

**Department of Energy**

Washington, DC 20585

JAN 29 2004

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DNE SAFETY BOARD

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:

The purpose of this memorandum is to provide you with a status of the October 2003 commitments identified in the Department of Energy Software Quality Assurance Implementation Plan (IP) which the Office of Environmental Management (EM) is responsible for as the Cognizant Secretarial Officer. The commitments are in response to the Defense Nuclear Facilities Safety Board Recommendation 2002-1, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear facilities*.

Deliverables for Commitment No. 4.1.3, No. 4.2.1.5, No. 4.2.3.2 and No. 4.2.4.2 are attached. Schedules are submitted for all EM sites except Portsmouth and Paducah Field Office (PPFO). PPFO identified no software quality assurance codes applicable to the Office of Environment, Safety and Health survey. Therefore, PPFO assessment schedule for Commitment No. 4.2.4.2 is not included. Several schedules provide the assessment completion dates. Please contact the site point-of-contact if any specific assessment performance date is needed for your staff visits.

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.

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.

Commitments No. 4.2.3.2 (Attachment 3)

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



Commitment No. 4.2.4.2 (Attachment 3)

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.

If you have any questions, please call Ms. Patrice Bubar, Deputy Assistant Secretary for Integrated Safety Management/Operations Oversight, at (202) 586-5151.

Sincerely,

A handwritten signature in black ink that reads "Ines Triay". The signature is written in a cursive, flowing style.

Dr. Ines Triay
Deputy Chief Operating Officer
Office of Environmental Management

Attachment

cc:
Patrice Bubar, EM-2.2
Mark Whitaker, DR-1
Beverly Cook, EH-1

04.0346

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JNF SAFETY BOARD**Attachment 1****Software Quality Assurance Implementation Plan**
Commitment No. 4.1.3
Office of Environmental Management
Federal Software Quality Assurance Personnel

EM Headquarters	Name	Telephone #	Fax #	e-mail
EM-2.2 Office of ISM/Operations Oversight	Larry Vaughan	(202) 586-2523	(202) 586-2974	larry.vaughan@em.doe.gov
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
Office of River Protection	David Brown	(509) 376-9210	(509) 376-3661	David_H_DOE_Brown@rl.gov
Ohio Field Office	Mike Reker	(513) 246-0106	(513) 246-0221	Michael.Reker@ohio.doe.gov
Richland Operations Office	Seth Shivaji	(509) 376-8129	(509) 376-1926	Shivaji_S_Seth@rl.gov
	Clifford Ashley	(509) 376-1056	(509) 373-3533	Clifford_A_Ashley@rl.gov
Portsmouth/Paducah Field Office	Dewintus Perkins	(740) 897-5524	(740) 897-2982	Perkinsdk@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

Software Quality Assurance Surveys Commitment No. 4.2.1.5

**Carlsbad Field Office
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

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

1. Introduction

The Department's Implementation Plan for Software Quality Assurance (SQA) that was developed in response to Defense Nuclear Facilities Safety Board Recommendation 2002-01, Quality Assurance for Safety-Related Software, includes a commitment (4.2.1.5) to conduct a survey of design codes currently in use to determine if any should be included as part of the toolbox codes. The toolbox codes are a small number of standard computer models (codes) supporting DOE safety analysis that have widespread use and appropriate qualification. Generally, the toolbox codes will have been developed and maintained within the DOE complex. However, the toolbox may also include commercial proprietary design codes where additional software quality assurance controls are appropriate.

The scope of the survey required by commitment 4.2.1.5 includes the identification of safety software currently use to support the analysis and design of defense nuclear facilities including structures, systems and components, as well electrical and control system design. Both commercial off-the-shelf software and DOE/contractor developed software should be included in the survey. Often the same software is used for both safety and non-safety, and nuclear and non-nuclear facility design. Therefore, care should be taken in identifying the safety software.

DOE field elements, including contractors and sub-contractors, as appropriate, should provide the information in the attached survey forms. The Office of Environment, Safety and Health (EH) will review the information submitted through this survey and determine if additional safety software should be included as toolbox codes.

In addition to the safety software information requested in this survey, EH would also like to receive information regarding your organization's SQA programs, procedures and training. This information should be entered in Section 5 of the survey form. This information will assist EH in the preparation of DOE SQA directives, which are also an Implementation Plan deliverable. However, this Section 5 of the survey form is optional.

If you have technical questions regarding the survey please contact Chip Lagdon, EH-31, at (301) 903-4218 or Larry Vaughan, EM-5, at (202) 586-2523.

2. Survey Information Prepared By

Name(s):	<u>James R. Schuetz</u>
Organization(s):	<u>Carlsbad Field Office (CBFO) Technical Assistance</u> <u>Contractor (CTAC)</u>
Site or Laboratory:	<u>Various as follows: (a and b)</u> <u>(a) Washington TRU Solutions (WTS) – performing maintenance and operations for and at the Waste Isolation Pilot Plant (WIPP) repository</u> <u>(b) Sandia National Laboratory – performing contract services related to the design of the Waste Isolation Pilot Plant (WIPP) repository and to the safety of the repository</u>
Address:	<u>Carlsbad Field Office</u> <u>4021 National Parks Highway</u> <u>Post Office Box 1270</u> <u>Carlsbad, New Mexico 88221-1270</u> <u>Attn: J. R. Schuetz / GSA 215 – C235</u>
Phone/email/facsimile:	<u>Ph. (505) 234-7181 FAX (505) 234-1799</u> <u>e-Mail: james.schuetz@wipp.ws</u>
Principal DOE organization(s) supported (NNSA, EM, NE, etc.)	<u>CBFO</u>
Date Survey Form Submitted:	<u>December 3, 2003</u>

3. Design Safety Software

List the commercial software packages used in the analysis and design of safety class and safety significant structures, systems, and components for DOE defense nuclear facilities. Also, list the proprietary software used in the analysis and design of safety class and safety significant structures, systems, and components where the software was used at more than one DOE site. (Note: This question was revised by EM.)

Attach additional sheets if needed.

Area of Applicability	Computer Software Name*
Civil/Structural/Geotechnical Systems	
Mechanical Systems	
HVAC	
Electrical Systems	
Fire Protection Systems	
Instrumentation and Control	
Others (not included above)	

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

Sandia National Laboratories
Software Inventory

a	Software Name	ALGEBRACDB
	Version	2.35
b	Function of code	Used to algebraically manipulate data in CAMDAT
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	BLOTADB
	Version	1.37
b	Function of code	Used to plot the mesh and results from finite-element and finite-difference analysis programs
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	BRAGFLO
	Version	4.1
b	Function of code	Used to study two-phase (brine and gas), three-dimensional isothermal flow in porous media
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	CCD2STEP
	Version	1.08
b	Function of code	CCD2STEP reads CCDFCALC files containing radionuclide release data for the dependent variables and writes an output file for either STEPWISE or PCCSRC
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	CCDFCALC
	Version	4.29
b	Function of code	CCDFCALC calls for and collects specific radionuclide release data calculated by various WIPP PA codes designed to estimate such releases (e.g., CUTTINGS, PANEL, SECOTP2D, etc.). The release data are scenario specific and are normally provided in CAMDAT format (CDB) files
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	CCDFGF
	Version	3.01
b	Function of code	Assemble WIPP PA codes results to produce the CCDF specified in 40 CFR 191. Allow brine in the Castile Formation to be specified as input. Construct the distribution of CCDFs.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	CCDFSUM
	Version	2
b	Function of code	Used to graphically display complementary cumulative distribution functions (CCDFs) constructed by the software CCDFGF
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	CUTTINGS_S
	Version	5.04
b	Function of code	Used to estimate the quantity (in Curies) of wastes brought to the surface as a result of an inadvertent borehole drilled directly over the WIPP repository so as to penetrate a waste panel
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	DTRKCDB
	Version	1
b	Function of code	Used to track the pathway of particles released in a fluid velocity field.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	DTRKMF
	Version	1
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-I implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	EPANUI
	Version	1.14
b	Function of code	Used to concur with the EPA standards, build a data set for the probability distribution for the volumetric EPA Unit .
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	EQ3/6
	Version	7.2c
b	Function of code	Used for speciation-solubility and reaction path calculation of aqueous system.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	FMT
	Version	2.4
b	Function of code	Used to calculate chemical equilibrium in high-ionic-strength geochemical systems at 25 deg C.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	GENMESH
	Version	6.08
b	Function of code	Used to generate three-dimensional finite-difference mesh
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	GRASP-INV
	Version	2.01
b	Function of code	Used to solve the inverse problem of groundwater flow for an ensemble of transmissivity fields
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	GROPECDB
	Version	12-Feb
b	Function of code	Used to examine CAMDAT file. It allows a user to interactively look at the contents of CAMDAT Database (CDB) file.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	ICSET
	Version	2.22
b	Function of code	Used to set initial conditions in a PA Computational Data Base (CDB) file in 1-D, 2-D, or 3-D
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	Kt3d
	Version	2
b	Function of code	A GSLIB kriging program Kt3d is used to estimate the residual values at all points on the grid within a model domain.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	LHS
	Version	2.41
b	Function of code	Used to perform Latin Hypercube Sampling
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	LHS2STEP
	Version	1.04
b	Function of code	LHS2STEP reads an LHS sampled output file containing the independent variables, and writes an output file for either the STEPWISE or PCCSRC codes.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	MATSET
	Version	9.1
b	Function of code	Used to set material and properties in CAMDAT
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	MODFLOW 2K
	Version	1.6
b	Function of code	A three-dimensional finite-difference ground- water model used to perform ground water hydrology simulation. MODFLOW2k also has capabilities such as solute transport and parameter estimation.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	NONLIN
	Version	2
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	nSIGHTS
	Version	1
b	Function of code	nSights consists of a numeric simulator, analytic routines that support standard well-test interpretation methodologies, and statistical sampling/optimization and post-processing procedures that enable the analyst to quantify uncertainty in parameter estimates
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O:)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	NUCPLOT
	Version	1.2
b	Function of code	Used to plot output data from the modeling codes
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	NUTS
	Version	2.05
b	Function of code	Used to simulate radioisotope transport through porous media and includes first-order radioactive decay processes.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	ORIGEN2
	Version	2.2
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PANEL
	Version	3.6
b	Function of code	PANEL takes brine flow and repository volume data and computes the amount of mobilized radioisotopes that leave the repository.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PAPDB
	Version	1
b	Function of code	The performance assessment parameter database.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PATTRN
	Version	1
b	Function of code	Used to detect patterns in scatterplots of independent variables versus dependent variables and used as an additional sensitivity analysis tool to aid in identifying important independent variables.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PCCSRC
	Version	2.21
b	Function of code	Used to evaluate parameter importance by reporting the partial correlation coefficients (PCCs) and standardized regression coefficients (SRCs) on either the raw or ranked data
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PEST
	Version	5.51
b	Function of code	Used as a "model-independent parameter estimator" and optimizes parameters pertaining to an existing simulation model, such that the outputs of that model are as well matched as possible to a set of field measurements.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	POST_EPAUNI
	Version	1.15
b	Function of code	Post-processor of output from EPAUNI to CAMDAT
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PSOTBRAG
	Version	4
b	Function of code	Post-processor (translator) of output from BRAGFLO to CAMDAT
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	POSTLHS
	Version	4.07
b	Function of code	Post-processor (translator) of output from LHS to CAMDAT
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	POSTSECOFL2D
	Version	4.04
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	POSTSECOTP2D
	Version	1.04
b	Function of code	Post-processor of output from SECOTP2D to CAMDAT
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PREBRAG
	Version	6
b	Function of code	Pre-processor (translator) for input to BRAGFLO
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PRELHS
	Version	2.3
b	Function of code	Pre-processor (translator) for input to LHS
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PRESECOFL2D
	Version	4.05
b	Function of code	Pre-processor for input to SECOTP2D
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	PRESECOTP2D
	Version	1.22
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	RELATE
	Version	1.43
b	Function of code	Used to transfer information from one CAMDAT database file (the "Reference" database) to another CAMDAT database file (the "Object" database)
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SANTOS
	Version	2
b	Function of code	The quasistatic, large deformation finite element code with a multi-mechanism deformation to model the creep behavior of rock salt.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SECOFL2D
	Version	3.03
b	Function of code	Performs single and multiple component radionuclide transport in fractured aquifers. calculate the discharge across a user defined boundary.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SECOTP2D
	Version	1.41a
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R -
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SGSIM
	Version	2
b	Function of code	A GSLIB utility used for creating realizations by performing (Sequential Gaussian Simulation) conditional stochastic Gaussian geostatistical. simulations
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SPLAT
	Version	1.02
b	Function of code	Used for X-Y plot. It reads data for ASCII files generated by SUMMARIZE.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	STAMMT-L
	Version	1
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	STAMMT-R
	Version	1
b	Function of code	Used for ground-water transport simulation
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	STEPWISE
	Version	2.21
b	Function of code	Used for stepwise regression analysis
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SUMMARIZE
	Version	2.2
b	Function of code	Data integration and conversion utility code for the analysis of binary input data. SUMMARIZE reads specific data from a series of CAMDAT binary CDB data files and generates a tabular ASCII output file or files.
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	SWIFT 2
	Version	2F
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice - R; Occasional use - O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	TOUGH28W
	Version	2
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	TRACKER
	Version	5.02
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

a	Software Name	TWBID
	Version	3.11
b	Function of code	N/A
c	Application (what projects/facilities at the site/lab)	Modeling of the WIPP waste repository physical characteristics
d	Code Developer / Sponsor	SRS Carlsbad
e	Commercial, Proprietary or Other (Explain)	Proprietary
f	Current Owner/Vendor and technical support provider	SRS Carlsbad
g	Documentation available	Full Software Life-Cycle Development Documentation Suite Per NQA 2.7
h	Code platform (Workstation, PC-based, Mainframe)	Mainframe, accessed from server workstations
i	Operating System (Windows, DOS, other)	Windows and/or VMS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k	How are error and user questions reported?	Sandia Procedure NP 19-1 implementing NQA Part 2 section 2.7 requirements
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Software is used to model the physical waste repository but does not contain data and/or is not used to report release to the atmosphere or impact to the public.

