

b:\wp\ Effective date: 00/00/00 Print: 12/5/95	OPGP02-ZA-0004	Rev. 0 General	Page 1 of 23
Station Performance Data Collection, Categorization, and Reporting			
Quality	Non Safety-Related	Usage: Reference	Effective Date: 00/00/00
Bruce C. MacKenzie	(name)	(name)	Operating Experience Group
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of ContentsPage

## 1.0 Purpose

Definitions

Responsibilities

Requirements

Process

Addendum 1, Department Performance Information (Typical)

Addendum 2. Organization Codes

Addendum 3. Attribute Codes

Addendum 4. Weighing Factors

*Draft RCM*

## Station Performance Data Collection, Categorization, and Reporting

## 1.0 Purpose and Scope

*Draft RJK*

- 1.1 This procedure prescribes the methods for identifying, collecting and categorizing performance data for use in STP Comprehensive Risk Management activities. This procedure applies to all STP personnel.

## 2.0 Definitions

- 2.1 Performance Information is all information including electronic media that would indicate the relative performance level of functional areas at the South Texas Project.
- 2.2 Weighing Factors are significance factors automatically assigned by the computer based upon performance information input coding.
- 2.3 Categorization is the assignment of a coding structure to data based upon factors such as system, component, and activity.

## 3.0 Responsibilities

- 3.1 All plant personnel are responsible for the identification of performance information. Performance information includes, but is not limited to, Condition Reports, Operating Logs, Electronic media such as computer printouts, etc.
- 3.2 Department managers are responsible for providing performance data input to the Operating Experience Group. This performance data may include, but is not limited to, the following:
- Department Self-assessment reports
  - System Health reports
  - Nuclear Regulatory Commission Inspection Reports including Resident Inspector's reports, announced and unannounced inspections, etc.
  - Institute of Nuclear Power Operations reports including Evaluation and Assistance reports, Trip reports, Significant Operating Experience Reports, etc.
  - Independent Oversight Results such as assessments and audits
  - Equipment Performance
- 3.3 Quality Department personnel are responsible for inputting observed performance information into the South Texas Project (STP) Performance Reporting & Identification Database (PR&ID).

## Station Performance Data Collection, Categorization, and Reporting

3.4 The Operating Experience Group is responsible for categorization, assigning performance classifications, assigning weighing factors, assigning trend codes, and ensuring the proper input of performance data, other than listed in 3.3 above, in the PR&ID.

3.5 The Operating Experience Group is also responsible for reporting performance data and forwarding of that data to the appropriate working group.

*Draft  
RJR*

#### 4.0 Requirements

4.1 Collection of performance information.

4.1.1 Department managers shall cause performance information, as identified in Addendum 1, to be collected and forwarded to the Operating Experience Group.

4.2 Categorization of performance information:

4.2.1 The Operating Experience Group shall review and categorize performance information.

4.2.2 The Operating Experience Group shall categorize performance data by systems, components and activity in accordance with Addendum 2.

4.2.2 The Operating Experience Group shall ensure necessary data is entered into the appropriate database.

4.3 Reporting of performance information:

4.3.1 The Operating Experience Group shall, on a periodic basis, generate performance reports, analyze captured data, and forward the reports and analysis to the appropriate Working Group.

#### 5.0 Process

5.1 Performance data

5.1.1 Operating Experience Group will compile performance data supplied by individual departments into categories in accordance with addendum two.

## Station Performance Data Collection, Categorization, and Reporting

5.1.2 Performance data will be evaluated against the following criteria and assign the appropriate grade:

- 4) Weakness: Performance or a condition that resulted in a significant condition adverse to quality;
- 3) Needs Improvement: Performance or a condition that resulted in a condition adverse to quality.
- 2) Satisfactory Performance: Performance that meets existing requirements.
- 1) Strength: Exemplary performance that exceeds goals/expectations.

*Draft*  
*RJH*

5.1.3 Recording of pertinent information, categorization, grading, and input of performance indications will be accomplished on the Generic Performance Input Form, within the PR&ID database.

5.1.4 Attribute codes will be assigned in accordance with addendum (3) to completed Condition Reports.

5.1.5 Graded Quality performance data shall be input into the PR&ID database in accordance with Quality procedures.

5.1.6 The Operating Experience Group shall compile performance data and sort by organization/attribute codes using Addenda two and three.

5.1.7 Compiled performance data output shall be graded one through five in accordance with the following criteria:

- 1) Sustained Excellence
- 2) Good with an improving trend
- 3) Good performance
- 4) Good with a declining trend
- 5) Poor performance

- 5.1.8 The Operating Experience Group shall periodically report the data to the appropriate Working Group for evaluation and use in the decision making process of the Comprehensive Risk Management program.

*Draft  
ROR*

	OPGP02-ZA-0004	Rev. n	Page 6 of 22
Station Performance Data Collection, Categorization, and Reporting			
Addendum 1	Department Performance Information (Typical)		Page 1 of 1

Performance information includes, but is not limited to the following:

1. Corrective Action Program (CAP) database
2. Independent Oversight Results
3. Self-assessment Reports
4. Equipment History (successes/failures)
5. System Health Reports
6. NRC Inspection Reports
7. Corporate Management Audit Program (CMAP) Reports
8. SALP Assessments
9. INPO Reports

*Draft RJC*

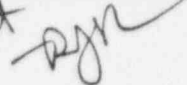
	OPGP02-ZA-0004	Rev. 0	Page 7 of 21
Station Performance Data Collection, Categorization, and Reporting			
Addendum 2	Organization Codes	Page 1 of 1	

The station organization codes are contained in the Corrective Action Program (CAP) database as tables. These organization tables are currently being used for sorting from other ORACLE based databases on site (such as CAP and the Work Order database). With the development of the Performance Monitoring and Identification database additional sorting capabilities will be available for sorting by organization to further refine the output data and enhance the station's capability for detecting declining performance by organization.

*Draft RYH*

	OPGP02-ZA-0004	Rev. 0	Page 8 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 1 of 15

**A: Radiation Protection/Contamination Control**

*Draft* 

- ACA1 ALARA practices: Requirements delineated in Procedure OPGP03-ZR-0050, Radiation Protection Program. It identifies such items as Radiation Work Permits, Health Physics coverage, and procedural implementation and compliance.
- ACA2 Contamination controls are exercised: Controls, as delineated in Procedure OPGP03-ZR-0044, Contamination Control Program, are exercised to minimize contaminated areas and levels in order to reduce radioactive waste and the risk of personnel contaminations.
- ACA3 Dressing/undressing techniques: Protective clothing is donned and removed in the correct sequence to prevent the spread of contamination. Protective clothing is disposed of in the correct receptacles as delineated in Procedure OPGP03-ZR-0044, Contamination Control Program. Donning and removal of protective clothing is performed in accordance with requirements in the General Employee Training Program.
- ACA4 Frisking techniques: Procedure OPGP03-ZR-0044, Contamination Control Program identifies when frisking is required. Frisking techniques are followed as delineated in the General Employee Training Program. Procedures/work documents, tools, etc. are properly frisked out of the RCA.
- ACA5 RWP followed as written: All RWP requirements are known to personnel performing the work activity and the requirements in the RWP are followed.
- ACA6 TLD, ALNOR, etc., are correctly controlled and worn: Self explanatory.
- ACA7 RWP is ready: The RWP was submitted to Health Physics in an adequate amount of time for the RWP to be prepared. The RWP is completed and ready for the job.
- ACA8 Radwaste volume reduction is exercised: Self-explanatory.
- ACA9 Tools are obtained from the hot tool room when they are to be used in a potentially contaminated area: Self-explanatory.
- ACA10 Only required tool, lubricants, solvents, etc., are taken into a potentially contaminated area: Self-explanatory.
- ACA11 Radioactive shipments are properly controlled: Self explanatory.
- ACA12 Radioactive releases are properly analyzed, monitored, and controlled: Self explanatory.



	OPGP02-ZA-0004	Rev. 0	Page 9 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 2 of 15

**B: Industrial Safety/Fire Protection**

*Draft RYN*

ACB1 Fire protection is proper/not compromised: Fire detection and protection systems meet the requirements as delineated in Procedure OPGP03-ZF-0001, Fire Protection.

ACB2 Personnel safety equipment usage: During the performance of an activity, industrial safety requirements are followed, as delineated in the Accident Prevention Manual and Procedure OPGP03-ZI-0001, Industrial Safety Program, in order to minimize the risk of injury or illness to employees due to recognized hazards in the work environment. This includes the use of ear plugs, eye protection, safety belts/harnesses, rubber gloves, electrical shock equipment, face shield, welding hoods, gloves, etc.).

ACB3 Safe work practices: In the performance of activities, safe work practices are followed, for example:

- a. Ladders are tied down.
- b. Scaffolding is erected when accessibility to a component is unsafe.
- c. Long sleeve shirts and gloves are not used around rotating equipment.
- d. Electrical safety equipment is used racking in high voltage breakers.
- e. Precautions are taken to properly ground electrical equipment before work commences.
- f. Proper lifting techniques are used

ACB4 Fire barrier boundary breach is approved: Administrative controls for breaching a fire barrier and for ensuring the restoration of the fire barrier are delineated in Procedure OPGP03-ZF-0003, Breaching of Fire Barriers.

ACB5 Hot work permits are used and correct: Hot work permits are completed and approved as required by Procedure OPGP03-ZF-0006, Control of Ignition Sources.

ACB6 Storage of flammable materials: Ensure flammable materials is stored in accordance with OPGP03-ZF-0006.

ACB7 Transient fire loads evaluated: Ensure that only fire resistant wood is brought into the PA.

	OPGP02-ZA-0004	Rev. 0	Page 10 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 3 of 15

**C: Configuration Management/Material Control**

*Draft RFR*

- ACC1 Material issued is controlled: Material that is issued and staged or placed in impound storage are controlled per the requirements of Procedure OPGP03-ZG-0001, Material Control.
- ACC2 Drawings/Procedures/Specifications are maintained in an "as-built configuration: Drawing/Procedures/Specifications are updated to reflect current plant configuration.
- ACC3 Inert gas blankets correctly maintained: (Self explanatory)
- ACC4 Tags (danger, caution, do not operate, etc.) are hung on the correct equipment, and are legible: Self-explanatory, correct unit/equipment/component are verified.
- ACC5 Clearances are administratively and technically correct: Equipment Clearance Orders meet the requirements as delineated in Procedure OPGP03-ZO-EC01, Equipment Clearance Orders, and adequately protect personnel performing work activities and the equipment the work in being performed on (this includes correct use of clearance, caution and test tags).
- ACC6 Maintenance of stored items scheduled/performed: Self explanatory.
- ACC7 Protective covers maintained and not deteriorated: Self explanatory.
- ACC8 Ready access to stored items: Self explanatory
- ACC9 RIDR hold tags correctly attached to stored items: Self explanatory.
- ACC10 Storage of expendable and hazardous materials maintained: Self explanatory.
- ACC11 Shelf life: Material shall not exceed the recommended life of the product as delineated by manufacturer or engineering requirements. Shelf life starts at the date of manufacture and continues until such time as the manufacturer or engineering deem the product unusable.
- ACC12 Control of materials and personnel into work areas: CAM
- ACC13 Access control into warehouse areas: Self explanatory.

	OPGP02-ZA-0004	Rev. 0	Page 11 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 4 of 15

**D: Communication**

*Draft RYM*

ACD1 Verbal/written instructions are adequate, and do not conflict with other instructions: Self-explanatory, within the knowledge of the personnel performing or evaluating task.

ACD2 Communications between participants in activity is apparent and clear: Participants in the activity clearly convey information, and ensure that the information sent and received is understood. Personnel ensure that pertinent information is conveyed to appropriate participants, to assist in their overall understanding of the activity and activity status. Expedient communications of needs, expectations and/or possible problems to appropriate personnel and/or organization levels occurs.

ACD3 Information/instructions are obtained prior to starting the job: Verify that personnel performing the activity are adequately informed of any information/instructions that are not documented in the procedure (i.e., start times, activity location, applicable RWP, participants, contact points, etc.,) are conveyed to and understood by participants in the activity.

	OPGP02-ZA-0004	Rev. 0	Page 12 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 5 of 15

**E: Work Practices**

*Draft pjm*

ACE1 Activity expectations and pertinent information are clear to workers: Expectations and pertinent information are adequately covered in pre-job briefing in accordance with OPGP03-ZA-0090, Work Process Program. Some activities do not have required topics for the pre-job brief. These briefings should include information such as:

- a. Precautions and limitations of the evolution.
- b. Prerequisites
- c. Major Steps.
- d. Lessons learned from previous performance of the evolution.
- e. Expected response during the evolution.
- f. Responsibilities of participants.
- g. Radiation exposures/ALARA Review.
- h. Safety hazards.
- i. Methods of communication.
- j. Contingencies

ACE2 Post activity/job meeting: If appropriate, a post activity/job meeting is performed to critique the activity performed, identify lessons learned (both positive and negative), discuss problems encountered, identify a more effective way to perform the activity, etc..

ACE3 Availability of parts, materials, test equipment: All necessary and correct parts, materials and/or test equipment is readily available for use at the commencement of the activity.

ACE4 Needed tools, materials, and/or equipment are obtained before starting the activity: All needed tools, materials, and/or equipment (testing, instrumentation, etc..) are obtained, staged, and/or installed before the start of the activity.

ACE5 Time allotted for personnel to prepare for activity/performance of prerequisites: Personnel are provided adequate time to prepare for and perform activity prerequisites.

ACE6 Time allotted for task: Time allotted for task is adequate to perform the activity in a controlled, quality manner, without placing unnecessary burden on the performers.

ACE7 Verification that condition of the unit can support the activity: The unit is in a condition that the performance of the activity will not create a initiator/event, compromise the safe operation of the plant, or compromise any safety system required to mitigate an accident.

ACE8 Barriers/signs are respected: Requirements delineated in Procedure OPGP03-ZI-0011, Warning Signs and Barriers.

	OPGP02-ZA-0004	Rev. 0	Page 13 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 6 of 15

ACE9 Clearance boundaries are respected: Personnel performing activity do not work outside equipment clearance, caution, and test tag boundaries. Tag placements and component positions are not changed, unless performed by Plant Operations or approved personnel.

*draft  
for*

ACE10 Correct tools are used: The tools used are appropriate for the job. Any specialty tools required have been obtained prior to the start of the job (e.g., refrigerant wrenches on the Essential Chillers, etc.).

ACE11 Dual/independent verification: Dual/independent verification requirements, as delineated in Procedure OPGP03-ZA-0010, Performing and Verifying Station Activities, are followed.

ACE12 M&TE installed/used correctly and calibration is current: Ref. procedure OPGP03-ZM-0007. The following attributes will be listed on the M&TE issue record sheet.

- a. Description
- b. ID No.
- c. Calibration Due Date, as applicable
- d. Date Issued
- e. Area or Group
- f. Name, badge number, and phone number of user
- g. Name and phone number of users supervisor
- h. Identity of person issuing the M&TE

Make sure that the calibration sticker on the calibrated instrument matches the M&TE issue record/etched number on the M&TE, and is within the allowable date.

ACE13 Rigging practices/techniques: Safe rigging and lifting practices are performed per the requirements in Procedure OPGP03-ZI-0026, General Rigging and the Rigging Handbook.

ACE14 Self-checking applied to ensure correct unit/train/component (STAR process): The STAR process is used during the entire performance of the activity to ensure correct unit/train/component.

ACE15 System tag-out is verified: Tag-out has been verified to provided required protection for personnel/equipment by the person performing the work activity before the work activity commences. The appropriate person has signed on-to the equipment clearance order after verifying the tag-out if appropriate before the work activity commences.

ACE16 Work start permission is obtained: Before work commences, work start permission is obtained from Plant Operations and/or approval authority.

