JUL 11 1984

MEMORANDUM FOR: Cecil O. Thomas, Chief
Standardization and Special
Projects Branch
Division of Licensing

FROM: Dino C. Scaletti, Project Manager
Standardization and Special
Projects Branch
Division of Licensing

SUBJECT: FORTHCOMING MEETING WITH GENERAL ELECTRIC COMPANY, GESSAR II*

DATE & TIME: July 24-25-26, 1984
9:00 AM

LOCATION: General Electric Company
175 Curtner Avenue
San Jose, CA 95125

PURPOSE: Conduct a Design Verification Audit of the General Electric Safety Parameter Display System for GESSAR II (Draft Audit Plan attached)

PARTICIPANTS:

NRC	GE
L. Beltracchi	D. Bitter
J. Joyce	
M. McCoy	
J. Costello	
G. Dick	
D. Scaletti	

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Dino C. Scaletti, Project Manager
Standardization and Special
Projects Branch
Division of Licensing

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*In accordance with staff policy on open meetings (43FR28058) portions of this meeting may be closed to the public to protect General Electric Company proprietary information.

OFFICE	SSPB:DL	SSPB:DL	SSPB:DL				
SURNAME	DScaletti:kb	PAnderson	CThomas				
DATE	7/11/84	7/11/84	7/11/84				

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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DRAFT AUDIT PLAN

DESIGN VERIFICATION AUDIT

FOR THE

GENERAL ELECTRIC EMERGENCY RESPONSE INFORMATION SYSTEM (ERIS)

Review Basis: NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements; Requirements for Emergency Response Capability."

I	General Topics	Audit Needs	Estimated Time (Hours)
1.	An entry briefing by the NRC audit team to discuss schedule and audit plan.	A conference room or equivalent to hold briefing.	0.25
2.	Staff caucus to discuss results of audit.	A conference room or equivalent.	2
3.	An exit briefing by the NRC audit team to report on the findings of the audit.	A conference room or equivalent to hold briefing.	0.5
4.	General Electric to define the scope of the SPDS within the Emergency Response Information System in terms of the requirements for an SPDS as stated in NUREG-0737, Supplement 1.	Have available all elements of the ERIS design as it currently exists consisting of hardware, software and display formats.	0.5
5.	Staff audit of the Design Verification and Validation Program used in the development of ERIS.	Have available the Design Verification and Validation Program. Also, on a part-time basis, have available aqualified person capable of answering staff questions on the program.	1.5

II. Human Factors Engineering Audit

	Topics	Audit Needs	Estimated Time (Hours)
1.	Staff audit of the Generic System Specifications and standards used in the design, such as human factors engineering standards. Also, audit generic application data.	Generic System Specifications, generic application data and standards used in the design. Also, on a part-time basis, have available personnel capable of answering questions on the specifications and standards.	2
2.	Staff audit of the validation of the display formats utilizing man-in-the-loop tests of a prototype display.	The validation program and the results from the program. Also have available personnel capable of answering staff questions on the validation program and the results from the program.	2
3.	Staff audit of the generic software requirements for incorporation of human factors requirements.	The generic software requirements, the generic spec., and human factors standards used in the design. Also have available personnel capable of answering questions on the above documents.	1.5
4.	Staff audit of the design, code, test software and data base instructions (if applicable).	Design documentation, listing of code, and description of data base. Also have available personnel capable of answering questions on the above documents.	1.5

	Topics	Audit Needs	Estimated Time (Hours)
5.	Staff audit of integration tests and test results for data base, displays and scenarios.	Documents and test plans for integration tests along with test results. Also have available design verification personnel and other personnel as needed to answer questions on the above documents.	2
6.	Staff audit of selected display formats for conformance to human engineering standards and guidelines.	Selected display formats on proto-type display system, if available. As a minimum, a hard copy, in color, of selected display formats will suffice.	2.5
7.	Staff audit of display devices, display controls, and keyboards, etc. for conformance to human engineering standards and guidelines.	Have available display devices, display controls and keyboards, etc. Also have available personnel to answer staff questions on the above devices.	2
8.	Staff audit of design validation test methods, and test plans. The staff understands that design validation tests have not begun at this time.	Documents on test methods and test plans, if available. If documents are not available, provide a discussion on validation testing.	1

III. Procedures and Systems Review Audit

	Topics	Audit Needs	Estimated Time (Hours)
1.	Staff audit of displayed information on the critical safety functions, including radioactivity control and reactivity control as defined by NUREG-0737, Supplement 1. The use of data from source range monitors and from containment radiation monitors are also to be audited in terms of the critical safety functions.	A demonstration or discussion as how ERIS meets the requirements of NUREG-0737, Supplement 1 should be provided. The concept of an enhanced display, with display formats, should be included, if appropriate. Also, General Electric should have available a listing of the critical safety functions with an identification of ERIS parameters used to satisfy each critical safety function.	2
2.	Staff audit of provisions for expansion to accommodate future revisions to the Emergency Procedure Guidelines.	Have available memory storage specifications for the software, data bases, and data along with hardware computer memory sizes.	1

IV. Instrumentation and Control Systems Audit

Topics	Audit Needs	Estimated Time (Hours)
1. Audit and evaluate the program plan of the reliability assessment and/or testing of the SPDS hardware. Review the rationale for the selection of hardware components.	Have available the reliability program, test results (if any) and the basis on the selection of hardware.	2
2. Audit the accuracy requirements of instrumentation used for the selected parameters.	Have available the design requirements for the instrumentation.	1
3. Audit the Computer Operating System A. Operating software - that software other than application software (to control disk, to control tape, to control multiplexer) B. System architecture and the fault tolerance of the architecture C. Storage capacity and expandability of system D. CPU efficiency, information rates E. Initial and periodic testing F. Software security (from system crashes, system overloads, conflicting tasks on systems employing general purpose, multi-task computers).	Have available whatever information is necessary to support this effort.	2

Topics	Audit Needs	Estimated Time (Hours)
4. Audit of qualification of isolation devices A. Audit each type of device used to accomplish electrical isolation, describe the specific testing performed to demonstrate that the device is acceptable for its application(s). This description should include elementary diagrams when necessary to indicate the test configuration and how the maximum credible faults were applied to the devices. B. Audit data to verify that the maximum credible faults applied during the test were the maximum voltage/current to which the device could be exposed, and audit how the maximum voltage/current was determined. C. Audit data to verify that the maximum credible fault was applied to the output of the device in the transverse mode (between signal and return) and other faults were considered (i.e., open and short circuits). D. Audit the pass/fail acceptance criteria for each type of device.	Have available the design criteria and the qualification test results which respond to the defined data needs.	4

Topics	Audit Needs	Estimated Time (Hours)
E. Audit the measures taken to protect the safety systems from electrical interference (i.e., Electrostatic Couplings, EMI, Common Mode and Crosstalk) that may be generated by the SPDS.		
As information, licensees and applicants who use ERIS should provide a commitment that the isolation devices comply with the environmental qualifications (10 CFR 50.49) and with the seismic qualifications which were the basis for plant licensing.		

V. Vendor Inspection Program

Topics	Audit Needs	Estimated Time (Hours)
1. Verify procedures consistent with NRC requirements.		20
2. Verify implementation of procedures.		
3. Evaluate findings for possible enforcement action.		
4. Identify and tabulate items requiring follow-up during subsequent inspections.		

MEETING NOTICE

JUL 11 1984

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