SCIENTIFIC NOTEBOOK

635E

by

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INITIAL ENTRIES

Scientific Notebook: #635E

Issued to: George Adams

Issue Date: January 28, 2004

Account Number: 20.06002.01.103

Title: PCSA Tool Testing

Participants: G. Adams
T. Maxwell

Objective:
This scientific notebook will document the work performed in testing the PCSA Tool.

In-Process Entries

2-10-2004 GADAMS
Troy Maxwell has been developing the Acceptance Test Plan for the PCSA Tool. He will make entries into this scientific notebook.

3-9-2004 TMAXWELL
The following bullets indicate the menu/submenus identified in the PCSA Tool that contain an error. The command within the menu/submenu that resulted in error are underlined.

- Ext. Events/Generic List/Naturally Occurring and Human-Induced Events
  <u>View Report File</u>: No Response.
- System/System Description
  <u>Show Report</u>: Not Yet Implemented.
- System/SSC/SSC Data

Show Report: Not Yet Implemented.
Update Record: Error 524
Cancel: Error 444, 3020

- Int. Events/What If
  Cancel: Error 444
  Update Record: Error 524

3-25-2004 GADAMS:
Troy Maxwell, Brandi Winfrey, and Ron Janetzke are conducting acceptance testing of the PCSA Tool, Version 3.0. They will make entries into this scientific notebook.

4-6-2004 TMAXWELL:
The following acceptance test tables are for SCR 438. The Action Commands were tested and if the Expected Result was achieved, the Action Command was given a "P"(pass). No items for SCR 438 received a "F"(fail) or produced any error messages.

System/SSCs/General		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Allows the user to enter information in the current window.	P
Delete Record	Deletes the current record.	P
Edit Record	Allows the user to edit the current record.	P
Show Report	Displays the information in report format.	P
Close	Closes the System/SSCs/General window	P
Add/Functions	Allows the user to enter information in the functions section of the System/SSCs/General window.	P
Edit/Functions	Allows the user to edit the information in the functions section of the System/SSCs/General window.	P
Delete/Functions	Deletes the selection in the functions section of the System/SSCs/General window.	P

System/SSCs/Design Basis and Design Criteria		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Allows the user to enter information in the current window.	P
Edit Record	Allows the user to edit the current record.	P
Copy Record	Allows the user to copy the current record.	P
Delete Record	Deletes the current record.	P
Show Report	Displays the information in report format.	P
Close	Closes the System/SSCs/General window	P
Add/Functions	Allows the user to enter information in the Functions section of the System/SSCs/General window.	P
Edit/Functions	Allows the user to edit the information in the Functions section of the System/SSCs/General window.	P
Delete/Functions	Deletes the selection in the Functions section of the System/SSCs/General window.	P
Add/Hazards	Allows the user to enter information in the Hazards section of the System/SSCs/General window.	P
Edit/Hazards	Allows the user to edit the information in the Hazards section of the System/SSCs/General window.	P
Delete/Hazards	Deletes the selection in the Hazards section of the System/SSCs/General window.	P
Add/Initiating Events	Allows the user to enter information in the Initiating Events section of the System/SSCs/General window.	P
Edit/Initiating Events	Allows the user to edit the information in the Initiating Events section of the System/SSCs/General window.	P
Delete/Initiating Events	Deletes the selection in the Initiating Events section of the System/SSCs/General window.	P
Add/Event Tree	Allows the user to enter information in the Event Tree section of the System/SSCs/General window.	P

Edit/Event Tree	Allows the user to edit the information in the Event Tree section of the System/SSCs/General window.	P
Delete/Event Tree	Deletes the selection in the Event Tree section of the System/SSCs/General window.	P

4-8-2004 RJANETZKE:
The following acceptance test tables are for SCR 435 Version BetaB.

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GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; PWR	
Field	Co-60	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	1.2
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; Probabilistic; Deterministic	
Field	Type of Run	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	F; Error 13	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Release Fraction...	
Field	Release Fraction	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP=<1	0.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Release Fraction...	
Field	Release Fraction	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP=<1	1.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Release Fraction...; Probabilistic; Deterministic	
Field	Release Fraction	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	F; Values are changed to default values rather than those in the project file.	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Bldg discharge...	
Field	Vapors...	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP=<1	1.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Bldg. Discharge...; Probabilistic	
Field	Number...	
Types Accepted (I=integer, R=real, T=text):	I	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	P	2
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Release Fraction; Pool; Restore all defaults	
Field	Release in	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		Pool
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	F; Does not restore “Air” as default value.	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Meterological	
Field	Input value; mixing layer height.	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP=<3000	3000.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Inhalation dose	
Field	Input value; inhalation...	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	3.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Inhalation dose	
Field	Input value; Activity mean...	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	P>0.1	0.1
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Ground Surface...	
Field	Inpu tvalue; decay time...	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	10.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Ground Surface	
Field	Input value; Building...	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP=<1.0	0.2
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Submersion...	
Field	Input value; decay time	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	10.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Ingestion...	
Field	Input value; Time crops...	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	P>0.04	17.
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; Fuel type	
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		"User Specified"
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	F; Does not run RSAC when supplied with PWR default values.	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Restore all defaults; Perform An...	
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P; RSAC runs	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	PWR; Perform An...	
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P; RSAC runs.	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-7-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Probabilistic; Fuel Selection/... ; BWR; Bldg D...; Perform An...	
Field	Number of R...	
Types Accepted (I=integer, R=real, T=text):	I	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	P	2
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P; RSAC runs.	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; PWR; Bldg...; Perform An...	
Field	Number of R...	
Types Accepted (I=integer, R=real, T=text):	I	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	P	2
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P; RSAC runs	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; User SPec...; Probabilistic; Perform An...	
Field	Co-60	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	6.57
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	F; No RSAC input file created.	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->Normal Operation...		**Date:** 4-7-2004

Dialogue Window	Public Normal Operation Dose	
Button Sequence		
Field	Normal Operation Dose	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	F; Focus is not on an active field.	

Dialogue Window	Public Normal Operation Dose	
Button Sequence	Edit; Normal Oper...	
Field		
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	10.
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

Dialogue Window	Public Normal Operation Dose	
Button Sequence	Edit; Description	
Field		
Types Accepted (I=integer, R=real, T=text):	T	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		test
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P	

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->Advanced RSAC Input		**Date:** 4-8-2004

Dialogue Window	Deterministic RSAC Run for Advanced User	
Button Sequence	Edit Exist...; Run Adv...	
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	F; RSAC does not run to completion.	

Dialogue Window		
Button Sequence		
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File		
Restorable		
Status (P=pass, F=fail)		

Dialogue Window		
Button Sequence		
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File		
Restorable		
Status (P=pass, F=fail)		

4-9-04 RJANETZKE

Additional test results for SCR435.

GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq. -> Public... -> RSAC -> RSAC-> Perfor...		**Date:** 4-9-2004

Dialogue Window	RSAC Most Recent Analysis
Button Sequence	RSAC Input; Show Report
Field	All
Archive File	scr435-1.mdb
Comments	All fields in the report have corresponding values on the screen.
Status (P=pass, F=fail)	P

Dialogue Window	RSAC Most Recent Analysis
Button Sequence	RSAC Output; Inhalation; Show Report
Field	All
Archive File	scr435-1.mdb
Comments	Reports do not correspond to the tab selected.
Status (P=pass, F=fail)	F; Could possibly remove the “Show Report” button from these boxes to disable attempts to show data from these tabs.

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GUI Test Worksheet

Project: PCSATool(BetaB)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Pefrom....-> Curent Level... -> Public		**Date:** 4-9-2004

Dialogue Window	Results Table - Functional ID E.3.3	
Button Sequence	double click on Dose Pt.Est. For manual data ; Apply	
Field	Editing Results Table - Functional ID E.3.3	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	NZP	1.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	F; Receive Error 76 after editing and selecting 'Apply'.	

4-12-2004 TMAXWELL:
The following acceptance test tables are for SCR 433. The Action Commands were tested and if the Expected Result was achieved, the Action Command was given a "P"(pass). No items for SCR 433 received a "F"(fail) or produced any error messages.

Int. Events/FMEA		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Activates the text box to add a record.	P
Delete Record	Deletes the record currently displayed and prompts the user.	P
Edit Record	Allows the user to modify any data in the form.	P
Show Report	Displays the information input into the System Description form in report format.	P
FMEA Table/Form	Toggles between FMEA Form and FMEA Table windows.	P

Close	Closes the window and returns to the main project screen retaining any changes made.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Copy Record (FMEA Table only)	Copies information of the entire row into another row. Copy Record is only available in the FMEA Table.	P

Int. Events/What If		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Activates the text box to add a record.	P
Delete Record	Deletes the record currently displayed and prompts the user.	P
Edit Record	Allows the user to modify any data in the form.	P
Show Report	Displays the information input into the System Description form in report format.	P
What If Table/Form	Toggles between What If Form and What If Table windows.	P
Close	Closes the window and returns to the main project screen retaining any changes made.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Copy Record (FMEA Table only)	Copies information of the entire row into another row. Copy Record is only available in the What If Table.	P

Int. Events/Energy Method		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Activates the text box to add a record.	P
Delete Record	Deletes the record currently displayed and prompts the user.	P
Edit Record	Allows the user to modify any data in the form.	P
Show Report	Displays the information input into the System Description form in report format.	P
FMEA Table/Form	Toggles between Energy Analysis Form and Energy Analysis Table windows.	P
Close	Closes the window and returns to the main project screen retaining any changes made.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Copy Record (FMEA Table only)	Copies information of the entire row into another row. Copy Record is only available in the Energy Anal. Table.	P

Int. Events/Human Reliability Analysis		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Activates the text box to add a record.	P
Delete Record	Deletes the record currently displayed and prompts the user.	P
Edit Record	Allows the user to modify any data in the form.	P
Show Report	Displays the information input into the System Description form in report format.	P
HRA Table/Form	Toggles between HRA Form and HRA Table windows.	P

Close	Closes the window and returns to the main project screen retaining any changes made.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Copy Record (HRA Table only)	Copies information of the entire row into another row. Copy Record is only available in the HRA Table.	P

4-13-2004 B. Winfrey:

The following comments are for SCR 431. SCR 431 was tested on version 3.0.0 (Beta C). There were six tests for this SCR. If the Expected Result was achieved, the Test PASSED. One item for SCR 431 FAILED.

Test	**Comments**
1 – Tree remains at current level after node selection	**PASSED**
2 – Command Buttons Expand and Collapse	**FAILED** • If a lower level is selected and the tree is completely collapsed, when you click on the "Collapse" button, the tree expands to the selected level. • If a lower level is selected and it's limb of the tree is collapsed, when you click on any other expand symbol "+", it will expand its own tree on the first click and then expand the selected tree on a random subsequent click. If the selected level is the third level down, it will only expand to the second level .
3 – Text Fields update correctly	**PASSED**
4 – Define Levels, Add Level, Edit	**PASSED** • Define Levels Button allows the user to define the levels of the Project Tree. The effect of defining these levels can be seen by

Selection, Delete Selection	setting the levels, closing the project tree, opening the "Initiating Event Form" and viewing the selected levels in the upper right text screen. • Clicking on the "Add Level button, creates a level number. This is applied to the new level with the "Apply" button. • The "Edit Selection" button is used to label the 1st through 4th levels as well as add optional remarks. • When a level is selected and the "Delete Selection" button is clicked, the selected level is removed from both the Project Tree and the Report.
5 – Show Report	**PASSED** • If the Project Tree is fully expanded, when you close the report generated by "Crystal Report", the Project Tree collapses. • It is difficult to compare the report with the tree because when the report is active, the tree is not, so you cannot scroll to the unseen levels without closing the report which in turn, collapses the tree. Also, the screen containing the tree is not extendable to allow full view of the tree. • Misspelling of Material as "Mateial" in level C.2 • Should capitalize "on-site" in level B.2 on tree (report is correct) • Should capitalize "unloading" in level E.1.2 on report and tree • Should capitalize "lock" in level E.2.1.1 on tree and report • Level E.2.2.1 should contain the words "DC Loading Area: Hot Cell" on report • Level E.3.1 should capitalize the word "lock"
6 – Log on exit	**PASSED** The log form opens AFTER the program prompts you to save with a pop-up dialog. Even if you elect not to save, the log form will appear. This is supposed to happen.
Additional Comments:	
When setting the Project Tree levels with the "Define Levels" button, it would be useful for this information to show up on the Report as a column header instead of "1st Level", "2nd Level", etc…	

4-13-2004 B. Winfrey:

SCR 432 was tested on version 3.0.0 (Beta C). The following acceptance test tables are for SCR 432. The Action Commands were tested and if the Expected Result was achieved, the Action Command was given a "P"(pass). No items for

SCR 432 received an "F"(fail) or produced any error messages.

Test 4 - Shielding Tab says to "Double-click on image name…", but in order to get the image to display, the user has to double-click on **Image Type**. Also, to add or remove images, one must go to the drop down menu on the main toolbar outside of the System Description dialog. To see the change implemented, the System Description dialog window must be closed and then re-opened.

Results for testing Action commands for Tests 1-3 are shown below.

System/System Description		
Action Command	**Expected Result & Comment**	**(P/F)**
Function	Opens the Function input window.	P
Operation Sequence	Opens the Operation Sequence input window.	P
Waste Characterization	Opens the Waste Characterization input window.	P
Human Actions	Opens the Human Actions input window.	P
Shielding	Opens the Shielding input window.	P
Software System	Opens the Software System input window.	P
Fire Hazards	Opens the Fire Hazards input window.	P
General	Opens the General input window.	P
Assumptions	Opens the Assumptions input window.	P

System/System Description/Assumptions		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Prompts the user with an "Assumption" input box (I).	P
Edit Record	Allows the user to alter information in the current window in the selected field.	P

Copy Record	Copies selected record in the current window, giving it a new item number.	P
Delete Record	Deletes selected records in the current window.	P
Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/Assumptions" window. Closes the entire System Description window, not just the Assumptions window.	P
I. Assumption		
Apply	Adds the user input into the System Description, Assumptions window.	P
Cancel	Closes the "Assumption" input box while not retaining any user input.	P

System/System Description/Human Actions		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record A.	Prompts the user with an "Data" input box (I).	P
Edit Record A.	Allows the user to alter information in the current window.	P
Copy Record A.	Copies selected record in the current window, giving it a new item number.	P
Delete Record A.	Deletes selected records in the current window.	P
Add Record B.	Prompts the user with an "Data" input box (I).	P
Edit Record B.	Allows the user to alter information in the current window.	P
Copy Record B.	Copies selected record in the current window, giving it a new item number.	P
Delete Record B.	Deletes selected records in the current window.	P
Edit Record/Update	Allows the user to edit and update References and Additional Information in the "System Description/Human Actions" window.	P

Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/Human Actions" window. Closes the entire System Description window, not just the Human Actions window.	P
I. Data		
OK	Adds the user input into the System Description/Human Actions window.	P
Cancel	Closes the "Assumption" input box while not retaining any user input.	P

System/System Description/Waste Characterization		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record/Update	Allows the user to enter and update data in the "System Description/Waste Characterization" window. Note: if there are multiple records entered, when the Update button is clicked, the record is updated, and the screen jumps to the LAST record. This is NOT an error, but also not standard practice (the record being updated should remain the current record in view).	P
Edit Record	Allows the user to alter information in the current window.	P
Scroll Arrows	Scrolls back and forward through available records, one at a time, jump to the first or last record.	P
Delete Record	Prompts the user with a "Delete Record?" option (I).	P
Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/Waste Characterization" window.	P
I. Delete Record?		
Yes	Deletes the selected record. Note: It DOES delete the record, but does NOT delete the text from the screen when there is only one record available. This should be corrected.	P

No	Closes the "Delete Record?" window and does not delete the selected record.	P

System/System Description/Operation Sequence		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record/Update	Allows the user to enter and update data in the "System Description/Operation Sequence" window. Note: if there are multiple records entered, when the Update button is clicked, the record is updated, and the screen jumps to the FIRST record. This is NOT an error, but also not standard practice (the record being updated should remain the current record in view).	P
Edit Record	Allows the user to alter information in the current window.	P
Delete Record	Prompts the user with a "Delete Record?" option (I).	P
Show Report	Displays the user input in report format.	P
Scroll Arrows	Scrolls back and forward through available records, one at a time, jump to the first or last record.	P
Close	Closes the "System Description/Operations Sequence" window.	P
I. Delete Record?		
Yes	Deletes the selected record. Note: It DOES delete the record, but does NOT delete the text from the screen when there is only one record available. This should be corrected.	P
No	Closes the "Delete Record?" window and does not delete the selected record.	P

System/System Description/Function		
Action Command	**Expected Result & Comment**	**(P/F)**
Edit Record/Update	Allows the user to enter and update data in the "System Description/Operation Sequence" window.	P

Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/Function" window.	P

System/System Description/General		
Action Command	**Expected Result & Comment**	**(P/F)**
Edit/Update	Allows the user to enter and update data in the "System Description/Operation Sequence" window.	P
Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/General" window.	P

System/System Description/Fire Hazards		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record/Update	Allows the user to enter and update data in the "System Description/Operation Sequence" window. Note: if there are multiple records entered, when the Update button is clicked, the record is updated, and the screen jumps to the last record. This is NOT an error, but also not standard practice (the record being updated should remain the current record in view).	P
Edit Record	Allows the user to alter information in the current window.	P
Delete Record	Prompts the user with a "Delete Record?" option (I).	P
Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/Fire Hazards" window.	P
I. Delete Record?		
Yes	Deletes the selected record.	P
No	Closes the "Delete Record?" window and does not delete the selected record.	P

System/System Description/Software System		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Prompts the user with a "Data" window (I).	P
Edit Record	Allows the user to alter information in the current window.	P
Copy Record	Allows the user to copy the selected record and give it a new Item No.	P
Delete Record	Deletes the selected record.	P
Edit/Update	Allows the user to input data in the References and Additional Information text box.	P
Show Report	Displays the user input in report format.	P
Close	Closes the "System Description/Software System" window.	P
I. Data		
OK	Applies the user input to the System Description/Software System window.	P
Cancel	Closes the System Description/Software System window not retaining any changes.	P

System/System Description/Shielding		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record/Update	Allows the user to enter and update data in the "System Description/Shielding" window.	P
Edit Record	Allows the user to alter information in the current window.	P
Scroll Arrows	Scrolls back and forward through available records, one at a time, jump to the first or last record.	P
Delete Record	Prompts the user with a "Delete Record?" option (I).	P
Show Report	Displays the user input in report format.	P

Close	Closes the "System Description/Shielding" window.	P
I. Delete Record?		
Yes	Deletes the selected record.	P
No	Closes the "Delete Record?" window and does not delete the selected record.	P

4-13-2004 RJANETZKE:
The following acceptance test tables are for SCR 436 Version BetaC.

