEWERS

Technical Review Items to Verify

TO: _____

SUBJECT: Review of _____

Please perform a Technical Review of the subject document in accordance with CNWRA QAP-002, verifying the specific items identified below. Technical comments shall be documented on the attached Comment Resolution Record and presented to the author for resolution. Initial blanks on right side of page to show completion of assigned review.

Required review completion date: _____

ASSIGNED TECHNICAL CORRECTNESS

ACCOMPLISHED

<input type="checkbox"/>	Assumptions are reasonable and clearly stated.	<input type="checkbox"/>
<input type="checkbox"/>	Appropriate techniques are used.*	<input type="checkbox"/>
<input type="checkbox"/>	Existing data are qualified (or exempted) in accordance with QAP-015.	<input type="checkbox"/>
<input type="checkbox"/>	Conclusions are properly supported by correctly interpreted data.*	<input type="checkbox"/>

* Novel or beyond state-of-the-art techniques or significant uncertainties in data and interpretations warrant application of the Peer Review.

Are there calculations? YES ☐ NO ☐ If yes, are "over checks" required? YES ☐ NO ☐

If no "over checks" are required, explain why: _____

<input type="checkbox"/>	Calculations are correct, documented and verified in accordance with QAP-014 (document this review by a statement on the TOP-3 form).	<input type="checkbox"/>
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READABILITY

<input type="checkbox"/>	Document is written for the intended audience, with correct grammar and syntax.	<input type="checkbox"/>
<input type="checkbox"/>	Illustrations and tables clearly present basic information and emphasize relationships.	<input type="checkbox"/>

CONTENT AND FORMAT

<input type="checkbox"/>	Title reflects the objectives of the document.	<input type="checkbox"/>
<input type="checkbox"/>	Abstract states purpose, describes study, and summarizes the pertinent results and conclusions.	<input type="checkbox"/>
<input type="checkbox"/>	Introduction states the objectives and scope of the work and presents background information.	<input type="checkbox"/>
<input type="checkbox"/>	Body of the manuscript is logically organized and presents the basic information.	<input type="checkbox"/>
<input type="checkbox"/>	Conclusions and results summarize the principal findings and answer each of the objectives of the work.	<input type="checkbox"/>
<input type="checkbox"/>	References are cited in the text and in the references section.	<input type="checkbox"/>
<input type="checkbox"/>	Costs and financial tables are included and agree with text.	<input type="checkbox"/>

ELEMENT MANAGER	DATE	COGNIZANT DIRECTOR	DATE
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CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
INSTRUCTIONS TO TECHNICAL REVIEWERS
Technical Review Items to Verify

REVIEWER: _____

TITLE: _____

Please perform a Technical Review of the subject document in accordance with CNWRA QAP-002, verifying the specific items identified below. Technical comments shall be documented on the attached Comment Resolution Record and presented to the author for resolution. Initial blanks on right side of page to show completion of assigned review.

Required review completion date: _____

TECHNICAL CORRECTNESS

ACCOMPLISHED

<input type="checkbox"/>	Assumptions are reasonable and documented in sufficient detail that a technically qualified person may review, understand, and verify the analysis without recourse to the originator. (Do not assign if report does not contain data interpretation and analysis.)	<input type="checkbox"/>
<input type="checkbox"/>	Appropriate techniques are used.	<input type="checkbox"/>
<input type="checkbox"/>	Existing data are qualified (or exempted) in accordance with QAP-015.	<input type="checkbox"/>
<input type="checkbox"/>	Conclusions are properly supported by correctly interpreted data. (Novel or beyond state-of-the-art techniques or significant uncertainties in data and interpretations warrant application of a Peer Review.)	<input type="checkbox"/>

Are there calculations? YES ☐ NO ☐ If yes, are "over checks" required? YES ☐ NO ☐

If no "over checks" are required, explain why: _____

If "over checks" are required, specify type(s) of calculation (per Section 3.2 and 3.2.3 of QAP-014) and describe extent of verification.

