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

OCT 13 1987

MEMORANDUM FOR: Inez K. Bailey, Chief
Records Services Branch

FROM: John N. Hannon, Chief
Operator Licensing Branch, DLPQ

SUBJECT: MINUTES OF MEETING BETWEEN NRC AND UTILITIES PROPOSING NON-ANS 3.5 SIMULATORS - SEPTEMBER 15 - 16, 1987

Please place the enclosed minutes in the Public Document Room (PDR).

John N. Hannon, Chief
Operator Licensing Branch, DLPQ

Enclosure:
As stated

CONTACT:
Jerry Wachtel, NRR
X28508

MINUTES OF MEETING OF NRC WITH FOUR FACILITY LICENSEES
PROPOSING TO APPLY FOR NRC APPROVAL FOR SIMULATION FACILITIES

September 15 - 16, 1987

A public meeting was held between the NRC staff and utility representatives to discuss the approach proposed jointly by four facility licensees to comply with NRC's requirement for simulation facilities under 10 CFR 55.45(b). The meeting was held from 9:00 am to 5:00 pm on September 15, 1987, and from 8:30 am to 11:30 am on September 16, 1987, in Room 2242, Air Rights Building, 4550 Montgomery Avenue, Bethesda, Maryland. The meeting was conducted by the staff of the Operator LIcensing Branch (OLB), Division of Licensee Performance and Quality Evaluation (DLPQE) for the Commission, and by R. Michael Kirby of Southern California Edison Company for the Utility Simulation Facility Group (USFG). Representatives from the utilities involved, cognizant project managers, and two members of the public attended. An attendance list is provided as Enclosure 1.

Opening remarks by Jack Roe, Director, DLPQE, clarified the NRC position that each utility's simulation facility, regardless of its design or configuration, would be expected to fully comply with the regulation. He stated that the Commission finds that simulators are very important to safety, and that the staff's goal is to work closely with each of the four utilities to ensure that their simulation facilities meet, to the greatest extent possible, the requirements of ANSI/ANS 3.5, 1985.

John Hannon, Chief, OLB, expressed his intent that each of the four utilities should be able to leave the meeting with sufficient information, on a plant-specific basis, to know what was expected of them by the staff. John also requested a briefing at the conclusion of the meeting, to include an identification of all open issues and a description of the actions that would be taken to resolve them.

The USFG then presented its approach to complying with the Commission's regulations. This approach, titled "Guidance for Development of a Simulation Facility to Meet the Requirements of 10 CFR 55.45" is provided, in summary form, as Enclosure 2.

After NRC presented its goals for non-ANS 3.5 simulators (see Enclosure 3), the participants spent the remainder of the day working through the USFG proposal in detail. The Staff expressed a number of specific concerns to the USFG about specific aspects of the proposal (see Enclosure 4), and the USFG responded to each concern in turn.

At the conclusion of the meeting, the Staff presented a summary of 14 key items that had been the subject of discussion, and the resolution proposed for each. This summary is provided at Enclosure 5. Essential agreement was achieved in all areas but one, "Physical and Functional Fidelity." The USFG will perform additional research and/or analysis in order to support or refute its position, and will present the findings to NRC in early November, at which time it will also provide a revision to its guidance document. The staff emphasized that physical and functional fidelity would be an important consideration in an operator's acceptance of a simulation facility as an adequate training device.

MEETING ATTENDEES:

M. J. Kirby, Southern California Edison
D. G. Lacroix, Consumers Power Co.
J. G. Ibarra, Southern California Edison
T. L. Lorens, Southern Califorian Edison
T. Henderson, Yankee Atomic Electric
J. O. Bradfude, USNRC
K. Heitner, USNRC
S. Willford, Public Service Company of Colorado
K. P. Owens, Public Service Companyn of Colorado
R. R. Frisch, Consumers Power Co.
R. Hall, USNRC
D. Rocssner, Iowa Electric
J. W. Roe, USNRC
L. Wiens, USNRC
J. Wachtel, USNRC
R. Laughery, Micro Analysis and Design
C. Plott, Micro Analysis and Design
J. Scholand, Westinghous-Training
D. A. Maidrand, Yankee Atomic Electric Co.
J. N. Hannon, USNRC
C. Plott, Micro Analysis and Design

# AGENDA

NUCLEAR REGULATORY COMMISSION MEETING

UTILITY SIMULATION FACILITY GROUP

SEPTEMBER 15-16, 1987

1. PRESENTATION OF USGF GOALS
2. OVERVIEW OF USFG DOCUMENT
3. REVIEW OF NRC GOALS AND OBJECTIVES
4. OPEN DISCUSSION OF COMMENTS
5. FUTURE ACTIONS PLANNED