Washing TRU Solutions
Software Inventory

a	Software Name	CAP88 PC Radiation Risk Assessment Software
	Version	1
b	Function of code	CAP88-PC version 1.0 is a personal computer software system used for calculating dose and risk from annual average releases of radionuclide to the air and for demonstrating compliance with 40 CFR 61.93 (a).
c	Application (what projects/facilities at the site/lab)	Applied to monitoring and reporting possible release of radioactive materials from the Waste Isolation Pilot Project (WIPP) and estimating surface area impacted.
d	Code Developer / Sponsor	EPA – Developer Linda Frank-Supka – Sponsor at the WIPP location
e	Commercial, Proprietary or Other (Explain)	Commercial
f	Current Owner/Vendor and technical support provider	EPA
g	Documentation available	Model Document (including calculation algorithms), User Manual, Installation instructions, WIPP Software Inventory, and WIPP Installation and Check-out Forms (including installation testing and reporting)
h	Code platform (Workstation, PC-based, Mainframe)	Desktop PC
i	Operating System (Windows, DOS, other)	Windows NT, 2000, or XP
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Quarterly
k	How are error and user questions reported?	Generated internally using the WTS SQA protocol and contacting EPA as appropriate based on type of problem/error identified
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	EPA has approved use of CAP88-PC version 2.0 for demonstrating compliance with 40 CFR 61.93 (a) NESHAPs subpart H-emissions of Radionuclides Other than Radon from Department of Energy Facilities.

a	Software Name	GENII -S
	Version	1.485
b	Function of code	Environmental Radiation Dosimetry Software System
c	Application (what projects/facilities at the site/lab)	Applied to Environmental monitoring and reporting at the WIPP site.
d	Code Developer / Sponsor	C. Ortiz
e	Commercial, Proprietary or Other (Explain)	Commercial
f	Current Owner/Vendor and technical support provider	C. Ortiz
g	Documentation available	User Manuals and Design Documentation
h	Code platform (Workstation, PC-based, Mainframe)	Desktop PC
i	Operating System (Windows, DOS, other)	DOS
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Daily
k	How are error and user questions reported?	Contact Mr. Peter Damm with WTS software quality assurance and vendor based on classification of problem or error.
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	For background and assistance from the Hanford software authors visit the following website. http://www.pnl.gov/eshs/software/genii.html

a	Software Name	GXQ
	Version	4.0A
b	Function of code	General Purpose Atmospheric Dispersion Code produced by Westinghouse Hanford Company Users Guide documented in WHC-SD-GN-SWD-30002 Rev. 1
c	Application (what projects/facilities at the site/lab)	Applied to Environmental monitoring and reporting at the WIPP site.
d	Code Developer / Sponsor	B. Faulk J. McCormick
e	Commercial, Proprietary or Other (Explain)	Commercial
f	Current Owner/Vendor and technical support provider	B. Faulk J. McCormick
g	Documentation available	User Manuals and Design Documentation
h	Code platform (Workstation, PC-based, Mainframe)	Desktop PC
i	Operating System (Windows, DOS, other)	Windows
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Daily
k	How are error and user questions reported?	Contact Mr. Peter Damm with WTS software quality assurance and vendor based on classification of problem or error.
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	None

a	Software Name	MetData Application
	Version	Apr-03
b	Function of code	Converts the onsite meteorological data into stability array (STAR) format that is part of required input for the CAP88-PC in order to calculate the effective dose equivalent resulting from normal operations conducted at WIPP to the maximally exposed individual.
c	Application (what projects/facilities at the site/lab)	Applied to Environmental monitoring and reporting at the WIPP site.
d	Code Developer / Sponsor	H. Chiou D. Kump
e	Commercial, Proprietary or Other (Explain)	Commercial
f	Current Owner/Vendor and technical support provider	H. Chiou D. Kump
g	Documentation available	User Manuals and Design Documentation
h	Code platform (Workstation, PC-based, Mainframe)	Desktop PC
i	Operating System (Windows, DOS, other)	Windows/NT
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Daily
k	How are error and user questions reported?	Contact Mr. Peter Damm with WTS software quality assurance and vendor based on classification of problem or error.
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	None

a	Software Name	RadClient/Radnet
	Version	RadclaJ1
b	Function of code	Software for remote monitoring/control of RADOS Radiation Monitoring System
c	Application (what projects/facilities at the site/lab)	Applied to Environmental monitoring and reporting at the WIPP site.
d	Code Developer / Sponsor	R. Sanchez R. Elmore
e	Commercial, Proprietary or Other (Explain)	Proprietary (supplied by vendor with monitoring equipment)
f	Current Owner/Vendor and technical support provider	R. Sanchez R. Elmore
g	Documentation available	User Manuals and Design Documentation
h	Code platform (Workstation, PC-based, Mainframe)	Desktop PC
i	Operating System (Windows, DOS, other)	W98/2000
j	Frequency of Use (Routine, repeated use, code of choice -- R; Occasional use -- O;)	Daily
k	How are error and user questions reported?	Contact Mr. Peter Damm with WTS software quality assurance and vendor based on classification of problem or error.
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	None

a	Software Name	Lpu02 af.exe
	Version	af
b	Function of code	Controls the Area Radiation Monitor Local Processing Unit. Receives communications from all the other ARMs which use Local Control Units
c	Application (what projects/facilities at the site/lab)	Applied to Environmental monitoring and reporting at the WIPP site.
d	Code Developer / Sponsor	R. Sanchez T. Burrington
e	Commercial, Proprietary or Other (Explain)	Proprietary (supplied by vendor with monitoring equipment)
f	Current Owner/Vendor and technical support provider	R. Sanchez T. Burrington
g	Documentation available	User Manuals and Design Documentation
h	Code platform (Workstation, PC-based, Mainframe)	Monitoring Equipment
i	Operating System (Windows, DOS, other)	Windows 98
j	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Daily
k	How are error and user questions reported?	Contact Mr. Peter Damm with WTS software quality assurance and vendor based on classification of problem or error.
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	None

a	Software Name	Lpu 022ab.exe
	Version	ab
b	Function of code	Controls the Area Radiation Monitor Local Processing Unit.
c	Application (what projects/facilities at the site/lab)	Applied to Environmental monitoring and reporting at the WIPP site.
d	Code Developer / Sponsor	R. Sanchez T. Burrington
e	Commercial, Proprietary or Other (Explain)	Proprietary (supplied by vendor with monitoring equipment)
f	Current Owner/Vendor and technical support provider	R. Sanchez T. Burrington
g	Documentation available	User Manuals and Design Documentation
h	Code platform (Workstation, PC-based, Mainframe)	Monitoring Equipment
i	Operating System (Windows, DOS, other)	Windows 98
j	Frequency of Use (Routine, repeated use, code of choice -- R; Occasional use -- O;)	Daily
k	How are error and user questions reported?	Contact Mr. Peter Damm with WTS software quality assurance and vendor based on classification of problem or error.
l	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	None

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): U.S. Department of Energy, Carlsbad Field Office (CBFO), Quality Assurance Program Document (QAPD), DOE/CBFO-94-1012, Revision 5, Effective May 2003 upper-tier requirements document including section 6 related to software quality assurance requirements based on NQA-1 and NQA Part 2, Section 2.7

Washington TRU Solutions (WTS), Software Screening and Action Plan, WP 16-2, Revision 4, Effective May 28, 2003 software quality assurance procedure

Sandia National Laboratories (SNL), Software Requirements, NP 19-1, Revision 10, Effective may 29, 2003 software quality assurance procedure

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

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

5.3 How do you apply QA procedures to safety software? See section 5.1 of this document for references and procedure numbers for application of software quality assurance to contractor and site activities. Also, contractors are required to implement all sections of the CBFO QAPD including requirements for an internal assessment program. The CBFO QAPD provides details of these requirements and the sites individual procedures give details for site-specific implementation. The CBFO conducts certification audits and annual re-certification audits of individual site QA program implementation. CBFO audit scope includes evaluation of individual site implementation of software quality assurance, training, and QA program activities.

5.3.1 How do you train users on safety software? Contractors conduct classroom training for site personnel to CBFO QAPD requirements. Contractor trains their personnel to site-specific implementation procedures on a required reading basis. Procedure up-dates are also assigned on a required reading basis. This method of training is applicable to technical and quality assurance programmatic procedures.

Washing TRU Solutions
Software Inventory

Area of Applicability	Software Name	Version	Date	Note
Civil/Structural/Geotechnical Systems	NONE			
Mechanical Systems	CAP88 PC Radiation Risk Assessment Software	2.0	1/13/99	
	GENII-S	1.485	10/10/94	For background and assistance from the Hanford software authors visit the following website. http://www.pnl.gov/eshs/software/genii.html
	GXQ	4.0A	4/24/00 6/12/00	
	MetData Application	4/2003	5/5/03	
	RadClient/Radnet	RadclaJ1	8/12/03	
	Lpu02 af.exe	af	6/12/02	
	Lpu 022ab.exe	ab	6/12/02	
HVAC	NONE			
Electrical Systems	NONE			
Fire Protection Systems	NONE			
Instrumentation and Control	NONE			
Others (not included above)	NONE			

**Office of River Protection
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

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

1. Survey Information Prepared By

Name(s):	Ernie Hamm, Larry Julyk, Robert Brown, Jack Nicholson, Dave Barnes
Organization(s):	CH2M HILL Hanford Group Inc.
Site or Laboratory:	Office of River Protection, Hanford Site
Address:	P.O. Box 1500, MSIN R1-14 Richland, Washington 99352
Phone/email/facsimile:	(509) 372-0310 FAX (509) 372-1608
Principal DOE organization(s) supported (NNSA, EM, NE, etc.):	EM
Date Survey Form Submitted:	11/15/03

2. Design Safety Software

Area of Applicability	Computer Software Name*
Civil/Structural/Geotechnical Systems	ANSYS/ Mechanical Version 7.0
Mechanical Systems	AutoPIPE
HVAC	GOTH-SNF
Electrical Systems	None
Fire Protection Systems	None
Instrumentation and Control	None
Others (not included above)	Micro-Shield 6.01

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

3. Safety Software Information

a.	Code name and version	ANSYS/ Mechanical Version 7.0
b.	Function of code	General purpose finite-element code used to solve linear and non-linear, static and dynamic structural, and heat transfer problems.
c.	Application (what projects/facilities at the site/lab)	Double-Shell Tank Integrity Program, Single- and Double-Shell Dome Load Program, PUREX connector analysis for Waste Feed Delivery Project, support for Tank Farm FSAR.
d.	Code developer and/or sponsor	ANSYS, Inc. Address: Southpointe 275 Technology Drive Canonsburg, PA 15317 Email: ansysinfo@ansys.com Web: http://www.ansys.com Phone: 724-746-3304
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	C; Site-license
f.	Current Owner/Vendor and technical support provider	Same as (d) above; Technical Support included in Site license fee through East coast vendor JLR, The Engineering Solutions Company Address: 111 SE Everett Mail Way, Suite E-201 Everett, WA 98208-3236 Email: jrao@chiar@jlrcom.com Web: http://www.jlrcom.com Phone: 425-353-8089, x251
g.	Documentation available	1. User's Manual (hard copy and online) 2. Verification Manual 3. Class notes
h.	Code platform (Workstation, PC-based, Mainframe)	PC-based
i.	Operating System (Windows, DOS, other)	Windows XP

j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	ANSYS, Inc. provides hard copy Class 3 error reports and QA Notices. Website and customer portal also provided as well as direct contact support for user questions.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	<p>Formal training classes are available by vender.</p> <p>Documentation is available on-line for current version and updates.</p> <p>Vender is responsive to user identification of potential errors. Patches and updates are periodically made available to correct errors.</p>

a.	Code name and version	AutoPIPE. Version 6.2
b.	Function of code	Piping stress analysis for safety and non-safety related systems (ASME B31 and Boiler and Pressure Vessel Code piping systems)
c.	Application (what projects/facilities at the site/lab)	Project W-211 and W-314; safety significant and general service piping systems
d.	Code developer and/or sponsor	Rebis/Bently Corporate Headquarters address: 685 Stockton Drive Exton, PA 19341 E-mail: autopipecom Phone: 1-800-236-8539 (corporate & technical)
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Same as (d.) above; Technical Support is included and is part of Site license fee.
g.	Documentation available	1. User's Manual 2. Verification Manual
h.	Code platform (Workstation, PC-based, Mainframe)	PC-based
i.	Operating System (Windows, DOS, other)	Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	The vendor reports updates and sends out error notices via email. A website exists for reporting software problems and posing questions on use of the code. Response is within 24 hours of the request.
l.	Comments on experience with this computer software, ease of	Documentation is upgraded with each version update.

	application, documentation provided; known errors or issues	Experience with this software has been good and relatively few (minor) errors have been identified in more than five years of use.
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a.	Code name and version	Micro-Shield 6.01
b.	Function of code	Estimate radiation levels and evaluate shielding
c.	Application (what projects/facilities at the site/lab)	Tank Farm Nuclear Facilities
d.	Code developer and/or sponsor	Grove Engineering 15215 Shady Grove Road Rockville, MD 20850
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Grove Engineering 15215 Shady Grove Road Rockville, MD 20850
g.	Documentation available	Users Manual Verification Manual
h.	Code platform (Workstation, PC-based, Mainframe)	PC Based
i.	Operating System (Windows, DOS, other)	Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Customer help lines
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	This is a good software package. It requires the user to have a knowledge of Health Physics. This is a recent upgrade from 5.05.

a.	Code name and version	GOTH-SNF Version 5.3 and Version 6
b.	Function of code	GOTH-SNF is a multi-dimensional, multi-phase, finite-difference, thermal-hydraulic computer code
c.	Application (what projects/facilities at the site/lab)	Analyzing pneumatic flow and pressure drops for the new Project 314 provided exhauster, and for analyses of waste tanks.
d.	Code developer and/or sponsor	John Marvin, Incorporated (JMI) 5335 West Van Giesen Street West Richland, WA 99353 509-967-2940
e.	Commercial, Proprietary or Other (Explain)	Proprietary
f.	Current Owner/Vendor and technical support provider	John Marvin Incorporated
g.	Documentation available	Analysis Output and QA documentation
h.	Code platform (Workstation, PC-based, Mainframe)	Workstation
i.	Operating System (Windows, DOS, other)	Unknown
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Proprietary Code: Handled internal to the vendor
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	This software was derived from the EPRI GOTHIC code and has been used to support various Tank Farm Design Efforts for several years.

