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):	_____
Organization(s):	_____
Site or Laboratory:	_____
Address:	_____
Phone/email/facsimile:	_____
	_____
Principal DOE organization(s) supported (NNSA, EM, NE, etc.)	_____
Date Survey Form Submitted:	_____

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)	

* 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	
b.	Function of code	
c.	Application (what projects/facilities at the site/lab)	
d.	Code developer and/or sponsor	
e.	Commercial, Proprietary or Other (Explain)	
f.	Current Owner/Vendor and technical support provider	
g.	Documentation available	
h.	Code platform (Workstation, PC-based, Mainframe)	
i.	Operating System (Windows, DOS, other)	
j.	Frequency of Use (Routine, repeated use, code of choice – R; Occasional use – O;)	
k.	How are error and user questions reported?	
k.	Comments on experience with this computer software, ease of application, documentation provided; known errors or issues	

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): _____

_____

_____

_____

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

Yes/No/Uncertain	Standard/Rule/DOE or Other Directive
	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
	d. DOE Order 414.1, *Quality Assurance*
	e. DOE Order 420.1, *Facility Safety*
	f. DOE Order 200.1, *Information Management Program*
	g. DOE Guide 200.1-1, *Department of Energy Software Engineering Methodology*
	h. DOE Guide 414.1-1, Assessment Guide for QA
	i. ANSI/ANS-10.4-1987, *Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry*
	j. Other DOE, National, International, or Industry Standards, Requirements, or Guidelines (Please identify)

5.3   How do you apply QA procedures to safety software? _____

_____

5.4   How do you train users on safety software? _____

_____
_____
_____

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	STRUCTRUEcode 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.	Commercial, Proprietary or Other (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	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	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. Documentation is upgraded with each version update. Experience with this software has been good and relatively few (minor) errors have been identified in five years of use.