Houston
Lighting
& Power
Company

Electric Tower
P.O. Box 1700
Houston, Texas 77001

November 14, 1979
AC-HL-AE-374

Mr. Domenic B. Vassallo, Acting Director
Division of Project Management
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Vassallo:

Allens Creek Nuclear Generating Station
Unit 1
Docket No. 50-466

In response to your letter of October 10, 1979 to all pending Construction Permit Applicants concerning TMI Lessons Learned recommendations, this letter and attachments have been prepared. This letter supercedes our previous letter delineating Allens Creek Commitments with regard to NUREG-0578, I&E Bulletin 79-08, and SECY-79-450 (E. A. Turner to H. R. Denton, August 9, 1979).

Several attachments to this letter are provided to specifically address your October 10, 1979 letter and its enclosures:

1) Attachment A to this letter addresses the additional instrumentation requirements outlined in Enclosure 3 to your letter.

2) Attachment B to this letter addresses the reactor coolant system high point venting recommendation outlined in Enclosure 4 to your letter.

3) Attachment C to this letter addresses the recommendations of NUREG-0578 as amended by the errata listed in Enclosure 5 to your letter. Whereas the previous (August 9, 1979) HL&P letter outlining commitments to NUREG-0578 addressed the main text of the NUREG, the commitments outlined in Attachment C to this letter address the more specific recommendations outlined in Appendix A to NUREG-0578.

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4) Attachment D to this letter addresses the Emergency Planning recommendations outlined in Enclosure 7 of your letter. The commitments in Attachment D are identical to those provided in our August 9, 1979 letter.

5) Attachment E to this letter addresses the contents of I&E Bulletin 79-08. The HL&P commitments stipulated in Attachment E are virtually identical to those provided in our August 9, 1979 letter.

The remaining Enclosures to your October 10, 1979 letter are being used by HL&P for information purposes and are not specifically addressed in this letter.

This letter and its attachments represents HL&P commitments with respect to the requirements identified in these documents. They will be incorporated into the plant design, operating procedures or emergency plans as appropriate. Those commitments requiring detailed design work will be implemented early in the construction phase of the project. All matters related to emergency plans or operational procedures, as well as detailed design changes, will be documented in the FSAR. In addition, HL&P will continue to participate in and provide support for the BWR Owners Group and other industry efforts toward further clarification and resolution of the Lessons Learned recommendations with the NRC.

Please do not hesitate to call if you should have any questions.

Very truly yours,

E. A. Turner
Vice President
Power Plant Construction
& Technical Services

TEB/ngb
Attachments (5)

cc: J. G. Copeland (Baker & Botts)
R. G. Gooch (Baker & Botts)
J. R. Newman (Lowenstein, Newman, Reis, Axelrad & Toll)
P. A. Horn
All Parties

STATE OF TEXAS

COUNTY OF HARRIS

ON THIS DAY personally appeared E.A. Turner, who being duly sworn, did state that he is Vice President of Houston Lighting & Power Company, Applicant herein, that he is duly authorized to execute and file the foregoing letter in the name and on behalf of Houston Lighting & Power Company and that the statements in said letter are true to the best of his knowledge and belief.

SUBSCRIBED AND SWORN TO this 15th day of Nov, 1979.

Rita F. Villarreal

Notary Public in and for Harris County, Texas

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ATTACHMENT A

HL&P Commitments Regarding Enclosure 3

"Instrumentation to Monitor Containment Conditions
During the Course of an Accident"

NRC Position:

Consistent with satisfying the requirements set forth in General Design Criterion 13 to provide the capability in the control room to ascertain containment conditions during the course of an accident, the following requirements shall be implemented:

(1) A continuous indication of containment pressure shall be provided in the control room. Measurement and indication capability shall include three times the design pressure of the containment for concrete, four times the design pressure for steel, and minus five psig for all containments.

(2) A continuous indication of hydrogen concentration in the containment atmosphere shall be provided in the control room. Measurement capability shall be provided over the range of 0 to 10% hydrogen concentration under both positive and negative ambient pressure.

(3) A continuous indication of containment water level shall be provided in the control room for all plants. A narrow range instrument shall be provided for PWRs and cover the range from the bottom to the top of the containment sump. Also for PWRs, a wide range instrument shall be provided and cover the range from the bottom of the containment to the elevation equivalent to a 500,000 gallon capacity. For BWRs, a wide range instrument shall be provided and cover the range from the bottom to 5 feet above the normal water level of the suppression pool.

The containment pressure, hydrogen concentration and wide range containment water level measurements shall meet the design and qualification provisions of Regulatory Guide 1.97, including qualification, redundancy, and testability. The narrow range containment water level measurement instrumentation shall be qualified to meet the requirements of Regulatory Guide 1.89 and shall be capable of being periodically tested.

Response:

HL&P recognizes the need for accurate, reliable assessment of containment conditions in the control room during the course of an accident. In response to this need, the ACNGS design will include:

(1) Containment pressure monitoring capable of detecting from minus five psig up to four times the steel containment design pressure,

(2) continuous containment atmosphere hydrogen monitoring capable of detecting a range of 0 to 10% hydrogen concentration under both positive and negative ambient pressure,

(3) continuous containment water level indication ranging from near the bottom (i.e., at the elevation of the lowest ECCS pump suction to ensure that the water level instrumentation will not be affected by sludge or small debris at the bottom of the pool) to 5 feet above the normal level of the suppression pool.

This instrumentation will be provided in accordance with the design and qualification provisions of Regulatory Guide 1.97. The requirements of Regulatory Guide 1.89 as well as periodic testability will be incorporated into the design of the narrow range water level instrumentation. The design details of recommendation (1) and (3) above will be submitted in the FSAR. Recommendation (2) above is already met by existing ACNGS hydrogen analyzer capability.

ATTACHMENT B

HL&P Commitments Regarding Enclosure 4

"Installation of Remotely Operated High Point Vents
In The Reactor Coolant System"

Position

Each applicant and licensee shall install reactor coolant system and reactor vessel head high point vents remotely operated from the control room. Since these vents form a part of the reactor coolant pressure boundary, the design of the vents shall conform to the requirements of Appendix A to 10 CFR Part 50 General Design Criteria. In particular, these vents shall be safety grade, and shall satisfy the single failure criterion and the requirements of IEEE-297 in order to ensure a low probability of inadvertent actuation.