<input type="checkbox"/>	Controlled Software	_____
<input type="checkbox"/>	Uncontrolled Software	_____
<input type="checkbox"/>	Commercial Off-the-Shelf Software	_____
<input type="checkbox"/>	Other Calculation(s)	_____

<input type="checkbox"/>	Calculations are correct, documented and verified in accordance with QAP-014, Section 3.2.3. Document this review by a statement on TOP-3 form explaining which calculations were checked, and how they were checked. Attach verification calculation, in accordance with Section 3.2.4 of QAP-014.	<input type="checkbox"/>
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CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
INSTRUCTIONS TO TECHNICAL REVIEWERS
Technical Review Items to Verify

READABILITY

ACCOMPLISHED

<input type="checkbox"/>	Document is written for the intended audience, with correct grammar and syntax.	<input type="checkbox"/>
<input type="checkbox"/>	Illustrations and tables clearly present basic information and emphasize relationships.	<input type="checkbox"/>

CONTENT AND FORMAT

ACCOMPLISHED


<input type="checkbox"/>	Title reflects the objectives of the document.	<input type="checkbox"/>
<input type="checkbox"/>	Abstract states purpose, describes study, and summarizes the pertinent results and conclusions.	<input type="checkbox"/>
<input type="checkbox"/>	Introduction states the objectives and scope of the work and presents background information.	<input type="checkbox"/>
<input type="checkbox"/>	Body of the manuscript is logically organized and presents the basic information.	<input type="checkbox"/>
<input type="checkbox"/>	Conclusions and results summarize the principal findings and address each of the objectives of the work.	<input type="checkbox"/>
<input type="checkbox"/>	References are cited in the text and in the references section.	<input type="checkbox"/>
<input type="checkbox"/>	Costs and financial tables are included and agree with text.	<input type="checkbox"/>
ELEMENT MANAGER		DATE
COGNIZANT DIRECTOR		DATE

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

MEMORANDUM

August 27, 2002

TO: QA Records Corrective Action Requests 2002-03 and 2002-04 Folder

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Extension of Time on CARs 2002-03 and 2002-04

REFERENCE: CAR 2002-03 and 2002-04, Annual 2002 CNWRA QA Audit

This memorandum to the Corrective Action Requests (CARs) 2002-03 and 2002-04 folder is to document progress and extend a time extension for the responses.

CARs 2002-03 and 2002-04 were originated July 30, 2002, following the conclusion of the 2002 annual CNWRA QA Audit. They were responded to by B. Sagar and G. Wittmeyer on August 26, 2002, but I reviewed their responses and rejected their responses.

The original responses lacked sufficient information from a QA perspective and they were returned to B. Sagar with a request to resubmit them with changes. There have been several discussions between B. Mabrito, B. Sagar and G. Wittmeyer regarding these two CARs and it is expected that several more iterations of CAR proposed actions will be submitted before CNWRA QA accepts the input.

For the purpose of this memorandum to the file, it should be noted that the initial response to the CARs were prior to response due date of 8/27/2002.

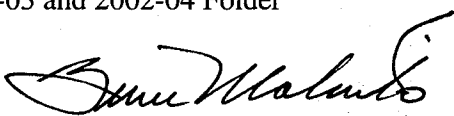
An extension of the two CAR response due dates is acceptable considering the on-going discussions and circumstances. An extension to September 26, 2002 is hereby granted.

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

MEMORANDUM

September 26, 2002

TO: QA Records Corrective Action Requests 2002-03 and 2002-04 Folder

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Second Extension of Time on CARs 2002-03 and 2002-04

REFERENCE: CAR 2002-03 and 2002-04, Annual 2002 CNWRA QA Audit

This memorandum to the Corrective Action Requests (CARs) 2002-03 and 2002-04 folder is to document progress and extend a time extension for the responses.

CARs 2002-03 and 2002-04 were originated July 30, 2002, following the conclusion of the 2002 annual CNWRA QA Audit. They were responded to by B. Sagar and G. Wittmeyer on August 26, 2002, but I reviewed their responses and rejected their responses. This is the second time extension on this set of CARs.

