



COMPUTER PROGRAM QUALITY ASSURANCE LICENSING REVIEWS & INSPECTION

EPRI JOINT UTILITY TASK GROUP

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CURRENT NRC INITIATIVES

- Development of Commercial-Grade Dedication Guidance
- Updating Licensing Guidance
- Developing Inspection Guidance



INTEGRATED ACTION PLAN TO MODERNIZE DIGITAL I&C REGULATORY INFRASTRUCTURE

- Four modernization plans were developed to resolve regulatory challenges and modernize the Digital I&C regulatory infrastructure:
 - MP #1 Protection against Common Cause Failure
 - MP #2 Considering Digital I&C in accordance with 10 CFR 50.59
 - MP #3 Commercial-Grade Dedication of Digital Equipment
 - MP #4 Modernization of I&C Regulatory Infrastructure

A copy of the Integrated Action Plan to Modernize Digital Instrumentation and Controls Regulatory Infrastructure is available electronically on the NRC Agency Wide Document Access and Management System (ADAMS) via Accession number [ML16097A182](#)

COMMERCIAL-GRADE DEDICATION OF DIGITAL EQUIPMENT MP #3 ACTIONS

Activity	Schedule
1. Public Meeting to discuss resolution of RIS 2016-05 public comments.	April 06, 2016
2. Issue RIS 2016-05	April 29, 2016
3. Obtain public comments on DG-1292.	July 2016
4. Stakeholder interaction to discuss proposed use of standards and third party process "certifiers".	November 03, 2016
5. Assess results of stakeholder information gathering and examine potential approaches for reviewing and endorsing additional EPRI guidance related to CGD.	1st Qtr CY 2017
6. Issue RG-xxxx "Dedication of Commercial-Grade Items for Use in Nuclear Power Plants".	2 nd Qtr CY 2017
7. Investigative and research activities to evaluate third-party process "certification" for digital equipment.	CY 2017
8. Complete analysis and develop recommendations regarding third-party process "certification" working with stakeholders.	CY 2018

THIRD-PARTY PROCESS "CERTIFICATION" FOR DIGITAL EQUIPMENT

- International Electrotechnical Commission (IEC) 61508, "Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems," establishes requirements for ensuring that systems are designed, implemented, operated, and maintained to provide the required Safety Integrity Level
- Industry Stakeholder's proposed the use of third-party Safety Integrity Level (SIL) certification in accordance with IEC 61508 (SIL categories 1-3)
- NRC will evaluate the proposed SIL certification process

REGULATORY GUIDANCE STATUS

- Draft Guide (DG)-1292 "Dedication of Commercial-Grade Items for Use in Nuclear Power Plants"
 - Expected issue date: 2nd Qtr CY 2017
- Regulatory Guide (RG) – 1.231 Acceptance of commercial-grade design analysis computer programs for nuclear power plants"
 - Issued: January 2017



DRAFT REGULATORY GUIDE (DG)-1292 "DEDICATION OF COMMERCIAL-GRADE ITEMS FOR USE IN NUCLEAR POWER PLANTS"

- DG-1292 consolidates the staff positions in alignment with industry guidance EPRI 3002002982
- EPRI 3002002982 was developed to:
 - Supersede outdated industry guidance in EPRI NP-5652 (June 1988) and TR-102260 (March 1994)
 - Incorporate staff positions in Generic Letter (GL) 89-02 and GL 91-05
 - Incorporate staff guidance in Inspection Procedure (IP) 38703 and IP 43004
 - Incorporate NEI 14-05

DG-1292 "DEDICATION OF COMMERCIAL-GRADE ITEMS FOR USE IN NUCLEAR POWER PLANTS"

- EPRI 3002002982, Section 14.1 on digital equipment and computer programs integral to plant systems, structures and components (SSCs) list 6 EPRI documents for accepting digital devices
- 2 have been found acceptable:
 - TR-106439, "Guideline on Evaluation and Acceptance of Commercial- Grade Digital Equipment for Nuclear Safety Applications"
 - TR-107330, "Generic Requirements Specification for Qualifying a Commercially Available PLC for Safety-Related Applications in Nuclear Power Plants"
- The NRC cautions on use of the other 4 documents to provide adequate justification and ensure consistency with regulatory practices

RG 1.231 "ACCEPTANCE OF COMMERCIAL-GRADE DESIGN ANALYSIS COMPUTER PROGRAMS FOR NUCLEAR POWER PLANTS"

- RG 1.231 approves the use of EPRI Technical Report (TR) 1025243, "Plant Engineering: Guideline for the Acceptance of Commercial-Grade Design and Analysis computer Programs Used in Nuclear Safety-Related Applications," with respect to acceptance of commercial-grade design and analysis computer programs
- EPRI TR 1025243 includes guidance for:
 - Examples of design and analysis software
 - Identifying safety classification of computer programs
 - Generic process for dedicating commercial-grade computer programs consistent with the process to dedicate other commercial-grade items
 - Examples of critical characteristics associated with computer programs

LICENSING AND INSPECTION GUIDANCE

- Steps taken to develop Digital Instrument and Control (DI&C) and software quality assurance review guidance:
 - Identified quality assurance requirements specific to software development included in chapter 7 of the mPower Design-Specific Review Standard (DSRS).
 - Organized requirements by basic activities of the software lifecycle.
 - Reviewed IEEE standards (endorsed by NRC) for additional high level QA processes specific to software development not included in the DSRS.
 - Developed draft addendum to the Standard Review Plan Chapter 17.5, “Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants”
- Development of inspection guidance to follow

