ArevaEPRDCPEm Resource

From: BRYAN Martin (EXTERNAL AREVA) [Martin.Bryan.ext@areva.com]
Sent: Friday, October 08, 2010 2:59 PM
To: Tesfaye, Getachew
Cc: DELANO Karen (AREVA); ROMINE Judy (AREVA); HOKE Robert (AREVA); HALLINGER Pat (EXTERNAL AREVA); RAYMOND Desmond (AREVA); BUDZIK Dennis (AREVA); RYAN Tom (AREVA); PANNELL George (AREVA)
Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 427, FSAR Ch. 18, Supplement 1
Attachments: 118-9051755-004 - DRAFT.pdf

Getachew,

Attached is the draft of the HPM plan that we just discussed. Let me know if you have questions or if this can be sent as final.

Thanks,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: BRYAN Martin (External RS/NB)
Sent: Thursday, October 07, 2010 12:26 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); PANNELL George (CORP/QP)
Subject: Response to U.S. EPR Design Certification Application RAI No. 427, FSAR Ch. 18, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to RAI 427 on September 2, 2010. To allow additional time to interact with the staff, a revised schedule is provided.

The schedule for a technically correct and complete final response to these questions is revised and provided below.

Question #	Response Date
RAI 427 18 —192	October 29, 2010
RAI 427 18— 193	October 29, 2010
RAI 427 18 —194	October 29, 2010
RAI 427 18 —195	October 29, 2010
RAI 427 18 —196	October 29, 2010
RAI 427 18 —197	October 29, 2010
RAI 427 18 —198	October 29, 2010
RAI 427 18 —199	October 29, 2010
RAI 427 18 —200	October 29, 2010
RAI 427 18 —201	October 29, 2010
RAI 427 18 —202	October 29, 2010

RAI 427 18 —203	October 29, 2010
RAI 427 18 —204	October 29, 2010
RAI 427 18 —205	October 29, 2010
RAI 427 18 —206	October 29, 2010
RAI 427 18 —207	October 29, 2010
RAI 427 18 —208	October 29, 2010
RAI 427 18 —209	October 29, 2010
RAI 427 18 —210	October 29, 2010
RAI 427 18 —211	October 29, 2010
RAI 427 18 —212	October 29, 2010
RAI 427 18 —213	October 29, 2010
RAI 427 18 —214	October 29, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: BRYAN Martin (External RS/NB)
Sent: Thursday, September 02, 2010 5:01 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); PANNELL George (CORP/QP); Miernicki, Michael
Subject: Response to U.S. EPR Design Certification Application RAI No. 427, FSAR Ch. 18

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information RAI 427. A complete answer is not provided for 23 of the 23 questions.

The following table indicates the respective pages in the response document, "RAI 427 Response U.S. EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 427 18 —192	2	2
RAI 427 18— 193	3	3
RAI 427 18 —194	4	4
RAI 427 18 —195	5	5
RAI 427 18 —196	6	6
RAI 427 18 —197	7	7
RAI 427 18 —198	8	8
RAI 427 18 —199	9	9
RAI 427 18 —200	10	10
RAI 427 18 —201	11	11
RAI 427 18 —202	12	12
RAI 427 18 —203	13	13
RAI 427 18 —204	14	14
RAI 427 18 —205	15	16
RAI 427 18 —206	17	17

RAI 427 18 —207	18	18
RAI 427 18 —208	19	19
RAI 427 18 —209	20	20
RAI 427 18 —210	21	21
RAI 427 18 —211	22	23
RAI 427 18 —212	24	24
RAI 427 18 —213	25	25
RAI 427 18 —214	26	26