	OPGP02-ZA-0004	Rev. 0	Page 14 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 7 of 15

ACE17

Access control maintained: This attribute includes the following: Activity meets requirements delineated in Procedure OPGP03-ZS-0001, Personnel Access Control, and for personnel access control requirements. Vehicle access control requirements are delineated in Procedure OPGP03-ZS-0002, Vehicle And Material Access To Protected Area. Requirements for access control of tools, personnel and materials in a Zone I, II and III Housekeeping Area are delineated in Procedure OPGP03-ZA-0098, Station Housekeeping.

*Draft RJC*

	OPGP02-ZA-0004	Rev. 0	Page 15 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 8 of 15

**F: Training/Qualifications**

ACF1 Personnel qualifications/certifications verified: Personnel performing the task are qualified to perform the activities assigned (certified or qualified). This is verified by evaluating TRDS records and/or hard copy qualification records of personnel. Personnel performing the task as a part of On-The-Job Training are under the direction and control of a qualified training instructor.

ACF2 Site specific training is identified/obtained: Site-specific administrative training requirements commensurate with job responsibilities are identified and performed for staff augmentation and specialty contractors. Departmental required reading cannot be exempted for staff augmentation contractors performing tasks independently. Requirements are delineated in Procedure OPGP03-ZT-0138, Contractor Training and Qualification Program, and OPGP03-ZT-0148 for PMPI modification work.

ACF3 OJT/OJE conducted properly: Self explanatory.



	OPGP02-ZA-0004	Rev. 0	Page 16 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 9 of 15

**G: Management Oversight/Involvement**

*Draft RJM*

- ACG1** Number of qualified personnel assigned to the task: The number of personnel assigned to the task is adequate to complete the job in a quality/timely manner.
- ACG2** Management/supervision at activity is actively involved: Management/supervision provide the appropriate support to ensure the activity is completed properly. Amount of participation is dependent on the experience and skill of the worker(s), and the amount of detail in the instructions used to perform the activity. Management/supervision personnel involved in the activity maintains a big-picture perspective of the activity.
- ACG3** Overtime control (individual/personnel): Key personnel do not violate Technical Specification requirements for overtime, as delineated in Procedure OPGP03-ZA-0116, Overtime. Any necessary exceedence of Technical Specification overtime is approved and documented on the required form by appropriate management prior to personnel performing the overtime. Management minimized overtime by aligning work scope to available resources and commitment dates.
- ACG4** Shutdown risk assessment: Evolution are assessed to confirm that the unit is in a condition that would not create an initiator/event, and to ensure the safety of the plant, personnel and the general public are not compromised. The requirements of Procedure OPGP03-ZA-0101, Shutdown Risk Assessment are followed.
- ACG5** Self-Assessment of department activities are periodically performed and used for enhancement: (self-explanatory)
- ACG6** Safe and "error free" human performance is fostered: Nuclear and industrial safety in emphasized; Human performances errors are communicated with corrective measures and "lessons learned"; Self identification and reporting of problems is encouraged.



	OPGP02-ZA-0004	Rev. 0	Page 17 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 10 of 15

**H: Coordination/Teamwork**

ACH1 Coordination between work groups established: Groups involved in the activity understand their responsibilities in the performance of the activity and are cognizant of how their work interfaces with other groups involved in the activity. When problems are encountered, work groups involved are notified and participate in resolution.

ACH2 Teamwork is apparent (personnel work together to complete the task): Adequacy of activity coordination within and between groups, participants working as a team to complete the activity, and group interaction to ensure the activity is performed in an efficient manner from the planning stage to final activity completion.

*Draft RJM*

	OPGP02-ZA-0004	Rev. 0	Page 18 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 11 of 15

**I: Condition Reporting/Processing**

*Draft RJM*

- ACI1 Adverse trend identification: Analysis of the CAP database by Operating Experience Group.
- ACI2 Conditions/problems are reported in accordance with the Corrective Action Program (CAP): Problems identified and near misses are appropriately documented on Condition Reports as delineated in Procedure OPGP03-ZX-0002, Corrective Action Program.
- ACI3 Corrective Action effectiveness: As determined by Quality Surveillances, Department effectiveness reviews, and trending.
- ACI4 Interdisciplinary review adequacy: Event Review Team report reviews, Condition Review Group assignment of significance, Supervisor initial assignment of significance.
- ACI5 JCO evaluation complete according to applicable procedures.
- ACI6 Operability/reportability determination: Operability/reportability determinations are promptly performed by qualified individuals, when appropriate, as delineated in Procedure OPGP03-ZX-0002, Corrective Action Program.
- ACI7 Operating experience utilized: Determined by Industry Operating Experience self-assessment, Quality audits and surveillances.
- ACI8 Process review adequacy: Technical review, design verification, work package meets administrative requirements as determined by observation and assessment activities.
- ACI9 Root cause analysis: Adequacy determined by Operating Experience Group and Condition Review Group review of Conditions Adverse to Quality - Station level and Significance Conditions Adverse to Quality report reviews.
- ACI10 Temporary modification adequacy: Design implemented, constructed, and tested to applicable procedure and regulatory requirements and removed in a timely manner..
- ACI11 USQE evaluation complete according to applicable procedures.
- ACI12 Follow-up performed on Condition Reports: Performance by either the owner or Quality.

	OPGP02-ZA-0004	Rev. 0	Page 19 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 12 of 15

*Draft RJK*

**J: Procedure/Work Instruction/Documentation**

- ACJ1 Documents used are up-to-date: The work documents (procedures, drawings, preventive maintenance, work packages, specifications, etc.) used to perform the work activity are the current revision.
- ACJ2 Work package preparation is adequate/complete, including all necessary precautions, required permits and documentation: Work packages are prepared in accordance with the requirements of Procedure OPGP03-ZA-0090, Work Process Program and The Planner Guide.
- ACJ3 Written instructions are effective, and do not conflict with other instructions or requirements: Self-explanatory, within the knowledge of the personnel performing or evaluating task.
- ACJ4 Drawings, and/or manuals are used: Procedures, drawings, and/or manuals are used to perform work activities. "In Hand" requirements for procedural use are followed, as delineated in Procedure OPGP03-ZA-0010, Performing and Verifying Station Activities. The most recent revision of the document is used. If manuals or drawings are used, changes are verified to be reflected in the document used.
- ACJ5 Programmatic and procedural requirements (ASME Section XI, VETIPS, Design Changes, Temporary Modification, etc.) are followed where applicable: Self-explanatory.

	OPGP02-ZA-0004	Rev. 0	Page 20 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 13 of 15

**K: Plant Support**

*Draft*

ACK1 50.59 evaluation adequate and complete: Requirements delineated in Procedure OPGP05-ZA-0002, 10CFR50.59 Evaluations.

ACK2 Engineering evaluations are documented and justifiable: Clarification on the understanding of design function can be written on the applicable work document; however, if the component no longer matches its designed fit/form/function or acceptance criteria is not met during testing, then a Condition Report must be generated and dispositioned as a Condition Report Engineering Evaluation (CREE). The final disposition of the CREE will direct future work activities (use-as-is or repair). The CREE process is defined in Procedure OPGP04-ZA-0002, Condition Report Engineering Evaluation Program.

ACK3 Support is timely/effective: Support of activities, such as evaluating work packages; providing a Justification For Continued Operation (JCO), operability determination, or a Conditional Release Authorization (CRA); functioning as the Test Manager; evaluating equipment problems in the field; Providing inspection coverage; Providing plant operations support for testing, etc.; Providing additional maintenance support, is timely, effective and proactive.

ACK4 Design Change Packages(DCP) are prepared in accordance with OPGP04-ZE-0309: Design information is current and correct and the assumptions used are based on sound engineering practices. Regulatory requirements and design bases are properly implemented, design review performed satisfactorily, appropriate post modification tests and the acceptance criteria identified, design information properly incorporated into project documents and operational documentation impact assessment correctly performed.

	OPGP02-ZA-0004	Rev. 0	Page 21 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 14 of 15

**L: Vendor/Contractor Performance**

*Draft RYN*

- ACL1 Contractor compliance with purchase orders or contract documents: Self-explanatory, within the knowledge of the personnel performing or evaluating task.
- ACL2 Contractor condition reporting: Contractors are reporting self-identified deficiencies in accordance with HL&P approved procedures.
- ACL3 Contractor on the approved vendor list: A list of vendors who have been evaluated by HL&P to specific criteria and have been found to be qualified to provide specific items and/or services. The AVL database is maintained on electronic media with controlled access to prevent unauthorized use or alterations.
- ACL4 Contractor overview: This item becomes applicable anytime a contractor is involved in the work activity. The contractor is competent and capable of performing his job function to the expected level (example: Follows procedures and site and company policies).
- ACL5 CTC oversight and involvement: Contract Technical Coordinator (CTC) has verified qualifications that Contract personnel are qualified as delineated in Procédure OPGP03-ZT-0138, Contractor Training and Qualification Program.

	OPGP02-ZA-0004	Rev. 0	Page 22 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 3	Attribute Codes		Page 15 of 15

**M: Miscellaneous Environmental Conditions**

*Draft PJM*

- ACM1 Area has adequate lighting: Self-explanatory, within the knowledge of the personnel performing or evaluating task.
- ACM2 Area has adequate ventilation: Self-explanatory, within the knowledge of the personnel performing or evaluating task. For confined spaces, meets requirements of Procedure OPGP03-ZI-0007, Confined Space Entry Program.
- ACM3 Ambient conditions: Items classified to Level A or B are those that are sensitive to environmental conditions and require special measures for protection from one or more of the following effects: temperature outside required limits, sudden temperature changes, humidity and vapors. (ANSI 45.2.2, paragraph 2.7.1 and 2.7.2)
- ACM4 Animal and bird control maintained in warehouse: Measures shall be taken to prevent the entrance of rodents and other animals into indoor storage areas or equipment to minimize possible contamination and mechanical damage to stored material. (ANSI 45.2.2, paragraph 6.2.5)
- ACM5 Coatings and preservatives: The content of shipments shall be visually inspected to verify that the specified packaging and shipping requirements have been maintained. These inspections shall include verification that coatings and preservatives are applied in accordance with specifications, purchase orders or manufacturer's instruction. (ANSI 45.2.2, paragraph 5.2.2)
- ACM6 Desiccant appropriately used: The content of shipments shall be visually inspected to verify that the specified packaging and shipping requirements have been maintained. These inspections shall include verification that the desiccant is not saturated, as indicated through the use of humidity indicators. (ANSI 45.2.2, paragraph 5.2.2)
- ACM7 Designated smoking/eating areas maintained: Housekeeping zone requirements are delineated in Procedure OPGP03-ZA-0098, Station Housekeeping.
- ACM8 Equipment/item storage level and protection: Equipment/components are stored in accordance with established criteria and with adequate/correct protection from degradation.
- ACM9 Heater for stored equipment energized: Self explanatory.
- ACM10 Housekeeping: Requirements delineated in Procedure OPGP03-ZA-0098, Station Housekeeping. This procedure provides a method to ensure the material condition and cleanliness of the plant are maintained through a program of inspection, reporting, follow-up and correction.

	OPGP02-ZA-0004	Rev. 0	Page 23 of 23
Station Performance Data Collection, Categorization, and Reporting			
Addendum 4	WEIGHING CRITERIA		Page 1 of 1

The weighing of individual data shall be accomplished within the computer code currently under development. The software shall provide for captured information to be tabulated, using weighing factors and threshold levels, and visually displayed, by linking categories, using colors to indicate performance levels. It shall consist of a one to ten scheme that is assigned by the computer program based upon the Attribute Code, Event Code, or Cause Code assigned upon data input. Weighing factors will be cumulative over a period of time (to be determined) such that declining performance will be captured. Each individual Attribute Code, Event Code, and Cause Code will be evaluated and weighted based upon plant and personnel performance history.

The weighted information will be evaluated for validity by the Operating Experience Group prior to submittal to the Working Groups. The weighing factor plus the frequency will provide the conversion factor from the one through four data input categorization to the one through five data output for the working groups.

*Draft  
RJM*

*Draft*

## STP Performance Reporting & Identification Software Specifications

### 1.0 General Scope

- 1.1 The contractor shall modify/develop and provide Local Applications Network (LAN) versions of their Annunciator Windows software, an ORACLE compatible database for use in the South Texas Project (STP) Performance Reporting & Identification process, and Root Cause Analysis Software. The contractor shall verify that this software will work under existing Station LAN applications (ORACLE environment). The contractor shall provide adequate programming personnel to work with the STP Nuclear Information Services (NIS) to install the software on the LAN. STP shall identify an interface within NIS to support LAN application.
- 1.2 The contractor shall develop forms and screens in accordance with the South Texas Project IMPACT Software Development Standards (Attached).
- 1.3 The contractor shall provide a one year warranty on the purchased software, that it will function as defined in this contract.
- 1.4 The PR&ID software shall have the capability to allow access to other software (ORACLE compatible) for usage and to sort, categorize, access, and trend data for results. Appropriate trending codes shall be provided by STP personnel.
- 1.5 The requirement of OPGP07-ZA-0014, Software Quality Assurance Program (Attachment 1), applies to this software. Development of this software shall be in accordance with the requirements of OPGP07-ZA-0014, Software Quality Assurance Program. This software is defined as Level II software under the above referenced procedure.
- 1.6 The contractor shall provide all programming codes to a total extent that the PR&ID software could be modified by station personnel.
- 1.7 The PR&ID software shall be designed to maximize the use of pull down menu and ICONS to speed usage, report generation and transfer of data. Appropriate "Help" files shall be provided to assist users.
- 1.8 The PR&ID software shall be capable of working in a standard Microsoft Windows format 3.1, Windows 95 or Windows NT.
- 1.9 The contractor shall provide training to selected personnel on the PR&ID software. The training shall include detailed training commensurate with the assigned level of access to 10 personnel, 3 system administrators and 2 training instructors for training other personnel.

### 2.0 Windows Annunciator Software

- 2.1 The Windows Annunciator software portion of the PR&ID software shall be capable of gathering and using existing data from STP ORACLE compatible environments for use in trending station information.



*Draft  
RPN*

- 2.2 The software shall provide for captured information to be tabulated, using weighting factors and threshold levels, and visually displayed, by linked categories, using colors to indicate performance levels (linked categories, trending thresholds, weighing factors, and performance level information and formulas shall be supplied by Station personnel).
- 2.3 Users of the software shall have the capabilities of keying on the visually displayed categories to "chain down" through the linked categories, for identifying the specific categorized and individual information that indicated and affected performance level change.
- 2.4 Secured areas of the program, dealing with data acquisition and determining factors of computation, shall be provided.
- 2.5 Window Annunciator software shall include capabilities for access control levels for secured and other areas, but be capable of site-wide use.
- 2.6 Windows Annunciator software shall be capable of trending hardware performance.

**3.0 PR&ID Database Software**

- 3.1 The software program shall include and provide for electronic completion of the report forms, and provide automatic cross reference/verification/access capabilities to other STP databases such as Quality Certification/Qualification portion of the NDE database, CAP database, and other appropriate databases. Printing capabilities of individual reports and sorted data shall be provided.
- 3.2 Quality Report forms
  - 3.2.1 QIP Inspection Report Form
  - 3.2.2 Quality Performance Monitoring Report Form
  - 3.2.3 Audits Report Form
  - 3.2.4 Assessments Report Form
  - 3.2.5 Generic Report Form(s) that have the capabilities of recording pre-graded information obtained from documents such as Nuclear Regulatory Commission Inspection Reports and other correspondences, INPO reports, SALP Assessments, Station System Health reports, Daily Communication and Teamwork reports, and other reports that indicate Station performance.