Survey Information Prepared By:

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Phone/email/facsimile: 371-2782
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	AGI32 version 1.64
Function of code	System Design Lighting Analysis
*Area of applicability - see above	Electrical Systems
Application (what projects/facilities at the site/lab)	Across all facilities
Code developer and/or sponsor	<i>Lighting Analysts, Inc.</i>
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Bechtel National, Inc. / <i>Lighting Analysts, Inc.</i> is the vendor/tech support
Documentation available	Yes - Manuals in acrobat format & online documentation
Code Platform (Workstation, PC-based, Mainframe)	PC workstations
Operating System (Windows #, DOS, Other)	Windows NT 4.0, Windows 2000, Windows XP
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Routine usage
How are error and user questions reported?	Error notification is handled according to procedure 24590-WTP-GPP-IT-001, <i>Use of Quality Affecting Software Applications</i> and can be obtained through Project Archives and Document Controls. User questions are handled internally, or by <i>Lighting Analysts, Inc.</i> technical support.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	AGI32 is a state of the art illumination engineering program. It will run satisfactorily on the Minimum required hardware for relatively simple applications. Users planning on taking advantage of the full

	<p>spectrum of power offered by AGI32 should consider the Recommended hardware requirements (see next page).</p> <p>AGI32 provides a software tool used to predict the lighting performance of selected luminaires in a simulated environment. The environments that may be considered in AGI32 can range from a simple rectangular space to a multilevel interchange or complex auditorium. AGI32 is a stand-alone tool, meaning that other software is not required to create or output the calculations results.</p> <p>Software errors are reported in accordance to procedure 24590-WTP-GPP-IT-001, <i>Use of Quality Affecting Software Applications</i>. No errors have been reported at this time.</p>
<p>Design and analysis work being performed using this application</p>	<p>See above. Lighting Calculations for the illuminated areas of all facilities.</p>

Survey Information Prepared By:

Name: Tim Milot
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	ANSYS
Function of code	Finite Element mechanical Analysis of equipment
*Area of applicability - see above	Structural, Mechanical systems
Application (what projects/facilities at the site/lab)	pressure vessels, equipment
Code developer and/or sponsor	ANSYS Inc
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial off the shelf
Current Owner/Vendor and technical support provider	JLR ANSYS
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	Workstation
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Software error notices
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	ANSYS is industry standard Finite Element Analysis software, which is very thoroughly documented and supported by the vendor
Design and analysis work being performed using this application	preliminary sizing of pressure vessels, stress and thermal analysis of equipment

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the preliminary design of safety class and safety significant structures, systems, and components in the following areas: Mechanical Systems

Note: This software is not used for final design of any component regardless of safety classification.

For each safety software application identified:

Code/application name and version	Aspen - BJAC 11.1
Function of code	Mechanical design of shell and tube heat exchangers
*Area of applicability - see above	Mechanical systems
Application (what projects/facilities at the site/lab)	heat exchangers for PTF, HLW, LAW, BOF, LAB
Code developer and/or sponsor	Aspen Technology Inc.
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial off the shelf
Current Owner/Vendor and technical support provider	Aspen Technology Inc.
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	PC-based, Workstation
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Software error notices
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Aspen-BJAC is widely used software for mechanical design of shell and tube heat exchanger, which is very thoroughly documented and supported by the vendor
Design and analysis work being performed using this application	Preliminary mechanical design of shell and tube type heat exchangers to support Material Requisition for quotes and to verify the vendor design. This is not used for final design of any shell and tube heat exchanger.

Survey Information Prepared By:

Name: Ivan Papp
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Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 371-3605/igpapp@bechtel.com/371-3507
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	WTP Engineering Baseline Process Performance Software, Version 1.0
Function of code	To provide stream data to support design and Commissioning and Testing of WTP (Waste Treatment Plant) facility.
*Area of applicability - see above	<u>O</u>
Application (what projects/facilities at the site/lab)	<ul style="list-style-type: none"> • Design input for design calculations (PT, LAW Vit, HLW Vit, Lab) • Forecasts performance of various feed streams to the WTP and effluent streams to LERF/ETF • Represents the design performance capability during cold and hot commissioning
Code developer and/or sponsor	Sponsor: Ivan Papp
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	<u>O</u> The routine was produced by the Process Engineering Department using fundamental engineering and chemistry equations. The Quality Affecting Software (QAS) routine was developed using Microsoft® Excel 2000.
Current Owner/Vendor and technical support provider	Central Process Engineering/Central Process Engineering
Documentation available	24590-WTP-VV-ENG-03-005, Rev. 0.
Code Platform (Workstation, PC-based, Mainframe)	Workstation

Operating System (Windows #, DOS, Other)	Windows 2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	<u>R</u>
How are error and user questions reported?	<p>Error identification and notification is per procedure 24590-WTP-GPP-IT-001 (Use of Quality Affecting Software Application).</p> <p>User questions are reported to the Project Program Sponsor (Ivan Papp).</p>
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	It is a Microsoft® Excel based model where all the inputs into the routine are listed in Appendix C of 24590-WTP-VV-ENG-03-005. A desktop instruction on using the routine is available from Ivan Papp or Dale Obcnauer.
Design and analysis work being performed using this application	<ul style="list-style-type: none"> • Estimated Hydrogen Generation Rates for Pretreatment and HLW Calculation • Memo reporting stream data for AY-102 and AP-101

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HIVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	CE980 (BSIMQKE), 1984, version B1-4PC
Function of code	Generation of spectrum-compatible time histories
*Area of applicability - see above	C
Application (what projects/facilities at the site/lab)	All Seismic Category I WTP buildings
Code developer and/or sponsor	Bechtel
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	P
Current Owner/Vendor and technical support provider	Bechtel
Documentation available	Computer Service Library of Bechtel Corp. in San Francisco, California
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows 95/98/2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	O
How are error and user questions reported?	Report to technical specialist or the Computer Service Library of Bechtel Corp. in San Francisco, California
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Specialized program needs experienced user
Design and analysis work being performed using this application	Generation of spectrum-compatible time histories

Survey Information Prepared By:

Name: Tim Milot
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Compress Codeware is an ASME VIII pressure vessel calculation program used for preliminary sizing of pressure vessels and nozzles. Compress is not used for final design.

For each safety software application identified:

Code/application name and version	Compress 6.187/6.214
Function of code	Pressure vessel sizing software
*Area of applicability - see above	Structural, Mechanical systems
Application (what projects/facilities at the site/lab)	pressure vessels
Code developer and/or sponsor	Codeware
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial off the shelf
Current Owner/Vendor and technical support provider	Codeware
Documentation available	PDF manual
Code Platform (Workstation, PC-based, Mainframe)	Workstation
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Software error notices are reported per procedure 24590-WTP-3DP-G04B-00038 rev 1. User questions are directed to PPS and Codeware technical support.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Compress is straightforward to use and user friendly. It is only applicable to pressure vessels, not tanks. Manuals are updated with version revisions and are in PDF format.
Design and analysis work being performed using this application	Preliminary sizing of pressure vessels. Compress Codeware is not used for final design.

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each software application identified:

Code/application name and version	Control Valve Sizing - Gas Service, Version 1.1
Function of code	Calculate Valve Sizing
*Area of applicability - see above	Instrumentation and Control (I&C) Mechanical Systems
Application (what projects/facilities at the site/lab)	WTP RPP Project for the LAW, PTF, HLW, BOF, and other facilities as needed on the project.
Code developer and/or sponsor	Calvin Lasley (PPS)
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Other. The routine was generated by I&C Central Engineering on the WTP RPP project.
Current Owner/Vendor and technical support provider	Calvin Lasley (PPS)
Documentation available	<ul style="list-style-type: none"> • 24590-WTP-VV-ENG-03-002, Control Valve Sizing for Gas Service - QAS Routine • 24590-WTP-GPG-J-016, Design Guide Control Valve Sizing
Code Platform (Workstation, PC-based, Mainframe)	PC-Based
Operating System (Windows #, DOS, Other)	Windows 2000 Service Pack 3 Windows NT 6 SP6a
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Routine
How are error and user questions reported?	All errors will be reported to the PPS and processed in accordance with 24590-WTP-GPP-IT-001. All questions are also directed to the PPS.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	I&C have generated a significant amount of calculations with this routine and have not experienced any technical errors or issues.

<p>Design and analysis work being performed using this application</p>	<p>Design work being performed involves I&C generating a valve size calculation based upon committed process data from Mechanical Systems. Once the sizing is completed and the calculation released, the HOLDS are removed from the P&ID's and Plant Design can model accordingly.</p>
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Survey Information Prepared By:

Name: Sean G. Smith
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, IVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Control Valve Sizing - Liquid Service, Version 1.1
Function of code	Calculate Valve Sizing
*Area of applicability - see above	Instrumentation and Control (I&C) Mechanical Systems
Application (what projects/facilities at the site/lab)	WTP RPP Project for the LAW, PTF, HLW, BOF, and other facilities as needed on the project.
Code developer and/or sponsor	Calvin Lasley (PPS)
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Other. The routine was generated by I&C Central Engineering on the WTP RPP project.
Current Owner/Vendor and technical support provider	Calvin Lasley (PPS)
Documentation available	<ul style="list-style-type: none"> • 24590-WTP-VV-ENG-03-001, Control Valve Sizing for Liquid Service - QAS Routine • 24590-WTP-GPG-J-016, Design Guide Control Valve Sizing
Code Platform (Workstation, PC-based, Mainframe)	PC-Based
Operating System (Windows #, DOS, Other)	Windows 2000 Service Pack 3 Windows NT 6 SP6a
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Routine
How are error and user questions reported?	All errors will be reported to the PPS and processed in accordance with 24590-WTP-GPP-IT-001. All questions are also directed to the PPS.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	I&C have generated a significant amount of calculations with this routine and have not experienced any technical errors or issues.

<p>Design and analysis work being performed using this application</p>	<p>Design work being performed involves I&C generating a valve size calculation based upon committed process data from Mechanical Systems. Once the sizing is completed and the calculation released, the HOLDS are removed from the P&ID's and Plant Design can model accordingly.</p>
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Survey Information Prepared By:

Name: Sean G. Smith
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Control Valve Sizing - Steam Service, Version 1.1
Function of code	Calculate Valve Sizing
*Area of applicability - see above	Instrumentation and Control (I&C) Mechanical Systems
Application (what projects/facilities at the site/lab)	WTP RPP Project for the LAW, PTF, HLW, BOF, and other facilities as needed on the project.
Code developer and/or sponsor	Calvin Lasley (PPS)
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Other. The routine was generated by I&C Central Engineering on the WTP RPP project.
Current Owner/Vendor and technical support provider	Calvin Lasley (PPS)
Documentation available	<ul style="list-style-type: none"> • 24590-WTP-VV-ENG-03-003, Control Valve Sizing for Steam Service - QAS Routine • 24590-WTP-GPG-J-016, Design Guide Control Valve Sizing
Code Platform (Workstation, PC-based, Mainframe)	PC-Based
Operating System (Windows #, DOS, Other)	Windows 2000 Service Pack 3 Windows NT 6 SP6a
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>Q</u>)	Routine
How are error and user questions reported?	All errors will be reported to the PPS and processed in accordance with 24590-WTP-GPP-IT-001. All questions are also directed to the PPS.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	I&C have generated a significant amount of calculations with this routine and have not experienced any technical errors or issues.