The original responses lacked sufficient information from a QA perspective and they were returned to B. Sagar with a request to resubmit them with changes. There have been several discussions between B. Mabrito, B. Sagar and G. Wittmeyer regarding these two CARs and it is expected that several more iterations of CAR proposed actions will be submitted before CNWRA QA accepts the input. Due to travel situations and preparation of Operations Plans, B. Sagar has not presented CNWRA QA with the new responses to CARs 2002-03 and 2002-04.

For the purpose of this memorandum to the file, it should be noted that the initial response to the CARs were prior to response due date of 8/27/2002. The first extension was to September 26, 2002.

I am reluctantly documenting a second extension for these two CAR responses. The new due date for both the CARs is October 11, 2002. It is expected that B. Sagar and G. Wittmeyer will have their responses to CNWRA QA by this second extension date.

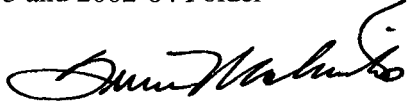
cc: B. Sagar
G. Wittmeyer
M. Padilla
M. Ehnstrom
B. Mabrito

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

MEMORANDUM

October 11, 2002

TO: QA Records Corrective Action Requests 2002-03 and 2002-04 Folder

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Third Extension of Time on CARs 2002-03 and 2002-04

REFERENCE: CAR 2002-03 and 2002-04, Annual 2002 CNWRA QA Audit

This memorandum to the Corrective Action Requests (CARs) 2002-03 and 2002-04 folder is to document progress and extend a time extension for the responses.

CARs 2002-03 and 2002-04 were originated July 30, 2002, following the conclusion of the 2002 annual CNWRA QA Audit. They were responded to by B. Sagar and G. Wittmeyer on August 26, 2002, but I reviewed their responses and rejected their responses. This is the third time extension on this set of CARs.

The original responses lacked sufficient information from a QA perspective and they were returned to B. Sagar with a request to resubmit them with changes. There have been several discussions between B. Mabrito, B. Sagar and G. Wittmeyer regarding these two CARs and it is expected that several more iterations of CAR proposed actions will be submitted before CNWRA QA accepts the input. Due to travel situations and preparation of Operations Plans, B. Sagar has not yet presented CNWRA QA with the new responses to CARs 2002-03 and 2002-04.

For the purpose of this memorandum to the file, it should be noted that the initial response to the CARs were prior to response due date of 8/27/2002. The first extension was to September 26, 2002. The second extension was to October 11, 2002. More discussions have taken place to resolve differences in approach to resolving these two CARs.

Based on the recent discussions between B. Sagar and myself, it has been agreed that the deadline for completing all action on these two CARs is December 31, 2002. This date will allow certain remedial actions to take place according to the Element Managers affected.


cc: B. Sagar
M. Padilla
M. Ehnstrom
B. Mabrito

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

MEMORANDUM

December 31, 2002

TO: QA Records Corrective Action Requests (CARs) 2002-03 and 2002-04 Folder

FROM: Bruce Mabrito, Director of Quality Assurance 

SUBJECT: Extension of Time for Closure on CARs 2002-03 and 2002-04

REFERENCE: CARs 2002-03 and 2002-04

This memorandum to the CAR 2002-03 and CAR 2002-04 folders is to document progress to date on these Corrective Action Requests.

CAR 2002-03 and CAR 2002-04 were originated July 30, 2002 at the conclusion of the 2002 annual CNWRA QA Audit. Remedial actions and corrective actions to preclude recurrence have taken place since that time.

Pertaining to CAR 2002-03, a revised version of the description of The Total System Performance Assessment and Integration Issue Resolution Blueprint (IM 20.01402.761.140) will be submitted to the NRC in early calendar year 2003.

Work continues on the closure of CAR 2002-04. Reports containing calculations submitted in FY2002 were identified in the QA Records Room and returned to the cognizant Element Managers for additional review. The reviews on these reports are approximately 90-percent complete and the entire effort to support closure of the CAR should be finished by the end of February 2003.

The cognizant Element Managers have asked for additional time to complete their deliverables to the NRC in order to fulfill all the corrective actions to close these CARs.