The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 427 18 —192	October 7,2010
RAI 427 18— 193	October 7, 2010
RAI 427 18 —194	October 7, 2010
RAI 427 18 —195	October 7, 2010
RAI 427 18 —196	October 7, 2010
RAI 427 18 —197	October 7, 2010
RAI 427 18 —198	October 7, 2010
RAI 427 18 —199	October 7, 2010
RAI 427 18 —200	October 7, 2010
RAI 427 18 —201	October 7, 2010
RAI 427 18 —202	October 7, 2010
RAI 427 18 —203	October 7, 2010
RAI 427 18 —204	October 7, 2010
RAI 427 18 —205	October 7, 2010
RAI 427 18 —206	October 7, 2010
RAI 427 18 —207	October 7, 2010
RAI 427 18 —208	October 7, 2010
RAI 427 18 —209	October 7, 2010
RAI 427 18 —210	October 7, 2010
RAI 427 18 —211	October 7, 2010
RAI 427 18 —212	October 7, 2010
RAI 427 18 —213	October 7, 2010
RAI 427 18 —214	October 7, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Tuesday, August 03, 2010 2:30 PM
To: ZZ-DL-A-USEPR-DL
Cc: Marble, Julie; Walker, Jacqwan; Junge, Michael; Eudy, Michael; Steckel, James; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 427 (4729, 4800), FSAR Ch. 18

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on July 16, 2010, and discussed with your staff on July 29, 2010. No change is made to the draft RAI as a result of that discussion. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 2111

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB7107DA1B04)

Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 427, FSAR Ch. 18, Supplement 1
Sent Date: 10/8/2010 2:58:47 PM
Received Date: 10/8/2010 2:59:33 PM
From: BRYAN Martin (EXTERNAL AREVA)

Created By: Martin.Bryan.ext@areva.com

Recipients:
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>
Tracking Status: None
"HOKE Robert (AREVA)" <Robert.Hoke@areva.com>
Tracking Status: None
"HALLINGER Pat (EXTERNAL AREVA)" <Pat.Hallinger.ext@areva.com>
Tracking Status: None
"RAYMOND Desmond (AREVA)" <Desmond.Raymond@areva.com>
Tracking Status: None
"BUDZIK Dennis (AREVA)" <Dennis.Budzik@areva.com>
Tracking Status: None
"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>
Tracking Status: None
"PANNELL George (AREVA)" <George.Pannell@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	6074	10/8/2010 2:59:33 PM
118-9051755-004 - DRAFT.pdf	684548	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

AREVA NP Inc.,

an AREVA and Siemens company

DRAFT

Implementation Plan

Document No.: 118 - 9051755 - 004

U.S. EPR Human Performance Monitoring Implementation Plan

Safety Related? ☐ YES ☒ NO

Does this document contain assumptions requiring verification? ☐ YES ☒ NO

Does this document contain Customer Required Format? ☐ YES ☒ NO

Signature Block

Name and Title/Discipline	Signature	P/LP, R/LR, A/A-CRF, A/A-CRI	Date	Pages/Sections Prepared/Reviewed/ Approved or Comments
Thad Wingo HFE Supervisor		P		ALL
Robert Hoke HFE Engineer		R		ALL
Desmond Raymond HFE Manager		A		ALL

Note: P/LP designates Preparer (P), Lead Preparer (LP)
R/LR designates Reviewer (R), Lead Reviewer (LR)
A/A-CRF designates Approver (A), Approver of Customer Requested Format (A-CRF)
A/A-CRI designates Approver (A), Approver - Confirming Reviewer Independence (A-CRI)

DRAFT

Record of Revision

Revision No.	Pages/Sections/ Paragraphs Changed	Brief Description / Change Authorization
000	N/A	Initial Issue
001	ALL	Revised to support DCD
002	References	Deleted document numbers for internal references. Added trademark to EPR
003	Section 1.4	Clarification of Plan Objective IAW RAI 328
003	Section 1.4	Additions to Objectives and Scope IAW NUREG-0711
003	Section 1.5	Clarification of Responsibilities
003	Section 3.0	Entire section was relabeled and rearranged
003	Section 3.2.3	Relabeled section as Performance Indicators
004	Section 1.4	Added the OSC and EOF to the scope IAW RAI 427;18-192
004	Section 1.5	Corrected ref IAW RAI 427;18-193
004	Section 1.7	Added the OSC and corrected EOF IAW RAI 427;18-192
004	Section 3.2	Removed cognizant and added HRA personnel, and elaborated the term adverse IAW RAI 427, 18-194

