NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER: 50-269/270/287

FILE NUMBER:

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

TO: Mr. E. Case

FROM: Duke Power Co.
Charlotte, N.C. 28242
W. O. Parker, Jr.

DATE OF DOCUMENT: 3-10-78

DATE RECEIVED: 3-22-78

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INPUT FORM

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DESCRIPTION: Ltr trans the following: 1P

ENCLOSURE: Description of a preliminary design concept & preliminary drawings of the over-pressure system modification..... 20P est.

REACTOR VESSEL OVERPRESSURIZATION
DISTRIBUTION PER G. ZECH 10-21-76

PLANT NAME: Oconee Units 1-2-3 JCM 3-31-78

~~1 ENCL~~ 1 ENCL + 1 SET DRWG'S

DIST PER ROBERTA INGRAM 3/31/78 DRWGS TO FILES TO BE CHARGED OUT TO G. ZECH

FOR ACTION/INFORMATION

ALL OTHERS RECEIVE LTR'S ~~& REPRO~~ ENCL ONLY.

SAFETY

BRANCH CHIEF: ~~(2)~~ (7) REID

~~LIC. ASST:~~

~~PROJECT MANAGER:~~

INTERNAL DISTRIBUTION

REG FILE W/DRWGS - CHARGE OUT TO ZECH
NRC PDR
I & E (2)
OELD
GOSSICK & STAFF
BOSNAK
PAWLICKI
NOVAK
EISENHUT
SHAO
BAER
BUTLER
ZECH - see FILES

EXTERNAL DISTRIBUTION

LPDR: WALHALLA SC

TIC:

NSIC:

ACRS 16 CYS HOLDING/SENT ~~TO LA~~ CAT B

CONTROL NUMBER

780900056

NRC FORM 195 (2-76)

DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

March 10, 1978

TELEPHONE: AREA 704
373-4083

Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. R. Reid, Chief
Operating Reactors Branch #4

Reference: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Sir:

In your February 2, 1978 letter, additional information was requested concerning a conceptual design of an overpressure protection system modification. Please find attached a description of a preliminary design concept and the preliminary drawings of the system modification.

This overpressure protection system is a conceptual design only. It is our position that installation of this system would not provide any significant, additional protection for the public's health and safety above that currently provided by installed protection systems and administrative procedures.

Very truly yours,

William O. Parker, Jr.

William O. Parker, Jr. By [illegible]

RLG:ge
Attachments

ATTACHMENT 1

OVERPRESSURE PROTECTION SYSTEM
PRELIMINARY DESIGN CONCEPT

The purpose of this design concept is to describe an additional redundant means to prevent an overpressurization incident caused by High Pressure Injection System (HPI) actuation.

This design concept includes an alarm which activates upon reaching an RCS temperature above Minimum Pressurization Temperature (MPT) to alert the operator to activate the overpressure protection system. This alarm monitors reactor coolant system temperature. Once this system is activated, a pressure switch, located on the HPI system as shown on attached Figure 1, senses RCS pressure. If RCS pressure exceeds the limiting value of approximately 500 psi, the pressure switch closes to energize a relay which trips the breakers to the HPI pumps.

The overpressure protection system is activated by valving into service the pressure switch and operating an electrical key-lock switch (S45/1VB2) in the control room. The pressure switch is valved out during normal operation abot MPT to prevent generation of the electrical signal indicating a high pressure condition. Both the pressure switch contact and the key-lock switch contact are required to energize the lock-out relay (1LOR/1VB2). During normal operation a fault in either the pressure switch or the key-lock switch will not cause the lock-out relay to be energized. Additionally, energizing the lock-out relay will not in itself cause a trip of the HPI pump breakers. The key-lock switch contact and the lock-out relay contact in the HPI pump breaker trip circuit must both be closed in order to trip the HPI pump by this means. Other trip features are not affected.

The following is a description of the series of events that would occur during a cooldown with this system installed:

Initial conditions: Normal cooldown in progress; HPI pump in operation to provide RCP seal water and RCS makeup water.

1. At a specific temperature above MPT, a warning alarm is energized. This statalarm monitors RCS temperature from a indicator located in the control room (See drawings OEE-118-31, -32).

2. After the alerting statalarm is energized and as directed by the station procedure for cooldown, the control operator activates the overpressure protection system. The HPI isolation valve, HP-26, is verified shut, its breaker racked out and tagged as required by the procedure. The overpressure protection system is activated by valving into service the pressure switch (See design Figure 1) and operating the key-lock switch. The overpressure protection system is now aligned for operation. As normal cooldown continues, if the setpoint of the pressure switch is not exceeded, a normal cold shutdown condition is achieved without further overpressure protection system actions.

3. However, if the setpoint of the pressure switch is exceeded, a pair of contacts in the circuit to the lock-out relay (1LOR/1VB2) are closed. See Elementary Diagram, H. P. Injection System, Overpressure Trip, OEE-XXX. Contacts S34/1VB2 2a, 2b had been previously closed by operation of the key-lock switch. Thus, lock-out relay, 1LOR/1VB2, is energized causing contacts in the trip circuit of each HPI pump breaker to close. See drawings OEE-117-47, -76, -62.

   In this trip circuit, contacts from both the lock-out relay and the key-lock switch are required to energize the trip coil. (Contacts 1LOR/1VB2 1F, 1Fa and S45/1VB2 4a, 4b for HPI pump 1A; 1LOR/1VB2 2F, 2Fa and S45/1VB2 6a, 6b for 1B; 1LOR/1VB2 3F, 3Fa and S45/1VB2 8a, 8b for 1C).