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GUI Test Worksheet

Project: PCSATool(BetaC)	**SCR:** 436	**Tester:** Janetzke
Root Test Box: Proj. Tree -> E.3.3 -> Done -> Perform.		**Date:** 4-13-2004

Results Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 1; Search...
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Edit category 1 Dose PtEst manual data to be 0.0150 and 0.0151.
Status (P=pass, F=fail)	P; All category 1 dose fields>0.015 are highlighted in both table and report.

Dialogue Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 2; Search...
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Edit category 2 Dose PtEst manual data to be 5.0.
Status (P=pass, F=fail)	P; Category 2 dose fields = 5.0 are not highlighted in either the table or report.

Dialogue Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 2; Search...
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Edit category 2 Dose PtEst manual data to be 5.01.
Status (P=pass, F=fail)	P; Category 2 dose fields > 5.0 are highlighted in both the table and report.

GUI Test Worksheet

Project: PCSATool(BetaC)	**SCR:** 436	**Tester:** Janetzke
Root Test Box: Proj. Tree -> E.3.3 -> Done -> Perform.		**Date:** 4-13-2004

Results Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 1; Search...; Show Report
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Dose is calculated and displayed correctly in table and report..
Status (P=pass, F=fail)	F; Some fields disappear under the cursor icon on the report, table is OK.

Dialogue Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 1; Search...; Probabilistic; Show Report
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Characters are missing from the label for “Total Frequency Weighted Dose” on the report for the probabilistic case.
Status (P=pass, F=fail)	F

GUI Test Worksheet

Project: PCSATool(BetaC)	**SCR:** 436	**Tester:** Janetzke
Root Test Box: Proj. Tree -> A.1 -> Done -> Perform.		**Date:** 4-13-2004

Dialogue Window	Results Table Project View Base Case
Button Sequence	Proj....; Safety...; Public; Compliance...; 1; Search...; set cutoff to 0; Calculate
Field	Expected Number
Archive File	scr436.mdb
Comments	Data from "Analytical and Numerical Solutions of the Expected Number of Occurrences for Combinations of Event Sequences Due to Variability", R. Benke, 2003.
Status (P=pass, F=fail)	F; Expected Number is a factor 30 less than that in the reference article. Table and Report column headings should be changed to "Expected Number of Occurrences per year".

4-12-2004 TMAXWELL:
The following is information concerning previous entries in this scientific notebook:
For entry 3-9-2004, the errors were recorded from version 3.0 Beta A.
For entry 4-6-2004, the test was conducted on version 3.0 Beta A.
For entry 4-12-2004, the test was conducted on version 3.0 Beta B.

4-15-2004 TMAXWELL:
The following bullets indicate the menu/submenus identified in the PCSA Tool version 3.0 Beta C that contain an error. The command within the menu/submenu that resulted in error are underlined.

- Freq. Analysis/Fault Tree

<u>Event Table</u>: When Event Table is selected and a record has been added to the Fault Tree Form, the Fault Tree Event Table opens without the information from the Fault Tree Form. The user is able to add, edit, copy, and delete records. However, the records are placed under the Top Event Name input from the Fault Tree Form and not included with the information already entered into the Fault Tree Form. This separation of data is also illustrated in the Show Report command. The Fault Tree Event Table also does not include a command to return to the Fault

Tree Form except to close the Fault Tree Event Table.

4-16-2004 TMAXWELL:
The following acceptance test tables are for SCR 434. The Action Commands were tested and if the Expected Result was achieved, the Action Command was given a "P"(pass). One item for SCR 434 received a "F"(fail) or produced an error messages (see entry 4-15-2004). The test was conducted on PCSA Tool Version 3.0 BetaD.

Freq. Analysis/Initiating Event		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record (Form/Table)	Activates the text box to add a record.	P
Delete Record (Form/Table)	Deletes the record currently displayed and prompts the user.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Edit Record (Table)	Allows the user to modify any data in the form.	P
Show Report (Form/Table)	Displays the information input into the Initiating Event Form in report format.	P
Init. Table/Form	Toggles between Init. Form and Init. Table windows.	P
Edit Record (Table)	Allows the user to edit input in the Initiating Event Table.	P
Copy Record (Table)	Copies information of the entire row into another row. Copy Record is only available in the Initiating Event Table.	P
Close (Form/Table)	Closes the window and returns to the main project screen retaining any changes made.	P

Freq. Analysis/Event Tree/Event Scenario		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Scenario	Activates the text boxes in the Event Scenario section and allows the user to add a scenario.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Delete Scenario	Deletes the scenario currently displayed and prompts the user.	P
Show Report	Displays the information input into the Event Tree Form Form/Event Scenario in report format.	P
Close	Closes the window and returns to the main project screen retaining any changes made.	P

Freq. Analysis/Event Tree/Subsequent Events		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Allows the user to add a record to the Subsequent Events section of the Event Tree Form.	P
Edit Record	Allows the user to edit a record to the Subsequent Events section of the Event Tree Form.	P
Copy Record	Allows the user to copy a record to the Subsequent Events section of the Event Tree Form.	P
Delete Record	Allows the user to delete a record to the Subsequent Events section of the Event Tree Form.	P
Show Report	Displays the information input into the Event Tree Form Form/Subsequent Events in report format.	P
Close	Closes the Event Tree Form.	P

Freq. Analysis/Fault Tree		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record (Form/Table)	Activates the text boxes in the Fault Tree Form and allows the user to add a scenario.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Delete Record (Form/Table)	Deletes the scenario currently displayed and prompts the user.	P
Show Report (Form/Table)	Displays the information input into the Fault Tree Form in report format.	P
Event Table	Displays the Fault Tree Event Table. When Event Table is selected and a record has been added to the Fault Tree Form, the Fault Tree Event Table opens without the information from the Fault Tree Form. The user is able to add, edit, copy, and delete records. However, the records are placed under the Top Event Name input from the Fault Tree Form and not included with the information already entered into the Fault Tree Form. This separation of data is also illustrated in the Show Report command. The Fault Tree Event Table also does not include a command to return to the Fault Tree Form except to close the Fault Tree Event Table.	F
Edit Record (Table)	Allows the user to modify any data in the form.	P
Copy Record (Table)	Allows the user to copy any data in the form.	P
Close (Table)	Closes the Table window and returns to the Form window.	P
Close (Form)	Closes the window and returns to the main project screen retaining any changes made.	P

Freq. Analysis/Event Sequence		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record (Form/Table)	Activates the text boxes in the Event Sequence Form and allows the user to add a scenario.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Delete Record (Form/Table)	Deletes the scenario currently displayed and prompts the user.	P
Show Report (Form/Table)	Displays the information input into the Event Sequence Form in report format.	P
Event Seq. Form/Table	Toggles between the Event Sequence Form and Table.	P
Edit Record (Table)	Allows the user to modify any data in the form.	P
Copy Record (Table)	Allows the user to copy any data in the form.	P
Close (Table)	Closes the Table window and returns to the Form window.	P
Close (Form/Table)	Closes the window and returns to the main project screen retaining any changes made.	P

4-21-2004 B. Winfrey:

The following acceptance test tables are for SCR 437. The Action Commands were tested and if the Expected Result was achieved, the Action Command was given a "P"(pass). The test was conducted on PCSATool Version 3.0 BetaD.

TEST 1: Crystal Reports Capture All Info in Report		
Action Command	**Expected Result & Comment**	**(P/F)**

Deterministic Risk	Calculate Deterministic Risk. A window will appear stating that the calculation is in progress, and when complete, the results will display in a table (I).	P
Probabilistic Risk	Calculate Deterministic Risk. A window will appear stating that the calculation is in progress, and when complete, the results will display as a graph (I) (II).	P
Double click on "Dose, PtEst"	Opens a window that calculates Event dose using a deterministic scenario calculation (III).	P
Double click on "Dose, Mean"	Opens a window that calculates Event dose using a probabilistic scenario calculation (III).	P
I. Common Buttons		
Show Report	Generate a Crystal Report. Expect all column headers to be displayed on report as well as identical reported results. For Probabilistic Report, Additional options are given (IV). Note: It would be useful for the report to state that the results are Deterministic or Probabilistic depending on which report is generated.	P
Done	Closes the Crystal Report and returns to the Risk Analysis window.	P
II. Probabilistic Buttons		
View Table/Graph	Toggles between viewing the Graph of CCDF Output for Total Risk and the Probabilistic Results Table	P
III. Scenario Calculation		
Event Dose	Calculates Event Deterministic Dose (if "Dose, PtEst" was double clicked) or the Mean Dose (if "Dose, Mean" was double clicked) and shows the results in the previously empty text box on the same window.	P
Done	Closes the Event Dose calculation window. If no calculation was performed, an error message will appear stating that the calculation failed. This is expected.	P
IV. Do you wish to see the plot with data?		

Yes	A Crystal Report is generated that contains the CCDF OUTPUT For Total Risk graph as well as the data it was generated from. Note: the wording of this question should be changed to "Would you like to see the data with the plot?" since it is the data which is the optional item.	P
No	A Crystal Report is generated that contains ONLY the CCDF OUTPUT For Total Risk graph.	P

TEST 2: % Contribution of Event Risk is Correctly Calculated		
Calculation Type	**Expected Result & Comment**	**(P/F)**
Deterministic	Risk = Probability * Consequence Total Risk = the sum of all risks %Contribution = (Risk/Total Risk) * 100 Risk calculations are 1/1000 off, however since % contribution is only considered to 2 significant digits this does not affect % Contribution accuracy. (see Excel spreadsheet Tables below)	P
Probabilistic	Risk = Probability * Consequence Total Risk = the sum of all risks %Contribution = (Risk/Total Risk) * 100 Risk calculations are 1/1000 off, however since % contribution is only considered to 2 significant digits this does not affect % Contribution accuracy. (see Excel spreadsheet Tables below)	P

Deterministic Results:

Note: cells highlighted in pink have differences in accuracy.

Data and Results obtained from PCSATool version 3.0.0 (BetaD)				**Results Calculated by Excel**	
Probability	**Consequence (rem)**	**Risk (rem in time period)**	**Contribution (%)**	**Risk (rem in time period)**	**Contribution (%)**
9.274E-01	0.000E+00	0.000E+00	0.00E+00	0.000E+00	0.00E+00

8.084E-03	2.766E-05	2.236E-07	3.05E-01	2.236E-07	3.05E-01
1.141E-04	1.944E-03	2.218E-07	3.02E-01	2.218E-07	3.02E-01
7.317E-06	8.032E-01	5.877E-06	8.00E+00	5.877E-06	8.00E+00
7.317E-06	0.000E+00	0.000E+00	0.00E+00	0.000E+00	0.00E+00
7.317E-06	3.784E-01	2.768E-06	3.77E+00	2.769E-06	3.77E+00
3.596E-03	2.923E-04	1.051E-06	1.43E+00	1.051E-06	1.43E+00
3.596E-03	7.505E-04	2.699E-06	3.68E+00	2.699E-06	3.68E+00
3.596E-03	4.284E-03	1.541E-05	2.10E+01	1.541E-05	2.10E+01
3.596E-03	1.669E-03	6.002E-06	8.17E+00	6.002E-06	8.17E+00
3.596E-03	4.284E-03	1.541E-05	2.10E+01	1.541E-05	2.10E+01
3.596E-03	1.273E-06	4.576E-09	6.23E-03	4.578E-09	6.23E-03
3.596E-03	4.358E-05	1.567E-07	2.13E-01	1.567E-07	2.13E-01
2.557E-02	2.682E-04	6.857E-06	9.34E+00	6.858E-06	9.34E+00
1.147E-02	1.100E-03	1.262E-05	1.72E+01	1.262E-05	1.72E+01
3.135E-05	3.200E-04	1.003E-08	1.37E-02	1.003E-08	1.37E-02
3.135E-05	7.782E-04	2.440E-08	3.32E-02	2.440E-08	3.32E-02
3.135E-05	4.312E-03	1.352E-07	1.84E-01	1.352E-07	1.84E-01
3.135E-05	1.697E-03	5.319E-08	7.24E-02	5.320E-08	7.24E-02
3.135E-05	4.312E-03	1.352E-07	1.84E-01	1.352E-07	1.84E-01
3.135E-05	2.894E-05	9.071E-10	1.24E-03	9.073E-10	1.24E-03
3.135E-05	7.124E-05	2.233E-09	3.04E-03	2.233E-09	3.04E-03
2.229E-04	2.958E-04	6.594E-08	8.98E-02	6.593E-08	8.98E-02
1.000E-04	1.128E-03	1.128E-07	1.54E-01	1.128E-07	1.54E-01
3.145E-06	2.213E-03	6.959E-09	9.48E-03	6.960E-09	9.48E-03
1.411E-06	3.045E-03	4.297E-09	5.85E-03	4.296E-09	5.85E-03
1.395E-05	1.043E-03	1.454E-08	1.98E-02	1.455E-08	1.98E-02
1.395E-05	4.577E-03	6.383E-08	8.69E-02	6.385E-08	8.69E-02
1.395E-05	1.961E-03	2.735E-08	3.73E-02	2.736E-08	3.73E-02
1.395E-05	4.577E-03	6.383E-08	8.69E-02	6.385E-08	8.69E-02
1.395E-05	2.936E-04	4.095E-09	5.58E-03	4.096E-09	5.58E-03
1.395E-05	3.359E-04	4.685E-09	6.38E-03	4.686E-09	6.38E-03
9.915E-05	5.605E-04	5.557E-08	7.57E-02	5.557E-08	7.57E-02
4.449E-05	1.393E-03	6.196E-08	8.44E-02	6.197E-08	8.44E-02
1.395E-05	5.035E-03	7.022E-08	9.56E-02	7.024E-08	9.56E-02
1.395E-05	2.419E-03	3.374E-08	4.60E-02	3.375E-08	4.60E-02
1.395E-05	5.035E-03	7.022E-08	9.56E-02	7.024E-08	9.56E-02
1.395E-05	7.518E-04	1.048E-08	1.43E-02	1.049E-08	1.43E-02
1.395E-05	7.941E-04	1.107E-08	1.51E-02	1.108E-08	1.51E-02
9.915E-05	1.019E-03	1.010E-07	1.38E-01	1.010E-07	1.38E-01
4.449E-05	1.851E-03	8.235E-08	1.12E-01	8.235E-08	1.12E-01
1.395E-05	5.953E-03	8.303E-08	1.13E-01	8.304E-08	1.13E-01
1.395E-05	8.569E-03	1.195E-07	1.63E-01	1.195E-07	1.63E-01
1.395E-05	4.286E-03	5.977E-08	8.14E-02	5.979E-08	8.14E-02
1.395E-05	4.328E-03	6.036E-08	8.22E-02	6.038E-08	8.22E-02
9.915E-05	4.553E-03	4.514E-07	6.15E-01	4.514E-07	6.15E-01
4.449E-05	5.385E-03	2.396E-07	3.26E-01	2.396E-07	3.26E-01

1.395E-05	5.953E-03	8.303E-08	1.13E-01	8.304E-08	1.13E-01
1.395E-05	1.670E-03	2.329E-08	3.17E-02	2.330E-08	3.17E-02
1.395E-05	1.712E-03	2.388E-08	3.25E-02	2.388E-08	3.25E-02
9.915E-05	1.937E-03	1.921E-07	2.62E-01	1.921E-07	2.62E-01
4.449E-05	2.769E-03	1.232E-07	1.68E-01	1.232E-07	1.68E-01
1.395E-05	4.286E-03	5.977E-08	8.14E-02	5.979E-08	8.14E-02
1.395E-05	4.328E-03	6.036E-08	8.22E-02	6.038E-08	8.22E-02
9.915E-05	4.553E-03	4.514E-07	6.15E-01	4.514E-07	6.15E-01
4.449E-05	5.385E-03	2.396E-07	3.26E-01	2.396E-07	3.26E-01
1.395E-05	4.485E-05	6.255E-10	8.52E-04	6.257E-10	8.52E-04
9.915E-05	2.695E-04	2.672E-08	3.64E-02	2.672E-08	3.64E-02
4.449E-05	1.102E-03	4.901E-08	6.68E-02	4.903E-08	6.68E-02
9.915E-05	3.118E-04	3.091E-08	4.21E-02	3.091E-08	4.21E-02
4.449E-05	1.144E-03	5.090E-08	6.93E-02	5.090E-08	6.93E-02
3.163E-04	1.369E-03	4.329E-07	5.90E-01	4.330E-07	5.90E-01
2.757E-06	1.396E-03	3.850E-09	5.24E-03	3.849E-09	5.24E-03
1.227E-06	1.661E-03	2.037E-09	2.77E-03	2.038E-09	2.77E-03
1.227E-06	2.119E-03	2.599E-09	3.54E-03	2.600E-09	3.54E-03
1.227E-06	5.653E-03	6.934E-09	9.44E-03	6.936E-09	9.44E-03
1.227E-06	3.037E-03	3.726E-09	5.07E-03	3.726E-09	5.07E-03
1.227E-06	5.653E-03	6.934E-09	9.44E-03	6.936E-09	9.44E-03
1.227E-06	1.370E-03	1.680E-09	2.29E-03	1.681E-09	2.29E-03
1.227E-06	1.412E-03	1.732E-09	2.36E-03	1.733E-09	2.36E-03
Total Risk		7.342E-05			

Probabilistic Results:

Note: cells highlighted in pink have differences in accuracy.

