

SNUPPS

Standardized Nuclear Unit
Power Plant System

5 Choke Cherry Road
Rockville, Maryland 20850
(301) 869-0010



Nicholas A. Petrick
Executive Director

June 26, 1981

SLNRC 81-51 FILE: 0278
SUBJ: Human Factors Evaluation of
the SNUPPS Control Room

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket Nos. STN 50-482, STN 40-483, and STN 50-486

Dear Mr. Denton:

A detailed human factors evaluation of the SNUPPS control room has been performed. The evaluation was performed utilizing the SNUPPS simulator, located at the Westinghouse Training Center in Zion, Illinois, the partially-completed Callaway 1 control room, a full-scale mock-up of the control panels, preliminary operating procedures, plant drawings, systems descriptions, and other design documents. The evaluation is applicable to Callaway 1, Wolf Creek and Callaway 2, since the control rooms are of a standardized design. The only exceptions to standardization are in the site-specific panels, which control the off-site power systems, the circulating water system, and the service water systems. These aspects of the Wolf Creek panels will be subsequently reviewed. The evaluation was performed by Essex Corporation and utilized the guidance of NUREG/CR-1580, "Human Engineering Guide to Control Room Evaluation."

Two aspects of the control room design were not included in Essex Corporation's evaluation, because they had not been completed. The first of these is the implementation of changes to the plant design in response to the accident at TMI-2. These features will be subjected to supplementary reviews as final definition is completed. The second is the actual control room environment, including light levels, background noise, and location of communications equipment. These features will be evaluated at the Callaway 1 plant when the control room is essentially complete.

A

8106300 161

Ten (10) copies of Essex Corporation's report are forwarded herewith. The report identifies 152 human engineering findings with assigned priority levels of 1 through 4. Priority 1 and 2 findings are considered by Essex to be safety-related. Priority 3 and 4 findings are considered to have an impact on reliability. The SNUPPS Utilities have discussed each finding with Essex and have not always agreed with the Essex interpretation. The disposition, to date, of each finding is documented in the SNUPPS files and is available for audit by the NRC. A general description of actions being taken by SNUPPS is contained in the balance of this letter.

A numerical categorization of the human engineering findings is as follows:

<u>Priority</u>	<u>Positive Action Defined</u>	<u>Under Detailed Review</u>	<u>No Action Deemed Necessary</u>
1	11	17	0
2	0	7	13
3	1	38	14
4	0	17	34

The findings for which positive action has been defined to date fall into three categories:

- (1) Annunciators
- (2) Status Light Panels
- (3) ESF Panels (mimics, labels, and arrangement of controls)

A subcontract has been issued to Offshore Power Systems for a detailed review of the annunciators, to include development of recommendations for prioritization, rearrangement, possible coloring, and relabeling. This study is expected to be completed in October 1981. Utility operations and engineering personnel will participate in the latter half of the study in order to expedite review and implementation.

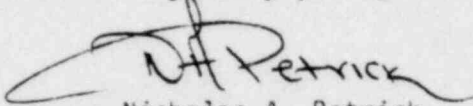
The status light panels, which include the partial trip/permissive/bypass panel, two ESF actuation systems panels, and a miscellaneous panel are being modified as a consequence of a detailed reexamination by a SNUPPS committee, which included SNUPPS Utility operations personnel, with experience on the SNUPPS simulator. The revised design follows guidelines endorsed by Essex Corporation and are improved with respect to human engineering.

The ESF control panels (RL017 and RL018) also are being revised on the basis of a detailed reexamination by the same SNUPPS committee. Essex Corporation participated in the deliberations, which utilized a full-scale mock-up of the two panels.

Definitions of action plans for the findings that are still under detailed review is scheduled to be completed by July 15, 1981.

The schedule for completion of all human engineering modifications has not yet been developed. SNUPPS will make a strong effort to complete this work prior to initial fuel load. If there are any exceptions, the SNUPPS Utilities will inform the NRC of the exception(s), the projected completion schedule, and the bases for this schedule.

Very truly yours,



Nicholas A. Petrick

FS/bds/8b27
Attachment

cc: J. K. Bryan	UE
G. L. Koester	KGE
D. T. McPhee	KCPL
W. Hansen	USNRC/CAL
T. F. Vandel	USNRC/WC