Florida Power
CORPORATION

September 22, 1988
3F0988-18

Dr. J. Nelson Grace
Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street N.W., Suite 2900
Atlanta, GA 30323

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Reactor Building Purge

Dear Sir:

Florida Power Corporation's Crystal River Unit 3 is scheduled to begin a MODE 5 outage on October 1, 1988, to repair valves in the Emergency Feedwater system. As a part of this outage, inspections of the piping and components in the reactor building with the reactor coolant system at temperature and pressure (MODES 3 & 4) is necessary. These inspections require numerous manhours be expended in the reactor building at a time when purging is not permitted by the Technical Specifications. The present reactor building atmosphere iodine concentration is approximately three (3) MPC's which necessitates respiratory protection measures be taken. These measures present difficulties in themselves and reduce the efficiency of the personnel in the performance of their inspections. This reduced efficiency translates into additional manhours in the reactor building and increased whole body and skin exposure doses.

Florida Power Corporation is therefore requesting to establish a mini-purge of the reactor building beginning as soon as approval of this proposal is obtained, and continuing until the October outage begins and the normal purge is established (MODE 5). Upon entry into MODE 5, the normal reactor building purge will be initiated. The mini-purge would be established by pumping air into the reactor building through a station air line at SAV-23 and SAV-24 which exits into the reactor building atmosphere through SAV-51 . The





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outlet from the reactor building would be through the post accident venting system at LRV-71 & 73 or LRV-70 & 72 and released through the reactor building purge exhaust HEPA and charcoal banks (see attached sketches). The purge exhaust rate would be approximately 750 SCFM and would be monitored by the normal reactor building purge exhaust effluent monitor (RM-A1).

This flow path utilizes containment isolation valves which are not automatically closed upon a high radiation signal from RM-A1 or a reactor building isolation signal. Crystal River Unit 3 Technical Specifications Section 3.6.1.1 and Table 3.6-1 contain a provision for opening SAV-23 & 24 on an intermittent basis under administrative controls consisting of a dedicated operator stationed at the valves who is in continuous communication with the control room. The LRV's do not have this provision available in the Technical Specifications.

By utilizing this mini-purge, the reactor building atmosphere iodine concentration can be theoretically reduced to 0.1 MPC's within approximately nine (9) days. This estimate is based on a standard bleed and feed equation with a dilution rate of 500 SCFM (Attachment 1). Reduction of the iodine concentration from 3 to 0.1 would result in a dose savings of approximately 2 Rem whole body and 46 Rem skin exposure for the personnel involved in the MODE 3 & 4 reactor building inspections. These dose savings are explained in detail in Attachment 1.

Additional benefits will result from the reduction or removal of respiratory protection requirements which will enhance productivity during the inspections and aid personnel safety through improved visibility and communication ability as well as reduced physical stress which results from the use of a respirator or self contained breathing apparatus.

The controls that will be established in support of this mini-purge include stationing of dedicated operators at the Station Air Valve area (SAV-23 & 24) and the Leak Rate Valve area (LRV-70 & 72 or LRV-71 & 73). These operators will be in continuous communication with the control room to allow for rapid closure of these valves should the effluent monitor alarm or conditions within the reactor building warrant building isolation. This release will be controlled in accordance with the provisions of the Off-site Dose Calculation Manual as stipulated in the Technical Specifications (with the exception of automatic isolation) and will be continuously monitored and processed through the HEPA and charcoal filters normally used for reactor building purges.

A study is underway to develop a long term solution to this problem. As part of this solution, an upgrade of the mini-purge exit path discussed herein is planned which will include placing the radiation monitor isolation signal on the affected valves. This modification is presently planned to be installed during Refuel VII. Also under review are closed cycle clean-up system for the reactor building atmosphere consisting of HEPA and charcoal filters which can be used at any time to reduce the concentration of iodine and particulate radionuclides, and other alternatives.

Florida Power Corporation makes this request in an effort to reduce its worker's exposure to radiation and radioactive materials, and to assure every measure has been taken that can safely and legally be taken to improve individual personnel safety.

