

April 29, 2016

Jack Rosentel  
Program Technical Licensing Manager  
Lockheed Martin Corporation  
459 Kennedy Boulevard  
Archbald, PA 18403

SUBJECT: REGULATORY AUDIT PLAN FOR MAY 2-6, 2016, AUDIT OF LOCKHEED  
MARTIN TOPICAL REPORT NuPACED610000-047-P, "GENERIC  
QUALIFICATION OF THE NuPAC PLATFORM FOR SAFETY-RELATED  
APPLICATIONS" (TAC NO. ME7900)

Dear Mr. Rosentel:

By letter dated June 28, 2011 (Agencywide Documents Access and Management System Accession No. ML11201A323), Lockheed Martin Nuclear Systems and Solutions (LMNSS) submitted Topical Report (TR) NuPAC\_ED610000-47-P, "Generic Qualification of the NuPAC Platform for Safety-related Applications" (Proprietary). The TR is supported by documentation that includes plans, requirements, design specifications, programming and hardware testing, independent verification and validation, and equipment qualification testing.

The U.S. Nuclear Regulatory Commission (NRC) staff is currently reviewing the TR for use in safety system equipment at nuclear power plants. As part of its review, the NRC staff will be performing a regulatory audit at Lockheed Martin on May 2-6, 2016.

The audit will determine the degree that the processes and outputs used have resulted in satisfying regulatory requirements for safety system applications at nuclear power plants. This audit will provide information necessary to complete the NRC staff's evaluation of the LMNSS TR. Enclosed for your information is a copy of the plan the NRC staff will follow on the audit.

J. Rosentel

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If you any questions or require any additional information, please feel free to contact me at 301-415-7297 or [Joseph.Holonich@nrc.gov](mailto:Joseph.Holonich@nrc.gov).

Sincerely,

***/Lynnea Wilkins for RA/***

Joseph J. Holonich, Project Manager  
Licensing Processes Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Project No. 780

Enclosure:  
Audit Plan

J. Rosentel

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If you any questions or require any additional information, please feel free to contact me at 301-415-7297 or Joseph.Holonich@nrc.gov.

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**ADAMS Accession No.: ML16119A265; \* concurred via e-mail**

**NRR-106**

OFFICE	NRR/DPR/PLPB	NRR/DPR/PLPB*	NRR/DE/EICB	NRR/DPR/PLPB	NRR/DPR/PLPB
NAME	JHolonich	DHarrison	MWaters	KHsueh	JHolonich (LWilkins for)
DATE	04/29/2016	04/28/2016	04/28/2016	04/29/2016	04/29/2016

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AUDIT PLAN  
ENVIRONMENTAL QUALIFICATION ASPECTS OF LOCKHEED MARTIN NUCLEAR SYSTEM  
AND SOLUTIONS, NUPAC ED610000-47-P, "GENERIC QUALIFICATION OF THE NUPAC  
PLATFORM FOR SAFETY-RELATED APPLICATIONS" TOPICAL REPORT  
(TAC NO. ME7900)

**Background:** By letter dated June 28, 2011 (Agencywide Documents Access and Management System Accession Number ML11201A323), Lockheed Martin Nuclear Systems and Solutions submitted a topical report (TR) NuPAC\_ED610000-47-P, Revision -, which proposes to use a generic digital safety instrumentation and control platform (i.e., the Nuclear Protection and Control (NuPAC) platform) to implement Class 1E safety-related applications in United States nuclear power plants. The TR is for a generic platform, not a plant-specific implementation.

**Regulatory Audit Bases:** The Instrumentation and Controls Branch technical review branch has reviewed the instrumentation and controls aspects of the application and concluded that an audit, with a specific focus on the environmental qualification aspects, improves efficiency, and is needed (May 2-6, 2016) to complete a timely review of the application by June 2016.

**Necessary Material:**

- Electronic Access for viewing and printing all project documents

**Team Assignments:** Deirdre Spaulding-Yeoman: Audit Team Lead  
George Adams: Reviewer  
Dan Pomerening: Reviewer (off-site)

**Audit Scope:**

- 1) Audit Kickoff/Introductions
- 2) Audit of portions of the environmental qualification of the LM NuPAC design, including its performance under the expected environmental extremes of radiation, ambient temperature, humidity, ambient pressure, seismic response, electrostatic discharge, and electromagnetic compatibility(EMC) (i.e., environmental, seismic, and electromagnetic interference/radio-frequency interference issues).

Specific areas to be audited include but are not limited to:

**Operability and Prudency Testing**

The process for documenting test results and verifying test results.

How files were used - Operability Test Record data sheets refer to serial log files and Data Logger files (see for example, NuPAC EMC Test Report (TR610000-007) page 355 of 482).

Enclosure

- How independent reviews were conducted - Operability Test Record data sheets show hand annotations referring to an independent review where test data was recorded in error (see for example, NuPAC EMC Test Report (TR610000-007) page 361 of 482).
- How hand annotations were tracked to trouble reports (see for example, NuPAC EMC Test Report (TR610000-007) page 362 of 482).

#### Tracking Anomalies/Trouble Reports to Resolution

- How anomalies discovered during testing are tracked to resolution.
- How built in test (BIT) errors included in hand annotations were formally tracked, and how the details recorded in engineering log books were tracked - Hand annotations on test signoff sheets show BIT errors and refer to engineering log books (see for example, NuPAC EMC Test Report (TR610000-007) page 99 of 482).
- The process for resolving trouble reports including how they are tracked and how their resolution (including their bearing on qualification) is documented.

#### Process for Reviewing Test Results against Criteria

- The process for determining compliance (including the identification of partial compliance) and how compliance is tracked against criteria - The Seismic Test Report (NuPAC\_TR610000-005) and the Environmental Test Report (NuPAC\_TR610000-004A) include a Verification Test Matrix in Table 4-1. This matrix includes the criteria (including a criteria identifier) and a description with regard to compliance. The EMC Test Report (NuPAC\_TR610000-007) contains a Table 3-1 with acceptance criteria but without a formal identifier.
- How reviews were conducted to determine that laboratory test results met the acceptance criteria, as well as where these reviews are documented, and who performed the reviews (see for example, pages B-37 and B-51 of the Seismic Test Report which show bad data).

### 3) Audit Conclusion

**Logistics:**      Audit Location – Lockheed Martin, Trinity Road, Dallas, Texas  
                            Audit to start 9 am, Monday, May 2, 2016  
                            Audit to end 12 noon, Friday, May 6, 2016

**Deliverables:** The NRC regulatory audit report should be issued by June 30, 2016.