Data and Results obtained from PCSATool version 3.0.0 (BetaD)				**Results Calculated by Excel**	
Probability	Mean Consequence (rem)	Mean Risk (rem in time period)	Contribution (%)	Mean Risk (rem in time period)	Contribution (%)
9.274E-01	0.000E+00	0.000E+00	0.00E+00	0.000E+00	0.00E+00
8.084E-03	4.957E-06	4.008E-08	3.75E-01	4.007E-08	3.75E-01
1.141E-04	3.484E-04	3.975E-08	3.71E-01	3.975E-08	3.72E-01
7.317E-06	1.439E-01	1.053E-06	9.84E+00	1.053E-06	9.84E+00
7.317E-06	2.441E-02	1.786E-07	1.67E+00	1.786E-07	1.67E+00
7.317E-06	2.641E-02	1.932E-07	1.81E+00	1.932E-07	1.81E+00
3.596E-03	0.000E+00	0.000E+00	0.00E+00	0.000E+00	0.00E+00
3.596E-03	5.239E-05	1.884E-07	1.76E+00	1.884E-07	1.76E+00
3.596E-03	2.991E-04	1.076E-06	1.01E+01	1.076E-06	1.01E+01
3.596E-03	7.674E-04	2.760E-06	2.58E+01	2.760E-06	2.58E+01
3.596E-03	2.991E-04	1.076E-06	1.01E+01	1.076E-06	1.01E+01
3.596E-03	0.000E+00	0.000E+00	0.00E+00	0.000E+00	0.00E+00
3.596E-03	3.042E-06	1.094E-08	1.02E-01	1.094E-08	1.02E-01

2.557E-02	4.028E-05	1.030E-06	9.63E+00	1.030E-06	9.63E+00
1.147E-02	2.156E-04	2.473E-06	2.31E+01	2.473E-06	2.31E+01
3.135E-05	4.957E-06	1.554E-10	1.45E-03	1.554E-10	1.45E-03
3.135E-05	5.734E-05	1.798E-09	1.68E-02	1.798E-09	1.68E-02
3.135E-05	3.040E-04	9.531E-09	8.91E-02	9.530E-09	8.91E-02
3.135E-05	7.723E-04	2.421E-08	2.26E-01	2.421E-08	2.26E-01
3.135E-05	3.040E-04	9.531E-09	8.91E-02	9.530E-09	8.91E-02
3.135E-05	4.957E-06	1.554E-10	1.45E-03	1.554E-10	1.45E-03
3.135E-05	7.999E-06	2.508E-10	2.34E-03	2.508E-10	2.34E-03
2.229E-04	4.523E-05	1.008E-08	9.42E-02	1.008E-08	9.42E-02
1.000E-04	2.205E-04	2.205E-08	2.06E-01	2.205E-08	2.06E-01
3.145E-06	3.887E-04	1.223E-09	1.14E-02	1.222E-09	1.14E-02
1.411E-06	5.640E-04	7.960E-10	7.44E-03	7.958E-10	7.44E-03
1.395E-05	5.239E-05	7.306E-10	6.83E-03	7.308E-10	6.83E-03
1.395E-05	2.991E-04	4.171E-09	3.90E-02	4.172E-09	3.90E-02
1.395E-05	7.674E-04	1.070E-08	1.00E-01	1.071E-08	1.00E-01
1.395E-05	2.991E-04	4.171E-09	3.90E-02	4.172E-09	3.90E-02
1.395E-05	0.000E+00	0.000E+00	0.00E+00	0.000E+00	0.00E+00
1.395E-05	3.042E-06	4.242E-11	3.96E-04	4.244E-11	3.97E-04
9.915E-05	4.028E-05	3.993E-09	3.73E-02	3.994E-09	3.73E-02
4.449E-05	2.156E-04	9.590E-09	8.96E-02	9.592E-09	8.96E-02
1.395E-05	3.515E-04	4.901E-09	4.58E-02	4.903E-09	4.58E-02
1.395E-05	8.197E-04	1.143E-08	1.07E-01	1.143E-08	1.07E-01
1.395E-05	3.515E-04	4.901E-09	4.58E-02	4.903E-09	4.58E-02
1.395E-05	5.239E-05	7.306E-10	6.83E-03	7.308E-10	6.83E-03
1.395E-05	5.543E-05	7.730E-10	7.22E-03	7.732E-10	7.23E-03
9.915E-05	9.266E-05	9.187E-09	8.59E-02	9.187E-09	8.59E-02
4.449E-05	2.679E-04	1.192E-08	1.11E-01	1.192E-08	1.11E-01
1.395E-05	1.066E-03	1.487E-08	1.39E-01	1.487E-08	1.39E-01
1.395E-05	5.981E-04	8.342E-09	7.80E-02	8.343E-09	7.80E-02
1.395E-05	2.991E-04	4.171E-09	3.90E-02	4.172E-09	3.90E-02
1.395E-05	3.021E-04	4.213E-09	3.94E-02	4.214E-09	3.94E-02
9.915E-05	3.393E-04	3.365E-08	3.14E-01	3.364E-08	3.14E-01
4.449E-05	5.146E-04	2.290E-08	2.14E-01	2.289E-08	2.14E-01
1.395E-05	1.066E-03	1.487E-08	1.39E-01	1.487E-08	1.39E-01
1.395E-05	7.674E-04	1.070E-08	1.00E-01	1.071E-08	1.00E-01
1.395E-05	7.704E-04	1.074E-08	1.00E-01	1.075E-08	1.00E-01
9.915E-05	8.076E-04	8.008E-08	7.48E-01	8.007E-08	7.48E-01
4.449E-05	9.829E-04	4.373E-08	4.09E-01	4.373E-08	4.09E-01
1.395E-05	2.991E-04	4.171E-09	3.90E-02	4.172E-09	3.90E-02
1.395E-05	3.021E-04	4.213E-09	3.94E-02	4.214E-09	3.94E-02
9.915E-05	3.393E-04	3.365E-08	3.14E-01	3.364E-08	3.14E-01
4.449E-05	5.146E-04	2.290E-08	2.14E-01	2.289E-08	2.14E-01
1.395E-05	3.042E-06	4.242E-11	3.96E-04	4.244E-11	3.97E-04
9.915E-05	4.028E-05	3.993E-09	3.73E-02	3.994E-09	3.73E-02
4.449E-05	2.156E-04	9.590E-09	8.96E-02	9.592E-09	8.96E-02

9.915E-05	4.332E-05	4.295E-09	4.01E-02	4.295E-09	4.01E-02
4.449E-05	2.186E-04	9.725E-09	9.09E-02	9.726E-09	9.09E-02
3.163E-04	2.558E-04	8.092E-08	7.56E-01	8.091E-08	7.56E-01
2.757E-06	2.608E-04	7.191E-10	6.72E-03	7.190E-10	6.72E-03
1.227E-06	2.558E-04	3.138E-10	2.93E-03	3.139E-10	2.93E-03
1.227E-06	3.082E-04	3.781E-10	3.53E-03	3.782E-10	3.53E-03
1.227E-06	5.549E-04	6.806E-10	6.36E-03	6.809E-10	6.36E-03
1.227E-06	1.023E-03	1.255E-09	1.17E-02	1.255E-09	1.17E-02
1.227E-06	5.549E-04	6.806E-10	6.36E-03	6.809E-10	6.36E-03
1.227E-06	2.558E-04	3.138E-10	2.93E-03	3.139E-10	2.93E-03
1.227E-06	2.589E-04	3.175E-10	2.97E-03	3.177E-10	2.97E-03
Total Risk		1.070E-05			

4-22-2004 B. Winfrey:
The following information relates to SCR431 and comes from the README file in the BetaE version which was tested:

```
SCR431: Modified the PCSA Tool to address errors and
comments observed from acceptance testing.
The following errors and comments were addressed:
1) Project tree: Modified the project tree to not
expand the tree to the last valid selection when it is
collapsed and the collapse button is pressed.
2) Project tree: Corrected the project tree to not
expand a previous limb of the tree containing the last
valid selection when a different limb of the tree is
selected repeatedly.
3) Report: Corrected spelling and capitalization errors
in the data.
```

SCR431 was re-tested and the above modifications did correct the errors, causing the SCR to PASS all of its tests. No other comments were added.

4-16-2004 TMAXWELL:
The following acceptance test tables are for SCR 434. The Action Commands were tested and if the Expected Result was achieved, the Action Command was given a “P”(pass). The item for SCR 434 that received a “F”(fail) from entry 4-16-2004, was not a “F”. The reason provided in the table from entry 4-14-2004 for the “F” is by design. No changes were made to the Fault Tree Event Table except the following:

SCR434: Modified the PCSA Tool to address errors from acceptance testing.
The following erorrs were addressed:
1) The Fault Tree Event Table Crystal Report displayed the Top Event Name and Description, but the heading only indicated Top Event Name. Corrected the heading to display both.

The test was conducted on PCSA Tool Version 3.0 BetaE.

Freq. Analysis/Initiating Event		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record (Form/Table)	Activates the text box to add a record.	P
Delete Record (Form/Table)	Deletes the record currently displayed and prompts the user.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Edit Record (Table)	Allows the user to modify any data in the form.	P
Show Report (Form/Table)	Displays the information input into the Initiating Event Form in report format.	P
Init. Table/Form	Toggles between Init. Form and Init. Table windows.	P
Edit Record (Table)	Allows the user to edit input in the Initiating Event Table.	P
Copy Record (Table)	Copies information of the entire row into another row. Copy Record is only available in the Initiating Event Table.	P
Close (Form/Table)	Closes the window and returns to the main project screen retaining any changes made.	P

Freq. Analysis/Event Tree/Event Scenario		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Scenario	Activates the text boxes in the Event Scenario section and allows the user to add a scenario.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Delete Scenario	Deletes the scenario currently displayed and prompts the user.	P
Show Report	Displays the information input into the Event Tree Form Form/Event Scenario in report format.	P
Close	Closes the window and returns to the main project screen retaining any changes made.	P

Freq. Analysis/Event Tree/Subsequent Events		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record	Allows the user to add a record to the Subsequent Events section of the Event Tree Form.	P
Edit Record	Allows the user to edit a record to the Subsequent Events section of the Event Tree Form.	P
Copy Record	Allows the user to copy a record to the Subsequent Events section of the Event Tree Form.	P
Delete Record	Allows the user to delete a record to the Subsequent Events section of the Event Tree Form.	P
Show Report	Displays the information input into the Event Tree Form Form/Subsequent Events in report format.	P
Close	Closes the Event Tree Form.	P

Freq. Analysis/Fault Tree		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record (Form/Table)	Activates the text boxes in the Fault Tree Form and allows the user to add a scenario.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P
Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Delete Record (Form/Table)	Deletes the scenario currently displayed and prompts the user.	P
Show Report (Form/Table)	Displays the information input into the Fault Tree Form in report format.	P
Event Table	Displays the Fault Tree Event Table.	P
Edit Record (Table)	Allows the user to modify any data in the form.	P
Copy Record (Table)	Allows the user to copy any data in the form.	P
Close (Table)	Closes the Table window and returns to the Form window.	P
Close (Form)	Closes the window and returns to the main project screen retaining any changes made.	P

Freq. Analysis/Event Sequence		
Action Command	**Expected Result & Comment**	**(P/F)**
Add Record (Form/Table)	Activates the text boxes in the Event Sequence Form and allows the user to add a scenario.	P
Update Record	Applies and saves any new information or changes made. Update Record is displayed if Add Record or Edit Record have been selected.	P

Cancel	Returns the user to the default form display screen without retaining user input. Cancel is displayed if Add Record or Edit Record have been selected..	P
Delete Record (Form/Table)	Deletes the scenario currently displayed and prompts the user.	P
Show Report (Form/Table)	Displays the information input into the Event Sequence Form in report format.	P
Event Seq. Form/Table	Toggles between the Event Sequence Form and Table.	P
Edit Record (Table)	Allows the user to modify any data in the form.	P
Copy Record (Table)	Allows the user to copy any data in the form.	P
Close (Table)	Closes the Table window and returns to the Form window.	P
Close (Form/Table)	Closes the window and returns to the main project screen retaining any changes made.	P

4-27-2004 TMAXWELL:

The following acceptance test data are for SCR 506. The following test where performed and identified as Pass or Fail. No items in SCR 506 received a Fail. The test performed are as follows :

Pass Load the Main RSAC form by selecting 'Conseq. -> Public Dose -> RSAC -> RSAC from the main menu. If the input and output data are 'in sync' (output data is valid and corresponds to the input data), the 'RSAC Output' tab will be shown, with the 'Summary Results' subtab data displayed. Click the 'RSAC Input' tab, modify any data field on any subtab, and the 'RSAC Output' tab should be disabled.

Pass Do a deterministic RSAC analysis, exit the PCSA Tool and answer 'Yes' to the 'Save?' question. Restart the tool, and do a probabilistic analysis; exit the tool without saving. Restart the tool, verify that the deterministic data is still shown on the output tab. Repeat this test by first doing a probabilistic run and afterwards a deterministic run.

Pass Verify that all fixed-value RSAC input parameters are highlighted in their grids with a grey background color. If these values are double-clicked, an error message should appear stating that they cannot be edited. [These can be identified by scrolling right in the grids, to the

'MinValue' column, which will show 'FIXED' for fixed-value parameters.]

Pass Verify that cell highlighting (for high doses) occurs in the Results Table (Compliance Assessment) and Results Table (Takeaway Analysis – Category Search) for category 1 event sequences that exceed 0.015 rem and category 2 event sequences that exceed 5 rem. If necessary, set doses manually to test this feature.

Pass Verify the 'Load Saved Analysis' button loads a saved deterministic run and probabilistic run, and for each case, the RSAC output tab is shown.

Pass Verify that 'Load Saved Analysis' shows an error if a subdirectory is selected that has no 'RSAC_Run.mdb' file in it.

4-28-2004 RJANETZKE:

The following acceptance test tables are for SCR 435 Version BetaE, and are comprised of the tests that failed for the BetaB version.

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GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-28-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; Probabilistic; Deterministic	
Field	Type of Run	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Release Fraction...; Probabilistic; Deterministic	
Field	Release Fraction	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P; Values do not change to default values, but keep those in the project file.	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Release Fraction; Pool; Restore all defaults	
Field	Release in	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		Pool
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P; Does restore “Air” as default value.	

GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC		**Date:** 4-28-2004

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; Fuel type	
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		"User Specified"
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P; Does run RSAC when supplied with PWR default values.	

Dialogue Window	RSAC: New or Modified Analysis	
Button Sequence	Fuel Selection/... ; User SPec...; Probabilistic; Perform An...	
Field	Co-60	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	ZP	6.57
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P; RSAC input file is created.	

GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->Normal Operation...		**Date:** 4-28-2004

Dialogue Window	Public Normal Operation Dose	
Button Sequence		
Field	Normal Operation Dose	
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P; Focus is on an active field.	

GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->Advanced RSAC Input		**Date:** 4-28-2004

Dialogue Window	Deterministic RSAC Run for Advanced User	
Button Sequence	Edit Exist...; Run Adv...	
Field		
Types Accepted (I=integer, R=real, T=text):		**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):		
Archive File	scr435-1.mdb	
Restorable		
Status (P=pass, F=fail)	P; RSAC does run to completion.	

GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Conseq.->Public Dose->RSAC->RSAC-> Perfor...		**Date:** 4-28-2004

Dialogue Window	RSAC Most Recent Analysis
Button Sequence	RSAC Output; Inhalation; Show Report
Field	All
Archive File	scr435-1.mdb
Comments	
Status (P=pass, F=fail)	P; The "Show Report" button from these boxes was removed to disable attempts to show data from these tabs.

GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 435	**Tester:** Janetzke
Root Test Box: Perform...-> Current Level... -> Public		**Date:** 4-28-2004

Dialogue Window	Results Table - Functional ID E.3.3	
Button Sequence	double click on Dose Pt.Est. For manual data ; Apply	
Field	Editing Results Table - Functional ID E.3.3	
Types Accepted (I=integer, R=real, T=text):	IR	**New Value**
Range Accepted (N = all negatives, Z = zero, P = all positives):	NZP	1.0
Archive File	scr435-1.mdb	
Restorable	yes	
Status (P=pass, F=fail)	P; No error after editing and selecting 'Apply'.	

4-28-2004 RJANETZKE:
The following acceptance test tables are for SCR 436 Version BetaE and are comprised of the tests that failed for the BetaC version.

GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 436	**Tester:** Janetzke
Root Test Box: Proj. Tree -> E.3.3 -> Done -> Perform.		**Date:** 4-28-2004

Results Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 1; Search...; Show Report
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Dose is calculated and displayed correctly in table and report..
Status (P=pass, F=fail)	P; Some fields disappear under the cursor icon on the report when run on the ALBY machine. This is assumed to be limited to this machine only, since the test ran correctly on two other machines.

Dialogue Window	Results Table Project View Base Case
Button Sequence	Current Lev..;Public; edit Dose PtEst; Close Perform.; Proj....; Safety...; Public; Compliance...; 1; Search...; Probabilistic; Show Report
Field	Dose PtEst
Archive File	PCSADemo.mdb
Comments	Characters are no longer missing from the label for “Total Frequency Weighted Dose” on the report for the probabilistic case.
Status (P=pass, F=fail)	P

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GUI Test Worksheet

Project: PCSATool(BetaE)	**SCR:** 436	**Tester:** Janetzke
Root Test Box: Proj. Tree -> A.1 -> Done -> Perform.		**Date:** 4-28-2004

Dialogue Window	Results Table Project View Base Case
Button Sequence	Proj....; Safety...; Public; Compliance...; 1; Search...; set cutoff to 0; Calculate
Field	Expected Number
Archive File	scr436.mdb
Comments	Data from "Analytical and Numerical Solutions of the Expected Number of Occurrences for Combinations of Event Sequences Due to Variability", R. Benke, 2003.
Status (P=pass, F=fail)	P; Table and Report column headings were changed to "Expected Number of Occurrences per year".

5-06-2004 B. Winfrey:
The following information relates to SCR432 and comes from the README file in the BetaF version which was tested:

```
SCR432: Modified the PCSA Tool to address errors and
comments observed from acceptance testing the System
Description form.
The following errors and comments were addressed:
1) When multiple records exist and a record is edited,
the screen jumps to the last record.  Corrected the
forms to remain at the record recently edited.
2) When only one record exists and this record is
deleted, the text remains on the screen.  Corrected the
form to remove the text from the screen.
3) Updated the images form to also update the System
Description form (Shielding tab) when images are added
or deleted.
```

Comments on the above corrective action:
1) System/System Description/Waste Characterization tab: After this corrective

action, the "Edit Record" and "Delete Record" buttons are no longer selectable so I cannot test #s 1 and 2 above for the Waste Characterization tab.

2) Item #2 above was corrected for tabs: Fire Hazard and Operation Sequence.

3) Item #3 above works correctly. When the user opens the Images dialog and adds or deletes an image, it is correctly added or removed from the list under the System/System Description/Shielding tab.

5-13-2004 B. Winfrey:
The following information relates to SCR432 and SCR437 and comes from the README file in the BetaG version which was tested:

```
SCR432: Modified the PCSA Tool to address errors and
comments observed from acceptance testing the System
Description form.
The following errors and comments were addressed:
1) After adding an item on the System Description form
Waste Characterization tab, the record cannot be edited
or deleted because the buttons are not enabled.
Corrected the tab to enable the buttons.

SCR437: Modified the PCSA Tool to address errors and
comments observed from acceptance testing the Risk
Analysis Module.
The following errors and comments were addressed:
1) Modified the report to indicate that the results are
deterministic or probabilistic.
2) When displaying a probabilistic plot, the user is
prompted to determine if he or she wants to see the
plot with the data.  The prompt was modified to ask the
user if he or she wants to see the data with the plot.
```

The BetaG version resolved my first comment in the entry on 5-06-2004 for SCR432. The "Edit Record" and "Delete Record" buttons are now selectable. When there is only one record and it is deleted, all of the text is removed from the screen. When there are multiple records and a record is edited, the screen stays on that record after it is updated instead of jumping to the last record.

For SCR437, the changes in item #2 above were implemented. The SCR passed without the changes, however they were useful and contributed to a more user friendly interface and report.

6-01-2004 GADAMS:
In addition to acceptance testing of the PCSA Tool, validation testing will also be documented in this scientific notebook. G Adams, T Maxwell, B Dasgupta, R Benke, and NRC staff will be conducting validation testing.

6-14-2004 B. Winfrey:
The following table documents testing performed for SCR 507. All sections of this test passed.