Based on discussions I have held with the Element Managers and the Technical Director, I am extending the time to complete the corrective actions to February 28, 2003.

cc: M. Ehnstrom
T. Mayces
R. Folck
G. Wittmeyer
J. Russell

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200203010003

Title of Report: An Approach for Implementing Quantitative Performance Assessment Regulatory Criteria for the Proposed Radiactive Waste Repository at Yucca Mountain, Nevada

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The QAP-012 form did not explicitly direct the EM to state all criteria required by QAP-014, Section 3.2.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: Linda Wetmore

Date: 12/16/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002 08290006

Title of Report: Stress Corrosion Cracking and hydrogen Embrittlement of Containers materials and drip shield

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

Report had only minor calculations that were checked ^{VS 10/23}
done on excel spreadsheet. Selected cells were checked for correctness.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: [Signature]

Date: 10/23/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2001/1190006.

Title of Report: An in-situ Galvanically Coupled Multi-electrode Array Sensor for Localized Corrosion.

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Report has only minor calculations and is limited to 2 or 3 figures.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: [Signature]

10/23/02
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200204080021

Title of Report: HI- STORM Analysis - ANSYS/LS-DYNA Model

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

It was the understanding of the EM that the extent and type of overchecks will be decided by the technical reviewers.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 10-23-02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200201040008

Title of Report: Safety Evaluation Report Concerning The Private
Fuel Storage Facility

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

It was the understanding of the EM that the extent and types of overchecks will be decided by the technical reviewers -

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 10-23-02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200208200019

Title of Report: Hazard Identification for the Geologic Repository
Operations Area: A Progress Report

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 10-23-02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200112060002

Title of Report: Assessment of Mechanical Response of Drift Shields
Under Repository Environment - Progress Report 2

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain It was the understanding of the EM that the
extent and type of overchecks will be decided by the
technical reviewer(s).

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: [Signature]

Date: 10-23-02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200110160004

Title of Report: Evaluation of U.S. Department of Energy Thermohydrologic Data and Modeling Status Report

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

It was the understanding of the EM that the extent and type of overchecks will be decided by the technical reviewers.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 10-23-02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200207050001

Title of Report: "Laboratory & Modeling Studies of Np-237 uptake on Calcite"

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer was expected to identify those most appropriate to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E. C. B.

Date:

11/5/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002040 80027

Title of Report: "Alternative explanation for groundwater..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer was expected to identify those most appropriate to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain

The existing overchecks are satisfactory, but need additional documentation. There is a statement on the comment form that the checks were done but no description or reference to other details. 11/5/02

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

See additional information on attached page.

Reviewed by:

E.C. De

Date:

11/5/2002

M. Chandrika

QAP 014 check details - Chandrika Manepally (December 16, 2002)

The input and output files for Figure 4 in the paper

Some details - Base case run, no recharge and the grid is unstructured.

Input file is Run29.dat and can be found in Vol. 4 of the Scientific Notebook 334E.

- reads the boundary conditions and phik part externally.
- the nodes corresponding to the top upper part of the unit were assigned with the permeability of $2E-16 \text{ m}^2$ and this matched with the model details presented on page 6.
- the boundary conditions are assigned temperature and pressure. The boundary conditions file showed the linear variation of temperature from 34-54 °C (top to bottom) on the left side of the model
- the plots are generated using Mathematica software and the details can be found in Run29.nb. The Run29fld.xyp file is used to generate the plots (Figure 4).

*Additional information for report
number Q200204080027.*

MRE

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200209050005

Title of Report: CNRA Input to the NEA PHASE II
Scoping Modeling Project.

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer was
asked to select those most important
to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

ECP

Date:

11/5/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002 09030002

Title of Report: "Hydrogeologic Properties of the Alluvial Basin..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer was expected to identify those not appropriate to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C.R.

