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DESCRIPTION:

Ltr re our 10-15-75 ltr,.....furnishing info concerning reactor vessel support systems....

ENCLOSURES:

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PLANT NAME: H B Robinson #2

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December 9, 1975

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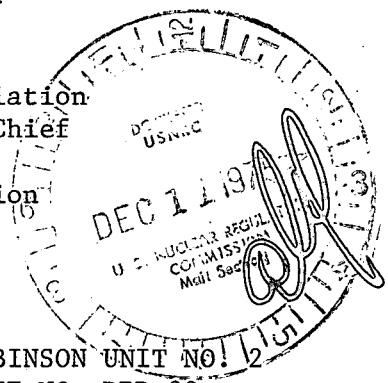

Director of Nuclear Reactor Regulation
Attention: Mr. Robert W. Reid, Chief
Operating Reactors Branch #4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Reid:

H. B. ROBINSON UNIT NO. 2
LICENSE NO. DPR-23
REACTOR VESSEL SUPPORT SYSTEMS

In response to your letter of October 15, 1975, we have conducted a review of the design basis for the reactor vessel support system for the H. B. Robinson Unit No. 2 Plant. In this review, we have contacted the Westinghouse Electric Corporation, who originally designed and supplied the Nuclear Steam Supply System, and Ebasco Services, Inc., the plant architect-engineering firm, for assistance.

During the design of the H. B. Robinson Unit No. 2 Plant, RCS pipe breaks were postulated for various reasons, e.g., large instantaneous severences were assumed to assess the capability of the containment structure and to assess the efficacy of emergency core cooling systems. The likelihood of occurrence of these postulated (for design evaluation) breaks is extremely remote. Attempts to quantify the probability of pipe ruptures anywhere in the RCS have utilized a data base that was not restricted solely to nuclear power plant piping. These studies include data from industries utilizing lower quality standards than those employed in nuclear plants. In addition, it must also be noted that the reactor coolant piping is very large diameter piping. It is essentially a pressure vessel, and might be appropriately categorized as such. Accordingly, the likelihood of a failure anywhere in the RCS is less than reported for piping and likely approaches that associated with pressure vessel failure. The likelihood of pressure vessel failure has been quantified as 10^{-6} to 10^{-7} per year.

The small likelihood of an RCS piping failure notwithstanding large pipe ruptures were considered in the design of the Robinson RCS supports. This consideration led to the inclusion of pipe rupture thrust reactions and jet impingement forces in the support system design. Elastic design methods were employed.

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The state-of-the-art progressed to the point where the dynamics associated with postulated pipe ruptures could be modeled and analyzed. These time-history methods have been applied on current designs indicating that additional forces can exist for short periods during RCS depressurization, namely, reactor cavity pressurization forces and reactor internal hydraulic forces. The former are only realized for breaks at or near the RPV nozzles and the latter are maximized for breaks at a cold leg nozzle. Westinghouse has shown that an instantaneous guillotine rupture adjacent to a cold leg nozzle has been shown generically to constitute the worst case for these effects. The likelihood of a pipe rupture at this one specific location is clearly less than the likelihood of a rupture occurring at any location in the total length of piping in the system.

Our review indicates that the precise margin in the Robinson RCS support design when compared to the Commission's requirements for new facilities is not quantifiable; that the analyses conducted to date on new facilities do not suggest unacceptable consequences due to the consideration of short-lived transient forces; and that the specific RCS failure that requires consideration of the transient phenomena is extremely remote. Therefore, we believe that the support system design is appropriately conservative.

Yours very truly,

E. E. Utley
Vice-President
Bulk Power Supply

DBW:mc

A combination of 10 reactivity manipulations will be performed during the two-year period. Each licensed operator will either manipulate the controls or direct the activities of individuals during plant control manipulations. If the required number of reactivity manipulations cannot be performed on H. B. Robinson - Unit 2, a simulator, with similar arrangement of the instrumentation and controls, that reproduces the general operating characteristics of the Robinson Unit, will be used.