(Specific required information and data fields shall be supplied by STP personnel concurrent with report development)

- 3.3 The database software program shall provide for the electronic transmittal of the initiator completed report to the appropriate responsible Supervisor or designee for review and concurrence. The Supervisor may either reject or accept the report. The report can then be electronically transmitted back to the initiator for correction or transmitted to a secured "completed file" for data usage and electronically transmitted to the Records Management System (RMS) for storage. The database software is to provide for security in such a manner that unauthorized personnel can not generate or change Reports or data in the database. There shall be security levels as follows:

Draft  
RM

- 3.3.1 Inspector/Initiator Level - generates reports and transmits for review; print completed reports; perform pre-determined sort of database information.
- 3.3.2 Supervisor/Designee Review Level - Same capabilities as 3.4.1, and; review and return reports to initiator for correction (requires personal comment section for reason of report rejection); transmit completed reports to complete file/RMS; print reports; perform unlimited sort of database information.
- 3.3.3 Data Base Administrator Level - Same capabilities as 3.4.2 and; can return completed reports for additional correction; has overall responsibility for access control to database; ability to add or delete access as necessary.
- 3.4 The database software shall provide for electronic signature capabilities, for initiator and reviewer, in such a manner that unauthorized/uncertified/unqualified personnel cannot generate, approve, or change reports. This may be accomplished by encrypted, unique password protected signature and acceptance fields, or other approved methods.
- 3.5 Each report shall have a location to record hours used on Quality observations. There shall be a method to sort man hours by initiator's name(s) in relation to the report number and topical category(s). Any additional personnel listed as initiator on the report shall also be traceable to the labor hours in the same fashion (for purchaser-approved purposes).
- 3.6 The PR&ID database shall have word processing capabilities, such as spell check, and direct ties/access to LAN based software applications by use of hotkey or ICON application(s).
- 3.7 The software shall have the capability of assigning a unique number to each report. The number shall consist of the Method, year, Unit No., and unique 4 digit number. Example: IR-95-0001. The next report would automatically be assigned the next sequential number. The numbering system is to start over each calendar year for each method.
- 3.8 The PR&ID database system reports shall have the capabilities to sort and create reports in the following manners:
  - 3.8.1 Inspection Reports
    - a. inspector name\*
    - b. component ID (TPNS)\*
    - c. M&TE Numbers\*
    - d. SAT or UNSAT status\*
    - e. date of inspection\*
    - f. Inspection Report Number\*
    - g. time period (Date to Date)\*
    - i. individual date\*
    - j. word search capabilities (on comments)\*
    - k. work document number\*
    - l. deficiency document number\*
    - m. labor hours required per inspection\*
    - n. individual attribute\*(\*or any combination)

*Draft*  
*RJK*

### 3.8.2 Monitoring Reports

- a. initiator name\*
  - b. monitoring attribute\*
  - c. observed organization\*
  - d. assigned grade\*
  - e. average grade\*
  - f. time period (date to date)\*
  - g. individual date\*
  - h. word search capabilities (on comments)\*
  - i. work document number (if applicable)\*
  - j. deficiency document number\*
  - k. labor hours required per observation\*
  - l. monitoring category\*
- (\*or any combination)

### 3.8.3 Audits Reports

- a. initiator(s) name\*
  - b. audit area\*
  - c. observed organization(s)\*
  - d. assigned grade\*
  - e. average grade\*
  - f. time period (date to date)\*
  - g. individual date\*
  - h. word search capabilities (on comments)\*
  - i. deficiency document number(s)\*
  - j. labor hours required\*
  - k. category(s)\*
- (\*or any combination)

### 3.8.4 Assessment Reports

- a. initiator(s) name\*
  - b. assessment area\*
  - c. observed organization(s)\*
  - d. assigned grade\*
  - e. average grade\*
  - f. time period (date to date)\*
  - g. individual date\*
  - h. word search capabilities (on comments)\*
  - i. deficiency document number(s)\*
  - j. labor hours required\*
  - k. category(s)\*
  - l. procedure/drawing number(s)\*
- (\*or any combination)

*Draft  
RJR*

### 3.8.5 RIDR

- a. supplier\*
  - b. deficiency code\*
  - c. purchase order number\*
  - d. date\*
  - e. time period (date to date)\*
  - f. word search capabilities (on comments)\*
  - g. initiator\*
  - h. assigned dispositioning organization\*
  - i. Condition Report generated, YES/NO\*
  - j. RIDR closure\*
- (\*or any combination)

### 3.8.6 Generic Report

- a. originating report organization\*
  - b. subject/category\*
  - c. assigned grade\*
  - d. average grade\*
  - e. time period (date to date)\*
  - f. individual date\*
  - g. word search capabilities (on comments)\*
  - h. deficiency document number(s)\*
  - i. procedure/document number(s)\*
- (\*or any combination)

## 4.0 Root Cause Analysis Software

- 4.1 The Root Cause Analysis software shall be designed to maximize the use of pull down menu and ICONs to speed usage, report generation and transfer of data. Appropriate "Help" files shall be provided to assist users.
- 4.2 Root Cause Analysis software shall include capabilities for access control levels for secured and other areas, but be capable of site-wide use.
- 4.3 Root Cause Analysis software shall include the capabilities for migration of results into the Corrective Action Program database in the Apparent Cause field.
- 4.4 Root Cause Analysis software shall include the capabilities for electronically linking the analysis results with the Condition Report by Condition Report Number. (ie; the Root Cause Analysis would have the same number as the Condition Report)
- 4.5 The database software shall provide for electronic signature capabilities, for initiator and reviewer, in such a manner that unauthorized/uncertified/unqualified personnel cannot generate, approve, or change reports. This may be accomplished by encrypted, unique password protected signature and acceptance fields, or other approved methods.
- 4.6 The Root Cause Analysis software shall have word processing capabilities, such as spell check.











## STP Risk Ranking Values with Common Cause Included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
EP_BUS1_FTR_L1C2	8.88E-05	7.77			2.88E-05	3.20	1.11E-04	9.48	8.80E-05	7.71
EP_BUS1_FTR_M1A1	1.62E-04	12.93			5.51E-05	5.06	2.17E-04	16.97	1.61E-04	12.84
EP_BUS1_FTR_M1A2	1.62E-04	12.93			5.51E-05	5.06	2.17E-04	16.97	1.61E-04	12.84
EP_BUS1_FTR_M1B1	4.87E-05	4.62			1.57E-05	2.17	4.78E-05	4.55	4.82E-05	4.58
EP_BUS1_FTR_M1B2	4.87E-05	4.62			1.57E-05	2.17	4.78E-05	4.55	4.82E-05	4.58
EP_BUS1_FTR_M1C1	8.88E-05	7.77			2.88E-05	3.20	1.11E-04	9.48	8.80E-05	7.71
EP_BUS1_FTR_M1C2	8.88E-05	7.77			2.88E-05	3.20	1.11E-04	9.48	8.80E-05	7.71
EP_CBG4_XFO_1A12	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_1A13	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_1B12	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_1B13	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_1C12	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_1C13	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_A11D	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_A12A	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_A12E	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_A13D	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_A23C	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_A24B	2.06E-04	12.93			7.00E-05	5.06	2.75E-04	16.97	2.04E-04	12.84
EP_CBG4_XFO_AA2X	1.33E-04	32.05			3.41E-05	8.96	1.80E-04	42.94	1.31E-04	31.55
EP_CBG4_XFO_AQ1X	1.33E-04	32.05			3.41E-05	8.96	1.80E-04	42.94	1.31E-04	31.55
EP_CBG4_XFO_B11E	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_B12F	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_B14E	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_B21B	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_B22A	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_B24B	6.35E-05	4.62			2.05E-05	2.17	6.23E-05	4.55	6.28E-05	4.58
EP_CBG4_XFO_BQ2X	4.82E-05	12.47	5.59E-05	14.03	1.20E-05	3.85	5.55E-05	14.22	4.74E-05	12.29
EP_CBG4_XFO_C11D	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_C12E	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_C14E	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_C22A	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_C23C	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_C24C	1.14E-04	7.77			3.71E-05	3.20	1.43E-04	9.48	1.13E-04	7.71
EP_CBG4_XFO_CH4X	3.26E-05	8.99			1.07E-05	3.60	4.26E-05	11.44	3.23E-05	8.91
EP_CBG4_XFO_CQ2X	3.26E-05	8.99			1.07E-05	3.60	4.26E-05	11.44	3.23E-05	8.91
EP_CBL4_XFO_A11B	4.57E-06	3.14			3.20E-06	2.50	7.14E-06	4.35	4.58E-06	3.15
EP_CBL4_XFO_A12X	1.33E-04	32.05			3.41E-05	8.96	1.80E-04	42.94	1.31E-04	31.55
EP_CBL4_XFO_A13X	1.33E-04	32.05			3.41E-05	8.96	1.80E-04	42.94	1.31E-04	31.55
EP_CBL4_XFO_B12X	4.82E-05	12.47	5.59E-05	14.03	1.20E-05	3.85	5.55E-05	14.22	4.74E-05	12.29
EP_CBL4_XFO_C11B	2.24E-06	2.07			2.21E-06	2.06	4.19E-06	3.01	2.27E-06	2.09
EP_CBL4_XFO_C12X	3.26E-05	8.99			1.07E-05	3.60	4.26E-05	11.44	3.23E-05	8.91
EP_CBL4_XFO_C13X	3.26E-05	8.99			1.07E-05	3.60	4.26E-05	11.44	3.23E-05	8.91
EW_AODPIFTO_9895	9.19E-04	13.56	8.71E-04	12.90			9.06E-05	1.09	9.10E-04	13.44
EW_AODPIFTO_9896	1.38E-03	14.06	1.30E-03	13.36			8.22E-04	1.82	1.36E-03	13.92
EW_CHKV_FTO_0006	4.06E-04	740.88	2.81E-05	1.18	8.98E-06	44.77	3.85E-04	3.47	4.19E-04	762.53
EW_CHKV_FTO_0042	3.58E-04	720.28	7.31E-04	5.71	1.44E-04	85.30	2.69E-04	2.75	3.69E-04	740.52
EW_CHKV_FTO_0079	5.10E-04	750.82	4.60E-03	30.78	1.53E-03	93.63	4.84E-04	4.14	5.23E-04	772.37
EW_CHKV_FTO_0262	8.00E-05	94.52	3.19E-05	66.92	5.27E-05	37.35	6.04E-05	1.39	6.18E-05	97.16
EW_CHKV_FTO_0263	5.32E-05	94.18	2.49E-05	66.66	3.50E-05	36.30	4.70E-05	1.30	5.34E-05	96.54
EW_CHKV_FTO_0264	6.65E-05	97.80	4.69E-05	70.18	4.55E-05	37.40	6.43E-05	1.42	6.69E-05	100.29
EW_CHKVIFTO_0042	2.74E-05	13.60	2.60E-05	12.93			1.30E-05	1.08	2.72E-05	13.47
EW_CHKVIFTO_0079	1.03E-04	14.09	9.72E-05	13.40			1.26E-04	1.82	1.02E-04	13.96
EW_EHCV_FTO_6854	2.77E-04	9.03	2.07E-04	6.11			2.27E-04	1.03	2.75E-04	8.98
EW_EHCV_FTO_6864	3.33E-04	13.66	2.21E-04	8.43			1.88E-04	1.02	3.31E-04	13.57
EW_EHCV_FTO_6874	2.67E-04	13.75	1.56E-04	8.54			8.99E-05	1.01	2.65E-04	13.67
EW_EHCV_FTO_6905	2.43E-03	19.19	9.09E-04	11.19			3.76E-03	1.42	2.40E-03	19.06

**Case**

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components











## STP Risk Ranking Values with Common Cause Included In Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
VE_RMFN_FTR_001R	4.23E-04	6.04	4.13E-04	5.93			6.72E-04	8.95	4.17E-04	5.98
VE_RMFN_FTR_014R	4.23E-04	6.04	4.13E-04	5.93			6.72E-04	8.95	4.17E-04	5.98
VE_RMFN_FTR_CC01	2.65E-03	91.59	2.59E-03	89.48					2.62E-03	90.42
VE_RMFN_FTR_CC02	8.84E-05	533.07	8.64E-05	520.71					8.73E-05	526.19
VE_RMFN_FTR_CC03	8.84E-05	533.07	8.64E-05	520.71					8.73E-05	526.19
VE_RMFN_FTS_0001	5.00E-04	2378.12	1.93E-03	17517.52	3.06E-02	41742.28	3.55E-04	1.90	5.15E-04	2488.58
VE_RMFN_FTS_0002	5.06E-04	2432.07	1.51E-02	34966.79	2.20E-03	20851.30	7.11E-05	2.06	5.25E-04	2546.90
VE_RMFN_FTS_0003	9.58E-04	2421.49	1.45E-02	34958.58	1.73E-02	41707.91	8.92E-04	3.30	9.75E-04	2535.87
VE_RMFN_FTS_0014	5.00E-04	2378.12	1.93E-03	17517.52	3.06E-02	41742.28	3.55E-04	1.90	5.15E-04	2488.58
VE_RMFN_FTS_0015	5.06E-04	2432.07	1.51E-02	34966.79	2.20E-03	20851.30	4.13E-04	2.06	5.25E-04	2546.90
VE_RMFN_FTS_0016	9.58E-04	2421.49	1.45E-02	34958.58	1.73E-02	41707.91	8.92E-04	3.30	9.75E-04	2535.87
VE_RMFNIFTR_0002	4.23E-04	6.04	4.13E-04	5.93			6.72E-04	8.95	4.17E-04	5.98
VE_RMFNIFTR_0015	4.23E-04	6.04	4.13E-04	5.93			6.72E-04	8.95	4.17E-04	5.98
XPORV	4.09E-02	1.00	9.84E-03	1.00	3.23E-02	1.00	4.69E-02	1.00	4.02E-02	1.00
AF_EHCV_XFC_7411	3.07E-09	1.00	3.42E-08	1.01	1.14E-09	1.00			3.01E-09	1.00
AF_EHCV_XFC_7421	2.86E-09	1.00	3.42E-08	1.01	1.24E-09	1.00			2.81E-09	1.00
AF_EHCV_XFC_7431	1.24E-09	1.00	1.01E-08	1.00	1.01E-09	1.00			1.22E-09	1.00
AF_EHCV_XFC_7441	5.10E-10	1.00	5.38E-09	1.00	2.87E-11	1.00			5.01E-10	1.00
AF_FXMT_FDO_7523	2.85E-05	1.30	9.81E-06	1.10	4.87E-07	1.01	1.45E-05	1.18	2.80E-05	1.30
AF_FXMT_FDO_7526	5.30E-05	1.56	9.01E-06	1.10	3.93E-06	1.04	1.06E-06	1.01	5.21E-05	1.55
AF_MANV_XFC_093D	7.64E-05	1.59	1.25E-05	1.10	5.12E-06	1.04	1.71E-06	1.01	7.51E-05	1.58
AF_MANV_XFC_096C	6.29E-05	1.48	1.81E-05	1.14	7.75E-07	1.01	2.18E-05	1.18	6.19E-05	1.48
AF_MOVL_XFC_523C	2.94E-04	1.65	8.46E-05	1.19	3.92E-06	1.81	1.93E-04	1.42	2.89E-04	1.64
AF_STRN_PLG_003C	4.70E-05	1.32	2.41E-05	1.16	9.60E-07	1.01	2.21E-05	1.15	4.61E-05	1.32
AF_STRN_PLG_004D	6.75E-05	1.46	1.44E-05	1.10	1.60E-05	1.11	3.90E-06	1.03	6.63E-05	1.45
CC_CHKVIFTO_0311	5.07E-06	1.19	6.48E-06	1.24			2.44E-06	1.02	5.02E-06	1.19
CC_CHKVIFTO_0313	1.02E-06	1.18	1.29E-06	1.23			2.67E-07	1.00	1.01E-06	1.18
CC_HTXR_RUP_011B	2.30E-05	1.87					2.36E-05	1.90	2.40E-05	1.91
CC_HTXR_RUP_101B	3.76E-05	1.87					3.84E-05	1.90	3.93E-05	1.91
CC_HTXRIRUP_011A	1.61E-05	1.00	2.05E-05	1.00			1.53E-05	1.00	1.59E-05	1.00
CC_HTXRIRUP_011B	2.50E-08	1.00	3.17E-08	1.00			2.44E-08	1.00	2.47E-08	1.00
CC_HTXRIRUP_011C	1.13E-06	1.02	1.44E-06	1.03			1.17E-06	1.02	1.12E-06	1.02
CC_HTXRIRUP_101A	1.61E-05	1.00	2.05E-05	1.00			1.53E-05	1.00	1.59E-05	1.00
CC_HTXRIRUP_101B	2.50E-08	1.00	3.17E-08	1.00			2.44E-08	1.00	2.47E-08	1.00
CC_HTXRIRUP_101C	1.13E-06	1.02	1.44E-06	1.03			1.17E-06	1.02	1.12E-06	1.02
CC_HUMA_ERR_001	1.61E-07	1.00	2.05E-07	1.00			1.61E-07	1.00	1.60E-07	1.00
CC_MANV_XFC_0028	9.19E-07	1.00	1.18E-06	1.00			8.69E-07	1.00	9.11E-07	1.00
CC_MANV_XFC_0065	6.25E-07	1.00	7.93E-07	1.00			5.56E-07	1.00	6.20E-07	1.00
CC_MANV_XFC_0083	1.82E-05	1.95					2.64E-05	2.43	1.97E-05	2.03
CC_MANV_XFC_0105	1.63E-06	1.02	2.09E-06	1.02			1.66E-06	1.02	1.62E-06	1.02
CC_MANV_XFC_0163	7.03E-04	1.88					7.37E-04	1.92	7.34E-04	1.92
CC_MANVIXFC_0083	8.31E-06	1.00	1.06E-05	1.00			8.11E-06	1.00	8.24E-06	1.00
CC_MANVIXFC_0163	5.40E-06	1.00	6.85E-06	1.00			5.29E-06	1.00	5.35E-06	1.00
CC_MANVIXFC_0223	1.46E-05	1.02	1.87E-05	1.02			1.54E-05	1.02	1.45E-05	1.02
CC_MOVL_XFC_0642	1.55E-05	1.94					2.29E-05	2.42	1.68E-05	2.02
CC_MOVL_XFC_0644	6.27E-04	1.88					6.56E-04	1.92	6.55E-04	1.92
CC_MOVLIXFC_0642	7.21E-06	1.00	9.22E-06	1.00			7.07E-06	1.00	7.15E-06	1.00
CC_MOVLIXFC_0644	4.77E-06	1.00	6.06E-06	1.00			4.74E-06	1.00	4.73E-06	1.00
CC_MOVLIXFC_0646	1.30E-05	1.02	1.66E-05	1.02			1.38E-05	1.02	1.29E-05	1.02
CC_PMFN_FTR_CC01	6.71E-08	1.00	8.58E-08	1.00					6.65E-08	1.00
CC_PMFN_FTR_CC02	6.07E-06	1.13	7.77E-06	1.17					6.02E-06	1.13
CC_PMFN_FTR_CC03	4.66E-08	1.23	5.91E-08	1.29					4.62E-08	1.22
CC_PMPRIIFTR_101A	9.34E-05	1.00	1.20E-04	1.00			8.89E-05	1.00	9.26E-05	1.00
CC_PMPRIIFTR_101B	1.78E-07	1.00	2.25E-07	1.00			1.66E-07	1.00	1.76E-07	1.00
CC_PMPRIIFTT_101C	7.81E-06	1.03	9.98E-06	1.03			8.22E-06	1.03	7.74E-06	1.03
CC_PMPRIIFTS_101B	2.39E-05	1.18	3.03E-05	1.23			1.26E-05	1.00	2.37E-05	1.18
CC_PMPRIIFTS_101C	1.14E-04	1.19	1.45E-04	1.24			1.08E-04	1.02	1.13E-04	1.19