Date:

11/5/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200205150003

Title of Report: Revised Analytical Compositions of Pore Water Collected from Y4

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain The technical reviewer was expected to identify those most appropriate to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E. C. Pen

11/5/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002 0509 0003

Title of Report: "Effects of SALT Formation..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer was expected to identify those most appropriate to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. Dwyer

11/5/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200204190005
Title of Report: " Unsaturated zone flow at
Yucca Mountain ... "

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer
was expected to identify those
most appropriate to be
checked.
EC
11/5/02

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. P

Date:

11/5/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 20011023 0002

Title of Report: The Solubility of Uranophane Under Oxidizing Conditions in CaCl_2 and $\text{SiO}_2(\text{aq})$ Test Solutions

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C. [Signature]

Date: 11/1/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200202130003

Title of Report: "Concepts of Saturated Zone Modeling ..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

The technical reviewer was expected to identify those most appropriate to be checked.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. Perry

11/5/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200201 020001

Title of Report: RISK ASSESSMENT OF A SUBSURFACE SAFETY VALVE

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain 1. Technical reviewer will make the judgement on the extent and type of overchecks.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 12/18/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200205070004

Title of Report: FINAL REPORT ON FRACTURE FILM FLOW IN THE UNSATURATED ZONE: A PORE MATRIX BYPASS MECHANISM

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain THE QAP-12-4 FORM HAS OVERCHECKS REQUIRED BUT DOES NOT PROVIDE THE SPACE TO WRITE OR DIRECTION TO WRITE "... THE EXTENT AND TYPE OF OVER CHECKS REQUIRED..." AS DISCUSSED IN QAP-014, SECTION 3.2. THE EXTENT & TYPE ARE DEFINED IN QAP-014, SECTION 3.2.3.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain THE OVERCHECKS CONDUCTED & DOCUMENTED APPEAR TO BE APPROPRIATE FOR THE SCOPE OF THIS PROJECT. HOWEVER, SECT. 3.2.3 REQUIRES SPECIFIC CHECKS BASED ON THE CALCULATIONS - I.E. CONTROLLED OR COMMERCIAL - OFF-THE-SHELF SOFTWARE CALCULATIONS, AND SECT. 3.2.4 REQUIRES SPECIFIC REVIEWER COMMENTS TO BE WRITTEN BASED ON THE REVIEW CONDUCTED.

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Additional information provided by J. Wittmeyer on 2/7/03. (Page 2 B of 4, Comment Resolution Record)

FILE 2/17/03

Reviewed by: [Signature] L.O. HOWARD

Date: 12/6/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200110010006

Title of Report: RESPONSE TO THE EXTERNAL REVIEW OF THE TOTAL SYSTEM PERFORMANCE ASSESSMENT VERSION 3.2 CODE.

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain SECTION 3.2 REQUIRES THE EXTENT & TYPE OF OVERCHECKS TO BE SPECIFIED ON THE QAP-12-4 FORM. FOR THIS PROJECT, THE SPECIFIC SECTIONS TO BE CHECKED ARE LISTED (SECTION 3.2 & APP. I). THE SECTION 3.2 SHOULD BE SECTION 3.15, WHICH HAS CALCULATIONS & WAS CHECKED BY THE REVIEWER.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain THE OVERCHECKS APPEAR TO BE SATISFACTORY BUT THE DOCUMENTED CHECK OF APP. I DOES NOT DISCUSS THE SOFTWARE USED (GENIE & ORIGEN2) IN THE REPORT NOR THE METHOD USED TO OVERCHECK THE SOFTWARE CALCULATIONS (AS REQUIRED IN SECT. 3.2.3 & 3.2.4 OF QAP-014).

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Additional information provided on Comment Resolution Sheet 5 of 5 by R. Benke on 2/7/03
ME 2/17/03

Reviewed by:

L.O. HOWARD

Date: 12/6/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200205070003

Title of Report: Final Report, Efficient Probabilistic Analysis Methods
For Complex Numerical Models. . .

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain

Comments provided on the manuscript appeared to indicate that the reviewer thoroughly reviewed the document. The author appeared to respond to all of the identified concerns. While the review of manuscript appeared to be thorough (based on comments on the manuscript), the comments provided on the ~~QAP~~ review sheets ^{with respect to calculations} appeared to be limited, and perhaps less than that required

(D.A. 12/18/02)

(D.A. 12/18/02)

in QAP-014

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Additional calculation overchecks provided by D. Farrell on 2/13/03 and included in report package.
MCS 2/13/03

Reviewed by:

David A. Farrell

Date: 12/18/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200201020004

Title of Report: "Radioisotope Inactivation..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain

Additional information is
needed to satisfy QAP-014
Section 3.2.3.