DRAFT

Table of Contents

Page

SIGNATURE BLOCK 2
RECORD OF REVISION 3
1.0 INTRODUCTION 5
1.1 Applicability 5
1.2 Owner 5
1.3 Purpose 5
1.4 Objectives and Scope 5
1.5 Responsibilities 6
1.6 Definitions 7
1.7 Acronyms 7
2.0 CODES, STANDARDS, AND REGULATIONS 8
2.1 Regulatory Guidance 8
2.2 Codes and Standards 8
3.0 METHOD 9
3.1 Monitoring 9
3.1.1 Plant Operation 9
3.1.2 Overall Design Control Process 9
3.2 HPM Tracking and Trending 10
3.2.1 Corrective Action Program and HFE Issues Tracking System 10
3.2.2 Design Change Process 11
3.2.3 Performance Indicators 11
3.2.4 Human Reliability Analysis and Probabilistic Risk Assessment 12
3.2.5 Existing Plant Maintenance and Inspection Programs 12
4.0 RESULTS AND DOCUMENTATION 13
5.0 REFERENCES 13

DRAFT

1.0 INTRODUCTION

1.1 Applicability

This plan applies to New Plants (NP) Engineering Instrumentation and Controls Engineering.

1.2 Owner

Program Manager, Human Factors Engineering (HFE) is responsible for providing this implementation plan.

1.3 Purpose

Monitoring of human performance is performed throughout the life of the plant. Human performance is monitored to verify that the results of the integrated system validation are maintained throughout the life of the plant, operator performance does not degrade over time, issues discovered by personnel are noted, tracked, and corrected before plant safety is compromised, and changes made to the design do not result in a degradation of human performance. The U.S. EPR Human Performance Monitoring (HPM) Implementation Plan provides the strategy for monitoring, tracking, and trending human performance.

1.4 Objectives and Scope

The objectives of the human performance monitoring program are to verify that:

- The design is effectively used by personnel, within the control room and among the control room and local control stations and support centers.
- Changes made to the human system interfaces (HSIs), procedures, and training do not adversely affect personnel performance.
- Human actions (HAs) are accomplished within the time frame and performance criteria defined by task analysis.
- The acceptable level of performance established during the integrated system verification is maintained.
- Degrading human performance is detected before plant safety is compromised.
- Identified errors in the design and associated corrective actions are resolved in a timely manner.
- Monitoring for HAs is commensurate with their safety significance.

The scope of the performance monitoring strategy applies to areas of the plant that require HAs. This includes the following:

- Main control room (MCR).
- Remote shutdown station (RSS).

DRAFT

- Technical support center (TSC) .
- Emergency operations facility (EOF).
- Operational support center (OSC).
- Other local control stations (LCSs) important to plant safety.

Operation, testing, and maintenance actions during the plant modes are also monitored for human performance.

1.5 Responsibilities

AREVA NP HFE engineers are responsible for providing input to the licensee's HPM program, along with the results of verification and validation (V&V) activities. The licensee is responsible for maintaining the HPM program throughout the life of the plant.

1.5.1 AREVA NP Engineering:

- Approves the AREVA NP HPM Implementation Plan.
- Provides input to the licensee's HPM program.
- Provides baseline human performance criteria established during V&V.
- Collects and reviews operational issues associated with the U.S. EPR design.