   UTILITIES

   NRC

# UTILITY SIMULATION FACILITY GROUP

- FORMED TO DEVELOP GENERIC GUIDANCE TO MEET 10 CFR 55.45(B) (1) (I)
- PLANT REFERENCE SIMULATION FACILITY GUIDANCE DOES NOT APPLY TO USFG MEMBER PLANTS
- PLANTS THAT DO NOT HAVE PLANT REFERENCE SIMULATION DEVICES
- METHODOLOGY TO DEVELOP OR EVALUATE NON-PLANT REFERENCE SIMULATION DEVICES

# USFG MEMBERSHIP

- CONSUMERS POWER COMPANY (BIG ROCK POINT)
- PUBLIC SERVICE COMPANY OF COLORADO (FT. ST. VRAIN)
- SOUTHERN CALIFORNIA EDISON COMPANY (SAN ONOFRE 1)
- YANKEE ATOMIC ELECTRIC COMPANY (YANKEE NUCLEAR POWER STATION)
- WESTINGHOUSE ELECTRIC CORP. (NON-VOTING MEMBER)

## USFG CONCLUSIONS/OBSERVATIONS

- CONSISTENT APPROACH TO MEET 10 CFR 55.45
- SYSTEMATIC DEVELOPMENT OD SIMULATION FACILITY
- ENHANCEMENT TO OPERATOR TRAINING
- MEETS INTENT OF REGULATION