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C. [Signature]

Date: 12/20/2002

Calculations were transferred to Scientific Notebook 172 (page 31) and new overchecks were performed. Reviewer noted this on the original technical review sheet.

David Pickett 2/12/2003 ³³

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: ^{VJ 11/20} Q 200211010007

Title of Report: ^{VJ 11/20} Comparison of Localized Corrosion of Fe-Ni-Cr-Mo Alloys in Chloride solutions ^{VJ 11/20} & Using a Coupled Multi-Electrode Array Sensor

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Specification of overchecks were not required in this review version

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

^{VJ 2/5/03} ☒ No, Explain The following errors were noted

1). Table 2 data does not match with the data used for calculation.

2). Data used for overchecks was converted to different set of units without specifying them.

3). Final document that was submitted to NRC was different -
If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Additional table and figures as page 7a and 20a added to identify original information used for overchecks performed by S. Brossier on 10/26/01.

Reviewed by: [Signature]

Date: 12/20/02

DOCUMENTED OVERCHECKS ARE NOW ACCEPTABLE

[Signature] 2/5/03

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200112110005

Title of Report: "Delinquency Behavior of Multicomponent"

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain

Need additional documentation to satisfy QAP-014 Section 3.2.3.

Follow up by M. Enstrom & R. Pabalan found that what had been done was satisfactory & fulfilled the requirements.

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. Ry

12/20/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200201240001

Title of Report: A Partitioning Method for Identifying Model Parameters

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

Although I did identify the need for the reviewer to conduct a calculational check, the QAP-012 form did not require and I did not specify the extent and type of overchecks.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

(Second page of Tech. Rev. TOP-3 form)

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

Gordon W. Hargreaves

Date:

1/29/03

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200202200002

Title of Report: Power-law velocity distributions in fracture networks...

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

This paper was written before we implemented, Form
QAP-012. and adopted.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

Oswaldo Pensado

Date: 4/28/2003

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200204150002

Title of Report: Review of the Multiscale Thermohydrologic Model Analysis and Model Report (Rev. 00 JUN 02)

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain It was the understanding of the EM that the extent and type of overchecks will be decided by the technical reviewers.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: [Signature]

Date: 1-15-03

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q210202200001

Title of Report: Assessment of aircraft crash frequency during take off and landing at an airport.

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain It was the understanding of the EM that the extent and type of overchecks will be decided by the technical reviewers.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 1-15-03

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200202060002

Title of Report: Methodology for Preclosure Safety Assessment of a Geologic Nuclear Waste Repository

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain It was the understanding of the EM that the extent and type of overchecks will be decided by the technical reviewers.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

10-23-03
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 20011190003

Title of Report: Creep Analyses of Titanium Drip Shield Subjected to Rockfall Static Loads in the Proposed Geologic Repository at Yucca Mountain.

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

It was the understanding of the EM that the extent and type of overchecks will be decided by the technical reviewers.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:



Date: 1-15-03

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200111010006

Title of Report: Evaluation of corrosion inhibitors in cooling water systems
using a coupled multi-electrode array sensor

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Overchecks were required. However, specific overchecks were not specified. Statement from reviewer indicates that overchecks were performed and verified to be acceptable.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 1/13/03



1/17/03 42

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200111260002

Title of Report: Assessment of passive and localized corrosion process for Alloy 22 as high-level nuclear waste container material

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Paper had only minor calculations. No overchecks were needed.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: 

Date: 1/13/03



1/17/03 43

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002 04 19 000.6

Title of Report: Modeling of the Fluid Chemistry Inside the waste package due to Waste Form and Waste Package Corrosion

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Over checks were required. However specific over checks were not provided. A statement from reviewer indicates that overchecks were performed. These overchecks are adequate.

lyagg on 11/17/03

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: J. Yang

Date: 12/27/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2001 1129 0014

Title of Report: Stress Corrosion Cracking of Ni-Cr-Mo
Alloys in Chloride Solutions