PHASE II OPERATOR EVALUATION

At the completion of Phase I each licensed operator will take a USNRC type comprehensive written examination. Periodically a CP&L instructor will conduct oral examinations on 1 or 2 licensed operators.

The following is a list of records to be kept in a personal file on each licensed operator:

1. Startup, Shutdown, and Reactivity Changes
2. Formal Lecture Attendance
3. On-shift Training
4. Grade Sheet for Periodic Examinations
5. Evalauation Sheets for Written Comprehensive Examinations
6. Evaluation Sheets for Oral Examination
7. Additional Training

In a master file will be copies of all periodic examinations and a copy of all comprehensive examinations given.

Any licensed operator absent from the site for a period of four (4) months or longer will be given a written examination and/or an oral walk through the plant to determine if an accelerated training program is necessary prior to returning him to his normal duties.

NOTE: The term "licensed operator" means any person holding an NRC License to operate a nuclear power plant, whether it be senior reactor operator or reactor operator.

a. Volume I - Administrative Procedures - Section 4
b. Volume V - Abnormal Procedures
c. Volume VI - Emergency Instructions
d. Volume VII - Precautions, Limitations, and Setpoints
e. Volume VIII - Radiation Control and Protection Manual
f. Volume XIII - Emergency Plan and Procedures

When covering the above six (6) volumes, the Technical Specifications, along with flow diagrams, logics, and functional diagrams will also be reviewed where applicable.

Before the end of every quarter (with the exception of the quarter in which the unit is being refueled), the shift foreman will submit to the Training Coordinator a report of the instructional sessions conducted during that quarter. The report will detail the information covered for each member of the shift operation crew, and will contain the shift foreman's judgment of each operator's familiarity with the information contained in the above volumes, as well as each operator's ability to take the required action.

The Training Coordinator will maintain a file of the reports filled out by the Shift Foremen. They will be used in compiling qualification information for NRC Reactor Operator license applications."

The staff personnel holding an NRC operator license will stand an average of four (4) hours watch in the control room per month. During this four (4) hours he will carry out those duties normally conducted by either the Shift Foreman or control room operator.

During all plant operations a record will be kept of any major reactivity changes a licensed operator will perform. The following is a list of some reactivity changes CP&L considers as major:

1. Startup to point of adding heat
2. Orderly shutdown
3. Manual control of S/G's during startup
4. Operation of EHC in manual during startup
5. Boration
6. Dilution
7. Operation of manipulator crane during refueling
8. Any power changes greater than ten (10) percent in manual rod control.

CP&L does not mean that the above list is complete. If credit is taken for any other major reactivity change other than those listed above, they will be documented fully.

g. Chemistry

1) Chemistry control
2) Radiation chemistry
3) Specifications and criteria

h. Quality Assurance Responsibilities

Annually a comprehensive examination will be given to each licensed operator. From the results of this exam an annual schedule will be formulated using the above topics as a guide. If any operator shows that he is clearly deficient in his performance (his examination results are less than 70% overall) he will be removed from work requiring an operator's license and placed in an accelerated requalification program until the management is satisfied that he is again proficient. This will be determined by a written and/or an oral examination.

Any operator who clearly shows he would have passed an NRC exam on a particular section (with an 80 percent or greater on that section) will be exempt from the lecture series on that section. If he scores less that 80% on a particular section, he will be required to attend a lecture series on that particular section. Upon completion of the classroom lectures a topical examination on that section will be given. A grade of 80% will be considered passing.

Certain licensed personnel, in the performance of their normal duties, may be very much involved with one or more of the areas covered in classroom lectures. These individuals would not be required to attend the applicable classroom lectures. In some cases, these individuals may be called upon to conduct lectures in their areas of expertise, i.e., Environmental and Radiation Control Supervisor for Radiation Control and Safety lectures.