<p>Design and analysis work being performed using this application</p>	<p>Design work being performed involves I&C generating a valve size calculation based upon committed process data from Mechanical Systems. Once the sizing is completed and the calculation released, the HOLDS are removed from the P&ID's and Plant Design can model accordingly.</p>
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Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	DAPSS 1.0
Function of code	Process Tool
*Area of applicability - see above	Piping
Application (what projects/facilities at the site/lab)	PTF, HLW
Code developer and/or sponsor	Amir Hamaoui
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Developed
Current Owner/Vendor and technical support provider	Amir Hamaoui
Documentation available	Non-QAS documentation
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Email to PPS
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Increases efficiency and quality.
Design and analysis work being performed using this application	Pipe Support Calculation Qualification Report

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	CE928 (DATAN), 1991, version C1-4PC
Function of code	Probabilistic data analysis
*Area of applicability - see above	C
Application (what projects/facilities at the site/lab)	All Seismic Category I WTP buildings
Code developer and/or sponsor	Bechtel
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	P
Current Owner/Vendor and technical support provider	Bechtel
Documentation available	Computer Service Library of Bechtel Corp. in San Francisco, California
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows 95/98/2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	O
How are error and user questions reported?	Report to technical specialist or the Computer Service Library of Bechtel Corp. in San Francisco, California
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Specialized program needs experienced user
Design and analysis work being performed using this application	Probabilistic data analysis of ground motions

Survey Information Prepared By:

Name: Carlos Villalpando
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Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	ETAP POWERSTATION 4.7.0
Function of code	Electrical Power System Analysis
*Area of applicability - see above	Electrical Systems
Application (what projects/facilities at the site/lab)	Across all facilities
Code developer and/or sponsor	OTI.
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Bechtel National, Inc. / OTI is the vendor/tech support
Documentation available	Yes - Manuals & online documentation
Code Platform (Workstation, PC-based, Mainframe)	PC workstations
Operating System (Windows #, DOS, Other)	Windows NT 4.0, Windows 2000, Windows Millennium, Windows XP
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Routine usage
How are error and user questions reported?	Error notification is handled according to procedure 24590-WTP-GPP-IT-001, <i>Use of Quality Affecting Software Applications</i> and can be obtained through Project Archives and Document Controls. User questions are handled internally, or by OTI technical support.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	ETAP PowerStation is a fully graphical power systems analysis program that runs on Microsoft® Windows® 98, NT 4.0, 2000, Me, and XP environments. ETAP PowerStation is used to

	<p>analyze complex power distribution networks requiring intensive computation. The software has been in use from the beginning of the project. There have been software errors reported in accordance to procedure 24590-WTP-GPP-IT-001, <i>Use of Quality Affecting Software Applications</i>. These errors have not affected project calculations. All the recorded errors have been documented and can be obtained through Project Archives and Document Controls.</p>
<p>Design and analysis work being performed using this application</p>	<p>See above. Electrical system analysis work such as short circuit, load flow, cable pull, and grounding calculations as required.</p>

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	FLOWEL, Version 3.0g
Function of code	Calculate Orifice Plate Size(s)
*Area of applicability - see above	Instrumentation and Control (I&C)
Application (what projects/facilities at the site/lab)	WTP RPP Project for the LAW, PTF, HLW, BOF, and other facilities as needed on the project.
Code developer and/or sponsor	Kenonic Controls LTD Sean G. Smith (PPS)
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	Kenonic Controls LTD
Documentation available	<ul style="list-style-type: none"> • 24590-WTP-PL-IN-03-001, Project Plan for FLOWEL • 24590-WTP-RPT-ENG-03-016, FLOWEL Software Requirements Specification • 24590-WTP-PL-ENG-03-016, FLOWEL V&V Plan • 24590-WTP-VV-HS-03-002, Verification and Validation Report for FLOWEL • FLOWEL 3.0 for Windows, Revision G, July 1999, Kenonic Controls Ltd. • FLOWEL 3.0 Equations Validation Vol. 1, 2, 3, February 1995, Kenonic Controls Ltd.
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows NT 6 SP6a

Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	All errors will be reported to the PPS and processed in accordance with 24590-WTP-GPP-IT-001. All questions are also directed to the PPS.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	I&C have generated calculations with this routine and have not experienced any technical errors or issues.
Design and analysis work being performed using this application	Design work being performed involves I&C generating an orifice size calculation based upon committed process data from Mechanical Systems.

Survey Information Prepared By:

Name: Jon Berkoe
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 415-768-2149; jberkoe@bechtel.com; 415-768-1794
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Fluent - Version 6.1.18
Function of code	Computational Fluid Dynamics
*Area of applicability - see above	HVAC, Mechanical Systems
Application (what projects/facilities at the site/lab)	HLW, LAW, and Pre-Treatment Buildings -Mixing Vessels, Pour Caves, Canisters
Code developer and/or sponsor	Fluent, Inc. (Lebanon, NH)
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Fluent, Inc. (Lebanon, NH)
Documentation available	Yes - CDROM
Code Platform (Workstation, PC-based, Mainframe)	Workstation and PC
Operating System (Windows #, DOS, Other)	Linux, Windows 2000, Unix
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Documentation or email replies sent from vendor to PPS; PPS to notify users of significant errors
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Very robust and industry-tested software. User-friendly Graphical user interface. Excellent CDROM documentation. Errors reported and resolved effectively.
Design and analysis work being performed using this application	CFD analysis of pulsed jet mixing systems for Newtonian and non-newtonian vessels; CFD analysis for LAW/HLW pour cave HVAC design and structural heat transfer.

Survey Information Prepared By:

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Phone/email/facsimile:
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Fluent 6.1.18
Function of code	Computational Fluid Dynamics
*Area of applicability - see above	Mechanical Systems
Application (what projects/facilities at the site/lab)	Species transport and heat transfer in HLW waste tanks.
Code developer and/or sponsor	Jon Berkoe
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Fluent, Inc.
Documentation available	Document is online at www.fluent.com and on CD Rom
Code Platform (Workstation, PC-based, Mainframe)	PC (Compaq W6000)
Operating System (Windows #, DOS, Other)	Windows 2000, SP3
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Repeated use, code of choice
How are error and user questions reported?	Fluent technical support/PPS
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Running the code requires training and knowledge in physics and fluid dynamics.
Design and analysis work being performed using this application	The Bechtel SF group is using the code for a number of WTP projects. E&NS is using the code for safety analysis work.

Survey Information Prepared By:

Name: Sam Ramesh
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
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Phone/email/facsimile: 509-371-5425
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	GTSTRUDL Version 25
Function of code	Structural and Finite Element Analysis - Concrete and Steel Design
*Area of applicability - see above	C
Application (what projects/facilities at the site/lab)	All major WTP buildings and structures
Code developer and/or sponsor	Georgia Tech University
Commercial, Proprietary, or Other (explain)	P
Current Owner/Vendor and technical support provider	Georgia Tech University
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	Workstation installation, License off wtps0050 server
Operating System (Windows #, DOS, Other)	Windows 2000 Service Pack 3
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Errors are reported to Computer Service Library in San Francisco. The Computer Service Library forwards the Error Notices to the PPS. User Questions are reported to the to the PPS.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Comprehensive program for analysis and design of structures. Known errors are distributed to users through SENs.
Design and analysis work being performed using this application	Structural and Finite Element Analysis - Concrete and Steel Design

Survey Information Prepared By:

Name: Charles W. McKnight
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	HASS 7.5
Function of code	Hydraulic analysis of automatic fire protection sprinkler systems
*Area of applicability - see above	Fire Protection
Application (what projects/facilities at the site/lab)	Hydraulic analysis of automatic fire protection sprinkler systems
Code developer and/or sponsor	N/A
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Bechtel National Inc/ Haestad Methods Inc.
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	PC-Based and Workstation
Operating System (Windows #, DOS, Other)	Windows NT, 2000, XP
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Via phone or email
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	This software is very easy to use and does an excellent job of modeling fire protection sprinkler systems. There are no known errors or issues at this time.
Design and analysis work being performed using this application	This software is being used to verify fire sprinkler designs supplied by subcontractors.

Survey Information Prepared By:

Name: Scott Rossell
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: Phone: (509) 371-3843, e-mail: srossell@bechtel.com, fax: (509) 371-3507
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	HSC Chemistry 4.1
Function of code	Chemical Reaction Equilibrium Software with Thermodynamic Database
*Area of applicability - see above	Other
Application (what projects/facilities at the site/lab)	Used to define enthalpies for certain compounds
Code developer and/or sponsor	Outokumpu Research Oy
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	developer: mailto:hsc@outokumpu.com vendor: http://www.esm-software.com/ or http://www.chemsw.com/
Documentation available	Users have a manual
Code Platform (Workstation, PC-based, Mainframe)	Workstation
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	O
How are error and user questions reported?	Users can refer to the manual, other users or the PPS for questions. The procedure for error reporting is documented in: 24590-WTP-3DP-G04B-00038.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	<ul style="list-style-type: none"> • It is useful as a quick reference for thermodynamic information • The documentation does a good job of explaining the features and giving examples. • Upgrade information is posted on the website: http://www.outokumpu.com/hsc

<p>Design and analysis work being performed using this application</p>	<p>Temperature Enthalpy data was extracted from the database for several minor compounds.</p> <p>The majority of the enthalpy information in the mass balance was taken from <i>Thermochemical Data of Pure Substances</i> by Barin. However, for completeness temperature enthalpy data was extracted from the HSC database for several minor components that were not found in the Barin reference.</p>
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Survey Information Prepared By:

Name: Snehal Shah
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Phone/email/facsimile: 509-371-4540 / ssshah@bechtel.com /
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the preliminary sizing of safety class and safety significant structures, systems, and components in the following areas: Mechanical Systems

Note: This software is not used for final design of any component regardless of safety classification.

For each safety software application identified:

Code/application name and version	HTRI (IST 2.0)
Function of code	Thermal design/rating of shell and tube heat exchangers
*Area of applicability - see above	Mechanical systems
Application (what projects/facilities at the site/lab)	heat exchangers for PTF, HLW, LAW, BOF, LAB
Code developer and/or sponsor	HTRI Inc.
Commercial, Proprietary, or Other (explain)	Commercial off the shelf
Current Owner/Vendor and technical support provider	HTRI Inc.
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	PC-based, Workstation
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>Q</u>)	R
How are error and user questions reported?	Software error notices
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	HTRI (IST 2.0) is widely used software for thermal design of shell and tube heat exchanger design and rating, which is very thoroughly documented and supported by the vendor
Design and analysis work being performed using this application	Preliminary sizing of shell and tube type heat exchangers to support Material Requisition for quotes and to verify the vendor design. This is not used for final design of any shell and tube heat exchanger.

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

This program is not used on WTP/RPP project, this program is part of HTRI package.

Note: This software is not used for final design of any component regardless of safety classification.

For each safety software application identified:

Code/application name and version	HTRI (PHE 2.0)
Function of code	Design/rating of plate and frame heat exchangers
*Area of applicability - see above	None
Application (what projects/facilities at the site/lab)	N/A
Code developer and/or sponsor	HTRI Inc.
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial off the shelf
Current Owner/Vendor and technical support provider	HTRI Inc.
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	PC-based, Workstation
Operating System (Windows #, DOS, Other)	DOS
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	N/A
How are error and user questions reported?	N/A
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Not used
Design and analysis work being performed using this application	Not used

Survey Information Prepared By:

Name: Stephen Troilett
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
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Phone/email/facsimile: (509) 371 3710 sptroile@bechtel.com
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Delmia Envision Version D5R12 (IGRIP)
Function of code	Look at overall design of Remotely operated plant and equipment
*Area of applicability - see above	O
Application (what projects/facilities at the site/lab)	RPP-WTP. High Level Waste Treatment Plant, Pre Treatment Facility, Low Active Waste and Laboratories
Code developer and/or sponsor	PPS / Stephen Troilett
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	C
Current Owner/Vendor and technical support provider	WTP / Delmia and Delmia
Documentation available	Delmia Online Documentation
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows 2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Routine
How are error and user questions reported?	Directly to Delmia support services, either via e-mail or over the phone.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	IGRIP is a 3 Dimensional software which is a very good tool for viewing plant and equipment in a virtual world.
Design and analysis work being performed using this application	Envision provides a virtual model for looking at the overall design and functionality of complete systems. Taking into account equipment dynamic movement and reach, system cycle times, overall equipment

	layout, equipment functionality and maintainability, remote viewing from cameras and shield windows.
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Survey Information Prepared By:

Name: Mary Hull
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 509-371-3739
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Mathcad 11, Roark's and Civil Engineering Library
Function of code	Application used to complete calculations
*Area of applicability - see above	ALL
Application (what projects/facilities at the site/lab)	ALL
Code developer and/or sponsor	PPS - Mary Hull
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	C
Current Owner/Vendor and technical support provider	Mathsoft
Documentation available	User Guide
Code Platform (Workstation, PC-based, Mainframe)	Concurrent License on server wtps0024, shared on workstations
Operating System (Windows #, DOS, Other)	Win2K service Pack 3
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	To the PPS and then with SENs
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	MathCAD is a widely used software (comparable to Microsoft excel), it is easy to use because it displays calculations and output in a "book" like manner. Known errors, documentation, and templates are found off their website.
Design and analysis work being performed using this application	Every calculation for the WTP can be created using this software.

Survey Information Prepared By:

Name: Ronald Graves
Organization: Bechtel National, Inc.
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Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 509-371-3744
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Mathematica
Function of code	Mathematical tool
*Area of applicability - see above	Mechanical Systems, Safety Analysis
Application (what projects/facilities at the site/lab)	Used as a mathematical tool for WTP safety analysis.
Code developer and/or sponsor	Ronald Graves
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Wolfram Research.
Documentation available	Documentation is in a book, which came with the product. Help files are accessible when the program is running.
Code Platform (Workstation, PC-based, Mainframe)	PC (Compaq W6000)
Operating System (Windows #, DOS, Other)	Windows 2000, SP3
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Repeated use, code of choice
How are error and user questions reported?	Wolfram Research
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Running the code requires training and knowledge in mathematics. Also, some features require Lisp programming knowledge.
Design and analysis work being performed using this application	The code is being used as a tool to solve safety analysis related problems.