**Case**

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components





## STP Risk Ranking Values with Common Cause Included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
CH_MANV_XFC_0590	3.46E-08	1.02	3.12E-08	1.02					3.43E-08	1.02
CH_MANV_XFC_0599	5.68E-06	1.03	1.30E-06	1.01	1.68E-09	1.00	5.39E-06	1.04	5.64E-06	1.03
CH_MANV_XFC_0608	6.51E-06	1.04	5.13E-06	1.03	1.69E-09	1.00	1.11E-05	1.06	6.49E-06	1.04
CH_RMFn_FTR_0019	7.84E-06	1.12	5.78E-06	1.09	8.20E-12	1.00	9.64E-06	1.14	7.76E-06	1.11
CH_RMFn_FTR_0020	4.67E-07	1.01	2.34E-07	1.00	2.32E-12	1.00	6.56E-07	1.01	4.67E-07	1.01
CH_RMFn_FTR_0021	7.20E-07	1.01	4.42E-07	1.01	5.89E-12	1.00	1.10E-06	1.02	7.31E-07	1.01
CH_RMFn_FTS_0019	1.56E-05	1.16	4.97E-06	1.10	6.95E-09	1.00	2.28E-05	1.06	1.61E-05	1.17
CH_RMFn_FTS_0020	1.37E-05	1.16	3.70E-06	1.10	1.36E-08	1.00	2.03E-05	1.05	1.36E-05	1.16
CH_RMFn_FTS_0021	2.03E-05	1.17	1.51E-05	1.13	1.42E-08	1.00	3.12E-05	1.08	2.03E-05	1.16
CH_STNK_RUP_0004	5.98E-07	1.16	4.56E-07	1.12	1.35E-06	1.37	7.03E-07	1.19	5.92E-07	1.16
CH_STNK_RUP_0005	2.16E-08	1.01	2.00E-08	1.01	1.71E-07	1.04	2.98E-08	1.01	2.16E-08	1.01
CH_STNK_RUP_0006	8.04E-05	1.30	5.76E-05	1.20	6.37E-05	1.26	1.29E-04	1.46	8.00E-05	1.29
CH_TRAN_RES_CHLA	1.59E-03	1.00	6.07E-04	1.00			2.35E-03	1.00	1.61E-03	1.00
CH_TRAN_RES_PMPB	7.27E-04	1.00	3.07E-04	1.00			8.40E-04	1.00	7.27E-04	1.00
CI_AOVL FTC 9776	-4.48E-05	0.97	-3.35E-05	0.98	-2.67E-05	0.98	-6.46E-05	0.96	-4.48E-05	0.97
CI_AOVL FTC 9777	-4.47E-05	0.97	-3.35E-05	0.98	-2.67E-05	0.98	-6.46E-05	0.96	-4.48E-05	0.97
CI_AOVL XFO 9776	-1.71E-07	0.97	-1.27E-07	0.98	-1.02E-07	0.98	-2.40E-07	0.96	-1.71E-07	0.97
CI_AOVL XFO 9777	-1.71E-07	0.97	-1.27E-07	0.98	-1.02E-07	0.98	-2.40E-07	0.96	-1.71E-07	0.97
CI_FRACTION	-6.33E-04	1.00	-3.97E-04	1.00	-2.20E-04	1.00	-8.02E-04	1.00	-6.26E-04	1.00
CI_MOVL XFO_0001	5.82E-07	1.08			2.13E-05	4.28	3.72E-06	1.50	5.75E-07	1.08
CI_MOVL XFO_0003	5.82E-07	1.08			2.13E-05	4.28	3.72E-06	1.50	5.75E-07	1.08
CI_MOVL XFO_0004	4.34E-07	1.06			4.43E-05	7.01	3.21E-06	1.43	4.45E-07	1.06
CI_MOVL XFO_0006	4.34E-07	1.06			4.43E-05	7.01	3.21E-06	1.43	4.45E-07	1.06
CI_RLYM_FOD_833A	-4.42E-06	0.77	-3.72E-06	0.77	-3.35E-06	0.76	-4.49E-06	0.96	-4.43E-06	0.77
CI_RLYM_FOD_833B	-1.51E-06	0.79	-1.56E-06	0.79	-1.60E-06	0.78			-1.51E-06	0.79
CS_BIST_FOD_0001	-3.06E-10	0.38	-4.66E-10	0.03	-7.97E-11	0.84			-2.99E-10	0.40
CS_BIST_FOD_0002	-3.06E-10	0.38	-4.66E-10	0.03	-7.97E-11	0.84			-2.99E-10	0.40
CS_BIST_FOD_0003	-3.06E-10	0.38	-4.66E-10	0.03	-7.97E-11	0.84			-2.99E-10	0.40
CS_BIST_FOD_0004	-3.06E-10	0.38	-4.66E-10	0.03	-7.97E-11	0.84			-2.99E-10	0.40
CS_CHKV_FTO_0002	-8.44E-06	0.16	-1.01E-05	-0.14	1.21E-05	3.72	-7.70E-06	0.98	-8.27E-06	0.18
CS_CHKV_FTO_0004	-8.72E-07	0.33	-8.79E-07	0.10	1.04E-06	3.19	-4.55E-08	1.00	-8.57E-07	0.35
CS_CHKV_FTO_0005	-8.69E-07	0.33	-8.75E-07	0.10	1.04E-06	3.19	-4.10E-08	1.00	-8.53E-07	0.35
CS_CHKV_FTO_0006	-5.37E-06	0.20	-6.21E-06	-0.10	1.30E-05	3.73	-3.03E-06	0.99	-5.27E-06	0.22
CS_CHKV_XFC_0002	-6.07E-09	0.98	-5.88E-09	0.98	3.62E-09	1.01	-6.05E-09	0.98	-5.97E-09	0.98
CS_CHKV_XFC_0004	-4.01E-11	1.00	-5.38E-11	1.00	1.42E-10	1.00	-3.56E-11	1.00	-3.92E-11	1.00
CS_CHKV_XFC_0005	-3.70E-11	1.00	-5.08E-11	1.00	1.42E-10	1.00	-3.22E-11	1.00	-3.61E-11	1.00
CS_CHKV_XFC_0006	-2.80E-09	0.99	-2.59E-09	0.99	4.40E-09	1.02	-2.41E-09	0.99	-2.57E-09	0.99
CS_HUMA_ERR_0001	-5.17E-05	0.87	-6.55E-05	0.81	2.04E-04	1.54	-4.40E-05	0.88	-5.04E-05	0.87
CS_MANV_XFC_0003	-2.54E-05	0.97	-2.19E-05	0.98	3.08E-05	1.03	-2.66E-05	0.97	-2.49E-05	0.97
CS_MANV_XFC_0007	-1.33E-05	0.99	-9.78E-06	0.99	3.34E-05	1.03	-1.22E-05	0.99	-1.31E-05	0.99
CS_MANV_XFC_0103	-8.85E-07	1.00	-1.99E-07	1.00	3.22E-06	1.00	-7.79E-07	1.00	-8.65E-07	1.00
CS_MANV_XFC_0104	-8.27E-07	1.00	-1.87E-07	1.00	3.23E-06	1.00	-6.97E-07	1.00	-8.07E-07	1.00
CS_MANV_XFC_111A	-2.46E-05	0.97	-2.17E-05	0.98	2.77E-05	1.03	-2.60E-05	0.97	-2.42E-05	0.97
CS_MANV_XFC_111B	-1.98E-05	0.98	-1.57E-05	0.98	2.97E-05	1.03	-2.09E-05	0.98	-1.94E-05	0.98
CS_MANV_XFC_111C	-1.25E-05	0.99	-9.55E-06	0.99	3.04E-05	1.03	-1.15E-05	0.99	-1.23E-05	0.99
CS_MANV_XFO_008A	-1.27E-06	0.97	-1.12E-06	0.98	1.43E-06	1.03	-1.34E-06	0.97	-1.25E-06	0.97
CS_MANV_XFO_008B	-1.02E-06	0.98	-8.07E-07	0.98	1.53E-06	1.03	-1.07E-06	0.98	-9.97E-07	0.98
CS_MANV_XFO_008C	-6.45E-07	0.99	-4.91E-07	0.99	1.56E-06	1.03	-5.93E-07	0.99	-6.34E-07	0.99
CS_MANV_XFO_020A	-2.46E-05	0.97	-2.17E-05	0.98	2.77E-05	1.03	-2.60E-05	0.97	-2.42E-05	0.97
CS_MANV_XFO_020B	-1.98E-05	0.98	-1.57E-05	0.98	2.97E-05	1.03	-2.09E-05	0.98	-1.94E-05	0.98
CS_MANV_XFO_020C	-1.25E-05	0.99	-9.55E-06	0.99	3.04E-05	1.03	-1.15E-05	0.99	-1.23E-05	0.99
CS_MANV_XFO_037A	-1.27E-06	0.97	-1.12E-06	0.98	1.43E-06	1.03	-1.34E-06	0.97	-1.25E-06	0.97
CS_MANV_XFO_037B	-1.02E-06	0.98	-8.07E-07	0.98	1.53E-06	1.03	-1.07E-06	0.98	-9.97E-07	0.98
CS_MANV_XFO_037C	-6.45E-07	0.99	-4.91E-07	0.99	1.56E-06	1.03	-5.93E-07	0.99	-6.34E-07	0.99
CS_MOVL_FTO_001A	-7.34E-05	0.51	-7.71E-05	0.34	8.54E-05	2.62	-6.24E-05	0.98	-7.21E-05	0.53
CS_MOVL_FTO_001B	-5.88E-05	0.52	-6.14E-05	0.34	8.47E-05	2.62	-4.76E-05	0.98	-5.76E-05	0.53
CS_MOVL_FTO_001C	-3.98E-05	0.53	-4.53E-05	0.35	9.29E-05	2.62	-2.46E-05	0.99	-3.91E-05	0.54

