

IEEE SC-2 Subcommittee
Safety Terms Group (STG)

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- STG Established during SC-2 (05-2) Meeting
- STG Task 1 - Investigate Differences Between Various Safety Terms Including Class 1E, Safety Related, Important to Safety, and Safety Significant
- STG Task 2 - Report Progress during SC-2 (06-1) Subcommittee Meeting
- STG Task 3 - Recommend Specific Guidance as to How Safety Terms Should Be Used in IEEE Standards during the SC-2 (06-2) Subcommittee Meeting

Individual Contributors Safety Terms Group

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Safety Terms Defined

Domestic Codes and Standards

- **IEEE 323 and IEEE 603**

- **Class 1E**
 - Emergency Reactor Shutdown
 - Containment Isolation
 - Reactor Core Cooling
 - Containment and Reactor Heat Removal
 - Prevent Significant Release of Radioactive Material

- **10 CFR 50.49**

- **Important to Safety**
 - Safety Related
 - Non-SR Equip Whose Failure Could Prevent SR Functions
 - Certain Post Accident Monitoring Equipment
- **Safety Related**
 - Assure Integrity of RCS Pressure Boundary
 - Shut Down Reactor and Maintain Safe Shutdown Condition
 - Prevent or Mitigate Consequences of Accidents

- **10 CFR 50.69**

- **Safety Significant**
 - Defense-in-Depth (Multiple Physical Barriers)
 - Reactor Protection (Prevent Core Damage)
 - Containment Isolation (Prevent Radiation Releases)
- **Safety Significant Classifications**
 - RISC 1 (High SS, SR)
 - RISC 2 (High SS, Non-SR)
 - RISC 3 (Low SS, SR)
 - RISC 4 (Low SS, Non-SR)

Safety Terms Defined

International Standards

- **IEC 60780 and 61226**

- **Safety Systems** – Systems **Important to Safety** to assure:
 - Safe Shut Down of the Reactor
 - Remove Heat from the Core
 - Limit Consequences of Accident Conditions
- **Important to Safety Categories**
 - Category A (Principle Safety Role, QA, Type Test of Identical Equip)
 - Category B (Complementary Safety Role, QA, Type Test of Similar Equip)
 - Category C (Auxiliary Safety Role, Commercial Grade, Experience Data)

- **Canadian Regulations (Candu Reactor)**

- **Safety Functions**
 - Shut Reactor Down and Maintain Safe Shutdown Condition
 - Remove Decay Heat
 - Limit Release of Radioactive Material
 - Perform Safety Related Control and Monitoring Functions
- **Safety Related Categories**
 - Preventive Nature (**Important to Safety** During Normal Operation)
 - Protective Nature (Prevent or Mitigate Consequences of System Failure)

Safety Term Hierarchy

- **Important to Safety (10 CFR 50.49)** **100%**
- **Safety Related (10 CFR 50.49)** **70%**
- **Class 1E (IEEE-323)** **70%**
- **Post-Accident Monitoring (10 CFR 50.49)** **30%**
- **Safety Significant (10 CFR 50.69)** **30% PWR**
40% BWR
- **Conclusion**
Safety Related, Class 1E, Post-accident Monitoring, and Safety Significant are all Subsets of Equipment Important to Safety.

IEEE Standards (EQ Related)

- IEEE 323 - Qualification of Class 1E Equipment
- IEEE 344 - Seismic Qual of Class 1E Equipment
- IEEE 334 - Class 1E Motors
- IEEE 381 - Class 1E Modules
- IEEE 382 - Safety Related Valve Actuators
- IEEE 383 - Class 1E Cable, Splices, and Connectors
- IEEE 535 - Class 1E Lead Storage Batteries
- IEEE 572 - Class 1E Connector Assemblies
- IEEE 638 - Class 1E Transformers
- IEEE 649 - Class 1E Motor Control Centers
- IEEE 650 - Class 1E Battery Chargers and Inverters
- IEEE 1205 - Guide for Assessing, Monitoring, and Mitigating Aging Effects

Safety Term Options

- **Option 1** - Continue Using Class 1E Language and Ignore Other Terms
- **Option 2** - Define Other Terms and Add a Note That Class 1E Generally Applies to Equipment Important to Safety, Safety Related, and Safety Significant in IEEE 323 & 344 only
- **Option 3** - Define Equipment Important to Safety and Change Title and Text of IEEE 323 & 344 only from Class 1E to Equipment Important to Safety
- **Option 4** - Define Equipment Important to Safety and Change Title and Text of all IEEE Standards from Class 1E to Equipment Important to Safety
- **Option 5** - Remove Safety Terms and Change Title and Text in IEEE 323 and IEEE 344 to Qualification of Equipment
- **Option 6** - Remove Class 1E Term and Change Title and Text of all EQ Related IEEE Standards to Qualification of Equipment