System / System Description - *Int. Events* menu		
Action Command	**Expected Results & Comment**	**(P/F)**
Edit Record / double click	Verify that an entire row is highlighted after editing a cell in a grid by editing a field in the grid (Assumption I). Notes: 1) First add an Item using the FMEA Form, What If Form, Energy Method Form, and HRA Forms. Then, go to the respective Severe Events form to perform editing. 2) The only editable field on the Severe Events form is the "Remarks" field. 3) When the Remarks field is edited the first 18 characters are visible under the Remark column on the Severe Events form, and the entire remark is visible on the report. 4) There is a 3 character minimum entry requirement per response under the Component Description, What If, Event Name, Human Action, Justification, and Explanation fields.	P
System / System Description - *Freq. Analysis* menu		
Action Command	**Expected Results & Comment**	**(P/F)**
Edit Record / double click	Verify that an entire row is highlighted after editing a cell in a grid by editing a field in the grid. Notes: 1) First add an Item using the Initiating Event, Event Tree, Fault Tree, and Event Sequence Forms. Then go to the respective Event Sequence Table (Assumption II) to perform editing.	P

	2) The only fields on the Event Sequence Table that can be edited are 'EvSeq ID', 'P W B', 'EvSeq Freq', 'Description', 'End State', and 'Additional Info'	
System / System Description - *SSC Data* form		
Action Command	**Expected Results & Comment**	**(P/F)**
Edit Record / double click	Verify that an entire row is highlighted after editing a cell in a grid by editing a field in the grid. Notes: 1) The SSC data form is available under the System dropdown menu under SSCs. 2) Under the Design Bases and Design Criteria tab on the SSC Data form, add a record and edit any or all of the editable cells to obtain the desired results.	P
System / System Description – *System Description* tabs		
Action Command	**Expected Results & Comment**	**(P/F)**
Edit Record / double click	Verify that an entire row is highlighted after editing a cell in a grid by editing a field in the grid Notes: 1) Open the System Description tabs under the System dropdown menu. For each of the following tabs, add a record and then edit the record to obtain the desired results: Human Actions, Software System, Assumptions,	P
System / System Description – *RSAC Input Form*		
Action Command	**Expected Results & Comment**	**(P/F)**
deterministic	Verify that on editing text on the RSAC Input form, that long field names requiring word wrapping (continuation to a second line in the field name label on the editing popup) display the entire field name. The longest entry in the database is currently '*Stored (other) vegetable consumption rate (wet kg/yr) includes fruits and grains*' in the '*RSAC Ingestion Dose*' table, which can be found on the '*Ingestion Dose*' tab. To verify word wrapping in the label caption, edit the '*Input Value*' for this field; you should see the entire field name visible on the field name label above the editing text box. Notes: 1) To find long field names to verify, simply click and drag the right edge of the Input Parameter column to expand the names. Find a few long names, double click on their Input Values to have the Edit RSAC Input dialog open, and verify	P

	that the entire Input Parameter Name is visible above the editing text box.	
probabilistic	Verify that on editing text on the RSAC Input form, that long field names requiring word wrapping (continuation to a second line in the field name label on the editing popup) display the entire field name. The longest entry in the database is currently '*Stored (other) vegetable consumption rate (wet kg/yr) includes fruits and grains*' in the '*RSAC Ingestion Dose*' table, which can be found on the '*Ingestion Dose*' tab. To verify word wrapping in the label caption, edit the '*Input Value*' for this field; you should see the entire field name visible on the field name label above the editing text box. Notes: same as for deterministic, above.	P
I. Assumption		
Apply	After clicking '*Apply*' to update the entry, the update will be implemented and the entire line for the field edited should be highlighted.	P
Cancel	Update not implemented, line not highlighted. In effect, no changes made.	P
II. Assumption		
Init Event Table	After clicking the 'Init *Event Table*' button the Initiating Event Table becomes available for editing.	P
Event Table	After clicking the '*Event Table*' button the Fault Tree Event Table becomes available for editing.	P
Event Seq Table	After clicking the 'Event Seq Table' button the Event Sequence Table becomes available for editing.	P

6-23-2004 T.Maxwell:

Validation testing was performed for the following SVTRs from May 20, 2004 to June 23, 2004. All of the following SVTRs passed the required test.

SVTR#: (assigned separately)	Project #: 20.060002.01.103	
Software Name: PCSA Tool		Version: 3.0 (Beta H)
Test ID: 6.1	Test Series Name: Project Tree	

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine GRIFFON, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: This test verifies the project tree is built correctly and the input is stored correctly into the proper functional areas within the tree structure.
Test Procedure: Tested in accordance with section 6.1.2 of the SVTP for PCSA Tool Version 3.0.
Test Results Test results are located in Appendix A. The level information and remarks appear correctly on the PCSA Project Tree Report after exiting and re-entering the PCSA Tool. The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Project Tree Report. Test Evaluation (Pass/Fail): Pass
Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)

Test ID: 6.2	Test Series Name: Ext. Events
Test Method ☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code	
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.	
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the user input is correctly stored in the database.	
Test Procedure: Tested in accordance with section 6.2.2 of the SVTP for PCSA Tool Version 3.0.	
Test Results Test results are located in Appendix A. The user input appears correctly on the PCSA External Events Report after exiting and re-entering the PCSA Tool. The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the External Events Report. Test Evaluation (Pass/Fail): Pass	
Notes: None.	
Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.2	Test Series Name: Ext. Events

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the user input is correctly stored in the database.
Test Procedure: Tested in accordance with section 6.2.2 of the SVTP for PCSA Tool Version 3.0.
Test Results Test results are located in Appendix A. The user input appears correctly on the PCSA External Events Report after exiting and re-entering the PCSA Tool. The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the External Events Report. Test Evaluation (Pass/Fail): Pass
Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.3.2	Test Series Name: System

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is correctly stored in the database and can be retrieved from the database and displayed.

Test Procedure: Tested in accordance with section 6.3.2.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA Structures, Systems, and Components Report after exiting and re-entering the PCSA Tool.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the SSC Report.

Test Evaluation (Pass/Fail): Pass

Notes: This test was conducted under Functional Area B.1.2.3.

Tester: Troy Maxwell	Date: June 3, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.3.2	Test Series Name: System

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is correctly stored in the database and can be retrieved from the database and displayed.

Test Procedure: Tested in accordance with section 6.3.2.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA Structures, Systems, and Components Report after exiting and re-entering the PCSA Tool.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the SSC Report.

Test Evaluation (Pass/Fail): Pass

Notes: This test was conducted under Functional Area B.1.2.3.

Tester: Troy Maxwell	Date: June 3, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.4.2	Test Series Name: Int. Events

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database, and that severe events are correctly distinguished from non-severe events

Test Procedure: Tested in accordance with section 6.4.2.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA What If Report after exiting and re-entering the PCSA Tool. The severe events are correctly distinguished from non-severe events.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the What-If Report.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.4.3	Test Series Name: Int. Events

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none.
Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database, and that severe events are correctly distinguished from non-severe events

Test Procedure: Tested in accordance with section 6.4.3.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA Energy Analysis Report after exiting and re-entering the PCSA Tool. The severe events are correctly distinguished from non-severe events.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Energy Method Report.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.4.4	Test Series Name: Int. Events

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database, and that severe events are correctly distinguished from non-severe events

Test Procedure: Tested in accordance with section 6.4.4.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA HRA Report after exiting and re-entering the PCSA Tool. The severe events are correctly distinguished from non-severe events.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the HRA Report.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.4.5	Test Series Name: Int. Events

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the severe events previously entered are displayed correctly.

Test Procedure: Tested in accordance with section 6.4.5.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The severe events are correctly displayed from previous entries in the Severe Events Report.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Severe Events Report.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.5.1	Test Series Name: Freq. Analysis

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database, and the event is correctly labeled as “likely”, “unlikely”, or “not included”.

Test Procedure: Tested in accordance with section 6.5.1.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA Initiating Event Report after exiting and re-entering the PCSA Tool. The events are correctly labeled as “likely”, “unlikely”, or “not included”.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Initiating Event Report.

Test Evaluation (Pass/Fail): Pass

Notes: Manual Data was checked in place of DOE Event. EXHZ_Ex1 was selected for Hazard ID.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.5.2	Test Series Name: Freq. Analysis

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database.

Test Procedure: Tested in accordance with section 6.5.2.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA Event Tree Report after exiting and re-entering the PCSA Tool.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Event Tree Report.

Test Evaluation (Pass/Fail): Pass

Notes: Yes was selected for Include for Perform. Analysis for the first event.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.5.3	Test Series Name: Freq. Analysis

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database.

Test Procedure: Tested in accordance with section 6.5.3.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located in Appendix A.

The user input appears correctly on the PCSA Fault Tree Report after exiting and re-entering the PCSA Tool.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Fault Tree Report.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.5.4	Test Series Name: Freq. Analysis

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the user input is stored correctly in the database.
Test Procedure: Tested in accordance with section 6.5.4.2 of the SVTP for PCSA Tool Version 3.0.
Test Results Test results are located in Appendix A. The user input appears correctly on the PCSA Event Sequence Report after exiting and re-entering the PCSA Tool. The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Event Sequence Report. Test Evaluation (Pass/Fail): Pass
Notes: Public Dose and Worker Dose were selected for Records 1 and 2 respectively.

Tester: Troy Maxwell	Date: May 20, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta H)
Test ID: 6.6	Test Series Name: Saphire

Test Method

☐ code inspection
☐ output inspection
☐ hand calculation
☐ spreadsheet
☒ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: This test verifies that the PCSA Tool can invoke the SAPPHIRE module.

Test Procedure: Tested in accordance with section 6.6.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

Test results are located on the attached CD labeled, "SVTR 6.6"

The SAPPHIRE program was invoked and the SAPPHIRE window was displayed. The PCSA Tool menu and forms were still available for user access and SAPPHIRE was available after the PCSA Tool was closed.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: May 28, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta J)
Test ID: 6.9	Test Series Name: SW Reliability

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the data entered into the Software Systems form is displayed correctly after exiting and reentering the PCSA Tool.

Test Procedure: Tested in accordance with section 6.9.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

The information entered into the Software Systems form is correctly displayed after exiting the PCSA Tool and reentering.

The PCSA Tool test input was checked in Microsoft Access and agreed with the data that appeared in the Software Systems form.

Test Evaluation (Pass/Fail): Pass

Notes: None.

Tester: Troy Maxwell	Date: June 22, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta J)
Test ID: 6.10.1	Test Series Name: Failure Rate

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the data retrieved from the View Taxonomy is displayed correctly.
Test Procedure: Tested in accordance with section 6.10.1.2 of the SVTP for PCSA Tool Version 3.0.
Test Results The search results for “Drillstring/Heave compensator” were displayed in the ‘Search Results for:’ form is correctly as were the corresponding reference for Letter ID ‘C’. Test Evaluation (Pass/Fail): Pass
Notes: There was no user input required for this test.
Tester: Troy Maxwell | Date: June 22, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta J)
Test ID: 6.10.2	Test Series Name: Failure Rate

Test Method

☐ code inspection
☒ output inspection
☐ hand calculation
☐ spreadsheet
☐ graphical
☐ comparison with external code

Test Environment Setup

Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional

Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed

Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.

Assumptions, constraints, and/or scope of test:
Assumptions or constraints: none
Scope of the test: The scope of this test is to verify that the data retrieved from the Failure Rate Data Search is displayed correctly.

Test Procedure: Tested in accordance with section 6.10.2.2 of the SVTP for PCSA Tool Version 3.0.

Test Results

The search results for “crane” were displayed in the ‘Search Results for:’ form is correctly as were the corresponding reference for Letter ID ‘E’ and Number ID ‘3'.

Test Evaluation (Pass/Fail): Pass

Notes: There was no user input required for this test.

Tester: Troy Maxwell	Date: June 22, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta J)
Test ID: 6.10.3	Test Series Name: Failure Rate

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the Frequency of Failure per year is calculated correctly.
Test Procedure: Tested in accordance with section 6.10.3.2 of the SVTP for PCSA Tool Version 3.0.
Test Results The "Frequency of Failure per year" is calculated as the product of the failure rate and the number of hours or demands placed on the component. The product is correctly calculated as shown in the equations in Appendix A. Test Evaluation (Pass/Fail): Pass
Notes: None.

Tester: Troy Maxwell	Date: June 22, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103
Software Name: PCSA Tool	Version: 3.0 (Beta J)
Test ID: 6.10.4	Test Series Name: Failure Rate

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the module is capable of guiding the tester through a series of options and producing an output representing the user input.
Test Procedure: Tested in accordance with section 6.10.4.2 of the SVTP for PCSA Tool Version 3.0.
Test Results The Human Error Probability Generator correctly guided the user through the series of options and produced an output that correctly represented the input. The output is shown in Appendix A. Test Evaluation (Pass/Fail): Pass
Notes: None.
Tester: Troy Maxwell | Date: June 22, 2004

SVTR#: (assigned separately)	Project #: 20.060002.01.103	
Software Name: PCSA Tool		Version: 3.0 (Beta J)
Test ID: 6.11	Test Series Name: Checklist	

Test Method
☐ code inspection ☒ output inspection ☐ hand calculation ☐ spreadsheet ☐ graphical ☐ comparison with external code
Test Environment Setup Hardware (platform, peripherals): Machine griffon, Windows 2000 Professional Software (OS, compiler, libraries, auxiliary codes or scripts): PCSA Tool Version 3.0 installed Input Data (files, database, mode settings): Default PCSA Tool database created at the start of the test.
Assumptions, constraints, and/or scope of test: Assumptions or constraints: none Scope of the test: The scope of this test is to verify that the user is able to retrieve the Component Failure Mode Checklist and search for a specific component.
Test Procedure: Tested in accordance with section 6.11.2 of the SVTP for PCSA Tool Version 3.0.
Test Results The Component Mode Failure Checklist successfully displayed the components shown in section 6.11.1 of the SVTP for PCSA Tool Version 3.0 and produced all components pertaining to the user input. Test Evaluation (Pass/Fail): Pass
Notes: None.
Tester: Troy Maxwell | Date: June 22, 2004

7-12-2004 B. Winfrey:
The following tables document testing performed for SCR 508. All listed Acceptance Tests on section 9 of the SCR passed, however see the notes in RED for possible unresolved issues.

System/SSCs		
Action Command	**Expected Result & Comment**	**(P/F)**
Add/Update Record	Add makes the fields editable so that the user can add an SSC to the database. Update adds the information in the fields to the database as an SSC. Note: Add three SSCs: 1)Mode of Operation = Manual 2)Important to Safety by DOE determination, and 3)Important to Safety by Staff determination	**P**
Show Report	Crystal Reports captures the information and displays the user input in report format. The report should include a Description in the upper right corner of the current selected Functional Area level.	**P**
Cancel	Cancels the action. Does not make any changes to the database.	**P**

Int. Events		
Action Command	**Expected Result & Comment**	**(P/F)**
Show Report	Crystal Reports captures the information and displays the user input in report format. All subareas under the Int. Events dropdown menu should include the Functional Area Description for the current selected level in the upper right area of the Report. These subareas include: FMEA, What If, Energy Method, HRA, and Severe Events (ALL) under both the form and severe events subcategories.	**P**

Perform./Current Level Results/Worker		
Action Command	**Expected Result & Comment**	**(P/F)**
Show Report	Crystal Reports captures the information and displays the user input in report format. The report should include a Functional Area Description for the current selected level in the upper right area. Both the involved and noninvolved subcategories should be tested.	**P**

Perform./Project Results/Display SSCs		
Action Command	**Expected Result & Comment**	**(P/F)**
Functional ID	Command and filtering functions work correctly to view SSCs. Displays SSCs for the current Functional ID or for all Functional IDs depending on which is selected.	**P**
Mode of Operation	Command and filtering functions work correctly to view SSCs. Displays SSCs based on the mode of operation selected	**P**
DOE	Command and filtering functions work correctly to view SSCs. If	**P**

	selected, dispays SSCs if they are Important to Safety by DOE determination.	
Staff	Command and filtering functions work correctly to view SSCs. If selected, dispays SSCs if they are Important to Safety by Staff determination. Note: if they are important to safety by staff determination, they should also be important by DOE determination. If not, the ITS columns for DOE and Staff will both be highlighted in RED.	**P**
Close	Closes the "View Selected SSCs" window.	**P**
	Go to the System/SSCs dropdown menu and delete all SSCs. Now re-open the Perform./Project Results/Display SSCs to open the View Selected SSCs window. With no SSCs entered in the database, all grids should display properly with no data in them.	**P**

Perform./Project Results/Risk Assessment, Public		
Action	**Expected Result & Comment**	**(P/F)**
Use the scroll bar to scroll to the far right end of the table.	The heading displays correctly for the last column "NoneFilesOnly" on the risk assessment grid.	**P**

Close PCSA Tool and save Log Entry but NOT database		
Action	**Expected Result & Comment**	**(P/F)**
Close PCSA Tool using the File/Exit command.	Expected result is that the log will be saved, but the changes to the database will not. Close and save all changes using the File/Exit command so that an initial log database will be created. Re-open the demo file in PCSA Tool and close it again. This time, do not save the file, but DO create a log entry. Open the log file PCSADemo.mdb with MS Access and verify that an entry was made for both times the file was closed. Results: When you click on File/Exit, you are prompted with "do you want to save". If you click "No", the program closes without asking you to enter a log. If you click on "Yes", you must enter a log, and everything (including the changes to the database) is saved. The only way I found to be able to save the log, but not the changes to the database is to open the file, make no changes, click on File/save then File/exit, say "No" to the prompt "do you want to save", and then you have to enter a log before it will close. If you do not save	**F**

	anything, you will not be prompted to create a log.	

7-19-2004 B. Winfrey:
The tests for SCR 508 all passed. The log database is designed that you should only be prompted to save a log if a change has been made. The SCR change made it possible for the following scenario to occur: you make a change to the database, save it, make another change and decide that you do not want to save this other change so when you exit, you click on "No", you do not want to save. A log should still be generated since you had previously saved a change to the database. In this case, when you click on "No", you are prompted to enter a log and this log is saved. Had you not previously saved a change, instead of being prompted for a log entry, PCSA Tool would have just exited.

Close PCSA Tool and save Log Entry but NOT database		
Action	**Expected Result & Comment**	**(P/F)**
Close PCSA Tool using the File/Exit command.	Expected result is that the log will be saved, but the changes to the database will not. Close and save all changes using the File/Exit command so that an initial log database will be created. Re-open the demo file in PCSA Tool and close it again. This time, do not save the file. PCSA Tool should exit without prompting for a log entry. Now open PCSA Tool and click on save. Make a few changes (such as entering a new SSC) and exit. Click "No" when prompted to save changes. You should then be prompted to save a log entry. Make the entry and verify with MS Access that the entry was saved upon exit.	**P**

7-20-2004 B. Winfrey:
The tests for SCR 509 did not all pass. The details are in the tables below.

Consequence Analysis Module/Worker Dose/Worker Internal/Dry		
Action Command	**Expected Result & Comment**	**(P/F)**
Internal Worker Dose		
Units for Rates	Radio buttons will convert Leakage and Ventilation rates to either m^3/s or %/day. Only one button can be selected at a time.	**P**
Fuel Type	Radio buttons will set the fuel type to BWR, PWR, or User Specified. The type should change to the value selected. Only one value can be selected at a time.	**P**

Restore Point Estimates to Defaults	This will return all values on the Internal Worker Dose tab to their default values and the Calculated Dose table will close.	**P**
Calculate Doses	Calculated worker dry dose values agree with hand/spreadsheet calculated values. Notes: · Under the Internal Worker Dose tab, set the Units for Rates to %/day, Ventilation Rate of the Worker Room to 2400.0, number of decimal places to display to 8, and Fuel type to User Specified. · Enter Inventory (column 1) values under the Source Term tab for the following Radionuclides: Note: User Specified fuel type must be selected on the Internal Worker Dose tab in order to edit this table. Double click on the cell under the Inventory (Ci/Assembyl) column to open it for editing. · Kr85 = 4.24e+02 · Sr90 = 2.37e-01 · Y90 = 2.37e-01 · Am241 = 1.67e-02 · Set the Release Fraction to 1.00e+00 for all groups under the Release Fraction by Group tab by double clicking on the cell to be modified under the Release Fraction column. · Under the Internal Worker Dose tab, set the Exposure Duration to the following times: 1.001, 2.201, 3.101, 4.001, 5.201, 6.101, 7.001, and 8.000. Calculate the Doses for each radionuclide individually for each of the times and calculate the total dose for all radio nuclides at each time. The individual radionuclide inhalation and submersion dose rates should be displayed in the dose table and total values for submersion and inhalation dose rates should be displayed in the Totals (rem) text blocks below the dose table. · Using Excel, create a spreadsheet that will calculate the dose for each radionuclide at each of the times and compare the "hand calculations" done by Excel to the calculations performed by PCSA Tool. There should be no difference (see Attachment 3). · Run the same radio nuclides for the same times with the Ventilation Rate of the Worker Room set to zero and compare the output calculations. There should be no difference between PCSA Tool and hand calculations (see Attachment 3).	P
Number of Decimal Places to Display	Will change the number of decimal places displayed in the dose calculations table. Minimum is 2 and Maximum is 8.	**P**
Source Term		
Restore Point Estimates to Defaults	This will return the Inventory (Ci/Assembly) column back to the default values. If User Specified fuel type is selected under the Internal Worker Dose tab, the default value is 0.00e+00 for all radio nuclides. This button is disabled under the PWR and BWR fuel types.	**P**
Release Fraction by Group		
Restore Point Estimates to Defaults	This will return the Release Fraction column back to the default values. The default values are the same for all fuel types.	**P**

Restore All Defaults	Will restore all edited values in all three tabs (Internal Worker Dose, Source Term, and Release Fraction by Group) to their default values.	**P**
View Notes	View dose calculation data sources and references.	**P**
Show Report	Show Crystal Reports PCSA Conseq. Worker Dry report with the following sub-reports: Output Doses, Rooms, Fuel, Source Term, and Release Fraction by Group. Note: If no calculations have been performed, the report will still be generated, showing all input values, but no Output Doses report will be generated.	**P**
Close	Closes the "frmWorkerDry" window. Closes the entire Consequence Analysis Module window.	**P**

Perform./Project Results/Safety Assessment/ [Public/Involved/Noninvolved Worker]		
Action Command	**Expected Result & Comment**	**(P/F)**
Takeaway	Opens the Results Table for Project View SSCIS Case (SSC takeaway analysis) for the Public, Involved Worker or Noninvolved Worker. See Project View SSCIS table (below).	**P**
Refresh	Refresh table to show all events instead of just the selected events.	**P**
Compliance Assessment	Brings up a Category Search dialog that allows the user to display records for categories 1, 2, or BCFL. Category 1: enter a cutoff for expected number of events and click on calculate. This will open an Event Sequences dialog window that selects event sequences within a specified cutoff for expected number of events. Clicking on the "Calculate" button within this window will generate a table of Event Combinations along with the maximum combination dose, normal operation dose, and aggregate TEDE for the listed combinations. Note: In all scenarios (Public, Involved, and Noninvolved Worker) the calculated doses are editable. Changes to these fields show up on the Crystal Report but seem to have no effect on the table other than to give the incorrect "calculated" value if changed. Is this right? Clicking on the "Done" button in this window will show a Results table with all Category 1 events. For the public scenario this table has with it, two radio buttons to select between displaying deterministic and probabilistic results. The results for Frequency Weighted, Normal Operation, and Total Dose are displayed for the Public, Involved, and Noninvolved Worker.	**F**
Edit Record	Not selectable.	**F**
Show Report	Crystal Reports capture the information on the forms.	**P**
Close	Closes the Results Table – Project View Base Case –	**P**

	Public/Involved/Noninvolved Worker window. Closes the entire Performance Assessment Module window.	

Results Table - Project View SSCIS Case [Public/Involved/Noninvolved Worker]

Action Command	Expected Result & Comment	(P/F)
SSC Select/Update	Allows SSC selection based on SSCs available in the database. Selection can be made based on Functional ID, Mode of Operation, ITS by DOE and ITS by Staff. When the Edit button is selected, the Update button will institute changes made to the Additional Information.	**P**
SSC Edit	Allows editing of Additional Information for the selected SSC.	**P**
Refresh	Updates the Results Table after a Category Search is performed. It repopulates the table with default data for all of the Categories.	**P**
Category Search	Allows the Results Table to list only results for Category 1, Category 2, or BCFL. When Category 1 is selected under Public, a dialog window "Category 1 Event Sequences" appears that allows either Point Estimate or Probabilistic Mean Dose Type to be calculated. • Probabilistic is misspelled. • There may be an unnecessary comma between Probabilistic and Mean. • Clicking the Calculate button under Annual Dose due to SSC Failure causes the calculation to be performed based on the Dose Type selected as well as the value entered in the text box for the Maximum Dose from SSC Failure. • If the value entered is greater than 1.49e-02, the Total Dose field is highlighted RED in both the Category 1 Event Sequences window and the main Project View SSCIS Case window. Note: the Project View Total Dose field is RED only when the Point Estimate radio button is selected for value = 1.50e-02. When the value is 1.55e-2 or greater, both fields are red for both Point Estimate and Probabilistic Mean Dose. Under the Involved Worker scenario, when the Maximum Dose is 5 rem it is highlighted red in the Category 1 Event Sequence window, but NOT in the main Project View window or in the Crystal Report. When the value is greater than 5 rem (e.g., 5.01 rem), it is highlighted red in the Event Sequences window, the Project View window, and the Report. Is this a discrepancy? Under the Noninvolved Worker when the Maximum Dose is 1.00e-01 rem (shouldn't this be 1.00e-3 rem?) it is highlighted red in the Category 1 Event Sequence window, but NOT in the main Project View window or in the Crystal Report. When the value is greater than 1.00e-01 rem (e.g., 1.01e-01 rem), it is highlighted red in the Event Sequences window, the Project View window, and the Report. Is this a discrepancy? When the total dose field is red, it is also red in the Crystal Report.	**F**
Edit Record	Allows the user to edit the 'Inclf/SA Calc', ;EvSeq Freq', and 'Internal' and	

	'External' Doses columns. Note: This is only a personal preference, but annoying enough to mention. When you try to edit a field that is not editable, a message window pops up and lists the fields that ARE editable. The field names are listed randomly instead of left-to-right as one would normally read column headers. The noninvolved worker category 1 doses are highlighted in both the form and Crystal Report when above 100 mrem for dose or 2 mrem/hr for dose rate. This includes takeaway analysis forms. The involved worker and public category 1 doses are highlighted in both the form and Crystal Report when **above** 5 rem. This includes takeaway analysis. Note: For the Public scenario this does not always work. Sometimes Dose, Mean = 5.00 is red sometimes it is not. Sometimes Dose, PtEst = 5.0 is red, sometimes it is not. When either dose is equal to 5.01, they are highlighted red. When they are highlighted on the form, they ARE highlighted on the Report.	**F**
Show Report	Crystal Reports capture the information on the forms. In the Noninvolved Worker scenario, the Dose Rate (rem/hr) is NOT on the Report	**F**
Close	Closes the Results Table – Project View Base Case – Public/Involved/Noninvolved Worker window. Closes the entire Performance Assessment Module window.	**P**

Attachment 3 from SCR509

Values from Excel Spreadsheet WorkerDry.xls

PCSA Tool Calculations for individual radionuclides

Time (t)	Kr85		Sr90		Y90		Am241	
	Submersion	Inhalation	Submersion	Inhalation	Submersion	Inhalation	Submersion	Inhalation
1.001	2.79597E-05	0.00000E+00	9.88926E-10	3.16781E-01	2.47737E-08	2.04295E-03	7.56991E-09	7.63137E+00
2.201	1.34728E-04	0.00000E+00	4.76530E-09	1.52646E+00	1.18351E-07	9.75971E-03	3.64769E-08	3.67731E+01
3.101	2.66770E-04	0.00000E+00	9.43563E-09	3.02251E+00	2.32835E-07	1.92005E-02	7.22271E-08	7.28135E+01
4.001	4.42984E-04	0.00000E+00	1.56684E-08	5.01903E+00	3.84148E-07	3.16785E-02	1.19927E-07	1.20911E+02
5.201	7.46077E-04	0.00000E+00	2.63889E-08	8.45312E+00	6.41457E-07	5.28972E-02	2.02000E-07	2.03640E+02
6.101	1.02408E-03	0.00000E+00	3.62212E-08	1.16029E+01	8.74835E-07	7.21426E-02	2.77270E-07	2.79521E+02
7.001	1.34516E-03	0.00000E+00	4.75787E-08	1.52408E+01	1.14177E-06	9.41555E-02	3.64204E-07	3.67161E+02
8.000	1.75161E-03	0.00000E+00	6.19554E-08	1.98461E+01	1.47624E-06	1.21737E-01	4.74255E-07	4.78105E+02

Hand Calculations for individual Radionuclides

Time (t)	Kr85		Sr90		Y90		Am241	
	Submersion	Inhalation	Submersion	Inhalation	Submersion	Inhalation	Submersion	Inhalation
1.001	2.79597E-05	0.00000E+00	9.88926E-10	3.16781E-01	2.47737E-08	2.04295E-03	7.56991E-09	7.63137E+00
2.201	1.34728E-04	0.00000E+00	4.76530E-09	1.52646E+00	1.18351E-07	9.75971E-03	3.64769E-08	3.67731E+01
3.101	2.66770E-04	0.00000E+00	9.43563E-09	3.02251E+00	2.32835E-07	1.92005E-02	7.22271E-08	7.28135E+01
4.001	4.42984E-04	0.00000E+00	1.56684E-08	5.01903E+00	3.84148E-07	3.16785E-02	1.19937E-07	1.20911E+02
5.201	7.46077E-04	0.00000E+00	2.63889E-08	8.45312E+00	6.41457E-07	5.28971E-02	2.02000E-07	2.03640E+02
6.101	1.02408E-03	0.00000E+00	3.62219E-08	1.16029E+01	8.74826E-07	7.21426E-02	2.77270E-07	2.79521E+02
7.001	1.34516E-03	0.00000E+00	4.75787E-08	1.52408E+01	1.14178E-06	9.41555E-02	3.64204E-07	3.67161E+02
8.000	1.75161E-03	0.00000E+00	6.19554E-08	1.98461E+01	1.47624E-06	1.21737E-01	4.74255E-07	4.78105E+02

Verification against individual calculations

Time (t)	PCSA Tool			Hand Calculations			Percent Difference		
	Submersion	Inhalation	TOTAL	Submersion	Inhalation	TOTAL	Submersion	Inhalation	Total
1.001	2.79930E-05	7.95020E+00	7.95023E+00	2.79930E-05	7.95020E+00	7.95023E+00	0.000%	0.000%	0.000%
2.201	1.34887E-04	3.83093E+01	3.83094E+01	1.34887E-04	3.83093E+01	3.83094E+01	0.000%	0.000%	0.000%
3.101	2.67084E-04	7.58552E+01	7.58555E+01	2.67084E-04	7.58552E+01	7.58555E+01	0.000%	0.000%	0.000%
4.001	4.43503E-04	1.25961E+02	1.25962E+02	4.43503E-04	1.25962E+02	1.25962E+02	0.000%	0.000%	0.000%
5.201	7.46946E-04	2.12146E+02	2.12147E+02	7.46946E-04	2.12146E+02	2.12147E+02	0.000%	0.000%	0.000%
6.101	1.02527E-03	2.91196E+02	2.91197E+02	1.02527E-03	2.91196E+02	2.91197E+02	0.000%	0.000%	0.000%
7.001	1.34671E-03	3.82496E+02	3.82497E+02	1.34671E-03	3.82496E+02	3.82497E+02	0.000%	0.000%	0.000%
8.000	1.75362E-03	4.98073E+02	4.98075E+02	1.75362E-03	4.98073E+02	4.98075E+02	0.000%	0.000%	0.000%

7-21-2004 B. Winfrey:
A few things about SCR509.

- On the Project View SSCIS Case - Public/Involved/Noninvolved Worker window, the edit button is NOT supposed to be selectable. The user is not allowed to edit this form but could do so if they were instead on the Current Level Results form.
- Under Results Table - Project View SSCIS Case [Public/Involved/Noninvolved Worker], {Edit Record}, For the public scenario, the reason sometimes a dose of 5 is red and sometimes not is because for category 1 a dose above 0.015 will turn red whereas for category 2 a dose above 5.00 will turn red and a BCFL will not turn red. Apparently when I checked this earlier I confused the tables and thought I had only category 1 listed when in fact, I had all three categories in the table.

SCR508 - a bug was found while testing the edit function on SCR509, but the fix was added to SCR508 because the problem was generated by setting the mode when adding an SSC (a function tested in SCR508).
The following excerpt is from the README file packaged with the new version:

> SCR508: Corrected an error in which editing a grid was not occurring on three forms if the user previously added an entry on a form. The three forms corrected were the Results Table (frmResultsTable), Results SSCITS Table (frmResultsSSCITSTable) and the FMEA Severe Events List (frmSelTable). When the user double clicked on a grid cell, if the mode was not properly set, then the form could try to add a record instead of editing an existing record.

SCR508 passed all of the tests, however one thing was noticed (highlighted in red below). Although it does not affect the SCR passing or failing, it is a function that does nothing and thus should either be removed or have the button "greyed out" so that the user knows it has no functionality. The function referred to is the 'refresh' button on the Perform./Current Level Results windows for Public, Involved, and Noninvolved Worker windows.

System/SSCs		
Action Command	**Expected Result & Comment**	**(P/F)**
Add/Update Record	Add makes the fields editable so that the user can add an SSC to the database. Update adds the information in the fields to the database as an SSC. Note: Add three SSCs: 1)Mode of Operation = Manual 2)Important to Safety by DOE determination, and 3)Important to Safety by Staff determination Note: This test only passes if the results table, SSCITS table, and FMEA	**P**

	Severe Events List can be correctly edited after an SSC has been added.	
Edit Record	Allows the user to edit a record after previously adding.	**P**
Show Report	Crystal Reports captures the information and displays the user input in report format. The report should include a Description in the upper right corner of the current selected Functional Area level.	**P**
Cancel	Cancels the action. Does not make any changes to the database.	**P**

Int. Events		
Action Command	**Expected Result & Comment**	**(P/F)**
Edit Record	Allows the user to edit a grid entry after previously adding on another form. This button works correctly on all subareas including: FMEA, What If, Energy Method, HRA, and Severe Events (ALL) for tables under both the form and severe events subcategories.	**P**
Show Report	Crystal Reports captures the information and displays the user input in report format. All subareas under the Int. Events dropdown menu should include the Functional Area Description for the current selected level in the upper right area of the Report. These subareas include: FMEA, What If, Energy Method, HRA, and Severe Events (ALL) under both the form and severe events subcategories.	**P**

Perform./Current Level Results/Worker/[Involved/Noninvolved]		
Action Command	**Expected Result & Comment**	**(P/F)**
Refresh	Does nothing for this form. Not part of this SCR, but something that was noticed during testing.	**N/A**
Edit Record	The results table allows the user to edit a grid entry after previously adding on another form.	**P**
Show Report	Crystal Reports captures the information and displays the user input in report format. The report should include a Functional Area Description for the current selected level in the upper right area. Both the involved and noninvolved subcategories should be tested.	**P**

Perform./Project Results/Display SSCs		
Action Command	**Expected Result & Comment**	**(P/F)**
Functional ID	Command and filtering functions work correctly to view SSCs. Displays SSCs for the current Functional ID or for all Functional IDs depending on which is selected.	**P**
Mode of Operation	Command and filtering functions work correctly to view SSCs. Displays SSCs based on the mode of operation selected	**P**

DOE	Command and filtering functions work correctly to view SSCs. If selected, dispays SSCs if they are Important to Safety by DOE determination.	P
Staff	Command and filtering functions work correctly to view SSCs. If selected, dispays SSCs if they are Important to Safety by Staff determination. Note: if they are important to safety by staff determination, they should also be important by DOE determination. If not, the ITS columns for DOE and Staff will both be highlighted in RED.	P
Close	Closes the "View Selected SSCs" window.	P
	Go to the System/SSCs dropdown menu and delete all SSCs. Now re-open the Perform./Project Results/Display SSCs to open the View Selected SSCs window. With no SSCs entered in the database, all grids should display properly with no data in them.	P

Perform./Project Results/Risk Assessment, Public		
Action	**Expected Result & Comment**	**(P/F)**
Use the scroll bar to scroll to the far right end of the table.	The heading displays correctly for the last column "NoneFilesOnly" on the risk assessment grid.	P

Close PCSA Tool and save Log Entry but NOT database		
Action	**Expected Result & Comment**	**(P/F)**
Close PCSA Tool using the File/Exit command.	Expected result is that the log will be saved, but the changes to the database will not. Close and save all changes using the File/Exit command so that an initial log database will be created. Re-open the demo file in PCSA Tool and close it again. This time, do not save the file. PCSA Tool should exit without prompting for a log entry. Now open PCSA Tool and click on save. Make a few changes (such as entering a new SSC) and exit. Click "No" when prompted to save changes. You should then be prompted to save a log entry. Make the entry and verify with MS Access that the entry was saved upon exit.	P

7-29-2004 B. Winfrey:

A few things about SCR509. All of the errors for the failing tests have been corrected and the SCR passes. An Excerpt from the README file:

```
SCR509:  Corrected errors observed while testing.  On the
takeaway analysis form and Crystal Report, the SSC total
dose would not always be consistently highlighted between
```

```
the compliance assessment, takeaway analysis, and Crystal
Report.  Also modified display units on the takeaway
analysis form and Crystal Report to be consistent. Corrected
the safety assessment combinations form to lock the summary
dose fields.  Added the dose rate to the takeaway analysis
Crystal Report for the noninvolved worker.  Modified the
error message displayed when a user tries to edit a field
that cannot be edited to display the list of fields which
can be edited in order from left to right.
```

8-4-2004 TMAXWELL:

The following is for SCR 511. The subroutine sortqr was replaced with subroutine sort_index which was developed internally. The generated output between Beta K(old routine) and Beta N(new routine) were equivalent. The test details are included in Attachment I. Also, references to the system description table were removed since it is no longer in the database. SCR 511 passed all test.