### Case

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components

STP Risk Ranking Values with Common Cause included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
CS_MOVL_XFC_001A	-1.74E-07	0.98	-1.89E-07	0.98	1.03E-07	1.01	-1.79E-07	0.98	-1.71E-07	0.98
CS_MOVL_XFC_001B	-1.31E-07	0.98	-1.22E-07	0.98	1.01E-07	1.01	-1.38E-07	0.98	-1.29E-07	0.98
CS_MOVL_XFC_001C	-7.50E-08	0.99	-7.46E-08	0.99	1.25E-07	1.02	-6.84E-08	0.99	-7.39E-08	0.99
CS_PMPS_FTR_101A	-2.10E-05	0.51	-2.06E-05	0.34	1.60E-05	2.62	-1.99E-05	0.98	-2.06E-05	0.53
CS_PMPS_FTR_101B	-1.60E-05	0.52	-1.54E-05	0.34	1.58E-05	2.62	-1.52E-05	0.98	-1.57E-05	0.53
CS_PMPS_FTR_101C	-9.94E-06	0.53	-9.98E-06	0.35	1.85E-05	2.62	-8.10E-06	0.99	-9.78E-06	0.54
CS_PMPS_FTS_101A	-1.16E-04	0.51	-1.28E-04	0.34	1.94E-04	2.62	-8.34E-05	0.97	-1.14E-04	0.53
CS_PMPS_FTS_101B	-9.86E-05	0.52	-1.09E-04	0.34	1.93E-04	2.62	-6.36E-05	0.98	-9.66E-05	0.53
CS_PMPS_FTS_101C	-7.40E-05	0.53	-8.91E-05	0.35	2.04E-04	2.63	-3.45E-05	0.99	-7.25E-05	0.54
CS_PSWT_FTR_0001	-3.10E-11	1.00	-8.34E-12	1.00	-8.06E-12	1.00	-2.37E-11	1.00	-3.03E-11	1.00
CS_PSWT_FTR_0002	-3.10E-11	1.00	-8.34E-12	1.00	-8.06E-12	1.00	-2.37E-11	1.00	-3.03E-11	1.00
CS_PSWT_FTR_0003	-3.10E-11	1.00	-8.34E-12	1.00	-8.06E-12	1.00	-2.37E-11	1.00	-3.03E-11	1.00
CS_PSWT_FTR_0004	-3.10E-11	1.00	-8.34E-12	1.00	-8.06E-12	1.00	-2.37E-11	1.00	-3.03E-11	1.00
CS_RLYM_FOD_001R	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_001S	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_002R	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_002S	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_003R	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_003S	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_004R	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_004S	-2.25E-08	0.85	-3.61E-08	0.76	-5.85E-09	0.96			-2.20E-08	0.85
CS_RLYM_FOD_287A	-5.31E-06	0.51	-6.24E-06	0.25	-1.50E-06	0.87	-3.98E-06	0.98	-5.22E-06	0.53
CS_RLYM_FOD_287B	-4.40E-06	0.52	-5.29E-06	0.25	-1.19E-06	0.87	-3.06E-06	0.98	-4.31E-06	0.53
CS_RLYM_FOD_287C	-3.27E-06	0.53	-4.30E-06	0.26	-9.23E-07	0.88	-1.55E-06	0.99	-3.20E-06	0.54
CS_RLYM_FOD_857A	-5.31E-06	0.51	-6.24E-06	0.25	-1.50E-06	0.87	-3.98E-06	0.98	-5.22E-06	0.53
CS_RLYM_FOD_857B	-4.40E-06	0.52	-5.29E-06	0.25	-1.19E-06	0.87	-3.06E-06	0.98	-4.31E-06	0.53
CS_RLYM_FOD_857C	-3.27E-06	0.53	-4.30E-06	0.26	-9.23E-07	0.88	-1.55E-06	0.99	-3.20E-06	0.54
CS_RLYM_FOD_858A	-5.31E-06	0.51	-6.24E-06	0.25	-1.50E-06	0.87	-3.98E-06	0.98	-5.22E-06	0.53
CS_RLYM_FOD_858B	-4.40E-06	0.52	-5.29E-06	0.25	-1.19E-06	0.87	-3.06E-06	0.98	-4.31E-06	0.53
CS_RLYM_FOD_858C	-3.27E-06	0.53	-4.30E-06	0.26	-9.23E-07	0.88	-1.55E-06	0.99	-3.20E-06	0.54
CS_STRN_PLG_0001	-3.63E-06	0.98	-3.51E-06	0.98	2.22E-06	1.01	-3.75E-06	0.98	-3.57E-06	0.98
CS_STRN_PLG_0002	-2.71E-06	0.98	-2.54E-06	0.98	2.20E-06	1.01	-2.85E-06	0.98	-2.66E-06	0.98
CS_STRN_PLG_0003	-1.58E-06	0.99	-1.55E-06	0.99	2.68E-06	1.02	-1.49E-06	0.99	-1.56E-06	0.99
CV_AOVL_XFC_0218	3.56E-06	1.61	3.07E-06	1.52	6.98E-07	1.12	5.94E-06	2.01	3.45E-06	1.59
CV_AOVL_XFO_0011	1.10E-08	1.00	4.37E-06	1.74	2.94E-07	1.05	3.59E-07	1.06	1.21E-07	1.02
CV_AOVL_XFO_0013	1.10E-08	1.00	4.37E-06	1.74	2.94E-07	1.05	3.59E-07	1.06	1.21E-07	1.02
CV_AXFR_FTR_01W1	8.95E-06	1.59	1.92E-06	1.13	1.00E-06	1.07	1.30E-05	1.83	9.27E-06	1.59
CV_AXFR_FTR_01W2	2.35E-06	1.14	1.33E-06	1.09	2.66E-10	1.00	2.63E-06	1.15	2.50E-06	1.14
CV_BUS1_FTR_001W	8.29E-06	1.59	1.77E-06	1.13	9.12E-07	1.07	1.18E-05	1.83	8.48E-06	1.59
CV_BUS1_FTR_01G8	8.29E-06	1.59	1.77E-06	1.13	9.12E-07	1.07	1.18E-05	1.83	8.48E-06	1.59
CV_CBG4_FTC_0000	3.17E-03	1.14	1.74E-03	1.09	2.77E-06	1.00	3.34E-03	1.15	3.20E-03	1.14
CV_CBG4_FTC_W15B	1.71E-05	1.14	9.61E-06	1.09	1.94E-09	1.00	1.84E-05	1.15	1.77E-05	1.14
CV_CBG4_FTO_W13B	1.71E-05	1.14	9.61E-06	1.09	1.94E-09	1.00	1.84E-05	1.15	1.77E-05	1.14
CV_CBG4_XFC_W13B	2.87E-06	1.14	1.58E-06	1.09	3.19E-10	1.00	2.98E-06	1.15	2.86E-06	1.14
CV_CBG4_XFO_0000	2.87E-06	1.14	1.58E-06	1.09	3.19E-10	1.00	2.98E-06	1.15	2.86E-06	1.14
CV_CBG4_XFO_01G8	1.13E-05	1.59	2.29E-06	1.13	1.19E-06	1.07	1.52E-05	1.83	1.09E-05	1.59
CV_CBG4_XFO_1W3B	1.13E-05	1.59	2.29E-06	1.13	1.19E-06	1.07	1.52E-05	1.83	1.09E-05	1.59
CV_CBG4_XFO_W15B	2.87E-06	1.14	1.58E-06	1.09	3.19E-10	1.00	2.98E-06	1.15	2.86E-06	1.14
CV_CHKV_XFC_0243	1.59E-07	1.61	3.15E-08	1.13	1.25E-08	1.05	2.15E-07	1.83	1.59E-07	1.59
CV_CHKV_XFC_034A	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_034B	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_034C	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_034D	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_036A	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_036B	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_036C	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_036D	1.50E-07	1.61	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59

Case

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components

### STP Risk Ranking Values with Common Cause Included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
CV_CHKV_XFC_0671	1.50E-07	1.81	1.30E-07	1.52	3.06E-08	1.12	2.55E-07	2.01	1.51E-07	1.59
CV_CHKV_XFC_235A	1.26E-09	1.00	3.93E-07	2.58	2.70E-09	1.01	9.43E-10	1.00	1.21E-09	1.00
CV_CHKV_XFC_235B	2.06E-07	1.81	1.18E-07	1.47	1.47E-07	1.60	2.35E-07	1.92	2.16E-07	1.87
CV_COIL_PLG_001A	1.08E-06	1.04	4.13E-05	2.58	3.07E-06	1.12	8.36E-07	1.03	1.06E-06	1.04
CV_COIL_PLG_001B	2.34E-05	1.89	1.23E-05	1.47	1.60E-05	1.61	2.57E-05	1.98	2.46E-05	1.94
CV_DGEN_FTR_T100	2.29E-03	1.14	1.28E-03	1.09	4.31E-07	1.00	4.24E-03	1.15	3.98E-03	1.14
CV_DGEN_FTS_0000	3.93E-03	1.14	2.15E-03	1.09	4.62E-07	1.00	4.40E-03	1.15	4.17E-03	1.14
CV_HUMA_ERR_0001	5.20E-05	1.00	5.54E-02	5.94	1.27E-02	2.19	5.71E-08	1.00	5.49E-04	1.05
CV_HUMA_ERR_0002	7.59E-05	1.05	2.06E-02	14.91	2.36E-03	2.56	6.72E-05	1.05	7.79E-05	1.05
CV_HUMA_ERR_0004	7.92E-07	1.00			2.16E-09	1.00	7.12E-07	1.00	8.85E-07	1.00
CV_HUMA_ERR_0005	5.99E-08	1.00	2.36E-05	1.00	1.98E-10	1.00	4.71E-08	1.00	5.29E-08	1.00
CV_MANV_XFC_0223	5.73E-07	1.59	1.32E-07	1.13	5.08E-08	1.05	9.12E-07	1.83	6.03E-07	1.59
CV_MANV_XFC_0238	5.73E-07	1.59	1.32E-07	1.13	5.08E-08	1.05	9.12E-07	1.83	6.03E-07	1.59
CV_MANV_XFC_0245	5.73E-07	1.59	1.32E-07	1.13	5.08E-08	1.05	9.12E-07	1.83	6.03E-07	1.59
CV_MANV_XFC_0246	5.73E-07	1.59	1.32E-07	1.13	5.08E-08	1.05	9.12E-07	1.83	6.03E-07	1.59
CV_MANV_XFC_032A	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_032B	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_032C	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_032D	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_035A	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_035B	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_035C	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_035D	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_037A	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_037B	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_037C	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_037D	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_0422	5.73E-07	1.59	1.32E-07	1.13	5.08E-08	1.05	9.12E-07	1.83	6.03E-07	1.59
CV_MANV_XFC_223A	5.57E-09	1.01	1.59E-06	2.58	1.26E-07	1.12	4.31E-09	1.00	5.62E-09	1.01
CV_MANV_XFC_223B	8.52E-07	1.83	4.75E-07	1.47	6.09E-07	1.60	9.15E-07	1.92	6.57E-07	1.87
CV_MANV_XFC_247A	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_247B	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_248A	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_248B	6.12E-07	1.81	5.26E-07	1.52	1.17E-07	1.12	1.04E-06	2.01	5.83E-07	1.59
CV_MANV_XFC_299A	5.57E-09	1.01	1.59E-06	2.58	1.26E-07	1.12	4.31E-09	1.00	5.62E-09	1.01
CV_MANV_XFC_299B	8.52E-07	1.83	4.75E-07	1.47	6.09E-07	1.80	9.15E-07	1.92	6.57E-07	1.87
CV_MOVL_FTC_0077	4.16E-05	1.50	5.48E-05	1.59	3.21E-05	1.19			6.79E-04	1.58
CV_MOVL_FTC_0079	2.90E-05	1.48	3.44E-05	1.57	1.27E-05	1.17			4.13E-04	1.56
CV_MOVL_FTO_0025	3.05E-06	1.00	2.68E-05	1.02	1.52E-03	2.19			3.15E-05	1.02
CV_MOVL_FTO_0770	2.40E-09	1.00	3.83E-10	1.00	2.31E-11	1.00	3.79E-09	1.00	2.78E-09	1.00
CV_MOVL_FTO_0771	5.74E-05	1.05	9.10E-11	1.00	8.40E-06	1.01	4.69E-05	1.04	5.66E-05	1.05
CV_MOVL_FTO_0774	2.40E-09	1.00	3.83E-10	1.00	2.31E-11	1.00	3.79E-09	1.00	2.78E-09	1.00
CV_MOVL_FTO_0775	5.74E-05	1.05	9.10E-11	1.00	8.40E-06	1.01	4.69E-05	1.04	5.66E-05	1.05
CV_MOVL_XFC_033A	4.40E-06	1.81	3.75E-06	1.52	8.54E-07	1.12	7.23E-06	2.01	4.24E-06	1.59
CV_MOVL_XFC_033B	4.40E-06	1.81	3.75E-06	1.52	8.54E-07	1.12	7.23E-06	2.01	4.24E-06	1.59
CV_MOVL_XFC_033C	4.40E-06	1.81	3.75E-06	1.52	8.54E-07	1.12	7.23E-06	2.01	4.24E-06	1.59
CV_MOVL_XFC_033D	4.40E-06	1.81	3.75E-06	1.52	8.54E-07	1.12	7.23E-06	2.01	4.24E-06	1.59
CV_MOVL_XFC_0768	2.40E-09	1.00	3.83E-10	1.00	2.31E-11	1.00	3.79E-09	1.00	2.78E-09	1.00
CV_MOVL_XFC_0772	2.40E-09	1.00	3.83E-10	1.00	2.31E-11	1.00	3.79E-09	1.00	2.78E-09	1.00
CV_MOVL_XFC_112C	7.52E-08	1.01	8.02E-12	1.00	2.82E-12	1.00	6.32E-08	1.01	7.30E-08	1.01
CV_MOVL_XFC_113B	3.13E-06	1.44	2.23E-06	1.31	1.15E-06	1.16	2.50E-06	1.35	3.28E-06	1.44
CV_MOVL_XFC_377A	3.02E-07	1.04	1.14E-05	2.58	8.00E-07	1.12	2.45E-07	1.03	2.90E-07	1.04
CV_MOVL_XFC_377B	6.10E-06	1.86	3.39E-06	1.47	4.39E-06	1.61	6.90E-06	1.96	6.71E-06	1.92
CV_MOVL_XFO_0023	3.46E-10	1.00	1.82E-05	3.53	1.27E-06	1.18			1.42E-06	1.00
CV_MOVL_XFO_0024	3.10E-07	1.04	3.89E-06	1.54	5.99E-06	1.83	6.12E-07	1.08	4.89E-07	1.07
CV_MOVL_XFO_0077	7.84E-08	1.01	1.28E-07	1.02	1.38E-07	1.02			2.09E-07	1.03
CV_MOVL_XFO_0079	3.97E-09	1.00	4.78E-09	1.00	1.60E-08	1.00			5.11E-08	1.01

**Case.**

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similiar Low Ranking Components