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Overchecks were required. However,
specific overchecks were not specified. Statement
from reviewer indicates that overchecks were
performed and that overchecks were adequate

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: J. Yang

Date: 12/27/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200209180004

Title of Report: Localized Corrosion Susceptibility of Alloy 22

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain

Extent and type of overchecks specification was not required by the QAP-12-4 form.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

[Signature]

Date:

1/7/03

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002 01020002

Title of Report: PREDICTING LOCALIZED CORROSION IN SEAWATER COOLING SYSTEMS

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain the extent and type of overchecks were not specified on the Instructions Form QAP 12-4 (there was no specific line or space assigned for this requirement) but the overchecks were performed by the technical reviewer.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

The overchecks were adequate and documented properly in the attached floppy disks.

Reviewed by: J. C. [Signature]

Date: 12/20/02

12/20/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200112170004

Title of Report: Localized Corrosion Susceptibility of Alloy 22 as
a Waste Package Container Material

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes VT 1/7/03

☒ No, Explain Overchecks were required. However,
specific overchecks were not specified.

[Signature]
1/7/03

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes The only calculated results are the Regression
equations for the Error values. The reviewer

☐ No, Explain review selected one point and did the verification.
The verification was correct.

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

[Signature]

Date: 12/27/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2001/01 60002

Title of Report: Development of a Multielectrode Array Sensor for Monitoring Localized Corrosion

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain (details)
Specification of overchecks not required for the review.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☐ Yes

☒ No, Explain Review indicates that check of the figure not required because it was reviewed somewhere else. Reviewer did not provide a reference if this figure was reviewed in previous documents.

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

This review was for this report only. If reviews were performed in earlier presented reports, this review would have included them. MRE 2/11/03

Reviewed by:

[Signature]

Date:

12/20/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2002 0611 0004

Title of Report: Effect of Palladium on the corrosion behavior of Titanium

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☐ Yes

☒ No, Explain Even though calculation overchecks were not specified, the review conducted appropriate overchecks for eq. 1 and associated figure. No significant calculations were used in the report.

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: Uy again

Date: 12/19/02

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200207230005

Title of Report: "Estimating transmissivity ..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C.P.

12/20/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2 00209090004

Title of Report: "Measurement of Corrosion..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. R

Date:

12/20/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 2 002 09030001

Title of Report: "Transport of Plutonium..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C.D.

12/20/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200207 / 90036

Title of Report: " Estimating uncertainty ... "

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C.M.

Date:

12/20/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q2 00205010002

Title of Report: "Edwards Aquifer Parameters Estimation..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. [Signature]

Date:

12/20/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: QZ 00204190003

Title of Report: " Effects of salt formation ... "

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C. [Signature]

12/20/2002
Date

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 20020418002

Title of Report: " Computer Simulation of Uranium ... "

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C.R.

Date: 12/20/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200203010006

Title of Report: "Significance of kinetics..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C.P.

Date: 12/20/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200201110002

Title of Report: "A Full-Bayesian Approach..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain _____

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain _____

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by: E.C. [Signature]

Date: 12/20/2002

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q200112110006

Title of Report: "Experimental Determination of the
Deliquescence Relative Humidity..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

No overchecks were needed for this document.

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. [Signature]

12/20/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200112060001

Title of Report: "Unstructured Flow through..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. [Signature]

12/20/2002
Date:

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

CAR NO. 2002-04 REVIEW WORKSHEET

QA Record No: Q 200111190002

Title of Report: "Molecular Dynamics Study ..."

1. Is the extent and type of overchecks specified on the Instructions to Technical Reviewers, Form QAP-012 in accordance with QAP-014, Section 3.2?

☒ Yes

☐ No, Explain

2. Are the existing overchecks satisfactory and documented in accordance with QAP-014, Section 3.2.3 and 3.2.4?

☒ Yes

☐ No, Explain

If overchecks are not adequate initiate a new review in accordance with QAP-002 and QAP-014.

Reviewed by:

E.C. R

12/20/2002
Date: