



## Department of Energy

Washington, DC 20585  
November 13, 2003

The Honorable John T. Conway  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW  
Suite 700  
Washington, D.C. 20004-2091


Dear Mr. Chairman:

This letter is to inform you of the status of the Office of Environmental Management Commitments No. 4.1.3, No. 4.1.2.5, No. 4.2.3.2, and No. 4.2.4.2 in response to the Department of Energy Implementation Plan for the Defense Nuclear Facilities Safety Board Recommendation 2002-1.

Commitment No. 4.1.3 is completed. Commitments No. 4.1.2.5, No. 4.2.3.2, and No. 4.2.4.2 are expected to be completed by November 30, 2003. See enclosure for more details.

If you have any questions, please call me at (202) 586-7709 or Ms. Sandra Johnson, Director Office of Safety and Engineering, at (202) 586-0755.

Sincerely,

  
Jessie Hill Roberson  
Assistant Secretary for  
Environmental Management

Enclosure

cc: Mark Whitaker, DR-1



# memorandum

DATE: OCT 31 2003

REPLY TO: EM-5  
ATTN OF:

SUBJECT: Status of the Office of Environmental Management October 2003 Commitments  
in the Department of Energy Implementation Plan for Software Quality Assurance

TO: Beverly A. Cook  
Assistant Secretary  
Environment, Safety and Health

The purpose of this memorandum is to provide you with the status of the Office of Environmental Management (EM) October 2003, commitments listed in the Department of Energy (DOE) Implementation Plan (IP) for Software Quality Assurance (SQA). On March 13, 2003, the DOE issued an IP, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities*, in response to the Defense Nuclear Facilities Safety Board Recommendation 2002-1. EM issued a memorandum dated October 22, 2003, directing the EM Field Element Managers (FEM) to support the IP by providing the deliverables in accordance with the schedule. Below is the status of the EM October 2003, SQA IP commitments.

**Commitment No. 4.1.3** (Attachment 1)

Deliverable: Identify the Federal positions whose duties and responsibilities require them to provide assistance, guidance, direction, oversight, or evaluation of safety software QA activities.

Status: Completed

**Commitment No. 4.2.1.5** (Attachment 2)

Deliverable: Conduct a survey of design codes currently in use to determine if any should be included as part of the toolbox codes.

Status: Incomplete (Open) - Due date extended until November 17, 2003, to allow for sites to complete the survey and obtain FEM signature.

**Commitment No. 4.2.3.2 (Attachment 2)**

Deliverable: Establish a schedule to complete the identification, selection, and assessment of safety system software and firmware at defense nuclear facilities.

Status: Incomplete (Open) - Due date extended until November 17, 2003, to allow for sites to complete the schedule and obtain FEM signature.

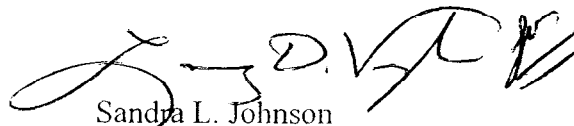
**Commitment No. 4.2.4.2 (Attachment 2)**

Deliverable: Establish a schedule to complete the assessment of the processes in place to ensure that safety software currently used to support the analysis and design of defense nuclear facilities is adequate.

Status: Incomplete (Open) - Due date extended until November 17, 2003, to allow for sites to complete the schedule and obtain FEM signature.

Field elements where EM is not the Lead Program Secretarial Officer (LPSO) are expected to submit the SQA deliverables to their respective LPSO.

If you have any questions, please give me a call at (202) 586-0651.



Sandra L. Johnson  
Director,  
Office of Safety and Engineering

**Attachments**

cc:

Jessie H. Roberson, EM-1

Paul Golan, EM-3

Larry Vaughan, EM-5

Mark Whitaker, DR-1

Attachment I  
Commitment No. 4.1.3  
Federal Software Quality Assurance Personnel

Field Element	Name	Telephone #	Fax #	e-mail
Carlsbad Field Office	Ava Holland	(505) 234-7423	(505) 234-7061	Ava.holland@wipp.ws
	Lea Chism	(505) 234-7442	(505) 234-7274	Lea.chism@wipp.ws
Idaho Operations Office	Robert Blyth	(208) 526-1181	(208) 526-0160	blythrl@id.doe.gov
Oak Ridge Operations Office	Mike Smith	(865) 576-0973	(865) 576-3725	smithmc@oro.doe.gov
Office of River Protection	David Brown	(509) 376-9210	(509) 376-3661	David_H_DOE_Brown@rl.gov
Ohio Field Office	Mike Reker (Miamisburg)	(513) 246-0106	(513) 246-0221	Michael.Reker@ohio.doe.gov
	John Orrison (Miamisburg)	(937) 865-3294	(937) 865-4402	John.orrison@ohio.doe.gov
	John Saluke (Miamisburg)	(937) 865-3747	(937) 865-4489	John.saluke@ohio.doe.gov
	Joe Neyer (Fernald)	(513) 648-3178	(513) 648-3077	Joe.neyer@fernald.gov
	David Gray (West Valley)	(716) 942-4780	(716) 942-4703	David.l.gray@wv.doe.gov
Richland Operations Office	Seth Shivaji	(509) 376-8129	(509) 376-1926	Shivaji_S_Seth@rl.gov
Paducah & Portsmouth field Offices	Teresa Perry	(865) 576-0831	(865) 576-3071	perrytc@oro.doe.gov
Rocky Flats Field Office	Wayne Burch	(303) 966-2529	(303) 966-4775	Wayne.Burch@rf.doe.gov
Savannah River Operations Office	William Rowland	(803) 952-8202	(803) 952-7206	bill.rowland@srs.gov

# **Attachment 2**

## **SQA IP Commitments**

**No. 4.2.1.5**

**No. 4.2.3.2**

**No. 4.2.4.2**

**Carlsbad Field Office**  
**(Waiting FEM Signature)**

**4.2.1.5 Completed**

**4.2.3.2 Completed**

**4.2.4.2 Completed**

## **Office of River Protection**

**4.2.1.5 Incomplete - Due date Nov. 17, 2003**

**4.2.3.2 Completed**

**4.2.4.2 Completed**

**Vaughan, Larry**

**From:** Brown, David H (DOE) [David\_H\_DOE\_Brown@RL.gov]  
**Sent:** Thursday, October 30, 2003 12:21 PM  
**To:** 'Vaughan, Larry'  
**Subject:** RE: EM's SQA Memorandum  
**Importance:** High

Larry -- we've done the following:

1. Submitted our name(s).
2. Submitted our assessment schedules (attached)
3. Directed our contractors to perform the surveys -- results due back to us in 2 weeks.

We'll be working items on our assessment schedules. I don't think we need to report back on completion of each commitment we've made -- or do we?

I need to talk to you about the UF6 valve issue. Please call me (509-376-9210). If we don't have any UF6 on site, do we still need to look for these valves? Can the valves be used in other applications where we might be concerned and should be looking?

thanks,  
Dave

-----Original Message-----

**From:** Vaughan, Larry [mailto:Larry.Vaughan@em.doe.gov]  
**Sent:** Thursday, October 23, 2003 12:48 PM  
**To:** 'bill.rowland@srs.gov'; Blyth, Robert L (INEEL); 'John.orrison@ohio.doe.gov'; 'John.saluke@ohio.doe.gov'; 'David.l.gray@wv.doe.gov'; 'Michael.Reker@ohio.doe.gov'; 'David\_H\_DOE\_Brown@rl.gov'; 'Shivaji\_S\_Seth@rl.gov'; 'Wayne.Burch@rf.doe.gov'; 'Ava.holland@wipp.ws'; 'Lea.Chism@wipp.ws'  
**Subject:** EM's SQA Memorandum

SQA SME,

The EM memorandum on SQA was signed yesterday, October 22, 2003. Several commitments (4.1.3, 4.2.1.5, 4.2.3.2, & 4.2.4.2) are due by October 31, 2003. Please inform me by COB Tuesday, Oct. 28, 2003, if any of the October commitments will be late and give me an expected completion date. I understand that the letter was signed late, but you were aware of the commitments and hopefully working to meet the completion/due date.

The letter contained several attachments:

**Attachment 1 - EM's Commitment Actions Listed in the SQA Implementation Plan (most commitments have a mid month due date (e.g., Oct 15th, Nov 15th, etc)**

**Attachment 2 - "Survey of Safety Software Used in Design of Structures, Systems and Components" (Commitment No. 4.2.1.5)(Questions No. 3 was revised for clarification purposes)**

**Attachment 3 - EH's memo dated September 12, 2003, "Identification of Federal Positions With Software Quality Assurance Responsibilities" (Commitment No. 4.1.3).**

**Attachment 4 - EH's memo dated September 5, 2003, "Schedule for Conducting Software Quality Assurance Assessments" (Commitments No. 4.2.3.2 & 4.2.4.2).**

**Attachment 5 - CARD 4.2.4.1, Rev. 2, "Assessment Criteria and Guidelines for Determining the Adequacy of Software Used in the Safety Analysis and Design of Defense Nuclear Facilities," dated October 22, 2003.**

10/30/2003



Attachment 6 - CARD 4.2.3.1, Rev. 2, "Criteria and Guidelines for the Assessment of Safety System Software and Firmware at Defense Nuclear Facilities," dated October 22, 2003.

Attachment 7 - "Implementation Plan for the Defense Nuclear Facilities Safety Board Recommendation 2002-1. Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities," dated March 13, 2003.

If you have any questions please give me a call at (202) 586-2523.

Larry Vaughan

United States Government

Department of Energy  
Office of River Protection

# memorandum

DATE: OCT 29 2003  
REPLY TO: ESQ:RCB 03-ESQ-070  
ATTN OF:  
SUBJECT: SOFTWARE QUALITY ASSURANCE (SQA) ASSESSMENT SCHEDULES

TO: Jessie Hill Roberson, Assistant Secretary  
for Environmental Management, EM-1, HQ

- References:
1. DOE letter from Spencer Abraham to the Honorable John T. Conway, DNFSB, "U.S. Department of Energy Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2002-1, *Quality Assurance For Safety Software at Department of Energy Defense Nuclear Facilities,*" dated March 13, 2003.
  2. HQ memorandum from J. H. Roberson to Distribution, "The Office of Environmental Management Commitments in Support the Department's Software Quality Assurance Implementation Plan," dated October 22, 2003.

This memorandum provides the schedules for the assessments of computer software and SQA specified in Reference 1. As directed in Reference 2, the Office of River Protection (ORP) will perform these assessments using the Criteria and Review Approach Documents (CRADs) provided by EH.

The ORP, CH2M Hill Hanford Group, Inc. (CH2M HILL), and Bechtel National, Inc. (BNI) have been addressing the Defense Nuclear Facilities Safety Board (DNFSB) concerns regarding SQA described in DNFSB Technical Report 25 and the Reference 1 document. Our contractors have upgraded their SQA processes and ORP has been assessing their performance regularly using technically knowledgeable assessment personnel.

For example, during the Phase II Vital Safety System Assessments for DNFSB Recommendation 2000-2, personnel experienced in performing SQA inspections for the U.S. Nuclear Regulatory Commission were included on the assessment. Minor issues found during these assessments have been corrected.

We also have performed at least one assessment of SQA processes of our primary site engineering subcontractor, Fluor Federal Services, Inc. (FFS). We found that FFS employs rigorous SQA processes, including processes for assuring the capabilities of its software suppliers.

J. H. Roberson  
03-ESQ-070


-2-

OCT 9 2003

We will meet the commitment to perform assessments in accordance with the EH CRADs and, based on the results of past assessments, are convinced of the adequacy of the SQA programs at both CH2M HILL and BNI.

ORP currently has no plans to assess BNI instrumentation and control (I&C) software, as the construction of the Hanford River Protection Project Waste Treatment and Immobilization Plant has not reached the stage where safety I&C software has been developed. The assessments of design and analysis software will confirm adequacy of the BNI SQA program under which I&C software will be developed

If you have any questions please contact me, or your staff may contact Robert C. Barr, Director, Office of Environmental Safety and Quality (509) 376-7851.

  
Roy J. Schepers  
Manager

Attachments:

1. BNI SQA Assessment Schedule
2. CH2M HILL SQA Assessment Schedule
3. CH2M HILL I&C Assessment Schedule

cc w/attachs.:

S. L. Johnson, EM-5



- c. ORP will conduct the assessment of the prime contractor's software QA and procurement processes. Assessments of subcontractors will be led by ORP, but there will be a minimum of one BNI employee participating to assure contract protocols are followed.
- d. Personnel participating in the assessments will be technically qualified to perform their assignments.
- e. The CRAD and the U.S. Department of Energy implementation plan define safety software. The prime contractor may be responsible for other software regulated under Price-Anderson Amendment Acts that is not safety software by this definition. It is the intent of these assessments to address only safety software falling under the definition in the implementation plan.

**CH2M HILL Hanford Group, Inc. (CH2M HILL)  
Schedule for Assessments of Design and Analysis  
Software Quality Assurance (SQA) Programs for the  
Hanford Tank Farms**

**Required Steps:**

1. Identify all design and analysis work where the application would require the use of safety software.  
Date: November 30, 2003 Action: CH2M HILL
2. Identify all subcontractors under which design and analysis work was conducted.  
Date: November 30, 2003 Action: CH2M HILL
3. Conduct assessment of prime contractor's software QA processes, including procurement and supplier control processes for software and design services.  
Date: April 30, 2004 Action: Office of River Protection (ORP)
4. Based on the results of the assessment of the prime contractor's procurement and supplier control processes, identify those subcontractors where an assessment of their software quality assurance program is warranted.  
Date: May 30, 2004 Action: ORP
5. Conduct assessments of the identified subcontractor software quality assurance programs.  
Date: April 30, 2005 Action: ORP/CH2M HILL

**Considerations:**

- a. Assessments will be conducted in accordance with the Criteria and Review Approach Documents (CRADs) provided by EH.
- b. The intent of the design and analysis assessments is to address the controls under which software was developed, procured and/or used. It is not intended to address individual codes. The assessments will evaluate some codes to the extent necessary to verify the effectiveness of the contractor's software quality assurance controls. However, if problems are found that could bring the validity of any codes into question the validity of the affected codes will need to be evaluated on a case-by-case basis.

- c. ORP will conduct the assessment of CH2M HILL software quality assurance and procurement processes. Assessments of subcontractors will be led by ORP, but there will be a minimum of one CH2M HILL employee participating to assure contract protocols are followed.
- d. Personnel participating in the assessments will be technically qualified to perform their assignments.
- e. The CRAD and the DOE implementation plan define safety software. The prime contractor may be responsible for other software regulated under Price-Anderson Amendment Acts that is not safety software by this definition. It is the intent of these assessments to address only safety software falling under the definition in the implementation plan.

**CH2M HILL Hanford Group, Inc. (CH2M HILL)  
Schedule for Assessments of I&C Safety Software  
at the Hanford Tank Farms**

**Required Steps:**

1. Identify all software and firmware within the scope of Criteria and Review Approach Documents (CRAD) safety software. Provide the list to the Office of River Protection (ORP).  
Date: November 30, 2003 Action: CH2M Hill
2. Select an appropriate sample of codes that will be evaluated for adequacy. The sample size will be based on numbers of different types of applications and the numbers of codes used in similar applications.  
Date: November 30, 2003 Action: ORP
3. Conduct assessment(s) of the codes in accordance with CRAD.  
Date: December 30, 2004 Action: ORP/CH2M Hill
4. Based on the results of the assessments, determine if assessments of a larger sample or assessments of all software is necessary.  
Date: January 30, 2005 Action: ORP/ CH2M Hill
5. Complete any additional assessments if necessitated by results of previous assessments.  
Date: June 30, 2005 Action: ORP/CH2M Hill

**Considerations:**

- a. Assessments will be conducted in accordance with the CRADs provided by EH.
- b. The U.S. Department of Energy (DOE) will lead the assessments; however contractor personnel may participate as team members. All codes may be evaluated in a single



assessment, or different codes or classes of codes may be evaluated in separate assessments.

- c. Software subject to recent, credible assessments, such as the Defense Nuclear Facilities Safety Board Recommendation 2000-2 phase II assessments, may be excluded from these assessments.
- d. Personnel participating in the assessments will be technically qualified to perform their assignments.
- e. The CRAD and the DOE implementation plan define safety software. The prime contractor may be responsible for other software regulated under Price-Anderson Amendment Acts that is not safety software by this definition. It is the intent of these assessments to address only safety software falling under the definition in the implementation plan.

## **Ohio Field Office**

**4.2.1.5 Incomplete - Due date Nov. 17, 2003**

**4.2.3.2 Completed**

**4.2.4.2 Completed**

## Vaughan, Larry

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**From:** Reker, Michael [Michael.Reker@ohio.doe.gov]  
**Sent:** Tuesday, October 14, 2003 12:36 PM  
**To:** Larry Vaughan (E-mail)  
**Cc:** Brown, Nat; Orrison, John; Saluke, John; Gray, David; Simak, John  
**Subject:** SQA IP Deliverables

**Importance:** High

Larry,

Per your request the following information is provided in support of the Implementation Plan for DNFSB 2002-1 relating to SQA:

Commitment 4.1.3 - Identify Federal Positions whose duties and responsibilities require them to provide assistance, guidance, direction, oversight, or evaluation of safety software QA activities.

Response: Recognizing that the Computer Software Functional Area Qualification Standard is still a DRAFT document, OH currently does not have any individuals qualified to this DRAFT Standard. Potential candidates would be the following personnel:

John Orrison, OH Quality Assurance Engineer  
John Saluke, MCP Nuclear Safety and Quality Control  
David Gray, WVCP Quality Assurance Engineer  
Mike Reker, OH PAAA Manager (previous experience as

QA Manager)

Commitment 4.2.1.5 - Conduct a survey of design codes currently in use to determine if any should be included as part of the toolbox codes.

Response: A request is being made to the MCP and FCP sites to compile the requested information. It is anticipated that this information will be available to EM by October 30, 2003.

Commitment 4.2.3.2 - Establish a schedule to complete the identification, selection and assessment of safety system software and firmware at defense nuclear facilities.

Response: The following schedule for completing this commitment is provided:

Fernald: January 15, 2004

Miamisburg: February 15, 2004

As a final note, it should be noted that the West Valley Closure Project (WVCP) is not a defense nuclear facility and does not fall under the jurisdiction of the DNFSB Oversight. The WVCP has indicated that there are currently no SS SSC's in place, however, WVDP is preparing a safety basis for a new facility which will generate SS SSC's. If it was determined that any software or firmware performs a safety system function as part of the determined SS SSC's, the CRAD's would apply to that software or firmware. WVDP has also utilized safety analysis and design software. Since the software quality assurance program in place at the WVDP meets the requirements of DOE/RW-0333P (based on ASME NQA-2a-1990), WVDP would fully comply with the intent of the CRAD.

If you have any questions or comments regarding this information please feel free to send me an e:mail or contact me at (513) 246 - 0106.

Thanks,  
Mike Reker

## **Paducah/Portsmouth Field Office**

**4.2.1.5 Incompleted - Due date Nov. 17, 2003**

**4.2.3.2 Incompleted - Due date Nov. 17, 2003**

**4.2.4.2 Incompleted - Due date Nov. 17, 2003**

# **Richland Operations Office**

**4.2.1.5 Completed**

**4.2.3.2 Completed**

**4.2.4.2 Completed**

**Vaughan, Larry**

**From:** Olinger, Shirley J [Shirley\_J\_Olinger@RL.gov]  
**Sent:** Thursday, October 23, 2003 8:35 PM  
**To:** SJ (Sandra.Johnson@hq.doe.gov); 'larry.vaughan@em.doe.gov'  
**Cc:** Hill, Burton E (Burt); Todd, James W; Seth, Shivaji S  
**Subject:** FW: Response to Safety SQA Commitment 4.2.1.5 (Design Code Survey )  
**Importance:** High

This is the input on software that we recommend be included in the tool box. We have yet to receive your letter but have worked with Larry and hope this meets what is in the letter. The schedule will be sent via separate email.

txs, sjo

-----Original Message-----

**From:** Seth, Shivaji S  
**Sent:** Thursday, October 23, 2003 4:36 PM  
**To:** Hill, Burton E (Burt); Todd, James W; Olinger, Shirley J  
**Subject:** Response to Safety SQA Commitment 4.2.1.5 (Design Code Survey)  
**Importance:** High

Attached is a table that provides the listing of software used in the design of safety systems and structures by RL contractor, which could be considered for inclusion in the toolbox if it meets the necessary criteria. Please note that safety analysis codes are not listed, because they were already identified and considered in a previous survey that led to the establishment of the present set of toolbox codes. (For example, GENII and CFAST already are in the toolbox).

The table does not provide all the information needed in the Survey form. However, if any software identified in the table merits further consideration, RL would provide the additional information. Development of the additional information, such as the contractor's use and experience with codes, will require additional time and resources.

All the software listed is presently controlled, verified and validated in accordance with the Contractor's SQA requirements (HNF-PRO-309).

This is in response to EH-1 memorandum, dated September 12, 2003, requesting the survey by October 31, 2003. It should be forwarded to EH-1 through Larry Vaughan (EM).

Let me know if you have comments or questions.

Shiv Seth  
509-376-8129

**Vaughan, Larry**

**From:** Olinger, Shirley J [Shirley\_J\_Olinger@RL.gov]  
**Sent:** Thursday, October 23, 2003 8:37 PM  
**To:** SJ (Sandra.Johnson@hq.doe.gov); 'larry.vaughan@em.doe.gov'  
**Cc:** Hill, Burton E (Burt); Todd, James W; Seth, Shivaji S  
**Subject:** FW: Response to Safety SQA Commitments 4.2.3.2 and 4.2.4.2 ( Assessment Schedule)  
**Importance:** High

Attached is the schedule for RL's Software QA reviews. Call me if you have questions.  
txs, sjo

-----Original Message-----

**From:** Seth, Shivaji S  
**Sent:** Thursday, October 23, 2003 3:56 PM  
**To:** Hill, Burton E (Burt); Todd, James W; Olinger, Shirley J  
**Subject:** Response to Safety SQA Commitments 4.2.3.2 and 4.2.4.2 (Assessment Schedule)  
**Importance:** High

Attachment 1 is RL's schedule for completing the safety SQA assessments required by Commitments 4.2.3.2 and 4.2.4.2 of DOE's Implementation Plan for DNFSB Recommendation 2002-1. Attachment 2 provides certain assumptions made to prepare the schedule.

The schedule is in response to EH-1 Memorandum, dated September 5, 2003, and is due by October 24, 2003. It should be forwarded to EH-1 through Larry Vaughan (EM).

Please let me know if you have questions or comments.

Thanks,  
Shiv Seth  
509-376-8129

10/24/2003



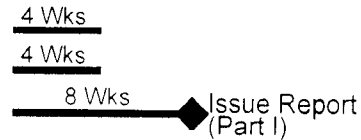
# DOE Richland Operations Office Safety Software QA Assessment Schedule

- **Identify Safety Software**

- Operating (safety system software)
- Safety Analysis
- Design

1 Mo   2 Mo   3 Mo   4 Mo   5 Mo   6 Mo   7 Mo

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- **Select & Assess Software**

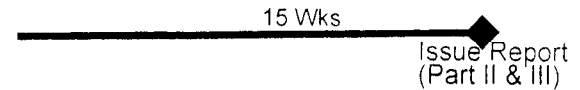
Establish Assessment Checklist



- 4.2.3.2    a. Select operating (safety system software)
- b. Assess operating (safety system software)



- 4.2.4.2    a. Select safety analysis & design software
- b. Assess safety analysis & design software



**U.S. Department of Energy  
Richland Operations Office**

**Schedule for Conducting Software Quality Assurance Assessments  
(Commitments 4.2.3.2 and 4.2.4.2, DOE Implementation Plan for  
DNFSB Recommendation 2002-1)**

Attachment I provides a schedule for completing the identification, selection, and assessment of safety system software and safety analysis and design software.

The following assumptions were made in order to bound the workscope:

- Safety Software was identified as that supporting selected Vital Safety Systems tracked in accordance with DNFSB Recommendation 2000-2, that used in the design and analysis of passive safety systems, and that used in safety analyses.
- Safety Software includes design software and design modifications used since the start of the Project Hanford Management Contract (PHMC) on October 1, 1996.
- Safety Software does not include software systems used by subcontracted vendors that performed design or analysis under contracts with already defined quality assurance standards.
- Safety Software includes only repetitive use software (no hand calculations or single-use applications wholly incorporated into technical reports).

The schedule broadly identifies the activities and their durations from the time RL gives formal direction to its contractor for undertaking the assessments. It is noted that the definitions for Safety Software and Safety System Software do not currently exist in the PHMC.

During FY 2003, RL's prime contractor, Fluor Hanford Inc. restructured its entire software QA program; requiring all projects to have a Software Management Plan, and to evaluate all inventoried software against current NQA software life cycle requirements for compliance. This work effort was completed at the end of FY 2003 and, therefore, all Safety Software can be expected to meet quality assurance expectations.

## Software List

Software Short Name	Version	Vendor	Discipline/ Function	Abstract
VAM3DF	1	Hydro Geologic	Nuclear Engineering	3-D flow and transport
ABAQUS	5.8	Abaqus, Inc.	Civil/Structural Engineering	Nonlinear/advanced linear finite element analysis
SASSI	1.1	Advanced Computational Software	Civil/Structural Engineering	Soil structure interaction finite element analysis
ANSYS	5.5, 5.7	Ansys, Inc.	Civil/Structural Engineering	General service finite element program
SAP2000 Plus	6.13	Computers & Structures, Inc.	Civil/Structural Engineering	General service finite element program
SAP Nonlinear	8.0	Computers & Structures, Inc.	Civil/Structural Engineering	General service finite element program, includes nonlinear capabilities
WaterCAD	6.0	Haestad Methods	Civil/Structural Engineering	Water distribution analysis
RISA3D	4.5	RISA Technologies	Civil/Structural Engineering	Small scale finite element program
PTW	4.5.11	SKM Power Tools	Electrical Engineering	Power system analysis
AUTOPIPE	6.2	Bentley	Mechanical Engineering	Piping system stress analysis
HASS	6.1 R2	HRS Systems, Inc.	Mechanical Engineering	Fire protection system analysis
Pipe-Flo	6.0	Engineered Software	Mechanical Engineering	Pipe flow analysis
MATLAB	6.10.4	-	Process Engineering	Analysis of differential equations

# **Rocky Flats Field Office**

**(Waiting FEM signature)**

**4.2.1.5 Completed**

**4.2.3.2 Completed**

**4.2.4.2 Completed**

**Vaughan, Larry**

**From:** Burch, Wayne [Wayne.Burch@rf.doe.gov]

**Sent:** Friday, October 31, 2003 12:51 PM

**To:** Larry.Vaughan@em.doe.gov

**Cc:** Morgan, Gary

**Subject:** DNFSB 2002-1 IP Commitments

Larry,

This is a draft of our SQA commitments memo. We plan to get it signed ASAP.

Hope this helps.

Thanks,

Wayne Burch (303)-966-2529 or Gary Morgan (303) 966- 6003

10/31/2003

United States Government

# memorandum

Department of Energy  
Rocky Flats Field Office

DATE:

REPLY TO: SP:QPD:WDB:03-00XXX  
ATTN OF:  
SUBJECT: Implementation Plan Commitments for Defense Nuclear Facility Safety Board  
Recommendation 2002-01, Quality Assurance for Safety-Related Software

TO: Jessie Hill Roberson, Assistant Secretary for Environmental Management, EM-1

On March 13, 2003, the Department of Energy (DOE) provided the Defense Nuclear Facilities Safety Board (DNFSB) an Implementation Plan (IP) for DNFSB Recommendation 2002-01, Quality Assurance for Safety-Related Software. The IP defines the actions and processes that will be taken to ensure the quality of safety software at defense nuclear facilities. To support these actions and processes, DOE field elements have been requested to provide the information outlined in the following IP Commitments:

Commitment 4.1.3: Identify Federal positions whose duties include providing assistance, guidance, direction, oversight and evaluation of safety software quality assurance activities. The Rocky Flats Field Office (RFFO) has assigned Wayne D. Burch, Quality Assurance Specialist, to this position. He can be contacted at telephone number (303) 966-2529, or [wayne.burch@rl.doe.gov](mailto:wayne.burch@rl.doe.gov).

Commitment 4.2.1.5: Conduct a survey of design codes currently in use to determine if any should be included as part of the tool box codes. The completed survey of design codes in use at the Rocky Flats Environmental Technology Site (Site) is included in the attachment.

Commitment 4.2.3.2: Establish a schedule to complete the identification, selection, and assessment of safety system software and firmware at defense nuclear facilities. The Criteria and Guidelines for the Assessment of Safety System Software and Firmware at Defense Nuclear Facilities (CRAD-4.2.3.1) will be used to perform this assessment. This assessment will be added to the RFFO Assessment Schedule and conducted during the second quarter of FY 2004.

Commitment 4.2.4.2: Establish a schedule to complete the processes in place to ensure that safety software currently used to support the analysis and design of defense nuclear facilities is adequate. The Assessment Criteria and Guidelines for Determining the adequacy of Software Used in the Safety Analysis and Design of Defense Nuclear Facilities (CRAD-4.2.4.1) will be used to perform this assessment. This assessment will be added to the RFFO Assessment Schedule and conducted during the second quarter of FY 2004.

If you have any questions, please contact me at (303) 966-7846 or Gary Morgan at (303) 966-6003.

Frazer Lockhart

Manager

Attachment

cc w/Att:

C. Lagdon, EH-31

G. Morgan, QPD, RFFO

W. Burch, QPD, RFFO



03 OCT 23 PM 12:19

CCDM

03-RF-01621

October 23, 2003

Gary Morgan  
DOE, RFFO

DOE IMPLEMENTATION PLAN COMMITMENTS FOR DNFSB RECOMMENDATION  
2002-01, QUALITY ASSURANCE FOR SAFETY-RELATED SOFTWARE - JAG-015-03

This is the Kaiser-Hill Company, LLC response to your October 16, 2003, request for information on the subject issue (SP:QPD:WDB:03-01413).

The Contractor Point of Contact for Safety-Related Software is Doyle Gillespie, Kaiser-Hill Quality Program, extension 2413.

The requested survey is attached.

Kaiser-Hill has scheduled an independent assessment of Site Safety-related Design Software for the fourth quarter of Fiscal Year 2004. This assessment is listed on the Integrated Assessment Schedule. Other assessments may be scheduled for outyears.

If you need any further information, please contact Doyle Gillespie.

A handwritten signature in black ink that reads 'J. A. Geis'.

John A. Geis, Program Manager  
Nuclear Safety, Criticality Safety & Licensing  
Safety, Engineering and Quality Programs

RDG:rlm

Attachment:  
As Stated

Original and 1 cc – Gary Morgan

cc:  
Charlie A. Dan – DOE, RFFO  
Wayne Burch – DOE, RFFO



## Survey of Safety Software Used in Design of Structures, Systems, and Components

### 1. Survey Information Prepared By

<b>Name(s):</b>	<u>Doyle Gillespie</u>
<b>Organization(s):</b>	<u>Kaiser-Hill Company, LLC</u>
<b>Site or Laboratory:</b>	<u>Rocky Flats Environmental Technology Site</u>
<b>Address:</b>	<u>10808 Highway 93, Golden, CO 80403-8200</u>
<b>Phone/email/facsimile:</b>	<u>303-966-2413/Doyle.Gillespie@rfets.gov/303-966-3407</u>
<b>Principal DOE organization(s) supported (NNSA, EM, NE, etc.)</b> <u>EM</u>	
<b>Date Survey Form Submitted:</b> <u>10/23/03</u>	

### 2. Design Safety Software

List the safety software that is used to support the analysis and design of safety-class structures, systems, and components (SC SSCs) and safety-significant structures, systems, and components (SS SSCs) for DOE defense nuclear facilities.

**Attach additional sheets if needed.**

Area of Applicability	Computer Software Name*
Civil/Structural/Geotechnical Systems	None
Mechanical Systems	None
HVAC	None
Electrical Systems	None
Fire Protection Systems	HASS FAST
Instrumentation and Control	None
Others (not included above)	RADIDOSE

\* Enter "None" if no safety software in applicable the area.

**3. Safety Software Information**

For each safety software application identified in Section 3, provide the information requested below. Attachment I is provided as an example. For additional assistance, email questions to [sqa@eh.doe.gov](mailto:sqa@eh.doe.gov).

a.	Code name and version	HASS v 7.4
b.	Function of code	Hydraulic Model
c.	Application (what projects/facilities at the site/lab)	Fire Protection – Sprinkler System design
d.	Code developer and/or sponsor	HRS Systems, Inc.
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	HRS
g.	Documentation available	Vendor-provided Manual
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O; )	O
k.	How are error and user questions reported?	To/through vendor – none experienced to date
k.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Good experience, well-considered by industry

a.	Code name and version	FAST v 3.1.7
b.	Function of code	Fire and Smoke Modeling
c.	Application (what projects/facilities at the site/lab)	Fire Protection: Fire and Smoke modeling
d.	Code developer and/or sponsor	NIST Building and Fire Research
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Government
f.	Current Owner/Vendor and technical support provider	NIST
g.	Documentation available	Yes
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O; )	R
k.	How are error and user questions reported?	To NIST directly
k.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Most Used Program in United States for this application

a.	Code name and version	RADIDOSE v 1.4.3
b.	Function of code	Analyze radiological consequences from postulated accidents based on potential configuration/operational changes
c.	Application (what projects/facilities at the site/lab)	All nonreactor nuclear facilities on Site.
d.	Code developer and/or sponsor	Kaiser-Hill
e.	Commercial, Proprietary or Other (Explain)	O – this software is specific to Rocky Flats
f.	Current Owner/Vendor and technical support provider	Kaiser-Hill Nuclear Safety and Licensing
g.	Documentation available	Can be obtained on the Intra-Net on Site
h.	Code platform (Workstation, PC-based, Mainframe)	PC-based
i.	Operating System (Windows, DOS, other)	Windows: code embedded in Microsoft Excel
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O: )	R
k.	How are error and user questions reported?	Via e-mail to Site owner
k.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Easy to use; simple to apply. No issues currently identified.

