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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

CONCERNING THE SOUTH TEXAS PROJECT PERSONNEL AIR LOCK

SEAL AIR SYSTEM REGARDING CONTAIMENT ISOLATION

SOUTH TEXAS PROJECT, UNIT 1

DOCKET NO. 50-498

By telephone on February 12, 1988 and letter dated February 18, 1988 the licensee informed the staff that the solenoid valves in the air supply lines to the containment personnel air lock seals had been overlooked in the identification of containment isolation valves. The licensee recognized that the valves in question should have been provided with either capability for remote manual actuation or automatic actuation on receipt of a containment isolation signal.

The licensee took the following actions upon recognition of the above condition and requested the staff's review and approval:

(a) Initiated a design change to add the requisite circuitry. It was stated that the design would be complete on February 19, 1988 and installation complete prior to exceeding 5% power.

(b) Changed operating procedures such that the solenoid valves will be maintained closed and deactivated when the air lock is operable.

(c) Included in the procedures a provision that when the valves are opened to recharge the air accumulators, an individual will be stationed at the breaker which supplies power to the valves. This person would be expected to close the valves in the event containment isolation is required.

(d) Instituted administrative controls to the personnel air lock to allow usage only for equipment passage into containment.

The staff has reviewed the current design (Bechtel Energy Corporation Drawing 5C269F05060-1) and the proposed change in design. There are four ¼ inch lines that emanate from a pneumatic module outside containment which provide compressed air to the air lock inflatable seals. Two of the lines provide compressed air to the inflatable seals of the air lock doors via accumulators located within the doors. Of these two lines, one passes completely through the containment wall and is connected to the inside air lock door from the containment side via a stainless steel flexible connection. The other line terminates in the air lock and is connected to the outside air lock door from the air lock via a stainless steel flexible connection. The two remaining ¼ inch lines go to the stationary part of the pneumatic seals and are used for the seal leakage measurement system. There is a single ¼ inch line for leakage measurement of the inner and outer seals.

Each of the four ½ inch lines has a solenoid valve installed in it. Valve FV-1025 controls the air supply to the outer seal while valve FV-1026 controls the air supply to the inner seal. Valves FV-1027 and FV-1028 are installed in the leak rate lines for the outer and inner seal, respectively.

Based on information provided by the licensee the staff has concluded that the four ½ inch lines to the air lock pneumatic seals must conform with GDC 57. The solenoid valves installed are acceptable as isolation valves, but do not receive a signal to close on a containment isolation. In order to conform to GDC 57, the licensee proposed an interim measure to close these solenoid valves with the power source locked out except for the times when the seals require replenishment of the air supply. At such times, the licensee proposed to station an operator at the valve control in order to manually close the valve should a containment isolation occur. The operator would remain at the valve controls until the valve is closed and the power to the valve was again locked out. For the long run the licensee has committed to modify the solenoid valve circuitry to allow automatic closure on a containment isolation. The modifications will be complete prior to exceeding 5% power.

Staff Evaluation

locked closed valves are acceptable as a means of complying with GDC 57. Locking open the power supply to a closed solenoid valve has the same effect as locking closed a manually operated valve. Therefore, the staff concluded that a closed solenoid valve with a locked open power supply is the equivalent of a locked closed valve and is in conformance with GDC 57.

For this interim application, the staff considers a manually controlled valve with an operator stationed at the controls to be the equivalent of a valve that is operated remote manually.

The magnitude of radioactivity that can potentially leak through the ½ inch line is quite low. Each line includes an ASME Section III Class 2 check valve. The radioactive source would have to overcome the instrument line air pressure. The final design of automatic isolation will be implemented before the plant exceeds 5% rated power. In the interim the valves would not be locked closed only for short periods of time for recharging the accumulators, during which periods they would be under administrative control.

Staff Conclusions:

The actions taken by the licensee, the proposed design change and the schedule for implementation are acceptable to the staff in terms of meeting the regulatory requirements regarding containment integrity. The actions taken by the licensee are sufficient to ensure the operability of the personnel air lock as well as the containment isolation system. Since the licensee's letter requests temporary waiver of Technical Specification 3.0.4 for the air supply lines to the containment personnel air lock seals, the staff grants such waiver to permit change of modes and continue the testing program, although it may not be necessary to invoke Specification 3.0.4 when the valves in question are considered operable. The staff will ensure implementation of the licensee's commitment before the power level exceeds 5% rated power.