**STP Risk Ranking Values with Common Cause Included in Basic Event Calculation**

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
CV_MOVL_XFO_0465	3.46E-10	1.00	7.86E-07	1.11	2.17E-06	1.29			8.59E-09	1.00
CV_MOVL_XFO_0468	3.46E-10	1.00	1.82E-05	3.53	1.27E-06	1.18			1.42E-08	1.00
CV_PMPS_FTR_X01A	5.30E-04	1.59	1.08E-04	1.13	5.62E-05	1.07	6.97E-04	1.83	5.22E-04	1.59
CV_PMPS_FTS_X01A	2.00E-03	1.59	4.26E-04	1.13	2.17E-04	1.07	2.79E-03	1.83	2.03E-03	1.59
CV_STRN_PLG_001A	8.93E-05	1.61	7.79E-05	1.52	1.77E-05	1.12	1.52E-04	2.01	8.70E-05	1.59
DG_COMP_XFR_0001	1.38E-05	1.55	2.86E-05	2.18	2.00E-05	1.83	3.39E-05	2.37	1.39E-05	1.55
DG_COMP_XFR_0002	8.68E-06	1.36	2.91E-05	2.20	1.99E-05	1.83	2.57E-05	2.05	8.63E-06	1.36
DG_COMP_XFR_0003	1.14E-05	1.46	2.91E-05	2.20	2.00E-05	1.84	3.02E-05	2.23	1.14E-05	1.46
EP_AXFR_FTR_1E1A	-3.42E-05	0.25	-3.52E-05	0.23	-1.37E-05	0.70			-3.25E-05	0.29
EP_AXFR_FTR_1E1B	-3.53E-05	0.21	-3.52E-05	0.23	-1.41E-05	0.69			-3.53E-05	0.21
EP_AXFR_FTR_1E1C	-3.65E-05	0.21	-3.52E-05	0.23	-1.45E-05	0.69			-3.65E-05	0.21
EP_AXFR_FTR_UT01	-1.56E-05	0.66	-1.59E-05	0.65	-4.87E-06	0.90	-1.60E-05	0.66	-1.54E-05	0.67
EP_AXFR_XFO_T130	-1.37E-05	0.21	-1.34E-05	0.23	-5.44E-06	0.69			-1.37E-05	0.21
EP_AXFR_XFO_T160	-1.37E-05	0.21	-1.34E-05	0.23	-5.47E-06	0.69			-1.37E-05	0.21
EP_BATT_FRD_EB11	3.27E-04	1.67	1.61E-04	1.33	2.58E-04	1.53	5.07E-04	2.03	3.23E-04	1.66
EP_BATT_FTR_BBAT	-1.68E-04	0.66	-1.74E-04	0.65	-5.23E-05	0.90	-1.72E-04	0.66	-1.65E-04	0.67
EP_BATTIFRD_EA11	4.28E-04	1.82	5.91E-04	2.14			5.78E-04	2.11	4.20E-04	1.81
EP_BATTIFRD_EB11	5.92E-09	1.00	8.20E-09	1.00			6.42E-09	1.00	5.82E-09	1.00
EP_BCHG_AVL_1B11	2.55E-03	1.00	2.93E-03	1.00	6.35E-04	1.00	2.94E-03	1.00	2.51E-03	1.00
EP_BCHG_FTR_112X	5.54E-09	1.00	7.67E-09	1.00			6.01E-09	1.00	5.45E-09	1.00
EP_BCHG_FTR_A111	1.51E-06	1.01			3.38E-07	1.00	2.02E-06	1.02	1.49E-06	1.01
EP_BCHG_FTR_A112	1.51E-06	1.01			3.38E-07	1.00	2.02E-06	1.02	1.49E-06	1.01
EP_BCHG_FTR_B111	6.06E-07	1.01	6.75E-07	1.01	1.30E-07	1.00	6.84E-07	1.01	6.06E-07	1.01
EP_BCHG_FTR_B112	5.70E-09	1.00	7.89E-09	1.00			6.18E-09	1.00	5.60E-09	1.00
EP_BCHG_FTR_C111	3.65E-07	1.00			8.11E-08	1.00	4.44E-07	1.00	3.60E-07	1.00
EP_BCHG_FTR_C112	3.65E-07	1.00			8.11E-08	1.00	4.44E-07	1.00	3.60E-07	1.00
EP_BCHGIFTR_A111	2.11E-04	1.00	2.92E-04	1.00			2.86E-04	1.00	2.08E-04	1.00
EP_BCHGIFTR_A112	2.11E-04	1.00	2.92E-04	1.00			2.86E-04	1.00	2.08E-04	1.00
EP_BUS1_FTR_11FA	-9.86E-06	0.25	-1.04E-05	0.23	-3.96E-06	0.70			-9.38E-06	0.29
EP_BUS1_FTR_11FS	-9.86E-06	0.25	-1.04E-05	0.23	-3.96E-06	0.70			-9.38E-06	0.29
EP_BUS1_FTR_11GS	-1.05E-05	0.21	-1.04E-05	0.23	-4.18E-06	0.69			-1.05E-05	0.21
EP_BUS1_FTR_11HS	-1.08E-05	0.21	-1.04E-05	0.23	-4.30E-06	0.69			-1.08E-05	0.21
EP_BUS1_FTR_BBS1	-4.57E-06	0.66	-4.71E-06	0.65	-1.42E-06	0.90	-4.68E-06	0.66	-4.49E-06	0.67
EP_BUS1_FTR_BUSK	-1.67E-07	0.99					8.04E-08	1.01	-1.82E-07	0.99
EP_BUS1_FTR_BUSL	-1.67E-07	0.99					8.04E-08	1.01	-1.82E-07	0.99
EP_CBG4_FOD_25KV	-7.20E-05	0.66	-7.56E-05	0.65	-2.24E-05	0.90	-7.38E-05	0.66	-7.08E-05	0.67
EP_CBG4_FTC_BUSK	-1.32E-05	0.99					6.35E-06	1.01	-1.43E-05	0.99
EP_CBG4_FTC_E1AE	-1.32E-05	0.99					6.35E-06	1.01	-1.43E-05	0.99
EP_CBG4_XFO_138K	-2.12E-07	0.99					1.03E-07	1.01	-2.32E-07	0.99
EP_CBG4_XFO_AA2L	3.01E-08	1.01			6.74E-09	1.00	4.02E-08	1.02	2.96E-08	1.01
EP_CBG4_XFO_AQ1R	3.01E-08	1.01			6.74E-09	1.00	4.02E-08	1.02	2.96E-08	1.01
EP_CBG4_XFO_BQ2R	1.15E-08	1.01	1.34E-08	1.01	2.47E-09	1.00	1.29E-08	1.01	1.13E-08	1.01
EP_CBG4_XFO_BUSK	-2.12E-07	0.99					1.03E-07	1.01	-2.32E-07	0.99
EP_CBG4_XFO_CH4L	6.83E-09	1.00			1.52E-09	1.00	8.31E-09	1.00	6.74E-09	1.00
EP_CBG4_XFO_CQ2R	6.83E-09	1.00			1.52E-09	1.00	8.31E-09	1.00	6.74E-09	1.00
EP_CBG4_XFO_E1A1	-1.28E-05	0.25	-1.34E-05	0.23	-5.16E-06	0.70			-1.22E-05	0.29
EP_CBG4_XFO_E1AE	-2.12E-07	0.99					1.03E-07	1.01	-2.32E-07	0.99
EP_CBG4_XFO_E1AN	-1.28E-05	0.25	-1.34E-05	0.23	-5.16E-06	0.70			-1.22E-05	0.29
EP_CBG4_XFO_E1B1	-1.37E-05	0.21	-1.34E-05	0.23	-5.47E-06	0.69			-1.37E-05	0.21
EP_CBG4_XFO_E1BN	-1.37E-05	0.21	-1.34E-05	0.23	-5.47E-06	0.69			-1.37E-05	0.21
EP_CBG4_XFO_E1C1	-1.37E-05	0.21	-1.34E-05	0.23	-5.44E-06	0.69			-1.37E-05	0.21
EP_CBG4_XFO_E1CN	-1.37E-05	0.21	-1.34E-05	0.23	-5.44E-06	0.69			-1.37E-05	0.21
EP_CBG4_XFO_P120	-1.28E-05	0.25	-1.34E-05	0.23	-5.16E-06	0.70			-1.22E-05	0.29
EP_CBG4_XFO_T120	-1.28E-05	0.25	-1.34E-05	0.23	-5.16E-06	0.70			-1.22E-05	0.29
EP_CBG4XFO_AA2L	4.60E-06	1.00	6.36E-06	1.00			6.21E-06	1.00	4.52E-06	1.00
EP_CBG4XFO_AQ1R	4.60E-06	1.00	6.36E-06	1.00			6.21E-06	1.00	4.52E-06	1.00
EP_CBG4XFO_BQ2R	1.15E-10	1.00	1.59E-10	1.00			1.25E-10	1.00	1.13E-10	1.00

**Case**

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similiar Low Ranking Components

**STP Risk Ranking Values with Common Cause Included in Basic Event Calculation**

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
EP_CBG4IXFO_BQ2X	1.12E-10	1.00	1.54E-10	1.00			1.21E-10	1.00	1.10E-10	1.00
EP_CBL4_XFO_A12A	3.01E-08	1.01			6.74E-09	1.00	4.02E-08	1.02	2.96E-08	1.01
EP_CBL4_XFO_A13A	3.01E-08	1.01			6.74E-09	1.00	4.02E-08	1.02	2.96E-08	1.01
EP_CBL4_XFO_B11B	1.41E-06	1.67	7.08E-07	1.33	1.12E-06	1.53	2.19E-06	2.03	1.40E-06	1.66
EP_CBL4_XFO_B12A	1.15E-08	1.01	1.34E-08	1.01	2.47E-09	1.00	1.29E-08	1.01	1.13E-08	1.01
EP_CBL4_XFO_C12A	6.83E-09	1.00			1.52E-09	1.00	8.31E-09	1.00	6.74E-09	1.00
EP_CBL4_XFO_C13A	6.83E-09	1.00			1.52E-09	1.00	8.31E-09	1.00	6.74E-09	1.00
EP_CBL4IXFO_A11B	1.34E-05	1.87	1.85E-05	2.20			1.81E-05	2.17	1.31E-05	1.85
EP_CBL4IXFO_A12A	4.80E-06	1.00	6.36E-06	1.00			6.21E-06	1.00	4.52E-06	1.00
EP_CBL4IXFO_A13A	4.80E-06	1.00	6.36E-06	1.00			6.21E-06	1.00	4.52E-06	1.00
EP_CBL4IXFO_B11B	8.21E-12	1.00	1.14E-11	1.00			8.90E-12	1.00	8.07E-12	1.00
EP_CBL4IXFO_B12A	1.15E-10	1.00	1.59E-10	1.00			1.25E-10	1.00	1.13E-10	1.00
EP_CBL4IXFO_B12X	1.12E-10	1.00	1.54E-10	1.00			1.21E-10	1.00	1.10E-10	1.00
EP_HUMM_ERR_125V	1.66E-10	1.00	2.30E-10	1.00			1.81E-10	1.00	1.64E-10	1.00
EP_MOSW_FTC_ME1E	-1.32E-05	0.99					6.35E-06	1.01	-1.43E-05	0.99
EP_MOSW_FTO_ME1A	-2.61E-06	0.99					1.26E-06	1.01	-2.84E-06	0.99
EP_MOSW_XFO_ME1A	-4.86E-06	0.25	-4.93E-06	0.23	-1.95E-06	0.70			-4.82E-06	0.29
EP_MOSW_XFO_ME1B	-5.36E-06	0.21	-4.93E-06	0.23	-2.14E-06	0.69			-5.36E-06	0.21
EP_MOSW_XFO_ME1C	-4.93E-06	0.21	-4.93E-06	0.23	-1.97E-06	0.69			-4.93E-06	0.21
EP_MOSW_XFO_ME1E	-2.12E-07	0.99					1.03E-07	1.01	-2.32E-07	0.99
EP_MXFR_FTR_T01A	-7.53E-05	0.66	-1.59E-05	0.65	-4.87E-06	0.90	-1.60E-05	0.66	-1.54E-05	0.67
EP_MXFR_FTR_T01B	-1.36E-05	0.66	-1.59E-05	0.65	-4.87E-06	0.90	-1.60E-05	0.66	-1.54E-05	0.67
EP_XFMR_FTR_EMGC	-5.87E-07	0.99					2.83E-07	1.01	-6.40E-07	0.99
EW_AODP_XFC_9894	3.56E-06	1.76	2.66E-03	554.14	4.71E-03	1012.20	4.56E-06	1.96	3.58E-06	1.77
EW_AODP_XFC_9895	6.28E-07	1.13	5.53E-06	2.15	3.49E-06	1.76	7.57E-07	1.16	6.41E-07	1.13
EW_AODP_XFC_9896	1.02E-06	1.22	6.52E-06	2.35	4.26E-05	10.15	1.44E-06	1.30	1.05E-06	1.22
EW_AODPIXFC_9894	8.82E-05	1.07	8.32E-05	1.07			8.19E-05	1.07	8.73E-05	1.07
EW_AODPIXFC_9895	3.03E-07	1.07	2.87E-07	1.06			3.85E-07	1.09	3.00E-07	1.06
EW_AODPIXFC_9896	7.99E-07	1.58	7.52E-07	1.55			1.20E-06	1.85	7.91E-07	1.58
EW_CHKV_LKG_0042	7.77E-07	1.07	7.37E-07	1.06			9.98E-07	1.08	7.70E-07	1.06
EW_CHKV_PLG_0006	4.46E-08	1.18	3.45E-06	14.81	2.44E-04	986.00	8.70E-09	1.04	4.45E-08	1.18
EW_CHKV_PLG_0042	5.59E-09	1.02	6.64E-10	1.00	1.67E-07	1.67	1.95E-09	1.01	5.75E-09	1.02
EW_CHKV_PLG_0079	5.99E-09	1.02	7.68E-10	1.00	4.40E-08	1.18	2.13E-09	1.01	6.17E-09	1.02
EW_CHKVIPLG_0006	4.63E-06	1.07	4.36E-06	1.07			4.14E-06	1.07	4.58E-06	1.07
EW_CHKVIPLG_0042	1.45E-08	1.06	1.37E-08	1.06			1.89E-08	1.08	1.43E-08	1.06
EW_CHKVIPLG_0079	4.16E-08	1.56	3.91E-08	1.53			5.99E-08	1.81	4.12E-08	1.55
EW_EHCV_XFC_6904	1.25E-07	1.02	1.12E-07	1.02			1.43E-08	1.00	1.24E-07	1.02
EW_EHCV_XFC_6905	3.11E-11	1.00	2.48E-09	1.00			1.49E-11	1.00	3.15E-11	1.00
EW_EHCV_XFC_6906	2.30E-10	1.00	2.09E-09	1.00			1.00E-10	1.00	2.37E-10	1.00
EW_HUMM_ERR_001	3.24E-06	1.07	3.07E-06	1.06			4.22E-06	1.08	3.21E-06	1.06
EW_MANV_XFC_0020	1.19E-10	1.00	1.70E-09	1.00	3.47E-04	3.04			1.22E-10	1.00
EW_MANV_XFC_0028	1.94E-06	1.93					2.33E-06	2.27	2.10E-06	2.01
EW_MANV_XFC_0065	7.46E-05	1.88					8.05E-05	1.92	7.80E-05	1.92
EW_MANV_XFC_0093	6.51E-09	1.00	1.06E-08	1.00	2.91E-05	1.18	7.46E-10	1.00	6.42E-09	1.00
EW_MANV_XFC_0259	3.46E-08	1.02	3.12E-08	1.02					3.43E-08	1.02
EW_MANV_XFC_0260	5.68E-06	1.03	1.30E-06	1.01	1.68E-09	1.00	8.39E-06	1.04	5.64E-06	1.03
EW_MANV_XFC_0261	6.51E-06	1.04	5.13E-06	1.03	1.69E-09	1.00	1.11E-05	1.06	6.49E-06	1.04
EW_MOVL_XFC_0121	5.43E-06	1.76	3.97E-03	554.25	7.17E-03	1009.00	6.92E-06	1.97	5.45E-06	1.76
EW_MOVL_XFC_0137	9.45E-07	1.13	8.52E-06	2.19	5.36E-06	1.75	1.13E-06	1.16	9.64E-07	1.13
EW_MOVL_XFC_0151	1.54E-06	1.22	1.00E-05	2.40	6.51E-05	10.16	2.19E-06	1.30	1.59E-06	1.22
EW_MOVLIXFC_0121	1.33E-04	1.07	1.25E-04	1.07			1.22E-04	1.07	1.31E-04	1.07
EW_MOVLIXFC_0137	4.53E-07	1.07	4.29E-07	1.06			5.89E-07	1.09	4.48E-07	1.07
EW_MOVLIXFC_0151	1.24E-06	1.59	1.17E-06	1.55			1.82E-06	1.85	1.23E-06	1.58
EW_PMPRIIFTR_101A	2.47E-03	1.07	2.33E-03	1.07			2.25E-03	1.08	2.45E-03	1.07
EW_PMPRIIFTR_101B	1.12E-05	1.09	1.06E-05	1.08			1.39E-05	1.11	1.11E-05	1.09
EW_PMPRIIFTR_101C	3.04E-05	1.77	2.86E-05	1.72			4.36E-05	2.10	3.01E-05	1.76
EW_RMFN_CC03	3.98E-07	1.13	3.77E-07	1.12					3.94E-07	1.13

- Case**
- A Base Case
  - B Removal of Maintenance Unavailability
  - C Removal of Operator Recovery
  - D Removal of Common Cause
  - E 10 \* Failure Rate of Similar Low Ranking Components