The test was conducted on PCSA Tool Version 3.0 BetaN.

	Pass	Fail	Description of Test
1	☑	☐	Verify the pcsa_prob module generates equivalent output in version BetaN of the PCSA Tool when compared to the output generated in version BetaK (prior to the change).
2	☑	☐	Verify the pcsa_ietccdf module generates equivalent output in version BetaN of the PCSA Tool when compared to the output generated in version BetaK (prior to the change).
3	☑	☐	Verify the pcsa_totrisk module generates equivalent output in version BetaN of the PCSA Tool when compared to the output generated in version BetaK (prior to the change).
4	☑	☐	Verify that a new database can be created and a new project tree established. Verify that an RSAC run can be saved and restored. These two areas of the database formerly referenced the SysDescription table.

Attachment 1

pcsa_prob: Verified that the output files generated by module pcsa_prob through a 100-realization test run of the PCSA Tool consequence module were equivalent between version BetaN and BetaK. The following files were checked: allccdf.dat, ccdfcomb.dat, pcsastat.out, and pcsastat.txt. The only difference between version BetaK and BetaN for files allccdf.dat and ccdfcomb.dat was the date/time stamp in the files. The files pcsastat.out and pcsastat.txt differ internally in the realization selected to represent the 50th percentile. This occurs because more than one consequence module realization generated the same value. The values for the 50th percentile are the same

between version BetaK and BetaN even though the realization selected differs; therefore, the files are equivalent between version BetaK and BetaN.

pcsa_ietccdf: Verified that the output files generated by module pcsa_ietccdf were equivalent between version BetaN and BetaK. This test was conducted using the pcsademo database which is the same database in version BetaN and BetaK in which a mean dose calculation was performed. The following files were checked: allccdf.dat and pcsastat.txt. The file pcsastat.txt is identical between the two versions. The only difference in file allccdf.dat between the two versions is the date/time stamp in the file. Therefore, the files are equivalent between version BetaK and BetaN.

pcsa_totrisk: Verified that the output files generated by module pcsa_totrisk were equivalent between version BetaN and BetaK. This test was conducted using the pcsademo database which is the same database in version BetaN and BetaK. A probabilistic risk assessment was performed. The following files were checked: pcsastat.txt, totrisk.out, and trallccdf.dat. The pcsastat.txt and totrisk.out files are identical between version BetaK and BetaN. The trallccdf.dat files differ only in the date/time stamp. Therefore, the files are equivalent between version BetaK and BetaN.

A new database, pcsa_test, was created. A new project tree could be created for this database. A deterministic RSAC run could be saved and restored.

8-10-2004 TMAXWELL:

The following is for SCR 510 and SCR 512.

For SCR 510, a new module frmRSAC_WkrInput was added to guide the user through the appropriate calculation mode, frmRSAC_Main, frmReadRSAC, frmLaunchRSAC, mdlYMPModule1, and MDI_PCSA_Frm1 were adjusted to accommodate the new mode of operation, batch file, 'RSAC6wkr.bat', was added in the \Tools directory, to run RSAC directly, bypassing 'PCSAProb.exe', which returns an error message since there is no Ingestion dose for worker mode, and New subroutines were added to read RSAC's output file directly, and bypass Ingestion, Inhalation, or Ground Surface data segments for which no dose was calculated. Doses and dose totals are saved to the 'WkrRSAC_OUTPUT' table. Also a Crystal Report to display the input and output for the RSAC run associated with the Downwind Worker Dose calculations was added. SCR 510 passed all test.

Pass	Fail	Description of Test

1	☑	☐	Manipulate the RSAC controls in accordance with the steps identified in Attachment 1, and verify the operation of the form.
2	☑	☐	Verify that a sample of the doses generated for the displacement zone, wake zone, and cavity zone are being retrieved from the rsac output file, are correctly scaled, and displayed.
3	☑	☐	Verify that RSAC can be run for the Public. Verify that runs can be saved and retrieved. Verify that parameters can be changed.

Attachment 1

1) Verify that the "RSAC Worker Dose Options" form is loaded by selecting 'Conseq. -> Worker Dose -> RSAC from the main menu.
2) Enter '100' for Stack Height, and '30' for Building Height. Click 'Next'. Verify a new frame is displayed to enter the Receptor Distance. Then enter '75' for Receptor Distance, and click 'Next'. Verify that an error message box is displayed.
3) Click 'OK' on the error message box, and change the value for Receptor Distance to '1000'. Verify that a new frame is displayed, with "Receptor is in the Displacement Zone".
4) Click 'Next'; verify that the "RSAC Worker Dose Options" form disappears, and the "RSAC: New or Modified Analysis" form appears showing the "RSAC Input" and "Fuel Selection / Assemblies Breached" tabs.
5) Click on the "Meteorological Data" tab, and verify that the value for "Stack release height (m)" is 100.0 (as entered earlier) and that its cell background is 'grayed'. Verfy that the value for "Downwind distance (m)" is 1000.0 (as entered earlier) and that its cell background is 'grayed'. Verify that the cell backgrounds for "Building height" and "Building width" are also 'grayed'.
6) Click 'Perform Analysis'; verify that the form disappears, RSAC runs, and (after a several seconds) the form reappears with the "RSAC Output" tab shown, with the output data.

Attachment 2

Verified the Worker Dry form performs the steps indicated on attachment 1. The error message displayed for step 2 is: "The Receptor Distance is less than or equal to 2.5 times the Building Height. This case is invalid." In step 3, after 1000 is entered for the Receptor Distance, the next frame displays, "Receptor is in the Displacement Zone." Verified the meteorological data tab appears as required in step 5. After performing an analysis, the RSAC Output doses are displayed.

On the summary tab, the following values were observed:
Inhalation: 9.38e-18
Ground surface: 3.38e-19
Submersion: 2.39e-7
TEDE: 2.39e-7

In the RSAC6 output file, the following values were observed:
Inhalation: 9.38e-18
Ground surface: 3.38e-19
Submersion: 2.39e-7
TEDE: 2.39e-7

The results from the file compare to the results displayed on the summary tab.

Performed a series of tests and compared dose results to spreadsheet calculations. The following summarizes the tests and test results:

Displacement Zone

Building Width (Wb)	150
Building Height (Hb)	34
Stack Height (Hs)	86
Receptor Location (X)	500

Line 5001 under Meteorological Data in RSAC output file includes the 86 m stack height

RSAC Dose	
Inhalation	8.10E-30
Ground Surface	0.00E+00
Air Submersion	3.06E-07
Total	3.06E-07

The PCSA Tool displays the above values under Summary Results

Checked doses from the output file and compared to the PCSA Tool Display

	output	display
H3 inhalation	7.29E-30	7.29E-30
CEDE inhalation	8.10E-30	8.10E-30

Wake Zone

Building Width (Wb)	150
Building Height (Hb)	34
Stack Height (Hs)	34
Receptor Location (X)	500
Area Building Ab	5100
Qb	178.5357

Since the receptor location is greater than Qb, wake zone

Chi/Q	7.34E-04
sigma z	7.92E+00
sigma zmod	41.06185
Fw	1.93E-01

Check of doses displayed by PCSA Tool

	RSAC	Scaled	Display	Percentage Difference
TEDE	3.41E-04	6.58E-05	6.56E-05	-0.24%
Inhalation Bone Sur	3.06E-04	5.90E-05	5.90E-05	-0.01%
Inhalation Pu240	1.41E-08	2.72E-09	2.72E-09	0.04%

Cavity Zone on Building in Stack

Building Width (Wb)	150
Building Height (Hb)	34
Stack Height (Hs)	34
Receptor Location (X)	1
Diameter of Stack	0.5
3 * Diameter of Stack	1.5
Flowrate through vent [m^3/s]	11.32674
Area Building Ab	5100
Qb	178.5357

Since the receptor location is greater than Qb, wake zone

Chi/Q	1.12E-02
Fv	7.92E+00

Check of doses displayed by PCSA Tool

	RSAC	Scaled	Display	Percentage Difference
TEDE	5.15E-03	4.08E-02	4.08E-02	0.05%
Inhalation CEDE	4.98E-03	3.94E-02	3.94E-02	-0.08%
Ground Surface lungs	9.47E-05	7.50E-04	7.50E-04	0.02%
Ground Surface Pb212	1.40E-09	1.11E-08	1.11E-08	0.13%

Cavity Zone on Building Away from Stack

Building Width (Wb)	150
Building Height (Hb)	34
Stack Height (Hs)	34
Wind Speed (Ua)	3
Receptor Location (X)	50
Diameter of Stack	0.5
3 * Diameter of Stack	1.5
Flowrate through vent [m^3/s]	11.32674
Area Building Ab	5100

Qb	178.5357

Since the receptor location is greater than Qb, wake zone

Chi/Q	1.12E-02
Fs	3.59E-01
Fv	7.92E+00

Check of doses displayed by PCSA Tool

	RSAC	Scaled	Display	Percentage Difference
TEDE	5.15E-03	1.85E-03	1.85E-03	0.13%
Inhalation CEDE	4.98E-03	1.79E-03	1.79E-03	0.19%
Inhalation R Marrow	4.56E-03	1.64E-03	1.64E-03	0.25%
Ground Surface Co60	1.52E-05	5.45E-06	5.45E-06	-0.05%

Cavity Zone not on Building

Building Width (Wb)	150
Building Height (Hb)	34
Stack Height (Hs)	34
Wind Speed (Ua)	3
Receptor Location (X)	50
Flowrate through vent [m^3/s]	11.32674
Area Building Ab	5100
Qb	178.5357
Lb	34

Since the receptor location is greater than Qb, wake zone

Chi/Q	1.12E-02
Fc	2.80E-01

Check of doses displayed by PCSA Tool

	RSAC	Scaled	Display	Percentage Difference
TEDE	5.15E-03	1.44E-03	1.44E-03	-0.10%
Inhalation CEDE	4.98E-03	1.39E-03	1.39E-03	-0.27%
Ground Surface B Surface	4.47E-04	1.25E-04	1.25E-04	-0.09%
Total Pu239	1.29E-07	3.61E-08	3.61E-08	-0.01%

For all of the tests shown above, the calculated (scaled) dose values agreed with the displayed value to within 1 percent and therefore these tests passed.

Also ran tests with RSAC for the public. Verified that RSAC runs could be saved and retrieved. Changed average wind velocity on the meteorological tab and verified that the changed value was in the output file.

For SCR 512, a scenario to the performance assessment takeaway analysis Crystal Report was added and the software to issue a Change Drive (ChDrive) command prior to issuing a Change Directory (ChDir) command was modified. SCR 512 passed all test.

	Pass	Fail	Description of Test
1	☑	☐	Verify that the Crystal Report for performance assessment takeaway analysis correctly displays the scenario.
2	☑	☐	Verify that a risk assessment can be performed after exporting a Crystal Report.

Attachment 1

The performance assessment takeaway analysis Crystal Report correctly displayed the "Point Estimate" scenario for the deterministic assessment and the "Probabilistic, Mean" scenario for the probabilistic assessment.

Verified that a Crystal Report could be exported (saved to a temp directory) and afterwards, a risk assessment could be performed.

8-10-2004 TMAXWELL:

The following is for SCR 513. The performance assessment module results tables and associated Crystal Reports were modified to only include event sequences for event scenarios marked to be included for performance assessment. The Initiating Event and Event Sequences Crystal Reports were updated. A Software Systems Crystal Report was updated and the form was corrected to require a system id and system description and ensure that they are unique. The help menu was adjusted to refer to the User's Guide and the About Box has the new contact information. The following table and information describe the test in greater detail.

	Pass	Fail	Description of Test
1	☑	☐	Only event sequences under event scenarios marked for inclusion in performance assessment are included in the results tables.
2	☑	☐	Initiating Event and Event Sequences reports have been updated.
3	☑	☐	Software Systems Crystal report reflects screen information entered, note any missing information. Also unique System IDs and System Descriptions are required on the Software Systems form.
4	☑	☐	The help menu refers to the User's Guide and the About Box has the new contact information

Attachment 1

TEST1:
Entered the following Event Sequences and verified that the Public and Worker Results Tables displayed the event sequences and calculated the correct combined frequency-weighted sums when different event scenarios were marked to be included for performance assessment.

Functional ID	Event Scenario ID	Initiating Event Frequency	Event Sequence ID	Event Sequence Frequency
A.1	1	0.01	1	0.2
			2	0.3
B.1 B.1	2	0.015	3	0.1
	3	0.015	4	0.4

Initially, all event scenarios are marked to be included for frequency analysis. The following is a comparison between the expected frequency-weighted sums and the actual values for the public, involved worker, and noninvolved worker.

Public

Event Sequence	Frequency	Dose Pt Est	Frequency * Dose	Dose Mean	Frequency * Dose
1	0.2	2.76E-05	5.52E-06	5.00E-06	1.00E-06
2	0.3	7.07E-05	2.12E-05	1.28E-05	3.84E-06
3	0.1	2.76E-05	2.76E-06	5.00E-06	5.00E-07
4	0.4	7.07E-05	2.83E-05	1.28E-05	5.12E-06
Frequency-Weighted Sum			5.78E-05		1.05E-05
PCSA Tool			5.78E-05		1.05E-05

Involved and Non-Involved Worker

Event Sequence	Frequency	TEDE	Frequency * Dose
1	0.2	7.00E-01	1.40E-01
2	0.3	3.00E-01	9.00E-02
3	0.1	7.00E-01	7.00E-02
4	0.4	3.00E-01	1.20E-01
Frequency-			4.20E-01

Weighted Sum PCSA Tool	4.20E-01

Event Scenario 1 is then marked as no longer included for performance assessment and the following is a comparison between the expected frequency-weighted sums and the actual values for the public, involved worker, and non-involved worker.

Without Event Scenario 1

Public

Event Sequence	Frequency	Dose Pt Est	Frequency * Dose	Dose Mean	Frequency * Dose
3	0.1	2.76E-05	2.76E-06	5.00E-06	5.00E-07
4	0.4	7.07E-05	2.83E-05	1.28E-05	5.12E-06
Frequency-Weighted Sum			3.10E-05	5.00E-06	5.62E-06
PCSA Tool			3.10E-05	1.28E-05	5.62E-06

Involved and Non-Involved Worker

Event Sequence	Frequency	TEDE	Frequency * Dose
3	0.1	7.00E-01	7.00E-02
4	0.4	3.00E-01	1.20E-01
Frequency-Weighted Sum			1.90E-01
PCSA Tool			1.90E-01

The current level results, performance assessment, combinations, and takeaway analysis forms and Crystal Reports no longer show event sequences 1 and 2 when event scenario 1 is no longer marked to be included in performance assessment as required.

<u>TEST2:</u>
The Initiating Event Crystal Report shows the correct fonts for uncertainty and time periods, the Event Sequences Crystal Report shows the Applicability of the Event as required.

<u>TEST3:</u>
The Software Systems Crystal Report reflects the information entered on the screen. No missing information is noted. Also, unique System IDs and System Descriptions (Names) were required.

TEST4:
The help menu refers to the User's Guide even though the User's Guide is not yet included and the About Box has updated contact information for George Adams and Robert Johnson.

8-13-2004 MCUTIL GADAMS:
The merge/conversion utility (MCUTIL) is a standalone code that was developed for use with the PCSA Tool. Because it is used with the PCSA Tool, testing for this code will also be documented in this scientific notebook. Completed the acceptance testing of the merge/conversion utility and validation testing of the merge/conversion utility. The acceptance testing consisted of testing each of the rules individually that the utility is capable of executing. The validation testing consisted of testing complex rule files that were made up of the individual rules tested during acceptance testing.

The following was performed for acceptance testing:

Merge Tool:

Equivalence Rule (EQI): Verified that using a unique rule on Table A, Field A and the equivalence rule between Table A, Field A and Table B, Field A that when Field A values were changed to force uniqueness, the corresponding field values were changed in Table B, Field A. This shows that any Table A, Field A value that was equivalent to Table B, Field A is still equivalent.

Do Not Merge Rule (NMG): Verified that the new database created did not contain the records from Table B of the secondary database. Table B had the do not merge rule placed on it.

Unique Rule (UNI): Verified that when the values from the secondary database were merged into the new database, that for Table A, Field A the values did not overlap. If values matched, then a numeric, "1," was appended. Table A, Field A had the unique rule applied to it.

Value Rule (VAL): Verified that when the secondary database was merged into the new database, that certain values from the secondary database were replaced with new values.

Conversion Tool:

Same Structure: Verified that when the same tables and fields exist between the primary database and the template database that a new database could be created which duplicates the primary database. For this test, the analysis tool was used to create the rule file.

Different Structure: The test was setup with two tables containing two fields each in the primary database and the template database. A rule file was used to create a new database that had the same structure (table names and field names) as the template database but populated with data from the primary database. In order to populate the new database, tables and fields between the primary and template databases were matched in a rule file.

Validation of MCUTIL was also conducted but is documented separately on a validation test report. The validation consisted of a conversion tool test and a merge tool test. In both cases, complex rule files (rule files containing multiple instructions) were used.

The test results and supporting files are included in an archive labeled mcutiltest8_13_2004.

8-17-2004 TMAXWELL:
The following is for SCR 514. The WhatIf, Energy Method, Fault Tree, Event Tree, and Software Reliability were adjusted to allow the Tab to flow from left to right. Image captions were adjusted so they would be visible within the PCSA Tool window. The Failure Probability form was adjusted so that a letter id is no longer mandatory. Messages were adjusted to reflect worker orientation to the surface of the building. System Description text fields were limited to 15 characters. All test passed for SCR 514. The table and attachments provide more detail for the SCR 514 acceptance test.

Attachment 1

The following images were added for the underground operations:
1) u1.jpg, Locomotives and Waste Package Transporter Approaching the North Portal
2) u2.jpg, Waste Package Transportation Equipment Traveling Along Main Drift
3) u3.jpg, Waste Package Transporter and Its Components
4) u4.gif, Access Main Tunnel, Turnout, and Emplacement Drift Layout
5) u5.jpg, Locomotive Operations at Emplacement Drift Turnout
6) u6.jpg, Waste Package Emplacement Sequence in Drift, #1
7) u7.jpg, Waste Package Emplacement Sequence in Drift, #2
8) u8.jpg, Waste Package Emplacement Sequence in Drift, #3
9) u9.jpg, Docked Transporter with Pallet and Waste Package on Transporter's Open Deck and Emplacement Gantry Approaching the Docking Area for Pickup
10) u10.jpg, Bottom/Side Lift Emplacement Gantry - End View within Emplacement Drift
11) u11.jpg, Bottom/Side Lift Emplacement Gantry - Perspective View

Attachment 2

TEST1:

	Pass	Fail	Description of Test
1	☑	☐	WhatIf, Energy Method, Fault Tree, Event Tree, and software reliability text and memo tab order flows left to right and top to bottom.
2	☑	☐	Images can be accessed from the database and associated drawing directory. Long image captions are visible.
3	☑	☐	Failure probability form no longer requires a letter id. Also a check of data in the failure probability database shows that data does not appear for removed references.
4	☑	☐	When the worker is on the same surface of the building as the stack, the frame caption and notes reflect this as well as whether the worker is in or near the stack flow.
5	☑	☐	Text fields on the waste characterization and fire hazards tabs are limited to 15 characters.