Survey Information Prepared By:

Name: Steven M. Henry
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	MCnP 4C
Function of code	Criticality and dose rate determination
*Area of applicability - see above	Criticality and shielding analysis
Application (what projects/facilities at the site/lab)	WTP
Code developer and/or sponsor	LANL
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	ORNL
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	PC-Based
Operating System (Windows #, DOS, Other)	DOS program but runs under windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>Q</u>)	Routine
How are error and user questions reported?	Software Error Notification Form
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	No problems`
Design and analysis work being performed using this application	Criticality and dose rate analysis

Survey Information Prepared By:

Name: Jack Shen
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	B31.3/ME101 Release N8
Function of code	Process Tool for pipe stress analysis
*Area of applicability - see above	<u>M</u> (Piping Systems)
Application (what projects/facilities at the site/lab)	RPP-WTP Project, all Facilities
Code developer and/or sponsor	Milton Dong
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	<u>P</u>
Current Owner/Vendor and technical support provider	Milton Dong/Mo Khlafallah
Documentation available	QAS Documentation
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows NT and Windows 2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	<u>R</u>
How are error and user questions reported?	If an error is discovered, the user immediately notices the Project Program Sponsor (PPS). The PPS analyzes software application errors and classifies them. User notification of Class 1 errors is optional, at the PPS's discretion. User notification is required for Class 2 and Class 3 errors. After being informed of application errors, the PPS prepares a Software Error Notification and e-mail notification of the error to IT Change Manager. Upon receiving a software error notification from the PPS or IT Change manager, the user determines if past or present

	<p>activities are impacted or affected by the error and take appropriate action to avoid use of results with the error present.</p>
<p>Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.</p>	<p>ME101 performs both static and dynamic piping stress analyses. It includes the analyses of weight, thermal expansion, the combined weight load and thermal expansion with non-linear effect, thermal stratification, wind (UBC or ASCE standards), static seismic, uniform response spectrum method, the independent support motion, and water hammer with linear or non-linear elements. Harmonic analysis is available to evaluate steady-state vibrations. Bechtel's non-linear energy absorber may be used to reduce dynamic response. All load cases can be evaluated in a single computer run, and the results can be combined easily according to project criteria to generate support and hanger guidance and to perform stress checks. ME101 provides standard material property tables and a standard AISC table, and has code compliance checks for the ANSI B31 Codes, ASME Section III Codes, and the British Code.</p> <p>The ME101 input is simple and user-friendly. On Windows 95/NT platforms, a windows-based intuitive and easy-to-use GUI interface is provided through the ME101PRE module. State-of-the-art numerical techniques and analytical methods are incorporated to provide the best solutions with fast turnaround time. On Windows 95/NT platforms, all graphics can be exported to any Microsoft Office program such as Word. Either a simple linedraw mode or a more realistic solid model mode can be selected to view the system, and animation of mode shapes or deformation is available as well. Response from time history analysis can be plotted in the form of time history traces.</p> <p>Based on the staffing curve in Pipe Stress Group, we may need ME101 software licenses up to 15 – 20 copies to perform the piping stress analysis for this project.</p>
<p>Design and analysis work being performed using this application</p>	<p>Pipe stress analysis and code compliance</p>

Survey Information Prepared By:

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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Code: B31.3 Application name and version ME150 Version 19 ME152 Version 11 ME153 Version 11 ME149 Version 6 ME035 Version 16
Function of code	Process Tool for pipe support design
*Area of applicability - see above	<u>M</u> (Piping Systems)
Application (what projects/facilities at the site/lab)	RPP-WTP Project, all Facilities
Code developer and/or sponsor	Harendra Shah
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	<u>P</u>
Current Owner/Vendor and technical support provider	Harendra Shah /Mo Khlafallah
Documentation available	QAS Documentation
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows NT and Windows 2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	<u>R</u>
How are error and user questions reported?	If an error is discovered, the user immediately notices the Project Program Sponsor (PPS). The PPS analyzes software application errors and classifies them. User notification of Class 1 errors is optional, at the PPS's discretion. User notification is required for Class 2 and Class 3 errors. After being informed

	<p>of application errors, the PPS prepares a Software Error Notification and e-mail notification of the error to IT Change Manager. Upon receiving a software error notification from the PPS or IT Change manager, the user determines if past or present activities are impacted or affected by the error and take appropriate action to avoid use of results with the error present.</p>
<p>Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.</p>	<p>ME150 is a suite of unique integrated computer programs for pipe support engineering work that increases productivity, consistency and quality while reducing engineering and construction cost. The family of programs effectively addresses technical, industry and documentation issues, and eliminates the time consuming manual calculation, expensive engineering judgment and "cookbook" approach, while reducing material and construction cost, and unnecessary repairs. The results provide the margin factors of various pipe support elements, thus assist in making sound engineering decisions in a timely fashion, and reduce the need for re-calculation. ME150 family of programs contains five PC-based computer programs. Together with Windows OpenGL graphic, this program provides us more power and versatility than the traditional mainframe systems. The Windows 95/NT version utilizes a graphical user interface to ease our work as we have expected from today's computer technology. ME150 family of programs has user's friendly interface, flexibility and simplicity, and provides consistency and integration.</p>
<p>Design and analysis work being performed using this application</p>	<p>Pipe support design and code compliance</p>

Survey Information Prepared By:

Name: Steven M. Henry
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Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Micro Shield 6.01
Function of code	Calculate Dose rate
*Area of applicability - see above	Shielding Analysis
Application (what projects/facilities at the site/lab)	WTP
Code developer and/or sponsor	Grove Engineering
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	BNI/Grove Engineering
Documentation available	Yes
Code Platform (Workstation, PC-based, Mainframe)	PC-Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Software Error Notification Form
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	No problems
Design and analysis work being performed using this application	Shielding Analysis

Survey Information Prepared By:

Name: Sharok Khabir
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 371-3628/skhabir@bechtel.com
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Jet Impingement Code (NE155)
Function of code	Jet Impingement forces and zone
*Area of applicability - see above	Mechanical Systems
Application (what projects/facilities at the site/lab)	All
Code developer and/or sponsor	Bechtel
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	None
Current Owner/Vendor and technical support provider	Bechtel
Documentation available	User Manual (on hand per Corporate procedure for SCP's.)
Code Platform (Workstation, PC-based, Mainframe)	PC - Based
Operating System (Windows #, DOS, Other)	Window/DOS
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	Errors are to be handled per Project procedures 24590-WTP-GPP-IT-001, <i>Use of Quality Affecting Software Applications</i> .
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Working knowledge of heat transfer and fluid flow required. About 4 hours are required to familiarize a user with the code.
Design and analysis work being performed using this application	None at this time. Plans are to use the software for Hazard topography final implementation and completion.

Survey Information Prepared By:

Name: Tim Eichhorn
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: (509) 371-3679/tpeichho@bechtel.com / (509) 371-3507
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Pipe-Flo Compressible Version 7.0
Function of code	Calculate flow parameters in compressible fluid flow piping networks.
*Area of applicability - see above	M
Application (what projects/facilities at the site/lab)	WTP Mechanical Systems Richland
Code developer and/or sponsor	PPS - Tim Eichhorn
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	C
Current Owner/Vendor and technical support provider	WTP - Licensee Engineered Software Inc. - technical support provider
Documentation available	24590-WTP-RPT-M-02-002 Rev 2, Test Plan/Report for Pipe-Flo Compressible Version 7.0
Code Platform (Workstation, PC-based, Mainframe)	Windows NT Version 4.0 SP6A workstations: Compaq AP550, Deskpro EN, Evo D500, and AP400 Windows 2000 Version 5.0 SP3 workstations: Compaq Deskpro ENS, AP550, Evo D500, Evo D510, and W6000 Single Processor
Operating System (Windows #, DOS, Other)	Windows NT Version 4.0 SP6 and/or Windows 2000 Version 5.0 SP3
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>Q</u>)	R
How are error and user questions reported?	Errors are reported on screen at local workstation when the program hits an error/interrupt. Questions answered by consultation with another engineer,

	engineering automation, or vendor.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	None
Design and analysis work being performed using this application	Newtonian, compressible, fluid flow through piping systems.

Survey Information Prepared By:

Name: Tim Eichhorn
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: (509) 371-3679/tpeichho@bechtel.com / (509) 371-3507
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	Pipe-Flo Professional Version 7.0
Function of code	Calculate non-compressible flow parameters in fluid flow piping networks.
*Area of applicability - see above	M
Application (what projects/facilities at the site/lab)	WTP Mechanical Systems Richland
Code developer and/or sponsor	PPS - Tim Eichhorn
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	C
Current Owner/Vendor and technical support provider	WTP - Licensee Engineered Software Inc. - technical support provider
Documentation available	24590-WTP-VV-M-01-001 Rev 4, Verification and Validation Report for Pipe-Flo Professional
Code Platform (Workstation, PC-based, Mainframe)	Windows NT Version 4.0 SP6A workstations: Compaq AP500, Deskpro ENS, AP550, Deskpro EN, Evo D500, W6000 single Processor and AP400 Windows 2000 Version 5.0 SP3 workstations: Compaq Deskpro ENS, AP550, Evo D500, Evo D510, and W6000 Single Processor
Operating System (Windows #, DOS, Other)	Windows NT Version 4.0 SP6A and/or Windows 2000 Version 5.0 SP3
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Errors are reported on screen at local workstation when the program hits an error/interrupt. Questions answered by consultation with another engineer,

	engineering automation, or vendor.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Due to the limited number of pumps contained in the software database, engineering judgment must be used when filling out the Mechanical System Data Sheet to start the bid-procurement process.
Design and analysis work being performed using this application	Newtonian, non-compressible, fluid flow through piping systems.

Survey Information Prepared By:

Name: Farhang Ostadan
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 415-768-3734
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	SASSI 2000
Function of code	Analysis of soil-structure interaction
*Area of applicability - see above	C
Application (what projects/facilities at the site/lab)	All Seismic Category I WTP buildings
Code developer and/or sponsor	University of California, Berkeley
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	P
Current Owner/Vendor and technical support provider	University of California, Berkeley
Documentation available	Computer Service Library of Bechtel Corp. in San Francisco, California
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows 95/98/2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	R
How are error and user questions reported?	Report to technical specialist or Computer Service Library of Bechtel Corp. in San Francisco, California
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Specialized program needs experienced user
Design and analysis work being performed using this application	Analysis of soil-structure interaction

Survey Information Prepared By:

Name: Jack Ho
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: (509) 371-3221/jsho@bechtel.com/(509)371-3001
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	EA399 / Setroute Ver. 8.7.1.1
Function of code	Cable, raceway and wiring system
*Area of applicability - see above	Electrical Systems
Application (what projects/facilities at the site/lab)	WTP / All Facilities and Construction Site
Code developer and/or sponsor	Bechtel Information Systems & Technology (IS&T) / Kenneth Hobbs
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	Bechtel Corporation (Owner) and David Kennedy (TechnicaSupport)
Documentation available	Bechtel Software Library
Code Platform (Workstation, PC-based, Mainframe)	Workstation
Operating System (Windows #, DOS, Other)	WIN 2000 Service Pack 3
Frequency of Use (Routine, repeated use, code of choice -R; Occasional - O)	R
How are error and user questions reported?	Error and user questions are reported to Setroute Administrator and Program Sponsor and also forwarded to Setroute Technical Support.
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	An efficient software program to be used on the project. No error and issues has been identified for SR ver. 8.7.1.1.
Design and analysis work being performed using this application	Yes, electrical engineers, designers, project control and construction are using this application.

Survey Information Prepared By:

Name: Farhang Ostadan
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 415-768-3734
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	SHAKE 2000
Function of code	Program for conducting equivalent linear seismic response analyses of horizontally layered soil deposits
*Area of applicability - see above	C
Application (what projects/facilities at the site/lab)	All Seismic Category I WTP buildings
Code developer and/or sponsor	Bechtel
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	P
Current Owner/Vendor and technical support provider	Bechtel
Documentation available	Computer Service Library of Bechtel Corp. in San Francisco, California
Code Platform (Workstation, PC-based, Mainframe)	PC-based
Operating System (Windows #, DOS, Other)	Windows 95/98/2000
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	O
How are error and user questions reported?	Report to technical specialist or the Computer Service Library of Bechtel Corp. in San Francisco, California
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Specialized program needs experienced user
Design and analysis work being performed using this application	Equivalent linear seismic response analyses of horizontally layered soil deposits

Survey Information Prepared By:

Name: Robert Niall Hunt
Organization: Bechtel National, Inc.
Site or Laboratory: River Protection Project - Waste Treatment Plant, Hanford
Address: 2435 Stevens Center Place, Richland WA 99352
Phone/email/facsimile: 371-3314
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

Application is used in the analysis and design of safety class and safety significant structures, systems, and components in the following areas: Civil/Structural/Geotechnical Systems, Mechanical Systems, HVAC, Electrical Systems, Fire Protection Systems, Instrumentation and Control, Other.

For each safety software application identified:

Code/application name and version	WINNupra, Version 2.0
Function of code	Integrated Probabilistic Risk Assessments
*Area of applicability - see above	Other - Reliability Analysis
Application (what projects/facilities at the site/lab)	WTP Operations Risk Assessment
Code developer and/or sponsor	SCIENTECH, Inc.
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Proprietary
Current Owner/Vendor and technical support provider	SCIENTECH, Inc.
Documentation available	User's Manual, V&V Report
Code Platform (Workstation, PC-based, Mainframe)	PC-Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	O
How are error and user questions reported?	There si an error reporting process to SCIENTECH
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	No problems although we do not use all of the functions provided by the code.
Design and analysis work being performed using this application	Reliability analyses (Fault trees) for WTP system configurations

Survey Information Prepared By:

Name: Duratek
Organization: Federal Services
Site or Laboratory: River Protection Project - Waste Treatment and Immobilization Plant, Richland, WA
Address: 345 Hill St, Richland WA
Phone/email/facsimile: 509-376-9942
Principal DOE Organization(s) supported: U.S. Department of Energy, Office of River Protection

Applicability

List the commercial software packages and proprietary software used in the analysis, design, and testing of design for the Waste Treatment and Immobilization Plant (WTP) in Richland, WA.