1.5.2 U.S. EPR Licensee:

- Maintains a corrective action program (CAP).
- Monitors and trends human performance throughout the life of the plants.
- Updates human reliability analysis (HRA)/probabilistic risk assessment (PRA) after major HSI design change.
- Maintain a design control process which includes HFE evaluations.
- Maintains the structures, systems, and components (SSCs) commensurate with 10CFR50.65.
- Maintains summaries of HPM issues to the industry and experts, including the NRC, INPO, EPRI, and AREVA NP.
- Notifies AREVA NP of any HSI changes, operating events, or other issues that potentially impact the standard design of the U.S.EPR.

DRAFT

1.6 Definitions

Human Reliability Analysis (HRA): The HRA is a structured approach used to identify potential human failure events and to systematically estimate the probability of the occurrence of those errors using data, models, or expert judgment.

Human System Interface (HSI): The HSI is a system of devices, including hardware and software, used by personnel to control, monitor, and interact with the plant including the alarms, displays, controls, and decision support aids.

Validation: Describes a process by which integrated system design (consisting of hardware, software, and personnel elements) is evaluated to determine whether it acceptably supports safe operation of the plant.

Verification: The process of checking and verifying that each step of the design process was implemented appropriately.

1.7 Acronyms

CAP	Corrective Action Program
EOF	Emergency Operations Facility
EPR™	Trademarked brand name for AREVA's evolutionary PWR reactor design
FSS	Full Scope Simulator
HA	Human Action
HF	Human Factor
HFE	Human Factors Engineering
HITS	Human Factors Issue Tracking System
HSI	Human System Interface
HPM	Human Performance Monitoring
HRA	Human Reliability Analysis
LCS	Local Control Station(s)
MCR	Main Control Room
NP	New Plants

DRAFT

NRC	Nuclear Regulatory Commission
NUREG	Publications prepared by the NRC staff
OSC	Operational Support Center
PRA	Probabilistic Risk Assessment
RSS	Remote Shutdown Station
SSC	Structures, Systems, and Components
TSC	Technical Support Center
V&V	Verification and Validation

DRAFT

2.0 CODES, STANDARDS, AND REGULATIONS

The following guidance was used in the development of this document.

2.1 Regulatory Guidance

- 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants.”
- NUREG-1764, "Guidance for the Review of Changes to Human Actions" (NRC 2004).
- NUREG-0700, "Human-System Interface Design Review Guidelines" (NRC, 2002).
- NUREG-0711, "Human Factors Engineering Program Review Model" Rev. 2 (NRC, 2004).
- NUREG-0800, "Standard Review Plan, Chapter 18 Human Factors Engineering" (NRC, 2004).
- NUREG/CR-6751, "THE HUMAN PERFORMANCE EVALUATION PROCESS: A Resource for Reviewing the Identification" (NRC, 2001).
- NUREG/CR-6775, "Human Performance Characterization in the Reactor Oversight Process and Resolution of Human Performance Problems", (NRC, 2002).

2.2 Codes and Standards

- IEEE-845-1999, "IEEE Guide for the Evaluation of Human-System Performance in Nuclear Power Generating Stations."

- EPRI 1008122, "Human Factors Guidance for Control Room and Digital Human-System Interface Design and Modification: Guidelines for Planning, Specification, Design, Licensing, Implementation, Training, Operation, and Maintenance", EPRI, Palo Alto, CA, the U.S. Department of Energy, Washington, DC: 2004.

3.0 METHOD

HPM is performed by observing personnel activities (during training and actual operation) and by conducting interviews, self-initiated feedback, and walkthroughs. The CAP and tracking database verify that design errors, design issues, operator workarounds, operator burdens, or inefficiencies identified are documented and addressed. Programs such as a CAP, human factors issue tracking system (HITS), design change control process, performance indicators, and maintenance rule are available to maintain acceptable human performance. These tools create a HPM strategy that meets the requirements of NUREG 0711, Rev. 2.