On the WhatIf, Energy Method, Fault Tree, and Event Tree forms, verified the tab order for text and memo fields from left to right and top to bottom.

TEST2:
New images were added to the database. Verified the images identified in Attachment 1 could be viewed. Verified the long captions for the images were visible.

TEST3:
Verified the failure probability form no longer requires a letter id. Also opened the probprac.mdb file and within the Probability and Sheet1 table, verified that where references no longer existed, data was also no longer present.

TEST4:
Verified that when the worker is on the same surface of the building as the stack that the frame

	Pass	Fail	Description of Test
1	☑	☐	The same Event Tree and Fault Tree Graphics are displayed for the Demo, YMP1, and Ymp1_ATS1 projects between version 6.70 (PCSA Tool Version BetaR) and version 6.80 (PCSA Tool Version BetaS).

caption and notes reflect this and they reflect that the worker is in or near the stack flow. When the receptor distance was within 3 * the stack diameter, the worker was in the stack flow; otherwise, the worker was near the stack flow.

TEST5:
Verified that on the Waste Characterization tab that Material Type, Material Container, and Material Amount were limited to 15 characters. Verified on the Fire Hazards tab that presence of combustible material was limited to 15 characters.

8-18-2004 TMAXWELL:
The following is for SCR 531. SAPHIRE was upgraded from version 6.70 to version 6.80. The SaphireProjects\Demo directory was also upgraded to contain the version 6.80 demo project. The table and attachments provide more detail for the SCR 531 acceptance test. SCR 531 passed all test.

Attachment 1

Within SAPHIRE, from the help menu, verified that version 6.80 was being tested in version BetaS and compared to version 6.70 of BetaR.

Verified the following graphics appeared the same between version BetaR and BetaS for projects Demo, YMP1, and Ymp1_ATS1:

Demo:
Event Tree - LOSP
Fault Tree - CCS
Fault Tree - ECS

YMP1:
Fault Tree - YOKE-DROP

Ymp1_ATS1:
Event Tree - CASK-DROP-CD1

8-18-2004 PCSATool GADAMS:
Validation testing has been conducted for the PCSA Tool Version 3.0.0. Validation testing was performed using the Software Validation Test Plan (SVTP) for PCSA Tool Version 3.0, 10-6-2003. Individual validation tests were documented on Software Validation Test Reports (SVTRs). The following table links the section of the SVTP to individual SVTRs and supporting files. Supporting files and SVTRs listed in the table are archived in pcsatool_SVTRs.zip. Spreadsheets identified in the table, may be viewed using Microsoft Excel 2002 (10.6501.6626), SP3.

Test Case	SVTR ID	Associated Files
Section 6.1 Project Tree	1-1	SVTRs\SVTR_1\SVTR_1-1.wpd SVTRs\SVTR_1\1-1.pdf
Section 6.2 External Events	2-1	SVTRs\SVTR_2\SVTR_2-1.wpd SVTRs\SVTR_2\2-1.pdf SVTRs\SVTR_2\2-2.pdf
Section 6.3.1 Detailed Operations Sequence	3-1	SVTRs\SVTR_3\SVTR_3-1.wpd SVTRs\SVTR_3\3_1_1.pdf SVTRs\SVTR_3\3_1_2.pdf SVTRs\SVTR_3\3_1_3.pdf SVTRs\SVTR_3\3_1_4.pdf SVTRs\SVTR_3\3_1_5.pdf SVTRs\SVTR_3\3_1_6.pdf SVTRs\SVTR_3\3_1_7.pdf SVTRs\SVTR_3\3_1_8.pdf SVTRs\SVTR_3\3_1_9.pdf
Section 6.3.2 Structures, Systems, and Components (SSCs)	3-2	SVTRs\SVTR_3\SVTR_3-2.wpd SVTRs\SVTR_3\3_2_1.pdf SVTRs\SVTR_3\3_2_2.pdf
Section 6.4.1 Internal Events - FMEA	4-1	SVTRs\SVTR_4\SVTR_4-1.wpd SVTRs\SVTR_4\4_1.pdf
Section 6.4.2 Internal Events - What If	4-2	SVTRs\SVTR_4\SVTR_4-2.wpd SVTRs\SVTR_4\4_2.pdf

Test Case	SVTR ID	Associated Files
Section 6.4.3 Internal Events - Energy Method	4-3	SVTRs\SVTR_4\SVTR_4-3.wpd SVTRs\SVTR_4\4_3.pdf
Section 6.4.4 Internal Events - HRA	4-4	SVTRs\SVTR_4\SVTR_4-4.wpd SVTRs\SVTR_4\4_4.pdf
Section 6.4.5 Internal Events - Severe Events (All)	4-5	SVTRs\SVTR_4\SVTR_4-5.wpd SVTRs\SVTR_4\4_5.pdf
Section 6.5.1 Frequency Analysis - Initiating Event	5-1	SVTRs\SVTR_5\SVTR_5-1.wpd SVTRs\SVTR_5\51.pdf
Section 6.5.2 Frequency Analysis - Event Tree	5-2	SVTRs\SVTR_5\SVTR_5-2.wpd SVTRs\SVTR_5\5-2-1.pdf SVTRs\SVTR_5\5-2-2.pdf
Section 6.5.3 Frequency Analysis - Fault Tree	5-3	SVTRs\SVTR_5\SVTR_5-3.wpd SVTRs\SVTR_5\5-3-1.pdf SVTRs\SVTR_5\5-3-2.pdf
Section 6.5.4 Frequency Analysis - Event Sequence	5-4	SVTRs\SVTR_5\SVTR_5-4.wpd SVTRs\SVTR_5\5-4.pdf
Section 6.6 SAPHIRE	6-1	SVTRs\SVTR_6\SVTR_6-1.wpd
Section 6.7.1 Consequence Analysis - Consequence Worker Dose	7-1-1	SVTRs\SVTR_7\SVTR_7-1-1.wpd SVTRs\SVTR_7\WorkerDose.xls SVTRs\SVTR_7\WorkerDosefromPoolRelea se2min.xls
Section 6.7.2.1.1 Consequence Analysis - RSAC Execution Standard Input-Deterministic	7-2-1	SVTRs\SVTR_7\SVTR_7-2-1.wpd SVTRs\SVTR_7\7-2-1A_Rsac6.out SVTRs\SVTR_7\7-2-1B_Rsac6.out SVTRs\SVTR_7\7-2-1C_Rsac6.out SVTRs\SVTR_7\7-2-1D_Rsac6.out
Section 6.7.2.1.2 Consequence Analysis - RSAC Execution Standard Input-Deterministic-User Specified	7-2-2	SVTRs\SVTR_7\SVTR_7-2-2.wpd SVTRs\SVTR_7\7-2-2A_Rsac6.out SVTRs\SVTR_7\7-2-2B_Rsac6.out
Section 6.7.2.1.3 Consequence Analysis - RSAC Execution Advanced Input	7-2-3	SVTRs\SVTR_7\SVTR_7-2-3.wpd SVTRs\SVTR_7\7-2-3_RSAC6.OUT
Section 6.7.2.1.4 Consequence Analysis - RSAC Execution Standard Input-Probabilistic-Four Realizations	7-2-4	SVTRs\SVTR_7\SVTR_7-2-4.wpd SVTRs\SVTR_7\7-2-4_lhs.out SVTRs\SVTR_7\7-2-4_Rsac6.out

Test Case	SVTR ID	Associated Files
Section 6.7.2.1.5 Consequence Analysis - RSAC Execution Standard Input-Probabilistic-Ten Realizations	7-2-5	SVTRs\SVTR_7\SVTR_7-2-5.wpd SVTRs\SVTR_7\7-2-5_lhs.out SVTRs\SVTR_7\7-2-5_Rsac6.out
Section 6.7.2.2.1 Consequence Analysis - MELCOR Execution-PWR	7-2-6	SVTRs\SVTR_7\SVTR_7-2-6.wpd SVTRs\SVTR_7\7-2-6_8mel.doc
Section 6.7.2.2.2 Consequence Analysis - MELCOR Execution-BWR	7-2-7	SVTRs\SVTR_7\SVTR_7-2-7.wpd SVTRs\SVTR_7\7-2-7_8mel.doc
Section 6.8.1.1 Performance Analysis - Safety Assessment-Current Level Results	8-1	SVTRs\SVTR_8\SVTR_8-1.wpd SVTRs\SVTR_8\8-1_1.pdf SVTRs\SVTR_8\8-1_2.pdf SVTRs\SVTR_8\8-1_3.pdf SVTRs\SVTR_8\8-1_4.pdf SVTRs\SVTR_8\calc_8.xls (tab 8-1)
Section 6.8.1.2 Performance Analysis - Safety Assessment-Compliance Assessment	8-2	SVTRs\SVTR_8\SVTR_8-2.wpd SVTRs\SVTR_8\8-2_1.pdf SVTRs\SVTR_8\8-2_2.pdf SVTRs\SVTR_8\8-2_3.pdf SVTRs\SVTR_8\calc_8.xls (tab 8-2a, 8-2b)
Section 6.8.1.3 Performance Analysis - Safety Assessment-Structures, Systems, and Components Important to Safety (SSCIS)	8-3	SVTRs\SVTR_8\SVTR_8-3.wpd SVTRs\SVTR_8\8-3_1.pdf SVTRs\SVTR_8\8-3_2.pdf SVTRs\SVTR_8\calc_8.xls (tab 8-3)
Section 6.8.2 Performance Analysis - Risk Assessment	8-4	SVTRs\SVTR_8\SVTR_8-4.wpd SVTRs\SVTR_8\8-4_1.pdf SVTRs\SVTR_8\8-4_2.pdf SVTRs\SVTR_8\calc_8.xls (tab 8-4)
Section 6.9 Software Reliability	9-1	SVTRs\SVTR_9\SVTR_9-1.wpd SVTRs\SVTR_9\9-1.pdf
Section 6.10.1 Failure Rate - View Taxonomy	10-1	SVTRs\SVTR_10\SVTR_10-1.wpd
Section 6.10.2 Failure Rate - Search Database	10-2	SVTRs\SVTR_10\SVTR_10-2.wpd
Section 6.10.3 Failure Rate - Failure calculator	10-3	SVTRs\SVTR_10\SVTR_10-3.wpd
Section 6.10.4 Failure Rate - Human Error Probability (HEP) Generator	10-4	SVTRs\SVTR_10\SVTR_10-4.wpd
Section 6.11 Checklists	11-1	SVTRs\SVTR_11\SVTR_11-1.wpd
Section 6.12 Regulations	12-1	SVTRs\SVTR_12\SVTR_12-1.wpd
Section 6.13 Help	13-1	SVTRs\SVTR_13\SVTR_13-1.wpd

Test Case	SVTR ID	Associated Files
Section 6.14 Additional Functionality - Worker Dry Form	14-1	SVTRs\SVTR_14-1\SVTR_14-1.wpd SVTRs\SVTR_14-1\14-1.xls
Section 6.14 Additional Functionality - Worker Downwind Dose	14-2	SVTRs\SVTR_14-2\SVTR_14-2.wpd SVTRs\SVTR_14-2\14-2.xls
Section 6.14 Additional Functionality - Display Images	14-3	SVTRs\SVTR_14-3\SVTR_14-3.wpd
Section 6.14 Additional Functionality - Highlight Doses and Dose Rates Above Limits (Performance Assessment)	14-4	SVTRs\SVTR_14-4\SVTR_14-4.wpd SVTRs\SVTR_14-4\14-4_1.pdf SVTRs\SVTR_14-4\14-4_2.pdf SVTRs\SVTR_14-4\14-4_3.pdf

9-7-2004 TMAXWELL:
The following is for SCR 537. The SSC Data form was corrected so it will no longer search for an empty string when comparing SSC identifiers. When a project is already open and the user tries to open a new project or create a new project, the System Log/System Log Entry forms are displayed on leaving the existing project. When the next project is subsequently opened, its System Log is displayed if there are any records to display. The Edit Record button is visible regardless of whether or not operation sequence records existed for the System Description form, Operation Sequence tab. In addition, for the Function tab and the Human Actions tab, changed the Edit Record button to instead display 'Edit.' Modified the Worker Dry form to clear output doses after the user restores point estimates to defaults and after a release fraction source is selected. The table and attachments provide more detail for the SCR 537 acceptance test. SCR 537 passed all test.

Attachment 1

Test 1:
Added a subsequent event to an event scenario within the PCSA Demo database. Did not select an SSC for this subsequent event. Closed the form and opened the SSC Data form. Verified that an SSC could be added on the SSC Data form and afterwards, this new SSC could be selected for the added subsequent event.

Test 2:
Evaluated a series of scenarios to verify the operation of the System Log/System Log Entry forms.

Scenario 1: Verified display of System Log/System Log Entry forms
Opened the PCSA Demo database with no log entries. Verified that the PCSA

	Pass	Fail	Description of Test
1	☑	☐	SSCs may be added on the SSC Data form after a subsequent event has been added and no SSC is selected for the subsequent event.
2	☑	☐	The System Log/System Log Entry forms appear when the user leaves the current project to open or create a new project. The System Log form appears when the next project is subsequently opened if any log entries exist.
3	☑	☐	For the System Description form, Operation Sequence tab, the Edit Record button appears whether or not operation sequence records exist. The Function tab and Human Actions tab display Edit buttons where previously Edit Record buttons appeared.
4	☑	☐	Calculated doses are cleared on the Worker Dry form when point estimates are restored to defaults and a release fraction source is selected.

Tool opened without displaying the System Log. Made no changes and chose to create a new database named test1. Chose not to save on exit and verified that on exiting, the System Log/System Log Entry forms were not displayed. Within the new database, built a project tree. Chose to exit, and when prompted, saved changes and exited. Verified that the System Log/System Log Entry forms displayed on exiting and entered a log entry test message.

Scenario 2: Verified that the System Log/System Log Entry is updated when a new database is opened and that the intermediate saves from the existing database are retained.

Opened the test1 database from the previous scenario. Verified that the System Log displayed when the database was opened since log entries were present. Modified the database by adding an initiating event. Saved the changes. Modified the database again by adding an event scenario. Chose to open the PCSA Demo database. When prompted to save the test1 database, chose not to save. Verified that the System Log/System Log Entry form appears. Made a new test entry in the System Log. After the PCSA Demo database opened, chose to open the test1 database. Verified that the System Log displayed with the log entries previously entered. Verified that the initiating event was present but the event scenario was not since only an intermediate save was performed prior to opening the PCSA Demo database. Exited the tool without saving. Verified that no System Log/System Log Entry form appeared.

Scenario 3: Verified that the System Log and other database changes are saved when a new database is opened and the existing database is saved on exit. Opened the test1 database from the previous scenario. Verified the System Log displayed with the log entries from the previous scenario. Modified the database by adding an event scenario. Chose to open the PCSA Demo database. When prompted to save the test1 database, chose to save. Verified that the System Log/System Log Entry form appears. Made a new test entry in the System Log. After the PCSA Demo database opened, chose to open the test1 database. Verified that the System Log displayed with the log entries previously entered. Verified that the event scenario entered and saved was also present. Exited the tool without saving. Verified that no System Log/System Log Entry form appeared.

Test 3:
Verified on the System Description form, Operation Sequence tab, that the Edit Record button displayed when no operation sequence records were in the database and one record was in the database. Without records, the Edit Record button was disabled and with a record, the Edit Record button was enabled.

Test 4:
Verified on the Worker Dry form that after doses are calculated, if the user chooses to Restore All Defaults or Restore Point Estimates to Defaults from any of the three tabs that the calculated doses are no longer displayed. Also verified that after doses are calculated, if the user selects a release fraction source, the calculated

	Pass	Fail	Description of Test
1	☑	☐	Verify that data entered for Additional Information appears on the SSC Data Crystal Report.
2	☑	☐	Verify that data entered for 'Saphire Data Path' and 'Include for Performance Assessment' appear on the Event Tree Crystal Report.
3	☑	☐	Verify that data entered for 'Saphire Data Path' appears on the Fault Tree Crystal Report.

doses are no longer displayed.

9-7-2004 PCSATool GADAMS:
A validation test was performed in addition to those identified in entry 8-18-2004 PCSATool GADAMS. Validation test 14-5 was conducted to test the ability for the PCSA Tool to save the System Log and database both when a new project is opened and when the current project is exited. This additional validation test was conducted in accordance with Section 6.14 of the Software Validation Test Plan (SVTP) for PCSA Tool Version 3.0, 10-6-2003. The associated Software Validation Test Report (SVTR) is archived in pcsatool_SVTR_14-5.zip.

9-10-2004 TMAXWELL:
The following is for SCR 539. The 'Additional Information' field was added to the SSC Data Crystal Report. 'Saphire Data Path' and 'Include for Performance Assessment' fields were added to the Event Tree Crystal Report. The 'Saphire Data Path' field was added to the Fault Tree Crystal Report. The following table provides more detail for the SCR 539 acceptance test. SCR 539 passed all test.

9-13-2004 TMAXWELL:
The following is for SCR 540. The SSC Design Bases and Design Criteria Crystal Report was updated to match SSC ID when retrieving records from the database for "Functions, Hazards, Initiating Events, and Event Tree Subsequent Events." For the case where an SSC is being edited, the SSC Data form was modified to no longer enable the SSC ID text field when design bases and design criteria exist for the SSC. The Design Bases and Design Criteria tab was disabled when an SSC is being added or edited. The following table provides more detail for the SCR 540

acceptance test. SCR 540 passed all test.

	Pass	Fail	Description of Test
1	☑	☐	Verify the test results obtained on SVTR 8-4 are obtained with Version BetaW of the PCSA Tool.
2	☑	☐	Verify that the PCSA Demo database for Event Scenario CTS-ES-01 no longer shows an error message for the 100-realization scenario.
3	☑	☐	Verify that when additional event sequences are added to the SVTR 8-4 base test in which the additional event sequences have 'None' selected for the consequence path that the same risk results obtained under test 1 are obtained.
4	☑	☐	Verify the risk assessment form will modify the number of realizations for those scenarios in which all event sequences have 'None' selected.
5	☑	☐	Verify that the percent contributions are zero when the total risk is zero

9-16-2004 TMAXWELL:

The following is for SCR 541. When file lhs.inp is generated, the output to the file was reformatted to allow the FORTRAN code to correctly read the number of realizations. The risk assessment form was modified to check the number of realizations after the user performs an event scenario risk calculation. Modified

	Pass	Fail	Description of Test
1	☑	☐	Verify that when "Functions, Hazards, Initiating Events, or Event Tree Subsequent Events" are entered for multiple SSCs that the Design Bases and Design Criteria Crystal Report shows only the information that applies to the applicable SSC.
2	☑	☐	Verify that when an SSC is edited from the General tab and design bases and design criteria exist for that SSC, the SSC ID text field is disabled. Also, verify that if an SSC is not selected for use within an Event Tree Subsequent Event and no design bases and design criteria exist for that SSC, then the SSC ID may be edited.
3	☑	☐	Verify that the Design Bases and Design Criteria tab is disabled when an SSC is being added or edited.

the calculation of percent contribution to check for a zero total risk. The following table and attachment provides more detail for the SCR 541 acceptance test. SCR 541 passed all test.