For each safety software application identified:

Code/application name and version	Fluent/Gambit
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	Fluent
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	Fluent
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Process CFD design of gas flow and heat transfer.

Code/application name and version	Algor
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	Algor
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	Algor
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Structural and seismic analysis of melter and heat transfer of refractory.

Code/application name and version	Flex PDE
Function of code	Finite Element Analysis .
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	Flex PDE
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Flex PDE
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Electrical design for melter electrodes and bus work.

Code/application name and version	LS-DYNA and LS-POST
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	LSTC (Livermore Software Technology Corp.)
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	LSTC (Livermore Software Technology Corp.)
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>Q</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Non Linear stress analysis of melter dam

Code/application name and version	Ansoft Mawell 3-D
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	Ansoft
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	Ansoft
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Analysis of electrical fields for bus work of glass melter.

Code/application name and version	ANSYS
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	ANSYS
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	ANSYS
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Used for structural analysis of glass melter dam and trough.

Code/application name and version	MCNP/ORIGEN
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	Origen
<u>C</u> ommercial, <u>P</u> roprietary, or <u>O</u> ther (explain)	Commercial
Current Owner/Vendor and technical support provider	Origen
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Used for radioactive shielding calculations associated with the waste glass melters..

Code/application name and version	COSMOS
Function of code	Finite Element Analysis
*Area of applicability - see above	Waste Glass Melter Design
Application (what projects/facilities at the site/lab)	River Protection Project Waste Glass Melters
Code developer and/or sponsor	Structural Research & Analysis Corporation (SRAC)
Commercial, Proprietary, or Other (explain)	Commercial
Current Owner/Vendor and technical support provider	Structural Research & Analysis Corporation (SRAC)
Documentation available	Manuals and CDs
Code Platform (Workstation, PC-based, Mainframe)	PC Based
Operating System (Windows #, DOS, Other)	Windows
Frequency of Use (Routine, repeated use, code of choice - <u>R</u> ; Occasional - <u>O</u>)	Occasional
How are error and user questions reported?	E-mail and website
Comments on experience with this computer software, ease of application; documentation provided; known errors or issues.	Good. No issues
Design and analysis work being performed using this application	Used for structural and thermal analysis of the waste glass melters..

**Ohio Field Office
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

2. Survey Information Prepared By

Name(s):	John Saluke_____
Organization(s):	DOE/OH/MCP_____
Site or Laboratory:	Miamisburg Closure Project_____
Address:	500 Capstone Circle, Miamisburg, OH_____
Phone/email/facsimile:	937-865-3747/ <u>john.saluke@ohio.doe.com</u> 937-847-8352_____
Principal DOE organization(s) supported (NNSA, EM, NE, etc.) EM_____	
Date Survey Form Submitted: Jan 14, 2004_____	

3. Design Safety Software

List the commercial software packages used in the analysis and design of safety class and safety significant structures, systems, and components for DOE defense nuclear facilities. Also, list the proprietary software used in the analysis and design of safety class and safety significant structures, systems, and components where the software was used at more than one DOE site. (Note: This question was revised by EM.)

Attach additional sheets if needed.

Area of Applicability	Computer Software Name*
Civil/Structural/Geotechnical Systems	None
Mechanical Systems	None
HVAC	Andover Direct Digital Control Software
Electrical Systems	None
Fire Protection Systems	Silent Knight Software Suite
Instrumentation and Control	None
Others (not included above)	None

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

4. Safety Software Information

For each safety software application identified in Section 3, provide the information requested below. Attachment 1 is provided as an example. For additional assistance, email questions to sqa@eh.doe.gov.

a.	Code name and version	Andover Direct Digital Control Software (installed ~1982-1998)
b.	Function of code	Monitors and controls ventilation system parameters
c.	Application (what projects/facilities at the site/lab)	T Bldg Haz Cat 2 (downgrade to rad facility expected Sep 2004) SW/R Complex Haz Cat 2 (downgrade to rad facility expected March 2004)
d.	Code developer and/or sponsor	Andover Controls
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	P
f.	Current Owner/Vendor and technical support provider	Environmental Temperature Controls Springboro OH
g.	Documentation available	User Manual Drawings for each installation Temperature Control Submittals
h.	Code platform (Workstation, PC-based, Mainframe)	Firmware in controllers Workstations
i.	Operating System (Windows, DOS, other)	Controller - DOS 5 Workstation - Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R: Occasional use – O;)	R
k.	How are error and user questions reported?	Reported to DDC Coordinator and Ventilation System Engineer Resolved by DDC Coordinator and Ventilation System Engineer or Environmental Temperature Control
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Very good experience No errors or issues to report

a.	Code name and version	Silent Knight Software Suite Model 5660. Version 2.2.3
b.	Function of code	Monitors alarm and status signals for the fire detection system. System is linked to central supervising station at Savannah River Site
c.	Application (what projects/facilities at the site/lab)	T Bldg Haz Cat 2 (downgrade to rad facility expected Sep 2004) SW/R Complex Haz Cat 2 (downgrade to rad facility expected March 2004)
d.	Code developer and/or sponsor	Silent Knight
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	P
f.	Current Owner/Vendor and technical support provider	Silent Knight
g.	Documentation available	User Manual Drawings for each installation
h.	Code platform (Workstation, PC-based, Mainframe)	Firmware in controllers Workstations
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?	Reported to Fire Protection Supervisor Resolved by Fire Protection Supervisor or Silent Knight
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Moderate ease of application

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?

MD-10541

5.2 Document title(s) and report number(s):

MD-10541, Software Quality Assurance Plan for Mound Exit Project, Issue 1

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

<u>Yes/No/Uncertain</u>	<u>Standard/Rule/DOE or Other Directive</u>
Yes	a. 10 CFR 830, Subpart A, Quality Assurance Requirements
	b. ASME NQA-1a-1999, NQA-1a-2000 (Part 2.7); or predecessor (indicate which)
	c. ANSI/ISO/ASQ Q9001-2000, Quality Management Systems – Requirements, or Related Standards
Yes	d. DOE Order 414.1, <i>Quality Assurance</i>
	e. DOE Order 420.1, <i>Facility Safety</i>
Yes	f. DOE Order 200.1, <i>Information Management Program</i>
	g. DOE Guide 200.1-1, <i>Department of Energy Software Engineering Methodology</i>
	h. DOE Guide 414.1-1, Assessment Guide for QA
	i. ANSI/ANS-10.4-1987, <i>Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry</i>
Yes DOE N 203.1	j. Other DOE, National, International, or Industry Standards, Requirements, or Guidelines (Please identify)

5.4 How do you apply QA procedures to safety software?

5.5 How do you train users on safety software?

Vendor training provided to users. Review of User Manual by system operators.

Attachment 1. EXAMPLE OF SAFETY SOFTWARE INFORMATION

The following input is provided to guide survey respondents on the level of detail for completing the Section 4 survey information

a.	Code name and version	STRUCTUREcode; Version 2003.1
b.	Function of code	STRUCTUREcode is used in the structural analysis and design of nuclear facilities and related structures.
c.	Application (what projects/facilities at the site/lab)	The software has been used in the analysis of many Hazard Category 2 and 3 facilities at the Site. It was used in the design of Facility A, and the upgrades to Facility B.
d.	Code developer and/or sponsor	XYZ Structural Safety Associates. Address: Email: Phone:
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	P; Site-license
f.	Current Owner/Vendor and technical support provider	Same as (d.) above; Technical Support is included and is part of Site license fee.
g.	Documentation available	<ol style="list-style-type: none"> 1. User's Manual 2. Software Model Description 3. Software Requirements Specification 4. Test Problems- Input and Output files
h.	Code platform (Workstation, PC-based, Mainframe)	The software runs on a PC-based platform.
i.	Operating System (Windows, DOS, other)	WINDOWS-NT, -XP, -2000 are supported.
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k.	How are error and user questions reported?	The vendor reports updates and sends out error notices via email. A website exists for reporting software problems and posing questions on use of the code. Response is within 24 hours of the request.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	<p>STRUCTUREcode requires a formal training class (given by vendor) and completion of several test studies before a user is qualified. Most users are structural engineers at the BS level.</p> <p>Documentation is upgraded with each version update.</p> <p>Experience with this software has been good and relatively few (minor) errors have been identified in five years of use.</p>

**Portsmouth/Paducah Field Office
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

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

1. Introduction

The Department's Implementation Plan for Software Quality Assurance (SQA) that was developed in response to Defense Nuclear Facilities Safety Board Recommendation 2002-01, *Quality Assurance for Safety-Related Software*, includes a commitment (4.2.1.5) to conduct a survey of design codes currently in use to determine if any should be included as part of the toolbox codes. The toolbox codes are a small number of standard computer models (codes) supporting DOE safety analysis that have widespread use and appropriate qualification. Generally, the toolbox codes will have been developed and maintained within the DOE complex. However, the toolbox may also include commercial proprietary design codes where additional software quality assurance controls are appropriate.

The scope of the survey required by commitment 4.2.1.5 includes the identification of safety software currently use to support the analysis and design of defense nuclear facilities including structures, systems and components, as well electrical and control system design. Both commercial off-the-shelf software and DOE/contractor developed software should be included in the survey. Often the same software is used for both safety and non-safety, and nuclear and non-nuclear facility design. Therefore, care should be taken in identifying the safety software.

DOE field elements, including contractors and sub-contractors, as appropriate, should provide the information in the attached survey forms. The Office of Environment, Safety and Health (EH) will review the information submitted through this survey and determine if additional safety software should be included as toolbox codes.

In addition to the safety software information requested in this survey, EH would also like to receive information regarding your organization's SQA programs, procedures and training. This information should be entered in Section 5 of the survey form. This information will assist EH in the preparation of DOE SQA directives, which are also an Implementation Plan deliverable. However, this Section 5 of the survey form is optional.

Please submit completed survey information to Chip Lagdon, EH-31, using the design software survey email address sqaip@eh.doe.gov by **October 31, 2003**.

2. Survey Information Prepared By

Name(s):	Ernie Elliott
Organization(s):	Nuclear Criticality Safety
Site or Laboratory:	East Tennessee Technology Park
Address:	Highway 58, Gallaher Rd. P.O. Box 4699 Oak Ridge TN 37831
Phone/email/facsimile	Ph: 865-576-5107 Fx: 865-574-8490 Elliottep@bechteljacobs.org
Principal DOE organization(s) supported (NNSA, EM, NE, etc.)	EM
Date Survey Form Submitted	12/31/03

3. 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	
Mechanical Systems	
HVAC	
Electrical Systems	
Fire Protection Systems	
Instrumentation and Control	
Others (not included above)	MCNP 4c2 SCALE 4.4a

* Enter "None" if no safety software in applicable area

4. Safety Software Information

For each safety software application identified in Section 3, provide the information requested below. Attachment 1 is provided as an example. For additional assistance email questions to sqa@eh.doe.gov

a.	Code name and version	MCNP 4c2
b.	Function of code	Particle and photon transport for Criticality Accident Alarm System (CAAS) detector placement. Can also be used for keff calculations.
c.	Application (what projects/facilities at the site/lab)	Used for facilities at ORR, Pad, Ports which have a CAAS or when Portable CAAS is required.
d.	Code developer and/or sponsor	Radiation Shielding Information Computational Center (RSICC) – Sponsor LANL – Developer
e.	Commercial, Proprietary or Other (Explain)	P – Company or user license
f.	Current Owner/Vendor and technical support provider	RSICC – some support included in license fee, other support can be purchased from LANL
g.	Documentation available	User's manual, test problems
h.	Code platform (Workstation, PC-based, Mainframe)	PC-based
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?	RSICC Newsletters, RSICC Website, direct contact with RSICC, LANL website
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Requires training, combination of formal and apprenticeship, documentation provided by RSICC. Widely used, good experience base

**Richland Operations Office
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

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

1. Introduction

The Department's Implementation Plan for Software Quality Assurance (SQA) that was developed in response to Defense Nuclear Facilities Safety Board Recommendation 2002-01, *Quality Assurance for Safety-Related Software*, includes a commitment (4.2.1.5) to conduct a survey of design codes currently in use to determine if any should be included as part of the toolbox codes. The toolbox codes are a small number of standard computer models (codes) supporting DOE safety analysis that have widespread use and appropriate qualification. Generally, the toolbox codes will have been developed and maintained within the DOE complex. However, the toolbox may also include commercial proprietary design codes where additional software quality assurance controls are appropriate.

The scope of the survey required by commitment 4.2.1.5 includes the identification of safety software currently use to support the analysis and design of defense nuclear facilities including structures, systems and components, as well electrical and control system design. Both commercial off-the-shelf software and DOE/contractor developed software should be included in the survey. Often the same software is used for both safety and non-safety, and nuclear and non-nuclear facility design. Therefore, care should be taken in identifying the safety software.

DOE field elements, including contractors and sub-contractors, as appropriate, should provide the information in the attached survey forms. The Office of Environment, Safety and Health (EH) will review the information submitted through this survey and determine if additional safety software should be included as toolbox codes.

In addition to the safety software information requested in this survey, EH would also like to receive information regarding your organization's SQA programs, procedures and training. This information should be entered in Section 5 of the survey form. This information will assist EH in the preparation of DOE SQA directives, which are also an Implementation Plan deliverable. However, this Section 5 of the survey form is optional.