3.1 Monitoring

3.1.1 Plant Operation

User activities are observed during simulator training and periodically during actual plant operation. The licensed operator training program allows monitoring of human performance and trending. Operator actions during training indicate potential operator workarounds, operator errors, and design inefficiencies. Risk-significant HAs identified in the task analysis, HRA, and PRA are observed more frequently to verify the safety of the plant. HAs are monitored to verify they agree with the established time and performance criteria established during the integrated system validation. These performance measures from the integrated system validation are the baseline for determining any change in efficiency of user actions or their ability to perform tasks in a timely manner. These changes, along with any discovered design errors and decline in performance, are entered into the licensee's CAP. These issues are analyzed, and areas of improvement are developed and used as input into human performance trending.

Other activities, such as communication among the control room and other areas of the plant, are also included in HPM and trending. Any inefficiencies, design errors, or failures detected are entered into the licensee's CAP. These issues are analyzed for possible areas of improvement and used as input into human performance trending.

3.1.2 Overall Design Control Process

The design control process verifies that modifications made to the HSI design do not adversely affect human performance. This is accomplished by using well-defined and structured methods for design change, design verification, and analysis activities. This process facilitates the translation of high level requirements to lower level requirements, design inputs to design outputs, and high level design features to lower level subsystem and component design features. Procedures are established to promote adequacy and accuracy of the design change documentation. These procedures govern the preparation and review of design documents, and also establish methods for the identification and control of design interfaces, the coordination among participating design organizations, and the review, approval, release, distribution, and revision of documents.

When the existing design requires modification, the plant design project management establishes the scope, objectives, requirements, and safety classification. The appropriate engineering organization prepares, reviews,

DRAFT

approves, and verifies design documents for items and services. The following are types of design documents that support facility design, construction, and operation:

- Plant technical requirements.
- System design requirements.
- System design descriptions.
- Design drawings.
- Design analyses, including HFE review and evaluations.
- Computer program documentation.
- Specifications and procedures.

The design review board and a design checklist verifies that the design change is adequate, accomplishes the goal of the design change, and does not adversely impact other aspects of the design. The entire change process verifies that sufficient information and design feedback loops exist for data collection, monitoring, tracking, and trending.

3.2 HPM Tracking and Trending

3.2.1 CAP and HFE Issues Tracking System

The licensee is required to develop a CAP. To verify that HFE-related issues are captured, the CAP may use a HITS. The licensee may choose to use a separate HITS or the current corrective action database. Inputs to the database include:

- HSI design errors.
- HSI design inefficiencies.
- User workarounds.
- Discrepancies between the full scope simulator and the actual control room (full scope simulator (FSS) fidelity).
- Changes to the HSI design that create an adverse affect on other aspects of the design.
- Operating experience reports.

To verify that the issues are captured, plant personnel are encouraged to report errors, deficiencies, workarounds, and design inefficiencies. Once an issue is entered into the database, an analysis is performed by the HRA personnel as described in "U.S. EPR Implementation Plan for the Integration of Human Reliability Analysis (HRA) with the Human Factors Engineering (HFE) Program" (Reference 2) to determine safety-significance.

DRAFT

Issues with a high safety-significance are analyzed and corrective actions generated to verify that plant safety is not compromised.

If an adverse trend is detected, a root cause analysis is performed by a cognizant human factor (HF) engineer to determine if human performance was a contributor. An adverse trend is an unfavorable or negative trend that shows an unexpected number of findings in the CAP, the HITS, or both. The CAP program contains guidance on the criteria for when an apparent or root cause analysis is performed.

This analysis verifies an understanding of the underlying problem so that appropriate corrective actions are taken. The results of the root cause analysis are used to categorize the issue. Trends are established and used to deter future degradations or to mitigate the effects of declining performance.

Industry and self-identified operating experience results contribute to enhancing human performance and preventing potential reduction in human performance errors. The operating experience review program tracks self-identified and industry issues. These issues are screened for human performance issues and analyzed for applicability to the plant. Preventative measures are taken for issues that may negatively impact human performance.