# 10 CFR 55.45

## IMPLEMENTATION SCHEDULE

- SUBMIT PLAN - MAY 26, 1988

- SUBMIT APPLICATION - NOVEMBER, 1990

  - MEETS THE PLAN

  - DESCRIPTION OF THE COMPONENTS

  - DESCRIPTION OF PERFORMANCE TESTS

- AFTER MAY 26, 1991 OPERATOR TESTS WILL BE CONDUCTED ONLY ON APPROVED SIMULATION FACILITIES

# OVERVIEW OF GENERIC PLAN

- CRITERIA
- SIMULATION DEVICES
- DEVELOPMENT OF SIMULATION FACILITY

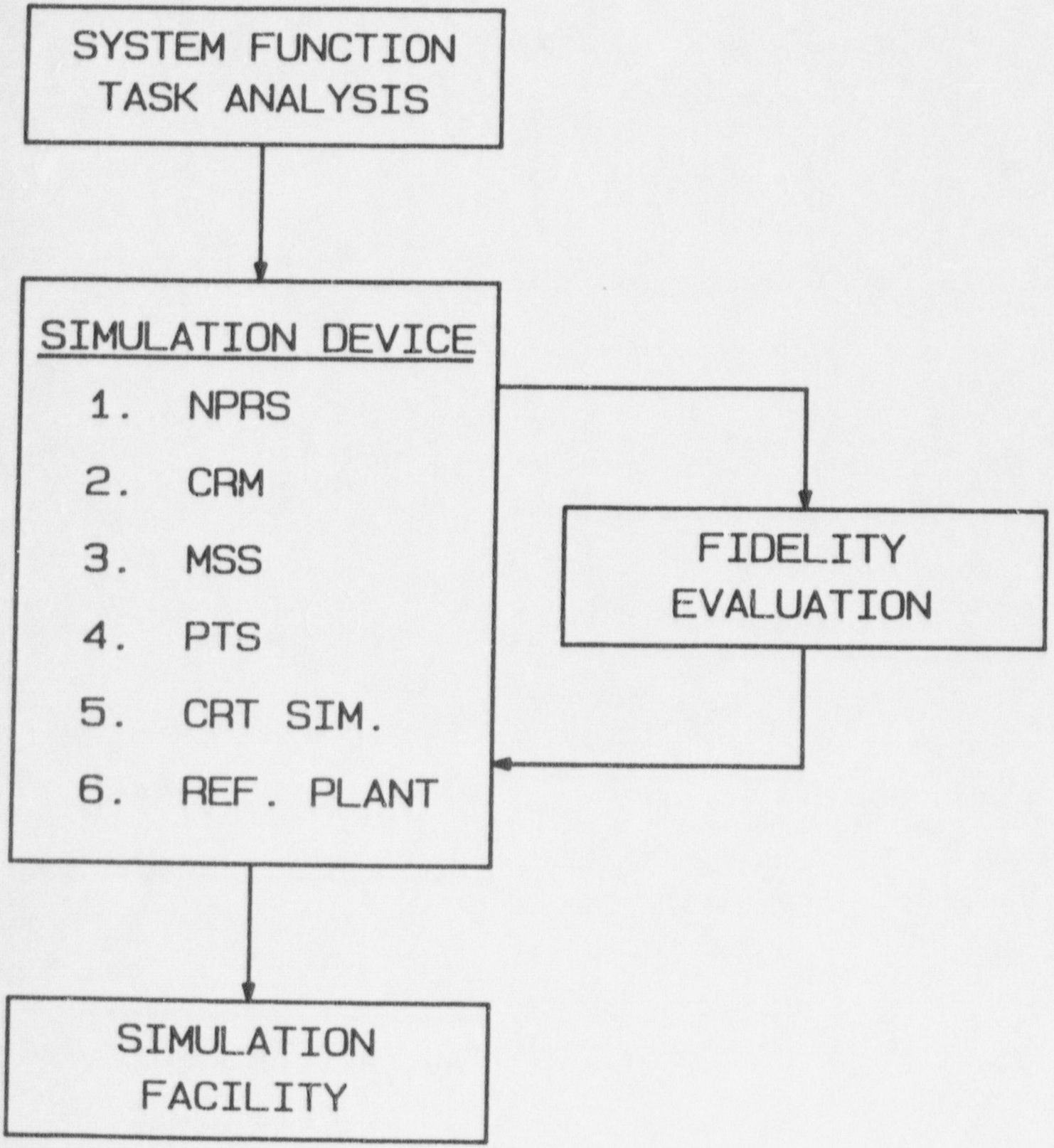
# CRITERIA

- HUMAN FACTORS
- PROCEDURES
- STEADY STATE AND TRANSIENT MODELS
- PERFORMANCE TESTING
- OPERATING TEST METHODOLOGY

# SIMULATION DEVICES

- NON PLANT REFERENCED SIMULATOR
- CONTROL ROOM MOCK-UP
- MINIMUM SCOPE SIMULATOR
- PART TASK SIMULATOR
- CRT SIMULATOR
- REFERENCE PLANT

# DEVELOPMENT OF SIMULATION FACILITY



# 10 CFR 55.45

## OPERATING TESTS

DEMONSTRATE PERFORMANCE OF THE FOLLOWING:

1) PRE-STARTUP PROCEDURES
2) OPERATION BETWEEN SHUTDOWN & FULL POWER
3) RESPOND TO ANNUNCIATORS
4) SIGNIFICANCE OF FACILITY INSTRUMENT READINGS
5) OBSERVE AND CONTROL OPERATING BEHAVIOR CHARACTERISTICS
6) CONTROL MANIPULATIONS DURING NORMAL, ABNORMAL AND EMERGENCY SITUATIONS
7) FACILITY'S HEAT REMOVAL SYSTEM
8) FACILITY'S RADIATION MONITORING SYSTEM
9) FACILITY'S RADIATION HAZARDS AND MITIGATING ACTIONS
10) SIGNIFICANT RADIATION HAZARDS AND MITIGATING ACTIONS
11) KNOWLEDGE OF THE EMERGENCY PLAN, RESPONSIBILITIES AND DECISIONS
12) KNOWLEDGE AND ABILITY TO ASSIGNED POSITION
13) ABILITY TO FUNCTION WITHIN THE CONTROL ROOM TEAM

# USFG CONCLUSIONS

- OPERATING TEST CAN BE PERFORMED IN ACCORDANCE WITH REGULATIONS
- SYSTEMATIC DEVELOPMENT OF SIMULATION FACILITY
- USE EXISTING TRAINING DEVICES
- PROMOTE ACTIVE MAN/MACHINE INTERFACE

# REQUESTED NRC ACTIONS

- SUPPORT USFG METHODOLOGY
- IN PROGRESS AUDIT OF SIMULATION FACILITY IMPLEMENTATION
- NRC REGIONAL INVOLVEMENT
- REPEATED USE OF NRC EXAMINERS

ENCLOSURE 3

OVERVIEW OF NRC GOALS FOR NON ANS 3.5 SIMULATORS

1. THE NRC GOAL IS THAT ALL FACILITY LICENSEES MEET THE REQUIREMENTS OF ANSI/ANS 3.5, 1985, AS ENDORSED BY REGULATORY GUIDE 1.149, TO THE EXTENT POSSIBLE. THIS MEANS THAT WE ARE NOT GOING TO HOLD YOU TO A LESSER STANDARD; BUT RATHER A DIFFERENT APPLICATION OF THE SAME STANDARD.