Each applicant and licensee shall provide the following information concerning the design and operation of these high point vents:

(1) A description of the construction, location, size, and power supply for the vents along with results of analyses of loss-of-coolant accidents initiated by a break in the vent pipe. The results of the analyses should be demonstrated to be acceptable in accordance with the acceptance criteria of 10 CFR 50.46.

(2) Analyses demonstrating that the direct venting of noncondensable gases with perhaps high hydrogen concentrations does not result in violation of combustible gas concentration limits in containment as described in 10 CFR Part 50.44, Regulatory Guide 1.7 (Rev. 1), and Standard Review Plan Section 6.2.5.

(3) Procedural guidelines for the operators' use of the vents. The information available to the operator for initiating or terminating vent usage shall be discussed.

Response

HL&P will evaluate the ACNGS design against these recommendations in order to determine the adequacy of the venting capability of the existing systems. Changes to the ACNGS design will be made where necessary to meet the above recommendations.

ATTACHMENT C

HL&P Commitments Regarding NUREG 0578 Appendix A
As Amended By The Errata In Enclosure 5

2.1.1 Emergency Power Supply Requirements for the Pressurizer Heaters Power-Operated Relief Valves and Block Valves, and Pressurizer Level Indicators in PWRs

Position:

Consistent with satisfying the requirements of General Design Criteria 10, 14, 15, 17, and 20 of Appendix A to 10 CFR Part 50 for the event of loss of offsite power, the following positions shall be implemented:

Pressurizer Heater Power Supply

(1) The pressurizer heater power supply design shall provide the capability to supply, from either the offsite power source or the emergency power source (when offsite power is not available), a predetermined number of pressurizer heaters and associated controls necessary to establish and maintain natural circulation at hot standby conditions. The required heaters and their controls shall be connected to the emergency buses in a manner that will provide redundant power supply capability.

(2) Procedures and training shall be established to make the operator aware of when and how the required pressurizer heaters shall be connected to the emergency buses. If required, the procedures shall identify under what conditions selected emergency loads can be shed from the emergency power source to provide sufficient capacity for the connection of the pressurizer heaters.

(3) The time required to accomplish the connection of the preselected pressurizer heater to the emergency buses shall be consistent with the timely initiation and maintenance of natural circulation conditions.

(4) Pressurizer heater motive and control power interfaces with the emergency buses shall be accomplished through devices that have been qualified in accordance with safety-grade requirements.

Power Supply for Pressurizer Relief and Block Valves and Pressurizer Level Indicators

(1) Motive and control components of the power-operated relief valves (PORVs) shall be capable of being supplied from either the offsite power source or the emergency power source when the offsite power is not available.

(2) Motive and control components associated with the PORV block valves shall be capable of being supplied from either the offsite power source or the emergency power source when the offsite power is not available.

(3) Motive and control power connections to the emergency buses for the PORVs and their associated block valves shall be through devices that have been qualified in accordance with safety-grade requirements.

(4) The pressurizer level indication instrument channels shall be powered from the vital instrument buses. These buses shall have the capability of being supplied from either the offsite power source or the emergency power source when offsite power is not available.

Response:

The ACNGS BWR design does not include a pressurizer or pressurizer heaters, level indicators, or relief and block valves. However, HL&P recognizes that the intent of these recommendations is to ensure that natural circulation can be readily established and maintained during off-normal modes of operation. The ACNGS design will be evaluated to ensure that natural circulation can be maintained in all off-normal modes of operation.

2.1.2 Performance Testing for BWR and PWR Relief and Safety Valves

Position:

Pressurized water reactor and boiling water reactor licensees and applicants shall conduct testing to qualify the reactor coolant system relief and safety valves under expected operating conditions for design basis transients and accidents. The licensees and applicants shall determine the expected valve operating conditions through the use of analyses of accidents and anticipated operational occurrences referenced in Regulatory Guide 1.70, Revision 2. The single failures applied to these analyses shall be chosen so that the dynamic forces on the safety and relief valves are maximized. Test pressures shall be the highest predicted by conventional safety analysis procedures. Reactor coolant system relief and safety valve qualification shall include qualification of associated control circuitry piping and supports as well as the valves themselves.

Response:

HL&P recognizes that the intent of this recommendation is to ensure that the functional capability of relief and safety valves is maintained under expected operating conditions for design basis transients and accidents (i.e, those operating conditions derived from the analyses of accidents and anticipated operational occurrences per Regulatory Guide 1.70, Rev 2). HL&P will support industry efforts in determining the accident and operational conditions to which ACNGS valves will be subjected. HL&P commits to incorporating in the ACNGS design valves verified by the resolution arrived at by ongoing industry/NRC activities.

2.1.3.a Direct Indication of Power-Operated Relief Valve and Safety Valve Positions for PWRs and BWRs

Position:

Reactor system relief and safety valves shall be provided with a positive indication in the control room derived from a reliable valve position detection device or a reliable indication of flow in the discharge pipe.

Response:

HL&P recognizes this recommendation as part of an effort to provide unambiguous information to allow operators to ascertain the status of the reactor coolant pressure boundary integrity. ACNGS will comply with this recommendation by providing direct position indication or reliable flow indication, (e.g., acoustic monitoring, pressure switches, etc.). Information describing the design of this indication will be provided in the FSAR.

2.1.3.b Instrumentation for Detection of Inadequate Core Cooling in PWRs and BWRs

Position:

(1) Licensees shall develop procedures to be used by the operator to recognize inadequate core cooling with currently available instrumentation. The licensee shall provide a description of the existing instrumentation for the operators to use to recognize these conditions. A detailed description of the analyses needed to form the basis for operator training and procedure development shall be provided pursuant to another short-term requirement, "Analysis of Off-Normal Conditions, Including Natural Circulation" (see Section 2.1.9 of this appendix).