Please submit completed survey information to Chip Lagdon, EH-31, using the design software survey email address sqa@eh.doe.gov by **October 31, 2003**.

2. Survey Information Prepared By

Name(s):	R. Scott Spencer
Organization(s):	Fluor Hanford POC/Central Engineering
Site or Laboratory:	Fluor Hanford
Address:	MS: H8-60 Richland, WA 99352
Phone/email/facsimile:	509-376-4980 / robert_s_scott_spencer@arl.gov / 509-376-5586
Principal DOE organization(s) supported (NNSA, EM) EM	
Date Survey Form Submitted:	1/9/2004

3. 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	ABAQUS, ANSYS, RISA3D, SASSI
	SAP2000 Plus, SAP Nonlinear, WaterCAD
Mechanical Systems	AUTOPIPE
	Pipe-Flo
HVAC	None
Electrical Systems	PTW
Fire Protection Systems	HASS
Instrumentation and Control	None
Others (not included above)	VAM3DF
	MATLAB

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

4. Safety Software Information

For each safety software application identified in Section 3, provide the information requested below. Attachment 1 is provided as an example. For additional assistance, email questions to sqaip@eh.doe.gov.

a.	Code name and version	VAM3DF Version 1.0
b.	Function of code	Nuclear Engineering – 3D Flow and Transport
c.	Application (what projects/facilities at the site/lab)	Integrated Disposal Facility (IDF) Performance Assessment for CH2MHill Hanford Group (CHG). Also been used extensively for Hanford Solid Waste Performance Assessment.
d.	Code developer and/or sponsor	HydroGeoLogic, Inc.
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	HydroGeoLogic, Inc.
g.	Documentation available	Vendor documentation and V&V.
h.	Code platform (Workstation, PC-based, Mainframe)	PC-based
i.	Operating System (Windows, DOS, other)	Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	No known errors; documentation could have been much better.

Fluor Hanford Site

a.	Code name and version	ABAQUS Version 6.3
b.	Function of code	Civil/Structural Engineering – Nonlinear/advanced linear finite element analysis.
c.	Application (what projects/facilities at the site/lab)	K-Basins, CSB
d.	Code developer and/or sponsor	ABAQUS, Inc. 1080 Main Street Pawtucket, Rhode Island 02860-4847
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	ABAQUS, Inc. 1080 Main Street Pawtucket, Rhode Island 02860-4847
g.	Documentation available	Users Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows 2000
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	No Current License
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Experienced Users Only

Fluor Hanford Site

a.	Code name and version	SASSI (ACS-SASSI-C) Version 1.1
b.	Function of code	Civil/Structural Engineering – Soil structure interaction finite element analysis.
c.	Application (what projects/facilities at the site/lab)	MWTF
d.	Code developer and/or sponsor	Advanced Computational Software
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Advanced Computational Software
g.	Documentation available	Users Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows NT
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Last Used 1999
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Experienced Users Only

Fluor Hanford Site

a.	Code name and version	ANSYS Version 7.1
b.	Function of code	Civil/Structural Engineering – General service finite element analysis.
c.	Application (what projects/facilities at the site/lab)	Widespread Use at Hanford, most Hanford facilities
d.	Code developer and/or sponsor	ANSYS, Inc. Southpointe 275 Technology Drive Canonsburg, PA 15317.
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	ANSYS, Inc. Southpointe 275 Technology Drive Canonsburg, PA 15317
g.	Documentation available	Users Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows XP
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, "134.200.0960 Control of Engineering Software"
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Difficult to use

Fluor Hanford Site

a.	Code name and version	SAP2000 Plus Version 6.99
b.	Function of code	Civil/Structural Engineering – General service finite element analysis.
c.	Application (what projects/facilities at the site/lab)	Tank Farms, PFP
d.	Code developer and/or sponsor	Computers & Structures, Inc. 1995 University Avenue, Suite 540 Berkeley, CA 94704
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Computers & Structures, Inc. 1995 University Avenue, Suite 540 Berkeley, CA 94704
g.	Documentation available	Users Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	Workstation
i.	Operating System (Windows, DOS, other)	Windows XP PRO SP1
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Rare
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, "134.200.0960 Control of Engineering Software"
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	User Friendly

Fluor Hanford Site

a.	Code name and version	SAP Nonlinear Version 8.2.3
b.	Function of code	Civil/Structural Engineering – General service finite element analysis, includes nonlinear capabilities.
c.	Application (what projects/facilities at the site/lab)	Tank Farms, PFP
d.	Code developer and/or sponsor	Computers & Structures, Inc. 1995 University Avenue, Suite 540 Berkeley, CA 94704
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Computers & Structures, Inc. 1995 University Avenue, Suite 540 Berkeley, CA 94704
g.	Documentation available	Users Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	Workstation
i.	Operating System (Windows, DOS, other)	Windows XP PRO SP1
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	User Friendly

Fluor Hanford Site

a.	Code name and version	WaterCAD Version 6.0
b.	Function of code	Civil/Structural Engineering – Water distribution analysis.
c.	Application (what projects/facilities at the site/lab)	Hanford Site Water Utilities
d.	Code developer and/or sponsor	Haestad Methods 37 Brookside Road Waterbury, CT 06708
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Haestad Methods 37 Brookside Road Waterbury, CT 06708
g.	Documentation available	User Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows XP
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Moderately Difficult

Fluor Hanford Site

a.	Code name and version	RISA3D Version 4.5
b.	Function of code	Civil/Structural Engineering – Small scale finite element analysis
c.	Application (what projects/facilities at the site/lab)	Widespread Use at Hanford, most Hanford Facilities
d.	Code developer and/or sponsor	RISA Technologies 26632 Towne Centre Drive, Suite 210 Foothill Ranch, CA 92610
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	RISA Technologies 26632 Towne Centre Drive, Suite 210 Foothill Ranch, CA 92610
g.	Documentation available	Users Manual and V&V
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows XP
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	User Friendly

Fluor Hanford Site

a.	Code name and version	PTW Version 4.5.11
b.	Function of code	Electrical Engineering – Power system analysis
c.	Application (what projects/facilities at the site/lab)	W-211, W-314, L-325, SNF, PFP, CWC, AP/AW/SY Tank Farm, etc.
d.	Code developer and/or sponsor	SKM SYSTEMS ANALYSIS P.O. Box 3376 MANHATTAN BEACH, CA 90266
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	SKM SYSTEMS ANALYSIS P.O. Box 3376 MANHATTAN BEACH, CA 90266
g.	Documentation available	Yes- V&V package per 134.200.0960
h.	Code platform (Workstation, PC-based, Mainframe)	PC Based, used with network license
i.	Operating System (Windows, DOS, other)	Windows XP
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, "134.200.0960 Control of Engineering Software"
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	No known problems, documentation adequate, this is the Code of choice for all power systems studies

Fluor Hanford Site

a.	Code name and version	AUTOPIPE Version 6.2
b.	Function of code	Mechanical Engineering – Piping system stress analysis
c.	Application (what projects/facilities at the site/lab)	Tank Farm Projects: W-211 and W-314, SNF KE Basin A16 Project
d.	Code developer and/or sponsor	Bentley 685 Stockton Drive Exton, PA 19341
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Bentley 685 Stockton Drive Exton, PA 19341
g.	Documentation available	User manuals and V&V
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;)	Routine
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”. FFS is a subscriber of QA Maintenance Program and we receive regular error reports.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	User friendly.

Fluor Hanford Site

a.	Code name and version	HASS Version 7.5 R 0
b.	Function of code	Mechanical Engineering/Fire Protection – Fire Protection system (sprinkler system) analysis.
c.	Application (what projects/facilities at the site/lab)	CWC Sprinkler System Upgrades, Building 2402, 2403, and 2404.
d.	Code developer and/or sponsor	HRS Systems, Inc.
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	HRS Systems, Inc.
g.	Documentation available	User manuals and V&V.
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;)	Program is used as required. It has been used 3 times in the past four years.
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	User friendly, program is updated yearly by HRS Systems, Inc. Any errors noted in the program are corrected by new CD sent out by HRS Systems, Inc. The new programs are verified by FFS prior to use.

Fluor Hanford Site

a.	Code name and version	Pipe-Flo Version 6.0
b.	Function of code	Mechancial Engineering – Pipe flow analysis.
c.	Application (what projects/facilities at the site/lab)	SNF KE Basin Project A-16
d.	Code developer and/or sponsor	Engineered Software, Inc. 4531 Intelco Loop SE Lacey, WA 98503-5941
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Engineered Software, Inc. 4531 Intelco Loop SE Lacey, WA 98503-5941
g.	Documentation available	User manuals and V&V.
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;)	Occasional
k.	How are error and user questions reported?	Follows Fluor Federal Services procedure, “134.200.0960 Control of Engineering Software”
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	User friendly.

Fluor Hanford Site

a.	Code name and version	MATLAB Version 6.5.1 Partial Differential Equations Toolbox Version 1.0.4
b.	Function of code	Process Engineering – Analysis of differential equations.
c.	Application (what projects/facilities at the site/lab)	Spent Nuclear Fuel Project (K Basins, CVDF, CSB facilities)
d.	Code developer and/or sponsor	The MathWorks, Inc. 3 Apple Hill Drive Natick, MA 01760-2098
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	The MathWorks, Inc. 3 Apple Hill Drive Natick, MA 01760-2098 service@mathworks.com 508-647-7000 press 4
g.	Documentation available	User Manuals (external interface guide, graphics, etc)
h.	Code platform (Workstation, PC-based, Mainframe)	PC-Based
i.	Operating System (Windows, DOS, other)	Windows
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine (and code of choice)
k.	How are error and user questions reported?	Any user questions are reported to and answered from MATLAB technical personnel.
k.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	13 years experience with MATLAB. No issues with MATLAB experienced so far. All MATLAB documentation calculations checked with other sources.

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):

HNF-MP-599 "Quality Assurance Program Description"

HNF-RD-10768 "Computer Software Requirements"

HNF-PRO-309 "Computer Software Management"

HNF-RD-1819 "PHMC Engineering Requirements"

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

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

- 5.3 How do you apply QA procedures to safety software? The scope of HNF-PRO-309 applies to software used to support safety-class and safety-significant SSCs, and so applies to safety software by definition. HNF-RD-1819 software requirements applies to software used for design and analysis of configuration baseline SSCs of which safety-class and safety-significant SSCs are a part of. HNF-RD-1819 requires use of HNF-PRO-309 for software used in design and analysis of configuration baseline SSCs.
- 5.4 How do you train users on safety software? Different training methods are used depending on the software and usage. Vendor provided training classes are utilized on complex packages. Vendor trained personnel are then utilized as an information source for other staff on site. In some cases, tutorials and user guides provided with the applications are utilized by engineering staff to learn the software. Software developed "in-house" is usually provided with online or classroom training, with support provided by the developer.

**Rocky Flats Field Office
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

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

1. Survey Information Prepared By

Name(s):	<u>Doyle Gillespie</u>
Organization(s):	<u>Kaiser-Hill Company, LLC</u>
Site or Laboratory:	<u>Rocky Flats Environmental Technology Site</u>
Address:	<u>10808 Highway 93, Golden, CO 80403-8200</u>
Phone/email/facsimile:	<u>303-966-2413/Doyle.Gillespie@rfets.gov/303-966-3407</u>
Principal DOE organization(s) supported (NNSA, EM, NE, etc.) <u>EM</u>	
Date Survey Form Submitted: <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 1 is provided as an example. For additional assistance, email questions to 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.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (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, Assessment Guide for QA
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
Software Quality Assurance Survey
Commitment
No. 4.2.1.5**

2. Survey Information Prepared By

Name(s):	Keith Morrell
Organization(s):	WSRC
Site or Laboratory:	SRS
Address:	730-4B Room 3091 Aiken, SC 29808
Phone/email/facsimile:	803-952-8101 keith.morrell@srs.gov
Principal DOE organization(s) supported (NNSA, EM)	
Date Survey Form Submitted: 10/31/03	

3. Design and Analysis 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	GTStrudl, Shake91, SASSI, SRPP, ABAQUS
Mechanical Systems	ANSYS, Autopipe Plus, Type 1 Tank Top Load, Type II, III & IIIA Tank Top Load, MCS/THERMAL, ABAQUS
HVAC	None
Electrical Systems	PDMS, ETAP
Fire Protection Systems	None
Instrumentation and Control	None
Others (not included above)	VERSE-LC

- Enter "None" if no safety software is applicable the area.

4. Design & Analysis Safety Software Information

a.	Code name and version	GTStrudl Version 26
b.	Function of code	Finite Element Code for analysis and design of structures.
c.	Application (what projects/facilities at the site/lab)	Tank Farm tank top structures. TEF interior steel structures
d.	Code developer and/or sponsor	Georgia Institute of Technology – Computer Aided Structural Engineering Laboratory
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Georgia Institute of Technology – Computer Aided Structural Engineering Laboratory
g.	Documentation available	User Documentation.
h.	Code platform (Workstation, PC-based, Mainframe)	PC
i.	Operating System (Windows, DOS, other)	Windows 2000 and later
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Contact with GT through the PE&CD Software library.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Excellent.

Design & Analysis Safety Software Information

a.	Code name and version	SHAKE91
b.	Function of code	Establish soil behavior under the action of seismic motion. Used a basis for input to other programs such as SASSI.
c.	Application (what projects/facilities at the site/lab)	Tank Farm underground tanks. TEF Process Building, KAMS Program.
d.	Code developer and/or sponsor	University of California
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	University of California
g.	Documentation available	User Documentation.
h.	Code platform (Workstation, PC-based, Mainframe)	PC, WorkStation and Mainframe
i.	Operating System (Windows, DOS, other)	Windows NT and later
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Contact with University of California through the PE&CD Software library.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Code requires expert knowledge in soil-structure interaction analysis. Code does not have GUI.