2. THE SIMULATION FACILITY MUST CREATE AN ENVIRONMENT IN WHICH LICENSE EXAMINERS CAN EVALUATE INDIVIDUAL CANDIDATE PERFORMANCE AS WELL AS TEAM INTERACTION AND COMMUNICATION UNDER DYNAMIC, REAL-TIME OPERATING CONDITIONS.

3. OPERATORS MUST BE ABLE TO UTILIZE CONTROLLED COPIES OF THE REFERENCE PLANT PROCEDURES IN THE SIMULATION FACILITY.

4. THE ANALYSES PERFORMED AND THE RATIONALE USED FOR THE DEVELOPMENT AND CONTINUING SUPPORT OF THE SIMULATION FACILITY MUST BE DOCUMENTED AND AVAILABLE FOR INSPECTION.

5. THERE MUST BE A WELL-DEFINED CONFIGURATION MANAGEMENT SYSTEM TO ENSURE AND DEMONSTRATE THAT THE SIMULATION FACILITY IS KEPT CURRENT WITH REFERENCE PLANT CHANGES OVER TIME.

6. FOR OPERATING PLANTS, THE EVALUATION OF THE SIMULATION FACILITY'S FIDELITY MUST BE BASED ON AVAILABLE PLANT OPERATING HISTORY, AND NOT MERELY BEST ESTIMATE ANALYSES.

7. ANY PLANT PROCEDURE THAT MAY BE USED IN AN OPERATING TEST MUST BE CAPABLE OF BEING EXERCISED ON A SINGLE SIMULATION DEVICE.

ENCLOSURE 4

NRC CONCERNS AND QUESTIONS ABOUT USFG PROPOSAL

1. USE OF PLANT PROCEDURES, AND DEMONSTRATION OF THE "ABILITY TO PERFORM"

THE SIMULATION FACILITY SHALL USE CONTROLLED COPIES OF PLANT PROCEDURES, WITH CHANGES TAKEN ONLY AS AN EXCEPTION. YOUR DEFINITION OF PROCEDURES MAKES NO REFERENCE TO REFERENCE PLANT PROCEDURES, NO LESS CONTROLLED COPIES, AND YOUR PRESENTATION EMPHASIZES PEN AND INK CHANGES TO PROCEDURES.

HOW DO YOU FEEL THAT THIS SUPPORTS CONDUCT OF AN OPERATING TEST, ESPECIALLY SINCE YOUR DEFINITION DESCRIBES PROCEDURES AS THOSE THAT "AN OPERATOR OR CANDIDATE WOULD BE REQUIRED TO IMPLEMENT?"

WE DISAGREE WITH YOUR APPROACH TO PROCEDURE SCOPE AND USE. YOU SAY THAT THE CHOICE OF PROCEDURE TO BE USED ON A SIMULATOR SHOULD BE BASED ON THE SIMULATOR'S CAPABILITY. WE BELIEVE THAT THE REVERSE IS TRUE. SIMULATOR CAPABILITIES SHOULD NOT DRIVE PROCEDURE CONTENT; PROCEDURE CONTENT SHOULD DRIVE THE SIMULATOR CAPABILITIES. IF A SIMULATION FACILITY CAN'T RUN ALL PROCEDURES FOR AN OPERATING TEST, THEN IT IS NOT SATISFACTORY AND MUST BE SUPPLEMENTED. THIS IS ADDRESSED, BUT NOT STRONGLY ENOUGH, UNDER "PROCEDURE MODIFICATIONS" (2.2).

WHY DO YOU RECOMMEND ONLY THAT CONSIDERATION OF AN ALTERNATIVE DEVICE UNDER THESE CIRCUMSTANCES?

WE DISAGREE WITH YOUR STATEMENT IN 3.6.5 THAT OPERATING TESTS, WHEN USING THE REFERENCE PLANT AS A SIMULATION DEVICE, CAN ONLY CONSIST OF WALKTHROUGHS, AND THAT TASK PERFORMANCE CAN ONLY BE DISCUSSED.

WHY CAN'T CERTAIN NORMAL EVOLUTIONS, SURVEILLANCE TESTS, AND START-UPS AND SHUT-DOWNS BE PERFORMED ON THE PLANT?