In addition, each PWR shall install a primary coolant saturation meter to provide on-line indication of coolant saturation condition. Operator instruction as to use of this meter shall include consideration that is not to be used exclusive of other related plant parameters.

(2) Licensees shall provide a description of any additional instrumentation or controls (primary or backup) proposed for the plant to supplement those devices cited in the preceding section giving an unambiguous, easy-to-interpret indication of inadequate core cooling. A description of the functional design requirements for the system shall also be included. A description of the procedures to be used with the proposed equipment, the analysis used in developing these procedures, and a schedule for installing the equipment shall be provided.

Response:

1. HL&P recognizes that the purpose of this recommendation is to assist the operator in rapidly determining the status of core cooling. ACNGS will comply with this recommendation by reviewing current instrumentation and determine whether further modifications are necessary. Using Section 2.1.9 guidance, HL&P will develop procedures for currently available instrumentation.

2. Any additional instrumentation or controls deemed necessary to supplement existing devices shall be described in detail (i.e., design requirements of the equipment, procedures for use of the equipment, and supporting analyses) in the FSAR.

2.1.4 Containment Isolation Provisions for PWRs and BWRs

Position:

(1) All containment isolation system designs shall comply with the recommendations of SRP 6.2.4; i.e., that there be diversity in the parameters sensed for the initiation of containment isolation.

(2) All plants shall give careful reconsideration to the definition of essential and non-essential systems, shall identify each system determined to be essential, shall identify each system determined to be non-essential, shall describe the basis for selection of each essential system, shall modify their containment isolation designs accordingly, and shall report the results of the re-evaluation to the NRC.

(3) All non-essential systems shall be automatically isolated by the containment isolation signal.

(4) The design of control systems for automatic containment isolation valves shall be such that resetting the isolation signal will not result in the automatic reopening of containment isolation valves. Reopening of containment isolation valves shall require deliberate operator action.

Response:

1. ACNGS currently complies with SRP 6.2.4 with regard to the diversity of parameters sensed for the initiation of containment isolation.

2. HL&P will conduct a design review of ACNGS to determine whether corrective measures are necessary with regard to defining essential and non-essential systems. The bases for the selection of essential and non-essential systems and containment isolation design will be described in detail in the FSAR.

3. The ACNGS design will ensure that all non-essential systems will isolate automatically upon receipt of a containment isolation signal.

4. ACNGS final design will meet the requirements of this recommendation to prevent inadvertent valve reopening upon reset of the isolation signal. The design will be fully described in the FSAR.

2.1.5.a Dedicated Penetrations for External Recombiners or Post-Accident Purge Systems

2.1.5.b Inerting BWR Containments

2.1.5.c Capability to Install Hydrogen Recombiner at Each Light Water Nuclear Power Plant

Items a and c of recommendation 2.1.5 are already met by the existing ACNGS design which includes permanent 100% redundant hydrogen recombiners within the Mark III containment. Pursuant to item (b) on page 2 of NRC's October 10, 1979 letter, item b above concerning the inerting of BWR containments has been deferred by the NRC for further study. The results of the NRC's further studies will be addressed when requested.

2.1.6.a Integrity of Systems Outside Containment Likely to Contain Radioactive Materials (Engineered Safety Systems and Auxiliary Systems) for PWRs and BWRs

Position:

Applicants and licensees shall immediately implement a program to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as-low-as-practical levels. This program shall include the following:

(1) Immediate Leak Reduction

a. Implement all practical leak reduction measures for all systems that could carry radioactive fluid outside of containment.

b. Measure actual leakage rates with system in operation and report them to the NRC.

(2) Continuing Leak Reduction

Establish and implement a program of preventive maintenance to reduce leakage to as-low-as-practical levels. This program shall include periodic integrated leak tests at a frequency not to exceed refueling cycle intervals.

Response

1. ACNGS will comply with this recommendation. Leakage rate tests will be performed on systems outside containment that could contain highly radioactive fluids and the results reported to the NRC.

2. The leakage rate test program and preventive maintenance actions will be described in the FSAR.

2.1.6.b Design Review of Plant Shielding of and Environmental Qualification of Equipment for Spaces/Systems which May Be Used in Post Accident Operations

Position:

With the assumption of a post-accident release of radioactivity equivalent to that described in Regulatory Guides 1.3 and 1.4 (i.e., the equivalent of 50% of the core radioiodine and 100% of the core noble gas inventory are contained in the primary coolant), each licensee shall perform a radiation and shielding design review of the spaces around systems that may, as a result of an accident, contain highly radioactive materials. The design review should identify the location of vital areas and equipment, such as the control room, radwaste control stations, emergency power supplies, motor control centers, and instrument areas, in which personnel occupancy may be unduly limited or safety equipment may be unduly degraded by the radiation fields during post-accident operations of these systems.

Each licensee shall provide for adequate access to vital areas and protection of safety equipment by design changes, increased permanent or temporary shielding, or post-accident procedural controls. The design review shall determine which types of corrective actions are needed for vital areas throughout the facility.

Response:

A radiation and shielding design review of the spaces around systems that may, as a result of an accident, contain highly radioactive materials will be performed using a post-accident release given in Regulatory Guide 1.3. The design review of these systems and spaces will be conducted in accordance with the criteria given above. Access to these areas will not be unduly impaired due to radiation from these systems, nor will the operation of essential components or systems be degraded due to radiation.

2.1.7.a Automatic Initiation of the Auxiliary Feedwater System for PWRs

Position:

Consistent with satisfying the requirements of General Design Criterion 20 of Appendix A to 10 CFR Part 50 with respect to the timely initiation of the auxiliary feedwater system, the following requirements shall be implemented in the short term:

(1) The design shall provide for the automatic initiation of the auxiliary feedwater system.

(2) The automatic initiation signals and circuits shall be designed so that a single failure will not result in the loss of auxiliary feedwater system function.

(3) Testability of the initiating signals and circuits shall be a feature of the design.

(4) The initiating signals and circuits shall be powered from the emergency buses.

(5) Manual capability to initiate the auxiliary feedwater system from the control room shall be retained and shall be implemented so that a single failure in the manual circuits will not result in the loss of system function.