Design & Analysis Safety Software Information

a.	Code name and version	SASSI 2000
b.	Function of code	Finite Element Code for the soil-structure interaction of surface and embedded structures.
c.	Application (what projects/facilities at the site/lab)	Tank Farm underground tanks. TEF Process Building, KAMS Program.
d.	Code developer and/or sponsor	University of California
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	University of California
g.	Documentation available	User Documentation.
h.	Code platform (Workstation, PC-based, Mainframe)	PC, WorkStation and Mainframe
i.	Operating System (Windows, DOS, other)	Windows NT and later
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Contact with University of California through the PE&CD Software library.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Code requires expert knowledge in soil-structure interaction analysis. Code does not have GUI.

Design & Analysis Safety Software Information

a.	Code name and version	SRPP
b.	Function of code	Develop seismic time histories whose response spectra match a given design response spectrum.
c.	Application (what projects/facilities at the site/lab)	Tank Farm underground tanks. TEF Process Building, KAMS Program.
d.	Code developer and/or sponsor	University South Carolina
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Owned by DOE Developed through SCURF funds.
f.	Current Owner/Vendor and technical support provider	DOE Technical support by WSRC PE&CD Structural Mechanics Section
g.	Documentation available	User Documentation.
h.	Code platform (Workstation, PC-based, Mainframe)	PC,
i.	Operating System (Windows, DOS, other)	Windows NT and later
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Contact with WSRC Structural Mechanics Department.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	This code will be retired within the next two years since criteria for enveloping response spectra will be changed with the release of the governing ASCE Standard.

Design & Analysis Safety Software Information

a.	Code name and version	ANSYS/Mechanical, versions 5.7, 6.0, 6.1, 7.0
b.	Function of code	Structural analysis and design of nuclear facility systems, structure and components.
c.	Application (what projects/facilities at the site/lab)	The software has been used extensively in the evaluation of many Hazard Category 2 and 3 systems, structures and components at the Site. Examples include the 3013 storage container welds, 3013 storage racks, and TEF module tops.
d.	Code developer and/or sponsor	ANSYS, Inc. Southpointe 275 Technology Drive Canonsburg, PA, 15317 Ansysinfo@ansys.com
e.	Commercial, Proprietary or Other (Explain)	P, Controlled license access (managed by FlexLM)
f.	Current Owner/Vendor and technical support provider	Mallett Technology 4601 Creekstone Drive, Suite 112 Durham, NC 27703 919/474-9222
g.	Documentation available	User's Manual, Verification Manual,
h.	Code platform (Workstation, PC-based, Mainframe)	Two platforms are used at SRS: Sun Work Station and PC-based
i.	Operating System (Windows, DOS, other)	SUN UltraSPARC/Solaris Windows NT, 98 & 2000
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	The vendor reports Code updates. The Code developer sends out error notices via email.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Program benefits from ease of use for routine evaluations typical at SRS. Complex evaluations require formal training for advanced users.

Design & Analysis Safety Software Information

a.	Code name and version	Type II, III, & IIIA Tank Top Load Program, Version I Type I Tank Top Load Program, Version 0
b.	Function of code	To maintain the structural integrity of the Types I, II, III & IIIA Tanks, these two Programs evaluate the reinforced concrete tank tops for tank top loads (track tank top loads and evaluate changes in these loads).
c.	Application (what projects/facilities at the site/lab)	The Type I, II, III, & IIIA Tanks in F and H Areas.
d.	Code developer and/or sponsor	Structural Mechanics Wade Faires 730-1B/2174
e.	Commercial, Proprietary or Other (Explain)	Other – Used to evaluate the tank top loads (tracks loads and evaluate changes) for the Type I, II, III & IIIA Tanks in F and H Areas.
f.	Current Owner/Vendor and technical support provider	Same as “d.”
g.	Documentation available	Software Quality Assurance Plan, Validation Package and User Manual (with test problems). No formal training is required. User friendly.
h.	Code platform (Workstation, PC-based, Mainframe)	PC Based
i.	Operating System (Windows, DOS, other)	WINDOWS-98, NT, & 2000 are supported.
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Routine
k.	How are error and user questions reported?	Software Error Notice (SEN) Forms are used to report errors and are sent out via email. A website exists for reporting software problems and posing questions on use of the code. Response is within 24 hours of the request.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	The two programs enable tank top loads to be tracked and changes (adds/deletes) evaluated in a timely and efficient manner. No errors have been reported or issues identified.

Design & Analysis Safety Software Information

a.	Code name and version	PDMS - Plant Data Management System
b.	Function of code	Track Electrical Components: cable routing and conduit & tray percent fills and their weights per ft.
c.	Application (what projects/facilities at the site/lab)	All site areas that have opt to use it.
d.	Code developer and/or sponsor	Cygna Energy Services (Glenn Smith and Tim Fay)
e.	<u>C</u> ommercial, <u>P</u> roprietary or <u>O</u> ther (Explain)	Commercial (then made client specific for SRS use)
f.	Current Owner/Vendor and technical support provider	Cygna Energy Services
g.	Documentation available	Validation Reports, Test Reports/Cases, Topology, User Guide(s) and other release documentation.
h.	Code platform (Workstation, PC-based, Mainframe)	UNIX server with Windows 2000 client (minimum)
i.	Operating System (Windows, DOS, other)	Windows 2000
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	Daily routine functions
k.	How are error and user questions reported?	Email to SRS Authority then to Vendor through SRS error handle process.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Used in all phases of SRS Projects. Design, construction, operations and maintenance. Large user base. Living database & documentation. Learning curve = 10-20 hands-on-hours.

Design & Analysis Safety Software Information

a.	Code name and version	ETAP 3.0.1N/4.7N/4.7.4N
b.	Function of code	Electrical analysis and calculation
c.	Application (what projects/facilities at the site/lab)	Any/all projects and facilities
d.	Code developer and/or sponsor	Operations Technology, Inc. (OTI)
e.	Commercial, Proprietary or Other (Explain)	Commercial software but proprietary code
f.	Current Owner/Vendor and technical support provider	BSRI/OTI
g.	Documentation available	Manuals test cases and error notification
h.	Code platform (Workstation, PC-based, Mainframe)	PC Workstation stand alone
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?	Notification system from vendor (OTI) to BSRI Software Library, then to users from BSRI Software Library.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Very good quality product

Design & Analysis Safety Software Information

a.	Code name and version	AutoPIPE Version 6.20.09
b.	Function of code	AutoPIPE is used for the structural analysis of piping systems.
c.	Application (what projects/facilities at the site/lab)	General site application used for all functional classifications (GS,PS,SS,SC) and performance categories (PC-0 thru PC-4) as necessary.
d.	Code developer and/or sponsor	Bentley Address: 1600 Riviera Ave., Suite 300 Walnut Creek, CA 94596 Phone: 925-933-2525
e.	Commercial, Proprietary or Other (Explain)	P, Site licensed (17 users)
f.	Current Owner/Vendor and technical support provider	Same as (d) above; Technical Support is included and is part of Site license fee.
g.	Documentation available	User Manual (computer based) Initial Software Verification Software Validation Report Microcomputer Application Control Form and Software Revision Description User Software Verification Instructions
h.	Code platform (Workstation, PC-based, Mainframe)	PC-Based
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?	Critical errors are by phone and email within 24 hr of confirmation. Vendor reports updates and sends out error notices via email on a monthly basis. The vendor can be contacted by phone for immediate response. A website exists for reporting software problems and posing questions on use of the code. Response is within 24 hours of the request.

Design & Analysis Safety Software Information

a.	Code name and version	ABAQUS, Version 5.8
b.	Function of code	Structural and heat conduction analyses
c.	Application (what projects/facilities at the site/lab)	Structural analyses of Type B radioactive material packages such as 9975, SAFKEG, and 5320.
d.	Code developer and/or sponsor	Hibbitt, Karlsson & Sorensen, Inc. 1080 Main Street Pawtucket, RI 02860-4847 Tel. 401-727-4200 Email: info@abaqus.com
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Same as (d.) above; Technical Support is included and is part of the license fee.
g.	Documentation available	User's Manual. Sample Problems including input and output files.
h.	Code platform (Workstation, PC-based, Mainframe)	Mainframe; Workstation; PC-based
i.	Operating System (Windows, DOS, other)	UNIX; WINDOWS 2000
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k.	How are error and user questions reported?	The vendor reports updates and sends out error notices via mail.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Vendor documentation is upgraded with each version update.

Design & Analysis Safety Software Information

a.	Code name and version	MSC/THERMAL Version 8.5
b.	Function of code	Thermal analysis for the design of subsystems and components. The pre-processor MSC/PATRAN is used to create finite element models for thermal and structural analyses.
c.	Application (what projects/facilities at the site/lab)	Type B radioactive material packages such as 9975, SAFKEG, and 5320, furnaces in the FB-Line and HB-Line, material storage cans, inertial welds.
d.	Code developer and/or sponsor	MacNeal-Schwendler Corporation, Costa Mesa, CA www.mssoftware.com PH: 1-800-732-7284
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Same as (d.) above; Technical Support is included and is part of the license fee.
g.	Documentation available	On-Line documentation, test problems selected by SRS are used for QA documentation.
h.	Code platform (Workstation, PC-based, Mainframe)	Mainframe; Workstation; PC-based
i.	Operating System (Windows, DOS, other)	UNIX; WINDOWS 2000
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k.	How are error and user questions reported?	Errors and patches are posted on the developer website. Solutions and patches are posted on the website.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	Vendor documentation is upgraded with each version update.

Design & Analysis Safety Software Information

a.	Code name and version	VERSE-LC v7.80
b.	Function of code	VERSE is an advanced dynamic simulation package for both batch and continuous liquid chromatography.
c.	Application (what projects/facilities at the site/lab)	Ion-Exchange Modeling: Low Curie Salt Program Hanford Waste Treatment Plant
d.	Code developer and/or sponsor	R. D. Whitley and N-H. L. Wang School of Chemical Engineering, Purdue University
e.	Commercial, Proprietary or Other (Explain)	Commercial
f.	Current Owner/Vendor and technical support provider	Same as (d) above.
g.	Documentation available	HTML User's Guide
h.	Code platform (Workstation, PC-based, Mainframe)	PC-based
i.	Operating System (Windows, DOS, other)	Windows-NT and 2000 are supported.
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	R
k.	How are error and user questions reported?	Errors and user questions are reported to the developers via email or phone.
l.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	University developed code. No user interface. HTML documentation.

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?
Site SQA procedure QAP 20-1 and Engineering SQA E7 Manual
 Document title(s) and report number(s): **Attachment 1**

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

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

5.3 How do you apply QA procedures to safety software? Graded approach based on classification. Using 5.2 documents above as guidance. Details are in procedures.

5.4 How do you train users on safety software? Software Engineering Training including SQA, Required reading of QA and SQA procedures, Required user documentation and training of users. Simulators are used where applicable.

WSRC 1Q Quality Assurance Manual

20-1 Software Quality Assurance

WSRC E7 Conduct of Engineering and Technical Support

Section 2.0 - Technical Baseline Change Control

2.25 Functional Classification

2.31 Engineering Calculations

2.40 Design Verification and Checking

Section 5.0 - Software Engineering and Control

5.01 Software Engineering and Control - Overview

5.03 Software Quality Assurance Plan (SQAP)

5.04 Software Project Management Plan (SPMP)

5.05 Software Classification

5.07 Evaluation of Existing or Acquired Software

5.10 Software Requirements

5.20 Software Design and Implementation

5.40 Software Testing, Acceptance and Turnover

5.61 Eng. & Scientific Software Distribution and Control

5.62 Computer Program Modification Tracker (CMT)

5.80 Data Management Plan

Attachment 3

OFFICE OF ENVIRONMENTAL MANAGEMENT (EM) ASSESSMENT SCHEDULESSOFTWARE QUALITY ASSURANCE COMMITMENT NO. 4.2.3.2 & 4.2.4.2

SITE	SOFTWARE IDENTIFIED	4.2.3.2 SCHEDULES	4.2.4.2 SCHEDULES	COMMENTS
Carlsbad Field Office	YES	November 2004	July 2004	
Office of River Protection	YES	CH2MHILL Dec. 2004 BNI February 2004	CH2MHILL April 2004 BNI February 2004	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.
Ohio Field Office	NONE IDENTIFIED	Fernald April 2004 Miamisburg August 2004	Fernald April 2004 Miamisburg August 2004	The Ohio Field Office has nuclear facilities at four sites (Columbus Closure Project, West Valley Demonstration Project, Fernald Closure Project and Miamisburg Closure Project). Only Fernald and Miamisburg have defense nuclear facilities. Only Miamisburg has Structures Systems and Components that are functionally classified as safety significant or safety class and has identified SQA codes that apply to the assessment criteria. However, assessments will be conducted at both Fernald and Miamisburg.

SITE	SOFTWARE IDENTIFIED	4.2.3.2 SCHEDULE	4.2.4.2 SCHEDULE	COMMENTS
Portsmouth/Paducah Field Office	YES	NONE IDENTIFIED	May 2004	
Richland Operations Office	YES NONE IDENTIFIED NONE IDENTIFIED	Fluor Hanford March 2004 PNNL BHI	Fluor Hanford May 2004 PNNL BHI	PNNL & BHI have no design software codes as defined by the CRADS.
Rocky Flats Field Office	YES	March 2004	March 2004	
Savannah River Operations Office	YES	February 2004	April 2004	