If you have any questions, please contact this office,

Ken Wilson

K.R. Wilson, Manager
Nuclear Licensing

Attachment

REF:KRW

xc: Document Control Desk

Senior Resident Inspector

ATTACHMENT 1

CLEAN-UP RATE:

The following is based on a simplified bleed and feed calculation from the B&W 1385 Water Chemistry Manual.

$$C'' = C'e^{-qt/v}$$

where: C" = new concentration in reactor building
C' = original concentration in reactor building
q = dilution rate (CFM)
t = time of purge (minutes)
v = volume of free air in reactor building (CF)

$$C'' = (3\ MPC's)(e^{-(500)(t)/(2E6)})$$

DOSE SAVINGS:

Whole Body Exposure Savings

258 manhours X 3 MPC's X 2.5 mRem/MPC-hr = 1.94 Rem

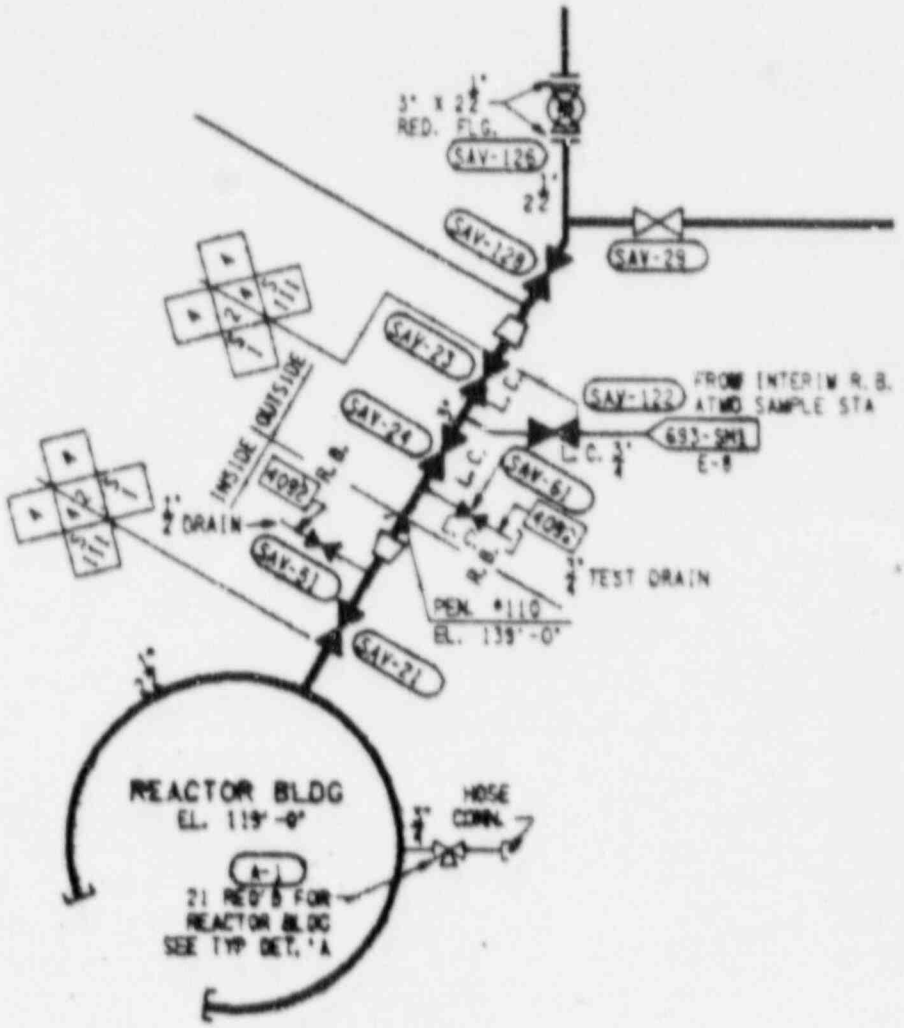
Skin Exposure Savings

258 manhours X 180 mRem/hr submersion dose = 46.4 Rem

These dose savings are based on the scheduled work load for MODE 3 & 4 activities (~258 manhours) and the noble gas and iodine concentrations presently in the reactor building atmosphere.

REACTOR BUILDING INLET

SKETCH



REACTOR BUILDING OUTLET

SKETCH