(6) The a-c motor-driven pumps and valves in the auxiliary feedwater system shall be included in the automatic actuation (simultaneous and/or sequential) of the loads to the emergency buses.

(7) The automatic initiating signals and circuits shall be designed so that their failure will not result in the loss of manual capability to initiate the AFWS from the control room.

In the long term, the automatic initiation signals and circuits shall be upgraded in accordance with safety-grade requirements.

Response:

This recommendation is not applicable to BWRs such as ACNGS.

2.1.7.b Auxiliary Feedwater Flow Indication to Steam Generators for PWRs

Position:

Consistent with satisfying the requirements set forth in GDC 13 to provide the capability in the control room to ascertain the actual performance of the AFWS when it is called to perform its intended function, the following requirements shall be implemented:

(1) Safety-grade indication of auxiliary feedwater flow to each steam generator shall be provided in the control room.

(2) The auxiliary feedwater flow instrument channels shall be powered from the emergency buses consistent with satisfying the emergency power diversity requirements of the auxiliary feedwater system set forth in Auxiliary Systems Branch Technical Position 10-1 of the Standard Review Plan, Section 10.4.9.

Response:

This recommendation is not applicable to BWRs such as ACNGS.

2.1.8.a Improved Post-Accident Sampling Capability

Position:

A design and operational review of the reactor coolant and containment atmosphere sampling systems shall be performed to determine the capability of personnel to promptly obtain (less than 1 hour) a sample under accident conditions without incurring a radiation exposure to any individual in excess of 3 and 18 3/4 Rems to the whole body or extremities, respectively. Accident conditions should assume a Regulatory Guide 1.3 or 1.4 release of fission products. If the review indicates that personnel could not promptly and safely obtain the samples, additional design features or shielding should be provided to meet the criteria.

A design and operational review of the radiological spectrum analysis facilities shall be performed to determine the capability to promptly quantify (less than 2 hours) quantify certain radioisotopes that are indicators of the degree of core damage. Such radionuclides are noble gases (which indicate cladding failure), iodines and cesiums (which indicate high fuel temperatures), and non-volatile isotopes (which indicate fuel melting). The initial reactor coolant spectrum should correspond to a Regulatory Guide 1.3 or 1.4 release. The review should also consider the effects of direct radiation from piping and components in the auxiliary building and possible contamination and direct radiation from airborne effluents. If the review indicates that the analyses required cannot be performed in a prompt manner with existing equipment, then design modifications or equipment procurement shall be undertaken to meet the criteria.

In addition to the radiological analyses, certain chemical analyses are necessary for monitoring reactor conditions. Procedures shall be provided to perform boron and chloride chemical analyses assuming a highly radioactive initial sample (Regulatory Guide 1.3 or 1.4 source term). Both analyses shall be capable of being completed promptly; i.e., the boron sample analysis within an hour and the chloride sample analysis within a shift.

Response:

HL&P will conduct a design and operational review of the reactor coolant and containment atmospheric sampling systems to determine the capability of personnel to promptly obtain a sample under accident conditions (Regulatory Guide 1.3 release) without incurring individual exposures in excess of 3 and 18 3/4 Rems to the whole body or extremities, respectively. Necessary changes in design, if any, will be incorporated. A comparable review will be made of the radiological spectrum analysis facilities to determine ability to promptly quantify certain radioisotopes that are indicators of core damage. This review will also consider the effects of direct radiation from piping and components in the auxiliary building and possible contamination and direct radiation from airborne effluents. Procedures will be developed to perform prompt (i.e., the boron analysis can be

completed within an hour and the chloride analysis within a shift) boron and chloride sample analyses assuming a Regulatory Guide 1.3 release. Design details and procedures will be described in the FSAR.

2.1.8.b Increased Range of Radiation Monitors

Position:

The requirements associated with this recommendation should be considered as advanced implementation of certain requirements to be included in a revision to Regulatory Guide 1.97, "Instrumentation to Follow the Course of an Accident," which has already been initiated, and in other Regulatory Guides, which will be promulgated in the near-term.

(1) Noble gas effluent monitors shall be installed with an extended range designed to function during accident conditions as well as during normal operating conditions; multiple monitors are considered to be necessary to cover the ranges of interest.

a. Noble gas effluent monitors with an upper range capacity of 10^5 Ci/cc (Xe-133) are considered to be practical and should be installed in all operating plants.

b. Noble gas effluent monitoring shall be provided for the total range of concentration extending from normal condition (ALARA) concentrations to a maximum of 10^5 Ci/cc (Xe-133). Multiple monitors are considered to be necessary to cover the ranges of interest. The range capacity of individual monitors should overlap by a factor of ten.

(2) Since iodine gaseous effluent monitors for the accident condition are not considered to be practical at this time, capability for effluent monitoring of radioiodines for the accident condition shall be provided with sampling conducted by adsorption on charcoal or other media, followed by onsite laboratory analysis.

(3) In-containment radiation level monitors with a maximum range of 10^8 rad/hr shall be installed. A minimum of two such monitors that are physically separated shall be provided. Monitors shall be designed and qualified to function in an accident environment.

Response:

HL&P agrees that the ability to monitor high level releases is vital to understanding the condition of an accident. ACNGS will provide instrumentation and laboratory facilities to accomplish this goal. In particular:

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(1) Noble gas effluent monitors with ranges outlined above will be provided consistent with available state-of-the-art technology.

(2) The ACNGS design will be capable of post accident effluent monitoring of radioiodines by sampling and subsequent onsite laboratory analysis.

(3) A minimum of two environmentally qualified in-containment radiation level monitors with maximum ranges consistent with state-of-the-art technology will be provided.

Design details of these instrumentation and laboratory facilities will be provided in the FSAR.

2.1.8.c Improved In-Plant Iodine Instrumentation

Position:

Each licensee shall provide equipment and associated training procedures for accurately determining the airborne iodine concentration in areas within the facility where plant personnel may be present during an accident.