IN 4.2, YOU STATE THAT "PROCEDURES NOT CAPABLE OF BEING IMPLEMENTED ON ANY OTHER SIMULATION DEVICE CAN BE EXAMINED ON THE REFERENCE PLANT. THIS BEGS THE QUESTION. YOU HAVE PREVIOUSLY STATED THAT THE REFERENCE PLANT PERMITS ONLY WALKTHROUGHS. THUS THIS DISCUSSION EFFECTIVELY ELIMINATES CERTAIN OPERATING TESTS FROM BEING ACHIEVED.

IF THE OPERATOR'S "ABILITY TO PERFORM" CANNOT BE DEMONSTRATED ON THE SIMULATION FACILITY IN A REAL-TIME, INTERACTIVE SETTING, WHY SHOULDN'T THE PLANT BE USED FOR THESE DEMONSTRATIONS?

2. PHYSICAL AND FUNCTIONAL FIDELITY

WE DISAGREE WITH YOUR STATEMENT IN 2.1 THAT "THE ONLY ACHIEVABLE FIDELITY COMPONENT WOULD BE DUPLICATION IN FUNCTION." THERE ARE DEGREES OF FIDELITY - IT IS NOT ALL OR NOTHING. THIS IS INDICATED BY YOUR OWN DISCUSSION OF PHYSICAL FIDELITY ON PAGE 9. ATTEMPTS TO ACHIEVE A MEASURE OF PHYSICAL FIDELITY SHOULD NOT BE DISMISSED. WE FEEL THAT CRITERIA ARE NEEDED FOR THE TERM "SHOULD APPROXIMATE" ON PAGE 9.

PLEASE DESCRIBE YOUR RATIONALE FOR ACCEPTING "REDUCED SCALE REPRODUCTIONS" IN A SIMULATION DEVICE OF THE SAME SIZE AS THE REFERENCE PLANT.

UNDER THE HEADING OF FIDELITY OF STEADY STATE AND TRANSIENT MODELS (3.1.3), WHO DEFINES WHEN A SOFTWARE MODELING CHANGE "CANNOT BE REASONABLY PURSUED," AND WHAT CRITERIA WILL BE USED IN THIS DECISION (PAGE 19)?

WHY DO YOU FEEL THAT THE 2% AND 10% CRITERIA FROM ANS 3.5 (AND USED BY YOU ELSEWHERE IN THIS DOCUMENT) DO NOT APPLY TO NON PLANT REFERENCED SIMULATORS (NPRS)?

3. EXISTING VS NEW SIMULATION DEVICES

YOUR INTENT AS EXPRESSED, SEEMS TO ASSUME THE USE OF ONLY EXISTING SIMULATION FACILITIES, RATHER THAN CONSIDERING THE POSSIBILITY OF DEVELOPING NEW ONES TO MEET THE NEED ESTABLISHED BY THE OPERATING TEST (PAGE IV).

FOR EXAMPLE, IN 4.3, WE ARE CONCERNED THAT THE TONE REPRESENTS A LIMITATION IN THE DOCUMENT AS A WHOLE. THAT IS, THE STATED PURPOSE OF THE FIDELITY EVALUATION IS TO "IDENTIFY AND JUSTIFY THE DEVIATIONS OF THE SIMULATION DEVICE FROM THE REFERENCED PLANT."

WHY, BEFORE ANY SUCH DEVIATIONS CAN BE JUSTIFIED, ISN'T SERIOUS CONSIDERATION GIVEN TO SEEKING ADDITIONAL DEVICES SO AS TO MINIMIZE THE EXTENT OF SUCH DEVIATIONS (PAGE 49)?

4. HARDWARE ALTERNATIVES AND INTEGRATION

ALTHOUGH YOU HAVE EVALUATED 6 MAJOR CATEGORIES OF SIMULATION FACILITY COMPONENTS, THERE ARE OTHER POSSIBILITIES THAT COULD HAVE BEEN EXPLORED AND DISCUSSED. E.G. ENGINEERING SIMULATORS, BASIC-PRINCIPLES TRAINERS, INTERACTIVE VIDEODISK SYSTEMS, ETC.

HAVE YOU EXPLORED ANY OF THESE ALTERNATIVES?

YOUR TREATMENT OF THE 6 CATEGORIES OF SIMULATION FACILITY COMPONENTS IS UNEVEN, WITH SOME RECEIVING MORE WEIGHT THAN OTHERS. THESE DIFFERENCES IN EMPHASIS SHOULD BE ADDRESSED.