Attachment 1

Test 1: Compared the risk and consequence values from SVTR8-4 to the values generated within version BetaW and verified the results were in agreement. Also generated deterministic and probabilistic reports as an attachment which show agreement to the SVTR8-4 results.

Test 2: Verified that by initially setting the Number of realizations to 1 for the 'None' files event sequence and then recalculating the event scenario risk that the resulting lhs.inp file is formatted to be read by the FORTRAN software by a 4x, I12 format statement. And verified through a DOS window that the FORTRAN software no longer generates an error message indicating that the number of realizations are not in agreement.

Test 3: Verified that with the addition of one event sequence to event scenario 1 in which the consequence paths for deterministic and probabilistic are both designated 'None' that the same results from Test 1 are obtained.

Test 4: Setup the form to have two event scenarios with 'None' selected and a third which set the number of realizations. Verified that when the number of realizations for the third scenario was modified that the risk assessment form updated the number of realizations for the other two as well.

Test 5: Set all event sequences to have 'None' for the deterministic and probabilistic consequence paths. Verified that when the deterministic and probabilistic risk was calculated that the percent contributions were all zero.

9/17/2004 PCSATool GADAMS:
Performed additional validation testing for the PCSATool. Software validation test 3-2, 5-2, and 5-3 were repeated. A comparison test was added to software validation test 7-2-5. And, software validation test 14-5 was added to the testing. The updated software validation test report directory is included in archive: SVTRs9-17-2004.zip.

9/17/2004 PCSATool GADAMS:
Using PCSATool Version 3.0.0BetaW, the PCSATool version 3.0.0 was created. Installation of this version was tested on standalone machine SPYDER. This machine is a Microsoft Windows XP machine running Microsoft Windows XP

Professional Version 2002 Service Pack 1. Installation was tested by installing the software to the default directory and verifying that the demo database would open.

1-5-2005 TMAXWELL:
The following is for SCR 542.

1) Crystal Reports summarizes the data when two points have the same x-value. The summary option formerly chosen was to sum the data. This resulted in the corresponding y-values being added when x-values were the same. X-values would be the same for a higher number of realizations due to round-off errors. To correct the problem, in Crystal Reports, the maximum was selected for the summary option. In addition, the y-axis scale was bounded to between 0.0 and 1.0.
2) Corrected the update functionality on the System Description, General Tab for ventilation flowrate to check if a value was entered before checking if it was numeric. This change allows the user to not enter a ventilation flowrate.
3) Modified the Human Actions Tab to no longer identify categories A, B, C, and D. Also, modified the Operation Sequence Tab to spell traveled correctly (formerly spelled travelled).
4) Corrected the initiating event form to populate the severe events table. Wrote a common module, gFillInternalEvents, to populate the severe events table for both the severe events form and the initiating event form.
5) For Energy Method Events, modified the type/item displayed so that the leftmost three characters of the event category are included with the type. This allows different energy method records with the same item number to be distinguished from each other.
6) Corrected the Event Tree Form, Subsequent Events Tab to allow the user to enter duplicate event ids.
7) Corrected the Event Tree Subsequent Events tab to allow the user to select 'None' if no SSC is desired for the subsequent event. The user can select 'None' for any number of subsequent events. This allows the user to make changes or reselect SSCs for subsequent events.
8) The SSC Data Crystal Report was corrected to only display SSC data for the associated functional id.
9) Modified the current level results grid within the PCSA Tool and the associated Crystal Report to display the End State instead of the Description field.
10) Modified the Event Tree Form Subsequent Events so that the Uncertainty

Data and Link Details fields are editable regardless of the state of the corresponding Yes-No fields (Uncertainty and Linking).

11) Sample data was removed from table ExternalAndNaturalEvents for the avalanche record within the template database.

12) Combined the Duration of Operation, Lift Height, Distance Traveled, and Speed of Travel fields together into a single row on the System Description Form, Operation Sequence Tab Crystal Report.

13) Updated the SSC Data form Design Bases and Design Criteria tab to remove hazards, initiating events, and event trees from the database when a design basis or criteria is removed. Modified the hazards tab in the secondary grid to allow the user to select a hazard from lists of external and internal hazards.

14) Updated the deterministic default for wind speed from 3 m/s to 4.3 m/s and the probabilistic default for wind speed to a User Supplied Discrete distribution with the following wind speed (m/s), probability pairs: 0.9,0.25 2.55,0.29 4.35,0.20 6.95,0.18 9.75,0.06 12.25,0.02. This change affected tables RSAC Meteorological Data, RSAC_LHS_Table, and WkrRSAC Meteorological Data.

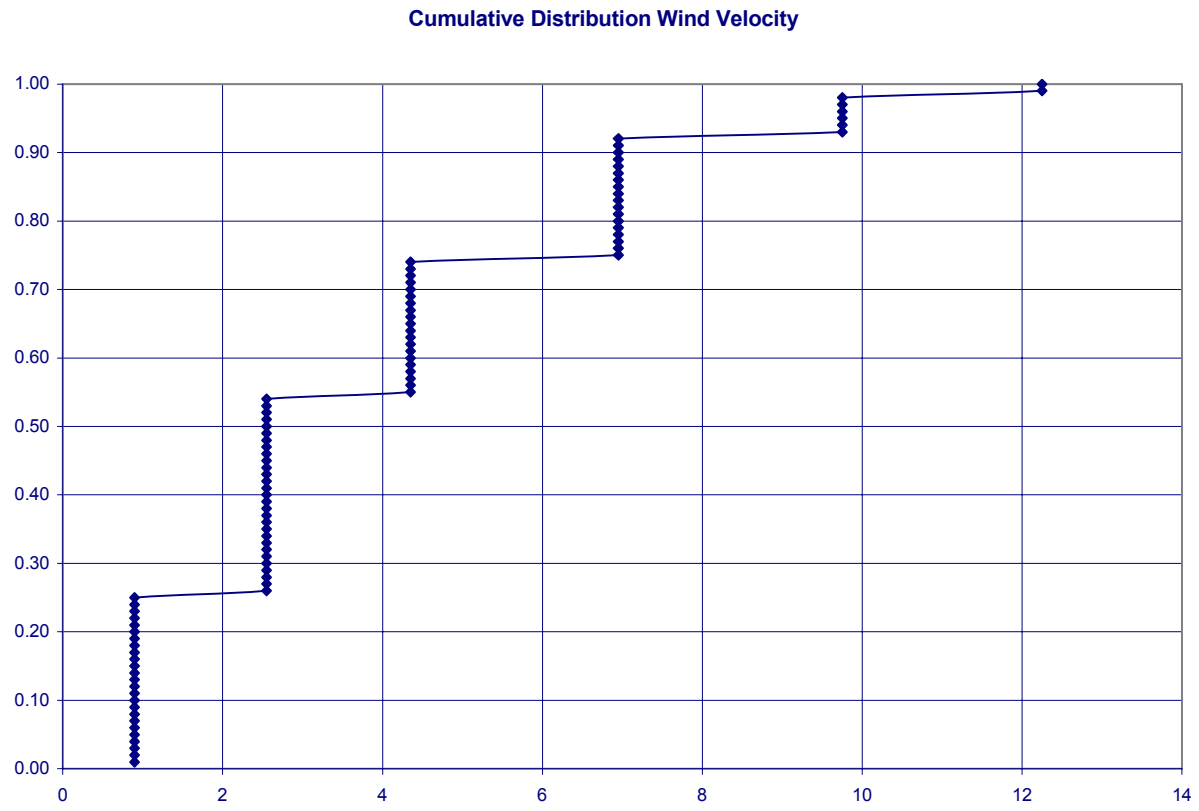
The following table and attachment provides more detail for the SCR 542 acceptance test. SCR 542 passed all test.

	Pass	Fail	Description of Test
1	☑	☐	When 300 or more realizations are performed, the RSAC output CCDF plot and the probabilistic risk assessment plot no longer show points above the curve.
2	☑	☐	On the System Description Form, General Tab, the ventilation flowrate no longer requires an entry.
3	☑	☐	On the System Description Form, Human Actions Tab, the categories A, B, C, and D are no longer identified. Also, on the System Description Form, Operation Sequence Tab, Distance Traveled is spelled correctly.
4	☑	☐	When the user switches between functional areas, the Select Hazard ID form is populated with severe events for the associated functional area.
5	☑	☐	For Energy Method Events displayed on the Severe Events List and the Select Hazard ID form (opened from the initiating event form when the user chooses to edit a hazard id), the type/item no field uniquely identifies the event with the event type.
6	☑	☐	On the Event Tree Form, Subsequent Events, the Event IDs are no longer required to be unique when the user adds a record.
7	☑	☐	On the Event Tree Form, Subsequent Events, Safety System or SSC field, the user always has the option of deselecting an SSC by instead selecting 'None.'
8	☑	☐	The SSC Data Crystal Report only displays the SSCs for the functional area currently selected instead of SSCs for all functional areas.
9	☑	☐	On the Results Table for Performance Assessment, Current Level Results, the end state field is displayed instead of the Description field.
10	☑	☐	The Event Tree form, Subsequent Events, no longer requires that the Uncertainty Data and Link Details fields be blank if the corresponding Yes-No fields (Uncertainty and Linking) are 'N.'
11	☑	☐	A new project was created and the external events information was empty for each of the listed external events within the Naturally Occurring and Human-Induced Events form.
12	☑	☐	The System Description, Operation Sequence Crystal Report contains the duration of operation, lift height, distance traveled, and speed of travel fields in a single row beneath the detailed operations sequence, additional information and DOE reports and references fields
13	☑	☐	On the SSC Data form, Design Bases and Design Criteria tab, when a design basis or design criteria is deleted from the database, the corresponding functions, hazards, initiating events, and event trees are removed. When a hazard is added or edited, lists of external and internal events are displayed, and the user can select hazards from the lists.
14	☑	☐	For a deterministic run, the RSAC input file displays a wind speed of 4.3 m/s. For the probabilistic case, the lhs.out file displays the user specified sample distribution: 0.9,0.25 2.55,0.29 4.35,0.20 6.95,0.18 9.75,0.06 12.25,0.02

Attachment 1

The following test were performed for Version 3.0 and Version 3.0.1 to verify the changes were properly implemented.

Test 1: Performed a RSAC probabilistic run of 300 realizations and verified the CCDF plot does not show points above the curve.
Test 2: Viewed System Description Form and verified flow rate no longer requires entry.
Test 3: Viewed System Description Form and verified categories A, B, C, and D are removed and misspellings were corrected.
Test 4: Verified Select Hazard ID form is populated with correct severe events.
Test 5: Verified Select Hazard ID form uniquely identifies the event with the event type.
Test 6: Input data and verified new records for Subsequent Events no longer require a unique Event ID.
Test 7: Verified user is provided "none" as an option for the Event Tree Form, Subsequent Events, Safety System or SSC fields.
Test 8: Viewed SSC Data Crystal Report and verified the data displayed is for the Functional Area currently selected.
Test 9: Viewed Performance Assessment, Current Level Results and verified "end state" has replaced "description" in the form.
Test 10: Input data into the Event Tree form, Subsequent Events and verified selecting "N" will not erase the Uncertainty data and Link Details fields.
Test 11: Created a new project, opened Ext. Events, and verified the form was empty.
Test 12: Opened the System Description, Operation Sequence Crystal Report and verified the duration of operation, lift height, distance traveled, and speed of travel fields were located below the primary fields.
Test 13: Opened the SSC Data form, Design Basis and Design Criteria tab and verified the functions, hazards, initiating events, and event trees are removed when a design basis or design criteria is deleted. Note: Version 3.0.1 now displays the lists of external and internal events when a hazard is added or edited.
Test 14: Opened RSAC input file and verified the default value for the wind speed is 4.3 for a deterministic run and the probabilistic case the sample distribution is: 0.9, 0.25 2.55, 0.29 4.35, 0.20 6.95, 0.18 9.75, 0.06 12.25, 0.02. Performed a 100 realization RSAC run and plotted the cumulative distribution of the wind speed from the lhs.out file to view the probabilistic wind speed data.



3-2-2005 TMAXWELL:

<u>The following is for SCR 543:</u>

The PCSA Tool was updated to Access 2000 to enable multiple user replication. The following errors, resulting from the update, were identified and corrected:

1. If a user opens a Crystal Report in one project and then chooses to open another project and show the Crystal Report, the Crystal Report will not display. Modified the Crystal Reports to remove the report reference when unloading the Crystal Report.

2. Modified the error message within frmRSAC_Main to generate an information message instead of an error message when attempting to delete tables and not all

tables are deleted since this is expected for replicable tables.

The following acceptance test were performed:

1. Two replicated databases were created and one non-replicated. Data was entered into each form, RSAC and MELCOR runs were performed, and SAPHIRE was opened. The crystal report was activated for each screen. No errors were observed for any function within the PCSA Tool.
2. The two replicated databases were merged using Access 2000. The merged database was opened in the PCSA Tool. The Crystal Report was opened for each screen, RSAC and MELCOR runs were performed, and SAPPIRE was opened. No errors were observed in any function within the PCSA Tool.
3. First the crystal report was opened for the first replicated database and the second database was opened. Then the crystal report was opened using the second database and the non-replicated database was opened. Finally the crystal report was opened for the non-replicated database. No errors were observed when opening the crystal reports for any database.

SCR 543 passed all test.

<u>The following is for SCR 544:</u>

The following items were identified and corrected:

1. The records on the SSC Design Bases and Design Criteria Crystal Report are not sorted by item number. Modified the SSC Design Bases and Design Criteria Crystal Report to sort records by item number.
2. The PCSA Tool Version 3.0 User Guide needs to be added to the Help Menu. The User Guide in PDF format with links from the table of contents was added to the Help Menu. Also, a directory, "Help" was created which contains the User Guide. Corrected the file launch routines to check for return values for errors less than or equal to 32.
3. The Operation Sequence Crystal Report subheadings do not need to be bold. The Energy Method Crystal Report Additional Information heading is cutoff. Made the Operation Sequence Report subheadings plain text instead of bold. Adjusted the Energy Method Crystal Report Additional Information heading.

4. Demo files do not need to be included with the PCSA Tool setup. Removed demo files from the PCSA Tool setup to include PCSADemo.mdb, PCSADemo directory, Working.mdb, IWorking.mdb, and Saphire Projects directories: Demo, YMP1, and Ymp1_ATS1.
5. The CheckLst database should be converted to Access 2000. Converted the CheckLst database to Access 2000 format.
6. The popup window for entering a subsequent event id says to enter a unique id, but unique ids are not required for event tree subsequent events. Corrected the popup window for event tree subsequent events to no longer request a unique event id.

The following acceptance test were performed:

1. Three records were input into the SSC Design Bases and Design Criteria. The following item numbers were input in this order: 1.0, 2.0, and 1.5. The Crystal report properly sorted the item numbers for Beta C. The same test was performed for Beta B and the numbers did not sort properly.
2. The User Guide was opened from the Help Menu. The User Guide was functional and the links within the Guide operated correctly.
3. Verified the Operation Sequence Crystal report subheadings are no longer bold by opening the report in Beta B and C.
4. Verified the the PCSA Demo database, working database files, and Saphire Demo Projects have been removed from the distribution by viewing the PCSA Tool un-installation and installation on a laptop computer.
5. Verified the checklist database was updated to Access 2000 by opening the database. Verified the functionality of the HEP Generation and Component Failure Mode Checklist by operating the forms within the PCSA Tool.
6. Verified the Event Tree Subsequent Event popup window no longer request a "unique ID" when adding a new event by opening a new event in Beta B and C.

SCR 544 passed all test.

7-1-2005 GADAMS:
Francisco Fierro is conducting acceptance testing of the PCSA Tool, Version 3.0.1Beta. He will make entries into this scientific notebook.

7-1-2005 SCR 545 FFierro

The following comments are for the SCR 545 acceptance testing. There were four changes that needed to be tested on PCSA Tool, Version 3.0.1 (Beta D). There were no errors produced from these changes. The details of the tests and results in the table below.

Verified removal of staff determination of Important to Safety (ITS) on the SSC Data form and View Selected SSCs form.	Pass
Verified Design Basis Ground Motion (DGBM) is now included for SSCs.	Pass
Tested The View Selected SSCs form displays ITS Evaluation and Staff Comments and Additional Info was removed. Also, verified a Crystal Report has been added to the View Selected SSCs form.	Pass
Tested The Design Review Comment and Additional Information fields are not visible on the Design Bases and Design Criteria tab of the SSC Data form, and are copied as empty fields when the Copy Record button is used. These fields are viewable and editable on the View Selected SSCs form.	Pass

SCR 545 passed all tests

7-1-2005 SCR 581 FFierro

The following comments are for the SCR 581 acceptance testing. There were five changes that needed to be tested on PCSA Tool, Version 3.0.1 (Beta D). There were no errors produced from these changes. The details of the test and results are seen in the table below.

On the Event Tree form, tested the addition of the capability to copy an even scenario to include all of the subsequent events associated with that scenario.	Pass
Verified the removal of Linking and Link Details fields from the Subsequent Events tab of the Event Tree form and the addition of Link to Fault Tree and Additional Info fields.	Pass
Verified the data environment within the application is no longer included.	Pass
On the System Description form, verified the user cannot select another functional are with the form open.	Pass
Tested the Crystal Reports for the Operation Sequence tab, Waste Characterization tab, Shielding tab, Fire Hazards tab, and Assumptions tab of the System Description form sort records by item number.	Pass

SCR 581 passed all tests.

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GEOSCIENCES AND ENGINEERING DIVISION

SCIENTIFIC NOTEBOOK REVIEW CHECKLIST RECORD

Scientific Notebook No.: 635E Date Turned In: 9-25-2006

Accomplished

×	1. Initial entries per QAP-001
×	2. Dating of entries
×	3. Corrections (crossed out, one line through w/initials/date)
×	4. No White out used
×	5. Page number visible on copy or original notebook
×	6. In process entries per QAP-001
×	7. Figure information present
×	8. Text readable
×	9. Electronic Scientific Notebook changes initialed and dated
×	10. Permanent ink or type only
×	11. Signing of entries (not required on each page)
×	12. Statement at the end of the Scientific Notebook.
×	13. Electronic media in the scientific notebook properly labeled

Any discrepancies must be resolved before notebook closeout.

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I have reviewed this scientific notebook and find it in agreement with QAP-001.

Manager's Signature 9-26-06 Date

Attach this completed form to the last page of the notebook.

Form QAP-01 (8/2005)