Response:

Accurate determination of in-plant airborne radioiodine concentrations will be provided by instrumentation reflecting state-of-the-art technology and by proper training and procedures of plant personnel. Information on the design of this equipment and associated procedures and training will be provided in the FSAR.

2.1.9 Analysis of Design and Off-Normal Transients and Accidents

Position:

Analyses, procedures, and training addressing the following are required:

(1) Small break loss-of coolant accidents;

(2) Inadequate core cooling; and

(3) Transients and accidents.

Some analysis requirements for small breaks have already been specified by the Bulletins and Orders Task Force. These should be completed. In addition, pretest calculations of some of the Loss of Fluid Test (LOFT) small break tests (scheduled to start in September 1979) shall be performed as means to verify the analyses performed in support of the small break emergency procedures and in support of an eventual long term verification of compliance with Appendix K of 10 CFR Part 50.

In the analysis of inadequate core cooling, the following condition shall be analyzed using realistic (best-estimate) methods:

(1) Low reactor coolant system inventory (two examples will be required - LOCA with forced flow, LOCA without forced flow).

(2) Loss of natural circulation (due to loss of heat sink).

These calculations shall include the period of time during which inadequate core cooling is approached as well as the period of time during which inadequate core cooling exists. The calculations shall be carried out in real time far enough that all important phenomena and instrument indication are included. Each case should then be repeated taking credit for correct operator action. These additional cases will provide the basis for developing appropriate emergency procedures. These calculations should also provide the analytical basis for the design of any additional instrumentation needed to provide operators with an unambiguous indication of vessel water level and core cooling adequacy (see Section 2.1.3.b in this appendix).

The analyses of transients and accidents shall include the design basis events specified in Section 15 of each FSAR. The analyses shall include a single active failure for each system called upon to function for a particular event. Consequential failures shall also be considered. Failures of the operators to perform required control manipulations shall be given consideration for permutations of the analyses. Operator actions that could cause the complete loss of function of a safety system shall also be considered. At present, these analyses need not address passive failures or multiple system failures in the short term. In the recent analysis of small break LOCAs, complete loss of auxiliary feedwater was

2.1.9 Position - Cont'd.

considered. The complete loss of auxiliary feedwater may be added to the failures being considered in the analysis of transients and accidents if it is concluded that more is needed in operator training beyond the short-term actions to upgrade auxiliary feedwater system reliability. Similarly, in the long term, multiple failures and passive failures may be considered depending in part on staff review of the results of the short-term analyses.

The transient and accident analyses shall include event tree analyses, which are supplemented by computer calculations for those cases in which the system response to operator actions is unclear or these calculations could be used to provide important quantitative information not available from an event tree. For example, failure to initiate high-pressure injection could lead to core uncovery for some transients, and a computer calculation could provide information on the amount of time available for corrective action. Reactor simulators may provide some information in defining the event trees and would be useful in studying the information available to the operators. The transient and accident analyses are to be performed for the purpose of identifying appropriate and inappropriate operator actions relating to important safety considertions such as natural circulation, prevention of core uncovery, and prevention of more serious accidents.

The information derived from the preceding analyses shall be included in the plant emergency procedures and operator training. It is expected that analyses performed by the NSSS vendors will be put in the form of emergency procedure guidelines and that the changes in the procedures will be implemented by each licensee of applicant.

In addition to the analyses performed by the reactor vendors, analyses of selected transients should be performed by the NRC Office of Research, using the best available computer codes, to provide the basis for comparisons with the analytical methods being used by the reactor vendors. These comparisons together with comparisons to data, including LOFT small break test data, will constitute the short-term verification effort to assure the adequacy of the analytical methods being used to generate emergency procedures.

2.1.9

Response:

Analyses, procedures, and training addressing small break LOCA's, inadequate core cooling, and transients and accidents shall be performed in accordance with the recommendations of this NRC position. HL&P recognizes that one of the most important "Lessons Learned" from TMI is to integrate the operator training and emergency procedures very closely with realistic transient analyses and instrument response. Much of the effort to accomplish this goal will be generic in nature with the NRC working with vendors, EPRI, AIF, and various owners' groups to develop appropriate programs. ACNGS will incorporate the results of these efforts by having the analyses put in the form of emergency procedures and training programs. The analyses, emergency procedures and training program will be described in the FSAR.

2.2.1.a Shift Supervisor's Responsibilities

Position:

(1) The highest level of corporate management of each licensee shall issue and periodically reissue a management directive that emphasizes the primary management responsibility of the shift supervisor for safe operation of the plant under all conditions on his shift and that clearly establishes his command duties.

(2) Plant procedures shall be reviewed to assure that the duties, responsibilities, and authority of the shift supervisor and control room operators are properly defined to effect the establishment of a definite line of command and clear delineation of the command decision authority of the shift supervisor in the control room relative to other plant management personnel. Particular emphasis shall be placed on the following:

a. The responsibility and authority of the shift supervisor shall be to maintain the broadest perspective of operational conditions affecting the safety of the plant as a matter of highest priority at all times when on duty in the control room. The idea shall be reinforced that the shift supervisor should not become totally involved in any single operation in times of emergency when multiple operations are required in the control room.

b. The shift supervisor, until properly relieved, shall remain in the control room at all times during accident situations to direct the activities of control room operators. Persons authorized to relieve the shift supervisor shall be specified.

c. If the shift supervisor is temporarily absent from the control room during routine operations, a lead control room operator shall be designated to assume the control room command function. These temporary duties, responsibilities, and authority shall be clearly specified.

(3) Training programs for shift supervisors shall emphasize and reinforce the responsibility for safe operation and the management function the shift supervisor is to provide for assuring safety.

(4) The administrative duties of the shift supervisor shall be reviewed by the senior officer of each utility responsible for plant operations. Administrative functions that detract from or are subordinate to the management responsibility for assuring the safe operation of the plant shall be delegated to other operations personnel not on duty in the control room.

2.2.1.a

Response:

1. Corporate management will issue an operations policy directive that emphasizes the duties, responsibilities, authority and lines of command of the shift supervisor position at ACNGS.