2. On-Shift Training

On-shift training will be conducted in accordance with Volume 1, Administrative Procedures, Section 4.1.6, Shift Operations Readiness as described below:

"It is essential to individual and crew readiness that emphasis periodically be given to vital information on alarm settings, safety limits, abnormal condition symptons for operation, operating sequences, and emergency immediate-action steps.

Individual reviews, instructional sessions, and where applicable, a walk-through of controls and instrumentation will be conducted with such duration and frequency that the information contained in the following volumes is covered once each quarter, with the exception of the 1-3 months during each operating cycle when the unit is being refueled:

b. General and Specific Plant Operating Characteristics

1) Normal plant transients
   a) Rod worth curves
   b) Xenon transients
   c) Step load changes
2) Safety analysis
   a) Review of minor accidents
   b) Review of major accidents

c. Plant Instrumentation and Control Systems

1) Excore nuclear instrumentation
2) Incore nuclear instrumentation
3) Full length rod control
4) Part length rod control
5) Rod position indication
6) Pressurizer pressure control
7) Pressurizer level control
8) Make-up water control
9) Steam dump control
10) Steam generator level control
11) Reactor protection system
12) Electrohydraulic control
13) All logics

d. Normal and Abnormal Procedures and Emergency Instructions

1) Engineered safety systems
2) Site emergency plan
3) Overall plant operating procedures

e. Radiation Control and Safety

1) Nuclear radiation
2) Biological effects of radiation
3) 10CFR20
4) Radiation protection manual
5) Radiation monitoring system
6) Radiation procedures

f. Technical Specifications

1) Safety limits, reactor core
2) Heatup and cooldown limits
3) Core power distribution
4) Discharge limits

H. B. ROBINSON'S OPERATOR REQUALIFICATION PROGRAM

H. B. Robinson's Requalification Program is designed to ensure that all licensed reactor operators and senior reactor operators will maintain proficiency in their assigned plant operating tasks. Further, it is expected that participation in this program will allow all licensed personnel to meet or exceed the requirements set forth by USNRC operator licensing group.

The following is a detailed summary of the H. B. Robinson's Operator Requalification Program which will be conducted to fulfill the requirements of 10CFR55. The full program will be implemented in such a manner as to minimize scheduling difficulties that will be incurred by plant management. It is the intention of CP&L to have a continuing training program between the time each annual examination is given. This consists of 2-4 months of formal lectures given weekly, if plant operation allows, and continuing with on-shift training through the remainder of the year. This will exclude the 1-3 months that the plant is down for maintenance and refueling.

The entire Requalification Program will be conducted in two (2) phases:

1) retraining on-site and 2) operator evaluation.
The Training Coordinator will be responsible for the scheduling and supervision of all training.

PHASE I - RETRAINING ON-SITE

The on-site portion of the Requalification Program will consist of approximately 120 hours of instruction. This instruction will be given in two (2) parts: 1) formal classroom lectures, and 2) on-shift training. The scheduling on site will be such that every licensed operator will have the opportunity to attend all lectures. The following is an outline of what subjects may be covered in each of these parts, but not necessarily in the order stated.

1. Formal Classroom Lectures

    a. Theory and Principles of Operations

        1) Atomic and nuclear physics
        2) Subcritical multiplication
        3) Xenon and samarium effects
        4) Rod worth
        5) Boron worth
        6) Coefficients and defects
            a) Moderator temperature
            b) Fuel temperature
            c) Voids
            d) Pressure
            e) Redistribution
            f) Power
        7) Shutdown margin
        8) Rod insertion limits

H. B. ROBINSON

UNIT NO. 2

OPERATOR REQUALIFICATION PROGRAM

Table of Contents

H. B. ROBINSON UNIT NO. 2

LICENSE DPR-23

OPERATOR REQUALIFICATION PROGRAM

December 4, 1975

It is our belief that the revised proposal meets all requirements stated in 10CFR55 and in most cases exceeds them.

Yours very truly,

E. E. Utley
Vice President
Bulk Power Supply

MBW:cs

Enclosure