STP Risk Ranking Values with Common Cause Included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
EW_RMFN_FTR_CC04	6.21E-09	1.53	5.84E-09	1.50					6.14E-09	1.53
EW_RMFN_FTR_CC06	2.25E-07	1.07	2.12E-07	1.07					2.22E-07	1.07
EW_RMFNIFTR_0001	1.63E-06	1.00	1.53E-06	1.00			1.50E-06	1.00	1.61E-06	1.00
EW_RMFNIFTR_0002	1.63E-06	1.00	1.53E-06	1.00			1.50E-06	1.00	1.61E-06	1.00
EW_RMFNIFTR_0003	1.35E-09	1.00	1.28E-09	1.00			2.41E-09	1.00	1.34E-09	1.00
EW_RMFNIFTR_0004	8.23E-08	1.00	7.80E-08	1.00			1.04E-07	1.00	8.15E-08	1.00
EW_RMFNIFTR_0005	4.27E-09	1.00	4.01E-09	1.00			6.86E-09	1.00	4.22E-09	1.00
EW_RMFNIFTR_0006	1.60E-07	1.01	1.50E-07	1.01			2.31E-07	1.01	1.58E-07	1.01
EW_STRSIFTR_101A	1.54E-03	1.08	1.46E-03	1.07			1.39E-03	1.07	1.53E-03	1.07
EW_STRSIFTR_101B	2.70E-05	1.08	2.56E-05	1.07			3.57E-05	1.10	2.67E-05	1.08
EW_STRSIFTR_101C	2.00E-04	1.67	1.88E-04	1.63			2.92E-04	1.97	1.99E-04	1.66
HE_AODP_FTC_0240	1.31E-05	1.01	1.43E-05	1.01			2.03E-05	1.01	1.29E-05	1.01
HE_AODP_FTC_0242	3.18E-07	1.14	3.47E-07	1.15			1.60E-07	1.07	3.13E-07	1.14
HE_AODP_FTC_0243	1.31E-05	1.01	1.43E-05	1.01			2.03E-05	1.01	1.29E-05	1.01
HE_AODP_FTC_0245	3.18E-07	1.14	3.47E-07	1.15			1.60E-07	1.07	3.13E-07	1.14
HE_BKDP_FTO_0254	7.32E-05	1.13	8.00E-05	1.14			3.13E-05	1.05	7.20E-05	1.12
HE_BKDP_FTO_0263	7.32E-05	1.13	8.00E-05	1.14			3.13E-05	1.05	7.20E-05	1.12
HE_BKDP_XFC_0252	6.09E-07	1.00	6.65E-07	1.01			9.44E-07	1.01	5.98E-07	1.00
HE_BKDP_XFC_0254	1.53E-08	1.13	1.67E-08	1.14			6.24E-09	1.05	1.51E-08	1.13
HE_BKDP_XFC_0261	6.09E-07	1.00	6.65E-07	1.01			9.44E-07	1.01	5.98E-07	1.00
HE_BKDP_XFC_0263	1.53E-08	1.13	1.67E-08	1.14			6.24E-09	1.05	1.51E-08	1.13
HE_HTXR_PLG_0010	7.30E-06	1.17	2.35E-06	1.06	7.23E-06	1.17	1.09E-05	1.26	7.24E-06	1.17
HE_HTXR_PLG_0013	6.17E-05	1.28	4.40E-05	1.19	5.20E-05	1.25	9.85E-05	1.43	6.14E-05	1.28
HE_HUMM_EFF_0001	1.28E-04	1.13	1.40E-04	1.14			5.51E-05	1.06	1.26E-04	1.13
HE_RMFN_FTR_0017	1.99E-04	1.01	2.18E-04	1.01			3.09E-04	1.01	1.96E-04	1.01
HE_RMFN_FTR_0019	5.34E-06	1.16	5.83E-06	1.18			2.39E-06	1.07	5.25E-06	1.16
HE_RMFN_FTR_0025	1.99E-04	1.01	2.18E-04	1.01			3.09E-04	1.01	1.96E-04	1.01
HE_RMFN_FTR_0027	5.34E-06	1.16	5.83E-06	1.18			2.39E-06	1.07	5.25E-06	1.16
HE_RMFN_FTS_0019	1.48E-04	1.12	1.62E-04	1.14			6.31E-05	1.05	1.46E-04	1.12
HE_RMFN_FTS_0027	1.48E-04	1.12	1.62E-04	1.14			6.31E-05	1.05	1.46E-04	1.12
HE_TXMT_FTR_9379	8.72E-05	1.23	2.55E-05	1.07	6.57E-05	1.17	1.31E-04	1.34	8.65E-05	1.23
HE_TXMT_FTR_9455	1.43E-04	1.30	9.78E-05	1.21	1.14E-04	1.24	2.23E-04	1.47	1.42E-04	1.30
HE_VNFL_PLG_0025	5.03E-05	1.01	5.49E-05	1.01			7.80E-05	1.01	4.94E-05	1.01
HE_VNFL_PLG_0026	5.03E-05	1.01	5.49E-05	1.01			7.80E-05	1.01	4.94E-05	1.01
HE_VNFL_PLG_0029	1.14E-06	1.16	1.24E-06	1.17			6.64E-07	1.09	1.12E-06	1.15
HE_VNFL_PLG_0030	1.14E-06	1.16	1.24E-06	1.17			6.64E-07	1.09	1.12E-06	1.15
LH_AOVL_XFC_0352	1.20E-03	1.74	6.08E-09	1.00	1.91E-04	1.12	1.09E-03	1.68	1.19E-03	1.74
LH_AOVL_XFC_0865	1.20E-03	1.74	6.08E-09	1.00	1.91E-04	1.12	1.09E-03	1.68	1.19E-03	1.74
LH_HTXR_RUP_001B	3.09E-05	1.68			2.88E-06	1.06	2.79E-05	1.61	3.08E-05	1.68
LH_MANV_XFC_207B	2.01E-04	1.72			2.32E-05	1.09	1.68E-04	1.64	2.00E-04	1.72
LH_MANV_XFO_121A	1.22E-09	1.00	3.14E-09	1.00	7.14E-11	1.00			1.20E-09	1.00
LH_MANV_XFO_121B	1.14E-09	1.00							1.12E-09	1.00
LH_MANV_XFO_121C	1.18E-09	1.00	3.17E-09	1.00	7.14E-11	1.00			1.16E-09	1.00
LH_MOVL_XFC_013B	2.59E-04	1.77			4.28E-05	1.13	2.41E-04	1.71	2.58E-04	1.77
LH_MOVL_XFC_014B	2.59E-04	1.77			4.28E-05	1.13	2.41E-04	1.71	2.58E-04	1.77
LH_MOVL_XFC_018B	1.50E-03	1.77	1.22E-08	1.00	2.57E-04	1.14	1.39E-03	1.71	1.49E-03	1.77
LH_MOVL_XFC_031B	1.50E-03	1.77	1.22E-08	1.00	2.57E-04	1.14	1.39E-03	1.71	1.49E-03	1.77
LH_STRN_PLG_001B	1.07E-04	1.71			1.18E-05	1.08	9.04E-05	1.61	1.07E-04	1.70
MS_AOVL_FOD_7414	3.16E-06	1.02			6.84E-07	1.00	3.83E-06	1.02	3.06E-06	1.02
MS_AOVL_FOD_7424	3.16E-06	1.02			6.84E-07	1.00	3.83E-06	1.02	3.06E-06	1.02
MS_AOVL_FOD_7434	3.16E-06	1.02			6.84E-07	1.00	3.83E-06	1.02	3.06E-06	1.02
MS_AOVL_FOD_7444	3.16E-06	1.02			6.84E-07	1.00	3.83E-06	1.02	3.06E-06	1.02
MS_RLYM_FOD_834A	5.46E-08	1.09			1.18E-08	1.02	4.49E-10	1.00	5.28E-08	1.09
MS_RLYM_FOD_834B	5.46E-08	1.09			1.18E-08	1.02	4.49E-10	1.00	5.28E-08	1.09
MS_RLYM_FOD_848A	5.46E-08	1.09			1.18E-08	1.02	4.49E-10	1.00	5.28E-08	1.09
MS_RLYM_FOD_848B	5.46E-08	1.09			1.18E-08	1.02	4.49E-10	1.00	5.28E-08	1.09
MS_SOVL_FOD_414C	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20

Case

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components

STP Risk Ranking Values with Common Cause Included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
MS_SOVL_FOD_414D	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FOD_424C	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FOD_424D	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FOD_434C	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FOD_434D	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FOD_444C	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FOD_444D	1.77E-06	1.21			3.82E-07	1.05	6.62E-07	1.00	1.71E-06	1.20
MS_SOVL_FTO_317A	-1.56E-06	0.80			-8.59E-07	0.89			-1.55E-06	0.80
MS_SOVL_FTO_317B	-1.56E-06	0.80			-8.59E-07	0.89			-1.55E-06	0.80
MS_SOVL_FTO_317C	-1.56E-06	0.80			-8.59E-07	0.89			-1.55E-06	0.80
MS_SOVL_FTO_6317	-1.56E-06	0.80			-8.59E-07	0.89			-1.55E-06	0.80
RC_CONSTANT_0001	3.54E-04	1.00	3.24E-04	1.00	3.78E-04	1.00	3.85E-04	1.00	3.37E-04	1.00
RC_CONSTANT_0002	4.56E-06	1.00	5.27E-06	1.00	7.51E-07	1.00	4.92E-06	1.00	4.46E-06	1.00
RC_HUMA_ERR_0001	2.57E-05	1.00	2.89E-05	1.00	8.26E-06	1.00	2.74E-05	1.00	2.51E-05	1.00
RC_MOVL_FTC_000A	2.50E-06	1.00	2.84E-06	1.00	6.11E-07	1.00	2.70E-06	1.00	2.44E-06	1.00
RC_MOVL_FTC_000N	2.50E-06	1.00	2.84E-06	1.00	6.11E-07	1.00	2.70E-06	1.00	2.44E-06	1.00
RC_PORV_FRS_0655	6.57E-04	1.12	4.11E-04	1.07	7.78E-04	1.14	7.13E-04	1.13	6.35E-04	1.12
RC_PORV_FRS_0656	6.57E-04	1.12	4.11E-04	1.07	7.78E-04	1.14	7.13E-04	1.13	6.35E-04	1.12
RC_PSRV_FRS_3450	2.53E-05	1.02	7.31E-06	1.00	5.73E-06	1.00	9.55E-07	1.00	2.48E-05	1.02
RC_PSRV_FRS_3451	2.53E-05	1.02	7.31E-06	1.00	5.73E-06	1.00	9.55E-07	1.00	2.48E-05	1.02
RC_PSRV_FRS_3452	2.53E-05	1.02	7.31E-06	1.00	5.73E-06	1.00	9.55E-07	1.00	2.48E-05	1.02
RH_AOVL_XFC_4531	5.72E-07	1.10	7.53E-08	1.01	2.73E-07	1.05	9.17E-07	1.15	5.44E-07	1.09
RH_AOVL_XFC_4548	4.89E-08	1.01	3.29E-08	1.01	1.27E-08	1.00	2.99E-08	1.01	4.46E-08	1.01
RH_AOVL_XFC_4565	7.11E-09	1.00	7.27E-09	1.00	1.59E-09	1.00			6.81E-09	1.00
RH_CHKV_XFC_0013	2.49E-08	1.10	3.20E-09	1.01	1.19E-08	1.05	3.79E-08	1.15	2.28E-08	1.09
RH_CHKV_XFC_0123	2.12E-09	1.01	1.40E-09	1.01	5.52E-10	1.00	1.26E-09	1.01	1.86E-09	1.01
RH_CHKV_XFC_0183	2.88E-10	1.00	3.09E-10	1.00	6.43E-11	1.00			2.89E-10	1.00
RH_HTXR_RUP_001A	3.54E-04	1.08	2.73E-04	1.06	8.68E-05	1.02	5.01E-04	1.12	6.89E-04	1.16
RH_HTXR_RUP_001B	3.54E-04	1.08	2.73E-04	1.06	8.68E-05	1.02	5.01E-04	1.12	6.89E-04	1.16
RH_HTXR_RUP_001C	1.01E-04	1.02	8.06E-05	1.02	2.26E-05	1.01	1.22E-04	1.03	2.53E-04	1.06
RH_MANV_XFC_0014	9.00E-06	1.10	1.20E-06	1.01	4.24E-06	1.05	1.62E-05	1.16	8.82E-06	1.09
RH_MANV_XFC_0124	9.98E-07	1.01	5.24E-07	1.01	2.60E-07	1.00	5.74E-07	1.01	8.72E-07	1.01
RH_MANV_XFC_0156	9.98E-07	1.01	5.24E-07	1.01	2.60E-07	1.00	5.74E-07	1.01	8.72E-07	1.01
RH_MANV_XFC_0184	1.41E-07	1.00	1.16E-07	1.00	3.15E-08	1.00			1.20E-07	1.00
RH_MANV_XFC_0213	9.00E-06	1.10	1.20E-06	1.01	4.24E-06	1.05	1.62E-05	1.16	8.82E-06	1.09
RH_MANV_XFC_0215	9.00E-06	1.10	1.20E-06	1.01	4.24E-06	1.05	1.62E-05	1.16	8.82E-06	1.09
RH_MANV_XFC_0410	9.98E-07	1.01	5.24E-07	1.01	2.60E-07	1.00	5.74E-07	1.01	8.72E-07	1.01
RH_MOVL_XFC_0012	6.58E-05	1.10	8.56E-06	1.01	3.10E-05	1.05	1.02E-04	1.16	6.33E-05	1.10
RH_MOVL_XFC_0049	6.58E-05	1.10	8.56E-06	1.01	3.10E-05	1.05	1.02E-04	1.16	6.33E-05	1.10
RH_MOVL_XFC_0050	6.58E-05	1.10	8.56E-06	1.01	3.10E-05	1.05	1.02E-04	1.16	6.33E-05	1.10
RH_MOVL_XFC_0122	7.45E-06	1.01	3.74E-06	1.01	1.94E-06	1.00	4.66E-06	1.01	6.60E-06	1.01
RH_MOVL_XFC_0129	7.45E-06	1.01	3.74E-06	1.01	1.94E-06	1.00	4.66E-06	1.01	6.60E-06	1.01
RH_MOVL_XFC_0130	7.45E-06	1.01	3.74E-06	1.01	1.94E-06	1.00	4.66E-06	1.01	6.60E-06	1.01
RH_MOVL_XFC_0182	9.95E-07	1.00	8.26E-07	1.00	2.22E-07	1.00			9.94E-07	1.00
RH_MOVL_XFC_0189	9.95E-07	1.00	8.26E-07	1.00	2.22E-07	1.00			9.94E-07	1.00
RH_MOVL_XFC_0190	9.95E-07	1.00	8.26E-07	1.00	2.22E-07	1.00			9.94E-07	1.00
RH_XFER_TRAINA	4.13E-04	1.08	3.22E-04	1.06	1.01E-04	1.02	6.06E-04	1.12	8.29E-04	1.16
RH_XFER_TRAINB	4.13E-04	1.08	3.22E-04	1.06	1.01E-04	1.02	6.06E-04	1.12	8.29E-04	1.16
RH_XFER_TRAINC	1.14E-04	1.02	9.16E-05	1.02	2.55E-05	1.01	1.40E-04	1.03	3.00E-04	1.06
SR_BIST_FOD_0932	8.02E-08	1.01	1.77E-07	1.02	1.41E-09	1.00			5.92E-08	1.01
SR_BIST_FOD_0933	6.06E-08	1.01	2.37E-07	1.03					5.95E-08	1.01
SR_LXMT_FTR_0932	4.40E-05	1.09	5.95E-05	1.12	2.62E-03	6.33	6.93E-05	1.14	4.25E-05	1.09
SR_LXMT_FTR_0933	4.80E-04	1.93	3.62E-04	1.72			5.34E-04	2.06	4.79E-04	1.93
SR_MOVL_XFC_104B	3.78E-08	1.01	1.08E-07	1.02	8.03E-10	1.00			3.72E-08	1.01
SR_MOVL_XFC_104C	3.80E-08	1.01	1.44E-07	1.02					3.74E-08	1.01
SS_INVF_FTR_IV01	2.73E-05	1.15	2.37E-06	1.01	1.01E-07	1.00	2.64E-06	1.01	2.68E-05	1.15
SS_INVF_FTR_IV02	3.11E-08	1.00	2.37E-06	1.01	3.42E-12	1.00	3.01E-08	1.00	3.06E-08	1.00