2. Plant procedures will be written such that the duties, responsibilities, and authority of the shift supervisor and control room operators are appropriately and clearly defined and reflect the command and control function vested in the shift supervisor as outlined in the statement of position. Particular emphasis will be placed on defining the authorities and duties of the shift supervisor and the delineation of authority in the absence of the shift supervisor.

3. HL&P will develop training programs to emphasize to the shift supervisor his responsibility for safety at ACNGS.

4. Administrative duties of the shift supervisor will be reviewed and those which detract from the shift supervisor's responsibility for safe operation of ACNGS will be delegated to other operations personnel not on duty in the control room.

Descriptions of plant procedures, training programs, and plant organizational structure will be provided in the FSAR.

2.2.1.b Shift Technical Advisor

Position:

Each licensee shall provide an on-shift technical advisor to the shift supervisor. The shift technical advisor may serve more than one unit at a multi-unit site if qualified to perform the advisor function for the various units.

The shift technical advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline and have received specific training in the response and analysis of the plant for transients and accidents. The shift technical advisor shall also receive training in plant design and layout including the capabilities of instrumentation and controls in the control room. The licensee shall assign normal duties to the shift technical advisors that pertain to the engineering aspects of assuring safe operations of the plant, including the review and evaluation of operating experience.

Response:

HL&P will designate a shift technical advisor prior to commencement of operations at ACNGS or, in the alternative, provide an equivalent capability to meet the functional requirements set forth in this recommendation and in Enclosure 2 to the October 10, 1979 NRC letter to all pending construction permit applicants. A description of the qualifications and duties of the shift technical advisor will be provided in the FSAR.

2.2.1.c Shift and Relief Turnover Procedures

Position:

The licensees shall review and revise as necessary the plant procedure for shift and relief turnover to assure the following:

(1) A checklist shall be provided for the oncoming and offgoing control room operators and the oncoming shift supervisor to complete and sign. The following items, as a minimum, shall be included in the checklist:

a. Assurance that critical plant parameters are within allowable limits (parameters and allowable limits shall be listed on the checklist).

b. Assurance of the availability and proper alignment of all systems essential to the prevention and mitigation of operational transients and accidents by a check of the control console (what to check and criteria for acceptable status shall be included on the checklist);

c. Identification of systems and components that are in a degraded mode of operation permitted by the Technical Specifications. For such systems and components, the length of time in the degraded mode shall be compared with the Technical Specifications action statement (this shall be recorded as a separate entry on the checklist).

(2) Checklists or logs shall be provided for completion by the offgoing and oncoming auxiliary operators and technicians. Such checklists or logs shall include any equipment under maintenance of test that by themselves could degrade a system critical to the prevention and mitigation of operational transients and accidents or initiate an operational transients (what to check and criteria for acceptable status shall be included on the checklist); and

(3) A system shall be established to evaluate the effectiveness of the shift and relief turnover procedure (for example, periodic independent verification of system alignments).

2.2.1.c

Response:

1. HL&P strongly agrees that formal shift turnover from off-going to on-going individuals responsible for reactor operations is required. Procedures for ACNGS will be developed and implemented which ensure that this turnover will be performed and verified by such checklists as described in the position statement.

2. This recommendation will be factored into the development of ACNGS shift and relief turnover procedures. Special attention in the checklists or logs will be given to systems important to safety which are subjected to maintenance or testing.

3. The effectiveness of the shift and relief turnover procedure will be periodically evaluated.

2.2.2.a Control Room Access

Position:

The licensee shall make provisions for limiting access to the control room to those individuals responsible for the direct operation of the nuclear power plant (e.g., operations supervisor, shift supervisor, and control room operators), to technical advisors who may be requested or required to support the operation, and to predesignated NRC personnel. Provisions shall include the following:

(1) Develop and implement an administrative procedure that establishes the authority and responsibility of the person in charge of the control room to limit access.

(2) Develop and implement procedures that establish a clear line of authority and responsibility in the control room in the event of an emergency. The line of succession for the person in charge of the control room shall be established and limited to persons possessing a current senior reactor operator's license. The plan shall clearly define the lines of communication and authority for plant management personnel not in direct command of operations, including those who report to stations outside of the control room.

Response:

HL&P most strongly agrees with this recommendation. Control room access should be limited at all times, but during accident conditions it is mandatory that only those required for safe command and control of reactor operations are permitted access. Procedures for ACNGS will be developed and implemented which limit access to the control room during normal and accident conditions. These procedures will be developed in accordance with positions 1 and 2 above.

2.2.2.b Onsite Technical Support Center

Position:

Each operating nuclear power plant shall maintain an onsite technical support center separate from and in close proximity to the control room that has the capability to display and transmit plant status to those individuals who are knowledgeable of and responsible for engineering and management support of reactor operations in the event of an accident. The center shall be habitable to the same degree as the control room for postulated accident conditions. The licensee shall revise his emergency plans as necessary to incorporate the role and location of the technical support center.

Records that pertain to the as-built conditions and layout of structures, systems and components shall be stored and filed at the site and accessible to the technical support center under emergency conditions. Examples of such records include system descriptions, general arrangement drawings, piping and instrument diagrams, piping system isometrics, electrical schematics, wire and cable lists, and single line electrical diagrams. It is not the intent that all records described in ANSI N45.2.9-1974 be stored and filed at the site and accessible to the technical support center under emergency conditions; however, as stated in that standard, storage systems shall provide for accurate retrieval of all pertinent information without undue delay.

Response:

HL&P agrees with the concept of an Onsite Technical Support Center to be utilized as an aid to the person responsible for reactor operations command and control in the control room. ACNGS design will provide an Onsite Technical Support Center, separate from the control room which will contain such drawings, documents, schematics, photographs and such monitoring and communications equipment as required to adequately support the reactor operations command and control function. The Onsite Technical Support Center will have the capability to display and transmit plant status to those individuals who are knowledgeable of and responsible for engineering and management support of reactor operations in the event of an accident. The center shall be habitable to the same degree as the control room for postulated accident conditions. ACNGS procedures will be developed which define the authority and lines of communication of those persons manning this center. A complete description of the Onsite Technical Support Center will be included in the FSAR submittal.