IN 4.0, WHILE WE AGREE THAT THERE IS A DISTINCTION BETWEEN DEVICES WITH ACTIVE M/M INTERFACES AND THOSE WITHOUT, WE DISAGREE WITH YOUR CHARACTERIZATION OF REFERENCE PLANT AS PASSIVE, OR THAT A CRT MUST ALWAYS BE PASSIVE. SINCE ALL OF THE DEVICES DISCUSSED HAVE CERTAIN LIMITATIONS THAT MUST BE RESOLVED BY INTEGRATION WITH OTHER DEVICES, THIS DISTINCTION MAY NOT BE NECESSARY.

THE DEFINITION OF NPRS IS TOO IMPRECISE, AND NEEDS CLARIFICATION (PAGE 17).

IN 3.4.5, WHY DO YOU NOT CONSIDER A PART TASK SIMULATOR (PTS) APPLICABLE TO PERFORMANCE OF OPERATOR TASKS FOR CERTAIN ABNORMAL AND EMERGENCY EVENTS?

IN 3.5.5, WE BELIEVE THAT YOUR STATEMENT ABOUT THE USE OF A CRT IN CONJUNCTION WITH OTHER SIMULATION FACILITY COMPONENTS IS ALSO APPLICABLE TO EACH OF THESE OTHER COMPONENTS, AND THAT A SECTION ADDRESSING OVERALL INTEGRATION IS NEEDED.

IN 4.5, WE AGREE THAT "IT IS IMPORTANT THAT THE SIMULATION FACILITY PROVIDE THE OPPORTUNITY TO EXAMINE ALL OF THE OPERATOR RESPONSES TO THE CUES LISTED IN THE OPERATIONAL CUE ANALYSIS," BUT WE BELIEVE THAT THIS MUST BE ACHIEVED IN AN INTERACTIVE MODE - ONE WHICH PERMITS THE OPERATOR OR CANDIDATE TO DEMONSTRATE THE "ABILITY TO PERFORM" AS REQUIRED IN 10CFR55.45(A). FURTHER, WE DO NOT ACCEPT YOUR PREMISE THAT CONSIDERATION SHOULD BE GIVEN ONLY TO "SIMULATION DEVICES CURRENTLY AVAILABLE OR EASILY MADE AVAILABLE."

WHY DO YOU REJECT THE THOUGHT THAT NEW DEVICES MAY BE NEEDED IN ORDER TO COMPLY WITH THE REGULATION?

5. BEST ESTIMATE ANALYSIS AND BASELINE DATA

RELIANCE ON "BEST ESTIMATE ANALYSIS" FOR SIMULATOR OUTPUT IS ACCEPTABLE ONLY FOR A REFERENCE PLANT WITHOUT AN OPERATING HISTORY. FOR AN OPERATING PLANT, ACTUAL PLANT DATA MUST BE USED AS BASELINE AGAINST WHICH TO COMPARE SIMULATOR OUTPUT (PAGE 12).

FURTHER, IF WE UNDERSTAND YOUR DISCUSSION OF METHODOLOGY, IT SEEMS THAT SIMULATOR PERFORMANCE TESTING RESULTS WILL SERVE AS BASELINE DATA FOR SUBSEQUENT PERFORMANCE TESTING. ANSI 3.5 REQUIRES THAT PLANT DATA (ACTUAL OR PREDICTED AS APPROPRIATE) SERVE AS THE BASELINE FOR PERFORMANCE TESTING (PAGE 20).

CAN YOU DISCUSS THESE TWO CONCERNS?

6. REAL TIME SIMULATION

WE BELIEVE THAT YOUR ACCEPTANCE OF "APPROXIMATE REAL TIME" MAY NOT BE SATISFACTORY FOR PARTS OF THE OPERATING TEST, ESPECIALLY THOSE EXAMINING TEAM DEPENDENT AND TIME CRITICAL BEHAVIORS. DEVIATIONS FROM TRUE REAL TIME PERFORMANCE MUST BE SHOWN AS EXCEPTIONS AND JUSTIFIED.

CAN YOU PROVIDE SUCH A JUSTIFICATION?

HOW DO YOU PLAN TO ADDRESS THE CUES IDENTIFIED IN THE CUE ANALYSIS WHICH ARE TIME-DEPENDENT, WITHOUT HAVING REAL TIME SIMULATION CAPABILITY?

7. SKILLS AND KNOWLEDGES

HAVE YOU DEFINED THE LINK BETWEEN THE PLANT SPECIFIC SKILLS AND KNOWLEDGES AND THE RULE?

YOUR OPERATING TESTS ADDRESS THE EVALUATION OF AN OPERATORS' "GENERIC SKILLS." CAN YOU DESCRIBE HOW AND WHERE THE PLANT SPECIFIC SKILLS ARE EVALUATED (PAGE IV)?