4. When RCS pressure has been reduced below its reset value, the control operator must manually reset the lock-out relay. Upon doing this, the HPI pumps may be re-started.

5. When a heatup from cold shutdown commences, the overpressure protection system remains in operation until the deactivate alarm is energized. This statalarm monitors RCS temperature and energizes at a specific temperature above MPT. Please see drawings OEE-118-29, -30. When directed by the station procedure for heatup, the control operator will deactivate the overpressure protection system by valving out of service the pressure switch and de-energizing the key-lock switch.

   Elementary drawings have been provided for Unit 1 systems only; a similar design could be utilized for Unit 2 and Unit 3.

ATTACHMENT 2

PRELIMINARY DESIGN DRAWINGS

Location of pressure switch	Figure 1
"Activate" Statalarm	OEE-118-31, -32
Overpressure Trip (Lock-out Relay)	OEE-XXX
HPI Pump Motor Control Circuit, No. 1A	OEE-117-47
No. 1B	OEE-117-76
No. 1C	OEE-117-62
"De-activate" Statalarm	OEE-118-29, -30

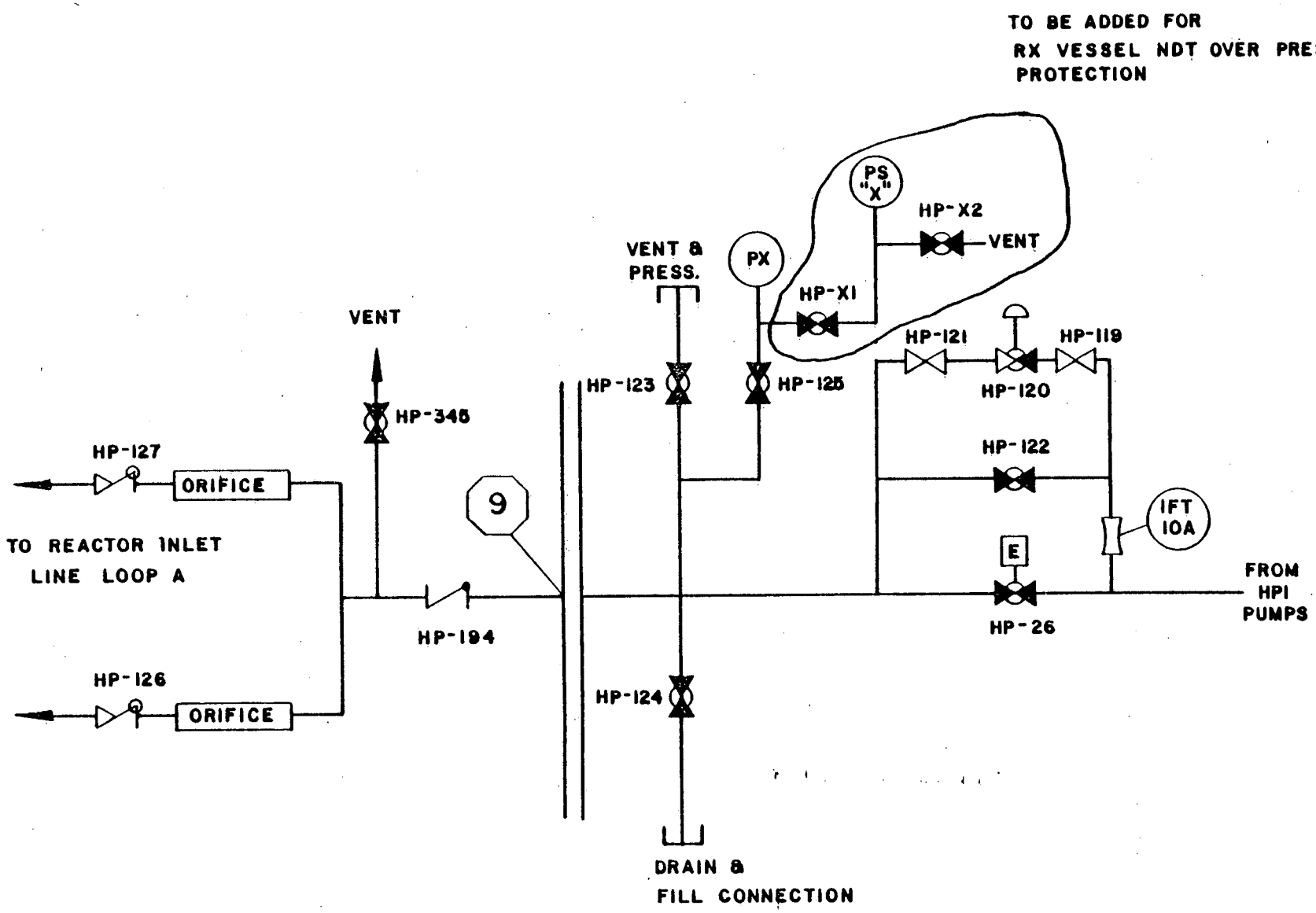
TO BE ADDED FOR
RX VESSEL NDT OVER PRESS.
PROTECTION
PS "X"
HP-X2
VENT
VENT & PRESS.
PX
HP-X1
VENT
HP-121
HP-119
HP-120
HP-123
HP-125
HP-345
HP-122
HP-127
ORIFICE
9
IFT 10A
TO REACTOR INLET LINE LOOP A
E
FROM HPI PUMPS
HP-194
HP-26
HP-126
ORIFICE
HP-124
DRAIN & FILL CONNECTION

FIGURE 1