2.2.2.c Onsite Operational Support Center

Position:

An area to be designated as the onsite operational support center shall be established. It shall be separate from the control room and shall be the place to which the operations support personnel will report in an emergency situation. Communications with the control room shall be provided. The emergency plan shall be revised to reflect the existence of the center and to establish the methods and lines of communication and management.

Response:

ACNGS will provide an Onsite Operational Support Center outside the control room, as a mustering point for operational support personnel. Communication with the Control Room will be provided. The ACNGS Emergency Plan will reflect the existence of the center and describe the methods and lines of communication and management.

2.2.3 Revised Limiting Conditions for Operation of Nuclear Power Plants Based Upon Safety System Availability (Section 2.2.3)

HL&P recognizes that this recommendation has been deferred for further study by the NRC (see item (a), page 2, October 10, 1979 letter).

ATTACHMENT D

HL&P Commitments Regarding Enclosure 7
"Near Term Requirements for
Improving Emergency Response"

The requirements of Enclosure 7 are identical to those contained in SECY-79-450 which was addressed in our August 9, 1979 letter. Those commitments are repeated below for convenience.

EMERGENCY PLAN COMMITMENTS

The Commission's Staff recently submitted to the Commissioners an "Action Plan for Promptly Improving Emergency Preparedness" (SECY-79-450, July 23, 1979). That document outlines immediate steps to improve licensee preparedness "at all operating power plants and for near term OLs." Although not applicable by its terms to pending CP applicants HL&P's Task Force on Emergency Planning has been evaluating many of the matters discussed in SECY-79-450. Although details will be furnished during the OL review, HL&P, based on its study to date submits the following comments and commitments with respect to emergency plans for the ACNGS:

* * * *

ITEM:

1. Upgrade licensee emergency plans to satisfy Regulatory Guide 1.101, with special attention to the developement of uniform action level criteria based on plant parameters.

Response:

1. The Emergency Plan for ACNGS submitted with the Operating License application will comply with the requirements of Regulatory Guide 1.101 as applicable. HL&P will upgrade the present Construction Permit-stage Emergency Plan to assure the capability to take protective measures consistent with Regulatory Guide 1.101 out to a distance of 10 miles from the plant site. In all cases, special attention will be given to the establishment of uniform action level criteria appropriate to the ACNGS design.

ITEM:

2. Assure the implementation of the related recommendations of the NRR Lessons Learned Task Force involving instrumentation to follow the course of an accident and relate the information provided by this instrumentation to the emergency plan action levels. This will

include instrumentation for post-accident sampling, high range radioactivity monitors, and improved in-plant radioidine instrumentation. The implementation of the lessons learned recommendation on instrumentation for detection of inadequate core cooling will also be factored into the emergency plan action level criteria.

Response:

2. HL&P is committed to these design features in Attachment 1. (See responses to Recommendations 2.1.3 b and 2.1.8 of NUREG-0578.) The information provided by this instrumentation will be related to the emergency plan action levels.

ITEM:

3. Determine that an Emergency Operations Center for Federal, State and local personnel has been established with suitable communications to the plant, and that upgrading of the facility in accordance with the Lessons Learned recommendation for an inplant technical support center is underway.

Response:

3. HL&P is committed to this recommendation.

ITEM:

4. Assure that improved licensee offsite monitoring capabilities (including additional TLD's or equivalent) have been provided for all sites.

Response:

4. ACNGS will comply with this requirement.

ITEM:

5. Assess the relationship of State/local plans to the licensee's and Federal plans so as to assure the capability to take appropriate emergency actions. Assure that this capability will be extended to a distance of 10 miles as soon as practical but not later than January 1, 1981. This item will be performed in conjunction with the Office of State Programs and the Office of Inspection and Enforcement.

Response:

5. HL&P is cooperating with another utility applicant in Texas as well as cognizant agencies of the State of Texas and local government to develop an emergency response plan designed to assure the capability to take protective measures out to a distance of 10 miles for the plant site. It is the intent of the participating organizations to submit such a plan before the end of this year.

ITEM:

6. Require test exercises of approved Emergency Plans (Federal, State, local, licensees), review plans for such exercises, and participate in a limited number of joint exercises. Tests of licensee plans will be required to be conducted as soon as practical for all facilities and before reactor startup for the new licensees. Exercises of the State plans will be performed in conjunction with the concurrence reviews of the Office of State Programs. Joint test exercises involving Federal, State, local and licensees will be conducted at the rate of about 10 per year, which would result in all sites being exercised once each five years.

Response:

6. ACNGS will comply with all requirements regarding the nature and frequency of periodic drills of emergency plan. Procedures for this purpose will be part of the plan to be submitted per Item 5., above.

ATTACHMENT E

ALLENS CREEK NUCLEAR GENERATING STATION
HOUSTON LIGHTING & POWER COMPANY
Docket No. 50-466

BULLETIN 79-08 COMMITMENTS

The information which follows addresses HL&P's response to IE Bulletin No. 79-08, "Events Relevant to Boiling Water Reactors Identified During Three Mile Island" (April 14, 1979). Although this document is, at least initially, intended for operations of licensed Boiling Water Reactors, an in-house task force established by HL&P has reviewed and continues to review IEB 79-08 for its applicability at the construction permit stage. Certain items have been identified, as to which appropriate commitments can be made now. The following responses address each item of IE Bulletin 79-08.

* * * *

ITEM:

1. Review the description of circumstances described in Enclosure 1 of IE Bulletin 79-05 and the preliminary chronology of the TMI-2 3/28/79 accident included in Enclosure 1 to IE Bulletin 79-05A.

   a. This review should be directed toward understanding: (1) the extreme seriousness and consequences of the simultaneous blocking of both trains of a safety systems at the Three Mile Island Unit 2 plant and other actions taken during the early phases of the accident; (2) the apparent operational errors which led to eventual core damage; and (3) the necessity to systematically analyze plant conditions and parameters and take appropriate corrective action.

   b. Operational personnel should be instructed to (1) not override automatic action of engineered safety features unless continued operation of engineered safety features will result in unsafe plant conditions (see Section 5a of this bulletin); and (2) not make operational decisions based solely on a single plant parameter indication when one or more confirmatory indications are available.

   c. All licensed operators and plant management and supervisors with operational responsibilities shall participate in this review and such participation shall be documented in plant records.