Case

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components

**STP Risk Ranking Values with Common Cause Included in Basic Event Calculation**

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
SS_INVF_FTR_IV03	2.73E-05	1.15	2.37E-06	1.01	1.01E-07	1.00	2.64E-06	1.01	2.68E-05	1.15
SS_INVF_FTR_IV04	3.11E-08	1.00	2.37E-06	1.01	3.42E-12	1.00	3.01E-08	1.00	3.06E-08	1.00
SS_PSMD_FTR_PS01	3.24E-05	1.15	2.96E-06	1.01	1.21E-07	1.00	3.19E-06	1.01	3.19E-05	1.14
SS_PSMD_FTR_PS02	3.70E-08	1.00	2.96E-06	1.01	4.05E-12	1.00	3.58E-08	1.00	3.64E-08	1.00
SS_PSMD_FTR_PS03	3.24E-05	1.15	2.96E-06	1.01	1.21E-07	1.00	3.19E-06	1.01	3.19E-05	1.14
SS_PSMD_FTR_PS04	3.70E-08	1.00	2.96E-06	1.01	4.05E-12	1.00	3.58E-08	1.00	3.64E-08	1.00
SS_PXMT_FTR_1CH1	6.32E-08	1.00	1.42E-05	1.07	2.70E-10	1.00	6.52E-09	1.00	6.22E-08	1.00
SS_PXMT_FTR_1CH2	6.32E-08	1.00	1.42E-05	1.07	2.70E-10	1.00	6.52E-09	1.00	6.22E-08	1.00
SS_PXMT_FTR_1CH3	6.32E-08	1.00	1.42E-05	1.07	2.70E-10	1.00	6.52E-09	1.00	6.22E-08	1.00
SS_PXMT_FTR_1CH4	6.32E-08	1.00	1.42E-05	1.07	2.70E-10	1.00	6.52E-09	1.00	6.22E-08	1.00
SS_RLYM_FOD_A01R	4.79E-07	1.00	7.66E-08	1.00	4.46E-07	1.00	7.25E-07	1.00	4.73E-07	1.00
SS_RLYM_FOD_A01S	4.79E-07	1.00	7.66E-08	1.00	4.46E-07	1.00	7.25E-07	1.00	4.73E-07	1.00
SS_RLYM_FOD_A02R	4.79E-07	1.00	7.66E-08	1.00	4.46E-07	1.00	7.25E-07	1.00	4.73E-07	1.00
SS_RLYM_FOD_A02S	4.79E-07	1.00	7.66E-08	1.00	4.46E-07	1.00	7.25E-07	1.00	4.73E-07	1.00
SS_RLYM_FOD_A03R	4.79E-07	1.00	7.66E-08	1.00	4.46E-07	1.00	7.25E-07	1.00	4.73E-07	1.00
SS_RLYM_FOD_A03S	4.79E-07	1.00	7.66E-08	1.00	4.46E-07	1.00	7.25E-07	1.00	4.73E-07	1.00
SS_RLYM_FOD_A17R	1.86E-13	1.00	1.92E-15	1.00	2.18E-13	1.00	2.20E-13	1.00	1.83E-13	1.00
SS_RLYM_FOD_A17S	1.86E-13	1.00	1.92E-15	1.00	2.18E-13	1.00	2.20E-13	1.00	1.83E-13	1.00
SS_RLYM_FOD_A39R	3.71E-13	1.00	3.84E-15	1.00	4.36E-13	1.00	4.41E-13	1.00	3.67E-13	1.00
SS_RLYM_FOD_A39S	3.71E-13	1.00	3.84E-15	1.00	4.36E-13	1.00	4.41E-13	1.00	3.67E-13	1.00
SS_RLYM_FOD_A832	1.86E-13	1.00	1.92E-15	1.00	2.18E-13	1.00	2.20E-13	1.00	1.83E-13	1.00
SS_RLYM_FOD_A839	1.86E-13	1.00	1.92E-15	1.00	2.18E-13	1.00	2.20E-13	1.00	1.83E-13	1.00
SS_RLYM_FOD_B01R	5.80E-08	1.00	3.55E-08	1.00	5.59E-07	1.00	7.93E-08	1.00	5.82E-08	1.00
SS_RLYM_FOD_B01S	5.80E-08	1.00	3.55E-08	1.00	5.59E-07	1.00	7.93E-08	1.00	5.82E-08	1.00
SS_RLYM_FOD_B02R	5.80E-08	1.00	3.55E-08	1.00	5.59E-07	1.00	7.93E-08	1.00	5.82E-08	1.00
SS_RLYM_FOD_B02S	5.80E-08	1.00	3.55E-08	1.00	5.59E-07	1.00	7.93E-08	1.00	5.82E-08	1.00
SS_RLYM_FOD_B03R	5.80E-08	1.00	3.55E-08	1.00	5.59E-07	1.00	7.93E-08	1.00	5.82E-08	1.00
SS_RLYM_FOD_B03S	5.80E-08	1.00	3.55E-08	1.00	5.59E-07	1.00	7.93E-08	1.00	5.82E-08	1.00
SS_RLYM_FOD_B17R	1.97E-14	1.00	8.89E-16	1.00	2.55E-13	1.00	3.41E-14	1.00	1.97E-14	1.00
SS_RLYM_FOD_B17S	1.97E-14	1.00	8.89E-16	1.00	2.55E-13	1.00	3.41E-14	1.00	1.97E-14	1.00
SS_RLYM_FOD_B39R	3.93E-14	1.00	1.78E-15	1.00	5.09E-13	1.00	6.82E-14	1.00	3.94E-14	1.00
SS_RLYM_FOD_B39S	3.93E-14	1.00	1.78E-15	1.00	5.09E-13	1.00	6.82E-14	1.00	3.94E-14	1.00
SS_RLYM_FOD_B832	1.97E-14	1.00	8.89E-16	1.00	2.55E-13	1.00	3.41E-14	1.00	1.97E-14	1.00
SS_RLYM_FOD_B839	1.97E-14	1.00	8.89E-16	1.00	2.55E-13	1.00	3.41E-14	1.00	1.97E-14	1.00
SS_RLYM_FOD_C01R	2.97E-07	1.00	2.65E-06	1.02	8.99E-08	1.00	5.38E-07	1.00	3.02E-07	1.00
SS_RLYM_FOD_C01S	2.97E-07	1.00	2.65E-06	1.02	8.99E-08	1.00	5.38E-07	1.00	3.02E-07	1.00
SS_RLYM_FOD_C02R	2.97E-07	1.00	2.65E-06	1.02	8.99E-08	1.00	5.38E-07	1.00	3.02E-07	1.00
SS_RLYM_FOD_C02S	2.97E-07	1.00	2.65E-06	1.02	8.99E-08	1.00	5.38E-07	1.00	3.02E-07	1.00
SS_RLYM_FOD_C03R	2.97E-07	1.00	2.65E-06	1.02	8.99E-08	1.00	5.38E-07	1.00	3.02E-07	1.00
SS_RLYM_FOD_C03S	2.97E-07	1.00	2.65E-06	1.02	8.99E-08	1.00	5.38E-07	1.00	3.02E-07	1.00
SS_RLYM_FOD_C17R	1.10E-13	1.00	6.64E-14	1.00	2.81E-14	1.00	2.39E-13	1.00	1.11E-13	1.00
SS_RLYM_FOD_C17S	1.10E-13	1.00	6.64E-14	1.00	2.81E-14	1.00	2.39E-13	1.00	1.11E-13	1.00
SS_RLYM_FOD_C39R	2.19E-13	1.00	1.33E-13	1.00	5.62E-14	1.00	4.79E-13	1.00	2.23E-13	1.00
SS_RLYM_FOD_C39S	2.19E-13	1.00	1.33E-13	1.00	5.62E-14	1.00	4.79E-13	1.00	2.23E-13	1.00
SS_RLYM_FOD_C832	1.10E-13	1.00	6.64E-14	1.00	2.81E-14	1.00	2.39E-13	1.00	1.11E-13	1.00
SS_RLYM_FOD_C839	1.10E-13	1.00	6.64E-14	1.00	2.81E-14	1.00	2.39E-13	1.00	1.11E-13	1.00
VE_AODP_FTC_9645	1.02E-05	1.85	3.67E-07	1.02	3.11E-06	1.25	1.23E-09	1.00	1.01E-05	1.85
VE_AODP_FTC_9648	1.26E-05	1.91	4.15E-07	1.02	4.24E-06	1.28	1.34E-07	1.00	1.25E-05	1.90
VE_AODP_FTC_9651	3.42E-05	1.95	8.45E-06	1.03	2.25E-05	1.31	4.35E-05	1.04	3.39E-05	1.94
VE_AODP_XF_TRNA	3.42E-07	1.02	1.20E-07	1.01	2.96E-07	1.02	6.03E-07	1.04	3.39E-07	1.02
VE_AODP_XF_TRNB	1.85E-08	1.00	6.39E-11	1.00	5.99E-09	1.00	1.80E-09	1.00	1.84E-08	1.00
VE_AODP_XF_TRNC	8.23E-09	1.00	2.42E-12	1.00	1.65E-09	1.00	1.38E-11	1.00	8.17E-09	1.00
VE_AOVI_XFC_IA	1.55E-07	1.02	7.69E-06	1.01	1.43E-07	1.02	2.78E-07	1.04	1.56E-07	1.02
VE_BKDP_FTO_0218	1.03E-04	1.53	3.86E-09	1.00	7.89E-03	40.93	1.77E-04	1.90	1.04E-04	1.53
VE_BKDP_FTO_0219	8.58E-05	1.44	1.14E-03	6.79			2.10E-04	2.06	8.73E-05	1.45
VE_BKDP_FTO_0226	2.04E-04	1.51	1.99E-04	1.50			1.53E-04	1.39	2.01E-04	1.50
VE_CBG4_FTC_BOP	5.13E-04	1.02	2.50E-04	1.01	4.54E-04	1.02	9.06E-04	1.04	5.16E-04	1.02

**Case**

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10x Failure Rate of Similar Low Ranking Components





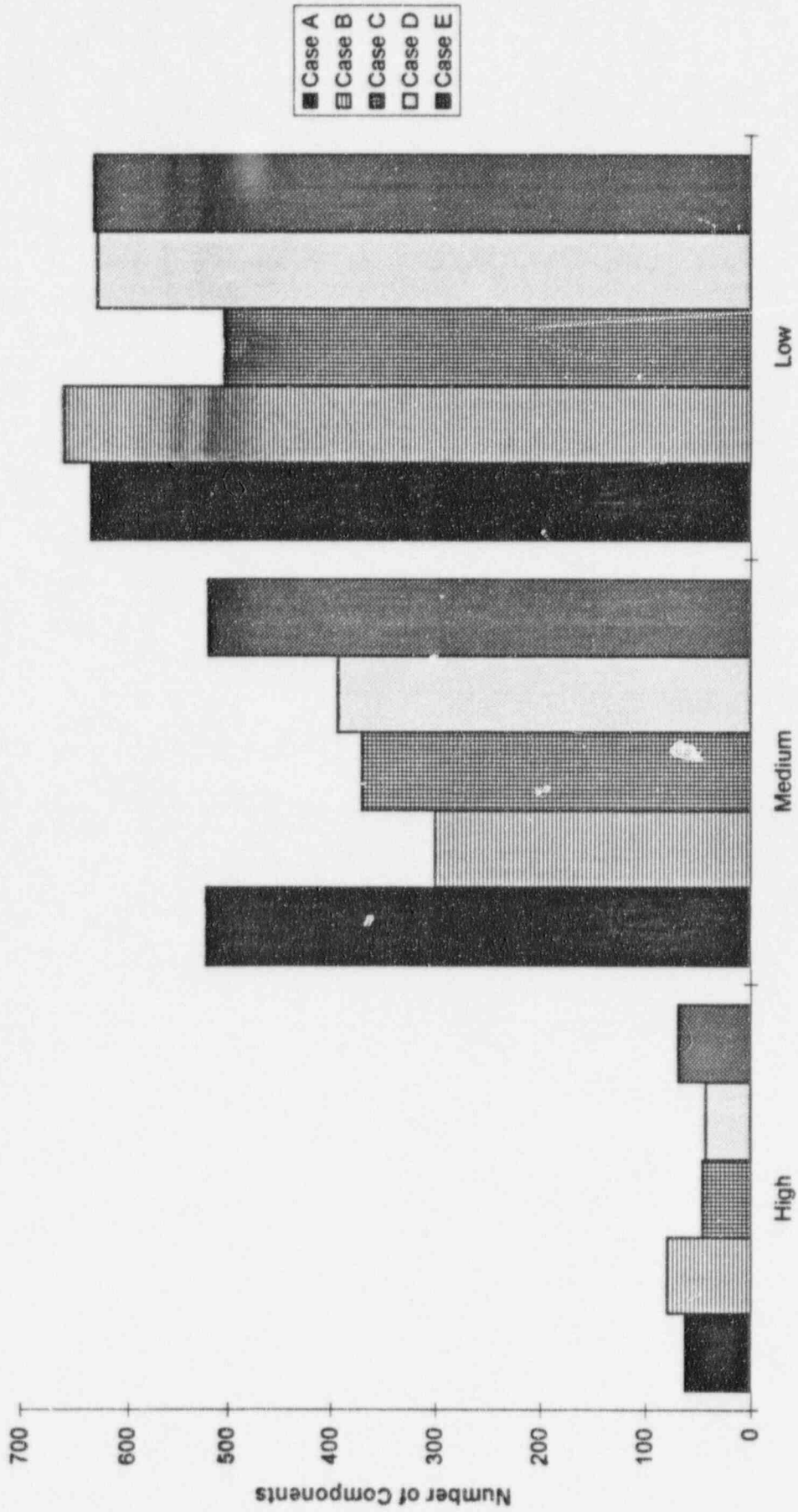
## STP Risk Ranking Values with Common Cause Included in Basic Event Calculation

Basic Event	Case A		Case B		Case C		Case D		Case E	
	FV	RAW	FV	RAW	FV	RAW	FV	RAW	FV	RAW
VE_PUMP_FOD_OTRA	7.77E-04	1.02	7.57E-04	1.02			1.33E-03	1.03	7.67E-04	1.02
VE_PUMP_FTO_OTRC	8.32E-07	1.12	8.13E-07	1.11			1.23E-06	1.17	8.21E-07	1.12
VE_PUMP_FTS_OTRC	2.61E-04	1.24	2.55E-04	1.23			2.25E-04	1.21	2.57E-04	1.23
VE_RCVR_FTO_IA	4.12E-05	1.02	2.03E-05	1.01	3.69E-05	1.02	7.30E-05	1.04	4.14E-05	1.02
VE_RMFN_FTR_002R	1.14E-03	1.07	1.11E-03	1.06			1.26E-03	1.07	1.12E-03	1.06
VE_RMFN_FTR_015R	1.14E-03	1.07	1.11E-03	1.06			1.26E-03	1.07	1.12E-03	1.06
VE_RMFN_FTR_A300	2.95E-04	1.02	2.87E-04	1.02			4.79E-04	1.03	2.91E-04	1.02
VE_RMFN_FTR_A3R	2.53E-05	1.30	2.46E-05	1.29			3.99E-05	1.48	2.50E-05	1.29
VE_RMFN_FTR_B300	3.00E-05	1.35	2.91E-05	1.34			4.72E-05	1.56	2.96E-05	1.35
VE_RMFN_FTR_CC1R	1.26E-07	1.76	1.23E-07	1.74					1.24E-07	1.75
VE_RMFN_FTR_TC03	5.71E-05	1.68	5.58E-05	1.7			4.53E-05	1.54	5.64E-05	1.67
VE_RMFN_FTR_TC16	5.71E-05	1.68	5.58E-05	1.7			4.53E-05	1.54	5.64E-05	1.67
VE_RMFN_FTS_B300	1.27E-04	1.32	1.23E-04	1.31			1.96E-04	1.50	1.25E-04	1.32
VE_RMFN_FTS_C300	3.71E-06	1.01	3.63E-06	1.01			4.59E-06	1.01	3.67E-06	1.01
VE_RMFNIFTR_0001	2.59E-03	1.15	2.52E-03	1.14			3.57E-03	1.21	2.56E-03	1.15
VE_RMFNIFTR_0014	2.59E-03	1.15	2.52E-03	1.14			3.57E-03	1.21	2.56E-03	1.15
VE_RMFNIFTS_0003	2.03E-04	1.51	1.98E-04	1.50			1.49E-04	1.38	2.00E-04	1.50
VE_RMFNIFTS_0016	2.03E-04	1.51	1.98E-04	1.50			1.49E-04	1.38	2.00E-04	1.50
VE_STNK_RUP_IA	1.63E-08	1.02	7.85E-09	1.01	1.46E-08	1.02	2.80E-08	1.04	1.63E-08	1.02
VE_XXLOSP_1	1.82E-06	1.00	7.63E-05	1.00	5.86E-07	1.00			1.93E-06	1.00
VE_XXLOSP_3	2.62E-03	1.00	4.31E-02	1.00	5.06E-02	1.00	2.49E-03	1.00	2.66E-03	1.00
XXLOSP	1.04E-04	1.00	1.38E-07	1.00			7.71E-05	1.00	1.07E-04	1.00

**Case.**

- A Base Case
- B Removal of Maintenance Unavailability
- C Removal of Operator Recovery
- D Removal of Common Cause
- E 10 \* Failure Rate of Similar Low Ranking Components

# Risk Categories with Common Cause included in Basic Event Calculation



- Case
- A Base Case
  - B Removal of Maintenance Unavailability
  - C Removal of Operator Recovery
  - D Removal of Common Cause
  - E 10 \* Failure Rate of Similar Low Ranking Components