8. USE OF CONTROLLERS

YOU PLACE GREAT EMPHASIS ON THE ROLE OF "CONTROLLERS." YET THEIR SKILLS, TRAINING, EMPLOYMENT AFFILIATION, SUPERVISION, ETC. ARE NOT DESCRIBED. PLEASE SUPPLY MORE INFORMATION ABOUT THIS CONCEPT, AND DEFEND ITS VIABLILITY.

9. HUMAN FACTORS ISSUES

WHAT CRITERIA DO YOU PLAN TO USE IN MAKING THE HUMAN FACTORS EVALUATIONS?

IN 3.1.1, WHAT DO YOU INTEND TO DO ABOUT DEVIATIONS DISCOVERED DURING THE HUMAN FACTORS REVIEW?

DOES LIGHTING (UNDER AMBIENT OPERATING ENVIRONMENT) INCLUDE NORMAL AND EMERGENCY LIGHTING (PAGE 10)?

IN 3.2.1, PLEASE COMMENT ON WHY A STATIC CONTROL ROOM MOCKUP (CRM), IF BUILT, SHOULD NOT BE AN EXACT PHYSICAL REPLICA OF THE CONTROL ROOM.

10. OPERATIONAL CUE ANALYSIS

WE ARE CONFUSED BY THE SECOND PARAGRAPH ON PAGE 13. THE "OPERATIONAL CUE ANALYSIS" IS AN ANALYSIS OF BOTH THE CUES AVAILABLE ON THE SIMULATOR AND THOSE REQUIRED BY REFERENCE PLANT PROCEDURES. THIS ANALYSIS YIELDS "DIFFERENCES" WHICH MUST BE RESOLVED BY ENHANCMENT OF THE SIMULATION OR BY ADDING AN ADDITIONAL DEVICE TO THE SIMULATION FACILITY. SUCH A TOP-DOWN APPROACH - AN OVERALL INTEGRATION OF THE VARIOUS INDIVIDUAL DEVICES THAT MIGHT MAKE UP A SIMULATION FACILITY, SEEMS TO BE LACKING IN YOUR DISCUSSION ON PAGE 13.

CAN YOU COMMENT?

WILL YOU DEFINE THE REALTIONSHIP BETWEEN THE CUE ANALYSIS AND THE SKILLS AND KNOWLEDGES REQUIRED FOR THE OPERATORS?

11. MULTI-DISCIPLINARY TEAM

YOU INDICATE, UNDER "ACCEPTANCE CRITERIA" ON PAGE 20, THAT A MULTI-DISCIPLINARY TEAM WILL DETERMINE THE ACCEPTABILITY OF PERFORMANCE TEST RESULTS.

WHAT CRITERIA ARE TO BE USED IN THESE ASSESSMENTS? WHAT ARE THE QUALIFICATIONS, TRAINING, EMPLOYMENT AFFILIATION, SUPERVISION, ETC. OF THE MULTI-DISCIPLINARY TEAM?

WHAT AUTHORITY/POWERS WILL THIS TEAM HAVE?

12. CONFIGURATION MANAGEMENT

IN 4.6, YOU SEEM TO BE REFERRING TO A CONFIGURATION MANAGEMENT PROGRAM TO KEEP THE SIMULATION FACILITY CURRENT WITH PLANT CHANGES. WE BELIEVE THAT YOUR COMMITTMENT MADE TO THESE UPGRADES IS INSUFFICIENT TO ENSURE CONTINUING FIDELITY. E.G. YOU STATE THAT MODIFICIATIONS TO THE SIMULATION FACILITY WILL BE MADE IN ACCORDANCE WITH EXISTING ADMINISTRATIVE CONTROLS PROCEDURES, YET SUCH PROCEDURES MAY NOT BE IN PLACE FOR SIMULATION FACILTIES. WE FEEL THAT A FORMAL, DOCUMENTED PROGRAM FOR EVALUATION AND UPGRADES, SUBJECT TO AUDIT, IS NEEDED FOR CONFIGURATION MANAGEMENT.

HAVE YOU EXPLORED A FORMAL CONFIGURATION MANAGEMENT APPROACH?

13. MISCELLANEOUS

WE DO NOT UNDERSTAND YOUR INTENT IN THE DISCUSSION OF QUALITY ASSURANCE ON PAGE 15. SCENARIOS USED IN THE CONDUCT OF OPERATING TESTS ARE DEVELOPED BY NRC EXAMINERS.