**4/5. Other Information on Your Organization's Software Quality Assurance Program (Optional)**

**Please take a moment to provide this additional information regarding your SQA programs, procedures, and training.**

5.1 What documented SQA programs and procedures do you follow for developing, testing, documenting, maintaining, and applying safety software? \_\_\_\_\_

Document title(s) and report number(s): MAN-004 CSMM Computer Software Management Manual

5.2 Do your procedures comply in whole or in part with (check compliance)?

Yes/No/Uncertain	Standard/Rule/DOE or Other Directive
Y	a. 10 CFR 830, Subpart A, Quality Assurance Requirements
Y	b. ASME NQA-1a-1999, NQA-1a-2000 (Part 2.7); or predecessor (indicate which)
NA	c. ANSI/ISO/ASQ Q9001-2000, Quality Management Systems – Requirements, or Related Standards
Y	d. DOE Order 414.1, <i>Quality Assurance</i>
Y	e. DOE Order 420.1, <i>Facility Safety</i>
Y	f. DOE Order 200.1, <i>Information Management Program</i>
U	g. DOE Guide 200.1-1, <i>Department of Energy Software Engineering Methodology</i>
U	h. DOE Guide 414.1-1, <i>Assessment Guide for QA</i>
Y	i. ANSI/ANS-10.4-1987, <i>Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry</i>
DOE/CBFO-94-1012	j. Other DOE, National, International, or Industry Standards, Requirements, or Guidelines (Please identify)

5.3 How do you apply QA procedures to safety software? Via software QA plans generated to comply with MAN-004-CSMM

5.4 How do you train users on safety software? Site Training Program

# **Savannah River Operations Office**

**4.2.1.5 Incomplete - Due date Nov. 17, 2003**

**4.2.3.2 Completed**

**4.2.4.2 Completed**

# memorandum

Savannah River Operations Office (SR)

DATE: OCT 31 2003

REPLY TO  
ATTN OF: SRPD (Rowland, 803-952-8202)

SUBJECT: Software Quality Assurance (SQA) Implementation Plan Commitments

TO: Jessie Hill Roberson, Assistant Secretary for Environmental Management (EM-1), HQ

The Implementation Plan for SQA in response to Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2002-1 contains three commitments to be completed by Field Element Managers by October 31, 2003. My input for these commitments is provided below.

### Commitment 4.1.3

**Action:** Identify the DOE personnel to be qualified to the new Computer Software Functional Area Qualification Standard being developed under commitment 4.1.2.

**SR Input:** I have identified an existing position in the SR Office of Safeguards, Security and Emergency Services to assume this responsibility and qualify to the new standard when it is completed. This position is currently responsible for the oversight of contractor safety software procurement and maintenance. SQA will be a logical extension to these existing duties.

### Commitment 4.2.3.2

**Action:** Establish a schedule to complete the identification, selection, and assessment of safety system software and firmware at SRS.

**SR Input:** This action will be completed as described in the Criterial Review and Approach Document (CRAD) developed under commitment 4.2.3.1 by February 28, 2004.

### Commitment 4.2.4.2

**Action:** Establish a schedule to complete the assessment of the processes in place to ensure that safety software used to support the analysis and design of defense nuclear facilities at SRS is adequate.

**SR Input:** This action will be completed as described in the Criterial Review and Approach Document (CRAD) developed under commitment 4.2.4.1 by April 30, 2004.

OPTIONAL FORM 99 (7-90)

### FAX TRANSMITTAL

# of pages ► 2

To: Larry Vaughan	From: Bill Rowland
Dept./Agency: EM-5	Phone #: 803-952-8202
Fax #: 202 586 2924	Fax #:
NSN 7540-01-317-7388 5099-101 GENERAL SERVICES ADMINISTRATION	

OCT 31 2003

If you have any questions, please call me at or have your staff call Bill Rowland at (803) 952-8202.

A handwritten signature in black ink, appearing to read "Jeff M. Allison". The signature is fluid and cursive, with a long horizontal stroke at the end.

Jeffrey M. Allison  
Manager

SRPD:WDR:sl

GA-04-0011

cc: Paul Golan (EM-3), HQ  
Mark Frei (EM-40), HQ  
Sandra Johnson (EM-5), HQ  
Larry Vaughan (EM-5), HQ