Response:

One of the responsibilities of our in-house Task Force is to review information concerning TMI including IE Bulletins, NSAC Reports and

NUREGs such as 0600. With regard to the NRC recommendations above:

1a. These matters will be incorporated and stressed in the training program for the ACNGS operating staff.

1b. Operating personnel will be instructed as indicated and appropriate procedures will be established to meet the requirement of recommendation 1b.

1c. Operating personnel, as well as plant managers and supervisors with operating responsibilities will participate in the programs described in 1a. and 1b.

ITEM:

2. Review the containment isolation initiation design and procedures, and prepare and implement all changes necessary to initiate containment isolation, whether manual or automatic, of all lines whose isolation does not degrade needed safety features or cooling capability, upon automatic initiation of safety injection.

Response:

2. The recommended review will be conducted for ACNGS and any necessary changes in design to meet these criteria will be documented in the FSAR.

ITEM:

3. Describe the actions, both automatic and manual, necessary for proper functioning of the auxiliary heat removal system (e.g., RCIC) that are used when the main feedwater system is not operable. For any manual action necessary, describe in summary form the procedure by which this action is taken in a timely sense.

Response:

3. ACNGS will review those actions necessary for proper functioning of the auxiliary heat removal systems when the main feedwater system is inoperable. Procedures for the activation of manually initiated actions in a timely manner will be described in the FSAR for ACNGS.

ITEM:

4. Describe all uses and types of vessel level indication for both automatic and manual initiation of safety systems. Describe other redundant instrumentation which the operator might have to give the same information regarding plant status. Instruct operators to utilize other available information to initiate safety systems.

Response:

4. As discussed in our response concerning Recommendation 2.1.3 and 2.1.9 of NUREG 0578 information available to the operator to determine the plant status and the need for manual actions will be reviewed. A description of the instrumentation (including water level) and how it relates to operator actions will be provided in the FSAR. The operator training program will assure that operators are trained to utilize all available information to initiate safety systems.

ITEM:

5. Review the action directed by the operating procedures and training instructions to ensure that:

   a. Operators do not override automatic actions of engineered safety features, unless continued operation of engineered safety features will result in unsafe plant conditions (e.g. vessel integrity).

   b. Operators are provided additional information and instructions to not rely upon vessel level indication alone for manual actions, but to also examine other plant parameter indications in evaluating plant conditions.

Response:

5a. Procedures will be developed to ensure that operators do not override automatic actions of engineered safety features unless continued operation will result in unsafe conditions.

5b. The procedures and operational training for ACNGS (to be described in greater detail with the FSAR submittal) will stress that operators shall take into account other available plant parameter conditions and not merely rely on vessel level indication.

ITEM:

6. Review all safety-related valve positions, positioning requirements and positive controls to assure that valves remain positioned (open or closed) in a manner to ensure the proper operation of engineered safety features. Also review related procedures, such as those for maintenance, testing, plant and system startup, and supervisory periodic (e.g., daily/shift checks,) surveillance to ensure that such valves are returned to their correct positions following necessary manipulations and are maintained in their proper positions during all operational modes.

Response:

6. HL&P will review from a design viewpoint all safety-related valve positions, position requirements and controls to assure that valves remain positioned to assure proper operation of ESFs. Operational procedures will also be developed, to assure that such valves are returned to correct position after being moved and are maintained in that position.

ITEM:

7. Review your operating modes and procedures for all systems designed to transfer potentially radioactive gases and liquids out of the primary containment to assure that undesired pumping, venting or other release of radioactive liquids and gases will not occur inadvertently.

   In particular, ensure that such an occurrence would not be caused by the retesting of engineered safety features instrumentation. List all such systems and indicate:

   a. Whether interlocks exist to prevent transfer when high radiation indication exists.

   b. Whether such systems are isolated by the containment isolation signal.

   c. The basis on which continued operability of the above features is assured.

Response

7. HL&P will review ACNGS operating modes and procedures to assure the inadvertent or undesirable transfer of radioactive fluids or gases outside of containment will be prevented. The systems designed to transfer potentially radioactive gases and liquids out of the containment together with the information required by Item 7. a., b., and c will be provided in FSAR.

ITEM:

8. Review and modify as necessary your maintenance and test procedures to ensure that they require:

   a. Verification, by test or inspection, of the operability of redundant safety-related systems prior to the removal of any safety-related system from service.

   b. Verification of the operability of all safety-related systems when they are returned to service following maintenance or testing.

c. Explicit notification of involved reactor operational personnel whenever a safety-related system is removed from and returned to service.

Response:

8. The necessary administrative controls will be described during the OL review. The controls will be designed to ensure that maintenance and test procedures address verification of the operability of redundant safety-related systems prior to removal of any such system from service; verification of the operability of such systems when they are returned to service following maintenance or testing; and the explicit notification of appropriate personnel of any change in the operational status of those systems.

ITEM:

9. Review your prompt reporting procedures for NRC notification to assure that NRC is notified within one hour of the time the reactor is not in a controlled or expected condition of operation. Further, at that time an open continuous communication channel shall be established and maintained with NRC.

Response:

9. Procedures for this purpose will be described in the Plant Technical Specifications for ACNGS submitted with the FSAR.

ITEM:

10. Review operating modes and procedures to deal with significant amounts of hydrogen gas that may be generated during a transient or other accident that would either remain inside the primary system or be released to the containment.

Response:

10. The review will be conducted and operating modes and procedures will be described during OL review for dealing with significant amounts of hydrogen gas inside the primary system or containment which may be generated during a transient or accident.

ITEM:

11. Propose changes, as required, to those technical specifications which must be modified as a result of your implementing the items above.

Response:

11. All of the foregoing items will be reviewed prior to submittal of the OL application. Technical specifications coming out of this review will be prepared and submitted during OL review.

Copies of this document were sent to the following by deposit in the United States mail on November 15, 1979.

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