CAN YOU EXPLAIN THE MEANING OF THIS SECTION?

YOUR SUGGESTION OF USING THE SAME EXAMINERS FOR NON PLANT REFERENCED SIMULATOR EXAMS REPEATEDLY IS NOTED, BUT NOT LIKELY TO BE FEASIBLE (PAGE 15).

ENCLOSURE 5

CONCLUSIONS AND AGREEMENTS REACHED

1. USE OF PLANT PROCEDURES, AND DEMONSTRATION OF THE "ABILITY TO PERFORM"

Agreement was reached on the use of controlled copies of the reference plant procedures. Pen and ink mark-ups of the procedures will be considered deviations from the requirements and shal be only made as a last resort. Such changes will be made only after the following steps have been taken:

a. Determination has been made that the procedure cannot be performed on existing simulation devices.

b. Upgrades to existing simulation devices, or the development of new simulation devices for the procedure(s) or part of the procedure(s) which cannot be conducted require an excessive effort or burden in relation to the benefit gained.

c. The use of controllers or similar mechanisms would result in a degradation to the examination process.

It was agreed that it is necessary, in order to comply with 10CFR55.45, for the simulation facility to provide the capability to allow license candidates to demonstrate their "ability to perform" the operations required by the procedures. This capability may include, if so determined by the facility licensee, the use of the reference plant for the performance of normal plant operations.

2. PHYSICAL AND FUNCTIONAL FIDELITY

It was agreed that both physical and functional fidelity should be included in the simulation facility. There was however, a distinct difference between the approaches for meeting this goal proposed by the USFG and the NRC staff. It was the USFG's position that this goal could be met by using separate simulation devices to provide physical and functional fidelity. It was the staff's position that both should be included in a single device for a given procedure or event.

Given this point of contention, the NRC staff requests that the USFG perform the research and/or analysis to support or refute its position, and present these findings to the NRC. The staff expects that this analysis, if performed adequately, would demonstrate a requirement for some degree of simultaneous physical and functional fidelity.

3. EXISTING VS NEW SIMULATION DEVICES

The USFG will include, in their plan, the consideration of obtaining or developing new simulation devices as a higher priority than the use of controllers or procedure changes.

4. HARDWARE ALTERNATIVES AND INTEGRATION

The USFG will include a general discussion of the overall integration of the simulation facilityies in the current plan. Specific discussions for each facilty licensee will be included in that facility licensee's plant-specific plan to be submitted no later than May 26, 1988.

5. BEST ESTIMATE ANALYSIS AND BASELINE DATA

Reference plant operating history data will be applied to simulation devices as appropriate.

Reference plant operating history data will not be applied to non-plant referenced simulators (NPRS) because they, by definition, are not referenced to the facility licensee's reference plant. Instead, best estimate data will be utilized to initially validate the NPRS models.

6. REAL-TIME SIMULATION

Criteria and evaluation procedures for determining real time fidelity in both the pragmatic sense and the "computer simulation" sense will be developed and applied to simulation devices, as appropriate, by the USFG.

7. SKILLS AND KNOWLEDGES

The use of the skills and knowledges as a basis for the development of the simulation facility will be more clearly defined and described in the USFG plan. Methods for showing the relationships between the skills and knowledges, the analyses to be conducted, and the regulation, will also be explored.

8. USE OF CONTROLLERS

The role, functions, and limitations of the controllers will be more clearly delineated by the USFG. Mechanisms for ensuring the integrity of examinations when using controllers will also be explored. Controller qualifications will be determined by the specific utilities and included in their plant-specific plans.

9. HUMAN FACTORS ISSUES

The USFG will more clearly delineate the criteria and evaluation procedures for the human factors issues.

10. OPERATIONAL CUE ANALYSIS

The USFG will provide more detail on the information and reference plant characteristics to be included in the operational cue analysis.

11. MULTI-DISCIPLINARY TEAM

The USFG will provide information about the guidance and criteria to be used by this team, and its overall role in the development of the simulation facility. Team make-up will be addressed by the individual utilities and included in their plant-specific plans.

12. CONFIGURATION MANAGEMENT

The USFG will provide more information on plans for configuration management. This will include consideration of such changes made to NPRS as a result of changes made to the NPRS's reference plant.

13. MISCELLANEOUS

The USFG plan will be changed to delete references to the utility review and approval of NRC examinations on the simulation facility, and to the repeated use of examiners.

14. WORKING REALTIONSHIP

It was agreed that the USFG and the staff would maintain close working relationships during the development of the simulation facilities.