3.2.2 Design Change Process

Before a design change that has a significant impact on HSIs, procedures, or training is implemented in the plant, the change is modeled on the engineering (part task) simulator. Human performance is monitored using applicable scenarios developed during the integrated system validation. These scenarios include those that use tasks affected by the design change. This allows analysis of performance efficiency, degradation, or improvement. During simulation, user actions are observed for their ability and efficiency to perform tasks with the new design. The results are verified against the existing trend of human performance to verify that performance was not degraded by the design change.

Any degradation in performance resulting from the design change is entered into the licensee's CAP for analysis. Significant impacts on human performance require the design change modification. If no degradation in performance is observed, the design is implemented and results of the HPM entered into the current trend. The design change process follows the overall design process as described in Section 3.1.2.

Once an approved design change has been implemented, performance is observed and users interviewed. The interviews with users are performed to determine any operator workarounds, HSI inefficiencies, or design errors that may have resulted from the design change. The interview questions focus on tasks that are affected by the design change. It is crucial to monitor the user actions during their initial use of the new design to note any adverse affect on performance, confirm the design change is performing its intended function, and view any operator workarounds. The significance of the design change impact determines the amount of monitoring necessary.

3.2.3 Performance Indicators

Performance Indicators are used to trend performance of operator's daily activities. Indicators are used to exhibit the level of performance and risk associated with different operational activities. The level of the indicator is

DRAFT

based on operator performance for that activity (e.g., Red = Bad, Yellow = Caution, Normal = White, and Green = Good).

Operational activities include the following:

- Operator workarounds.
- Operator burdens.
- Control room correctives.
- Control room annunciates.
- Worker/maintenance tagouts greater then 90 days.
- Caution tagouts greater then 90 days.
- Active fire protection impairment due to problem component.
- Corrective maintenance inventory.
- Plant election maintenance inventory.
- Temporary modifications.

The indicators are updated periodically with a rolling average that shows the trend in the indicators. Any adverse trends are entered into the CAP. Further analysis (e.g., root cause or operator interviews) may be required to understand the adverse trend and to identify effective corrective actions.

DRAFT

3.2.4 Human Reliability Analysis and Probabilistic Risk Assessment

HRA and PRA models are used when plant or personnel performance can not be simulated, monitored, or measured. Performance data from modeled risk-significant HAs are used to evaluate the risk of the proposed design change on human performance during different operation modes. The licensee maintains the HRA/PRA model. After a design change, the HRA/PRA model is updated to reflect the new design. Risk-significant HAs are addressed through this monitoring program (Reference 2).

3.2.5 Existing Plant Maintenance and Inspection Programs

Additional plant programs are used to support human performance. Barriers, including the inservice inspection/inservice testing program and the maintenance rule, are used to prevent a negative impact on human performance. To maintain acceptable human performance, the SSC are maintained in proper working order. Routine testing and inspection of SSC are performed to verify that deficiencies are corrected before they become ineffective or inoperable.

Proper notification that an SSC is out of commission for maintenance is important for monitoring human performance. Notification to operators of which SSC are out of commission prevents operators from using that

inoperable SSC. Use of an inoperable SSC is tracked as an error in human performance. These errors give a false trend to human performance, leading to misinterpretations about true human performance issues.

4.0 RESULTS AND DOCUMENTATION

HPM is continued and is expected to remain intact throughout the life of the plant. Operating conditions determine the necessary frequency of these summary reports. The licensee maintains an HPM program which meets regulatory guidance. Documentation of HPM summarizes the following:

- Baseline human performance criteria established during V&V (Reference 1).
- HPM implementation strategy.
- Any trends in human performance.
- Performance indicators.
- Human performance-related issues, resolution, implementation status, and operating results.
- Determination if specific human performance issues can be applied to the standard U.S. EPR plant.

5.0 REFERENCES

1. AREVA NP Document, "U.S. EPR Human Factors Verification and Validation Implementation Plan".
2. AREVA NP Document, “U.S. EPR Implementation Plan for the Integration of Human Reliability Analysis (HRA) with the Human Factors Engineering (HFE) Program”

DRAFT