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March 16, 1981
IPN-81-18

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RECEIVED
MAR 23 1981
U.S. NUCLEAR REGULATORY COMMISSION

Attention: Mr. Steven A. Varga, Chief
Operation Reactors Branch No. 1
Division of Operating Reactors

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Anticipated Transients Without
Scram (ATWS) Modifications

Dear Sir:

In response to item C.4 of Appendix A of the February 11, 1980 Confirmatory Order, the Authority submitted a schedule indicating that the required ATWS instrument modifications will be completed by the Fall of 1982. Refer to August 4, 1980 letter (IPN-80-74) from Mr. J.P. Bayne (Authority) to Mr. S.A. Varga.

Attachment I provides a conceptual design description of the ATWS Mitigating System Actuation Circuitry (AMSAC) proposed for Indian Point 3.

As required by the Confirmatory Order the proposed circuitry is based on the analytical results contained in the December 30, 1979 Westinghouse letter (NS-TMA-2182) to Mr. S.H. Hanauer.

The proposed system operates independently of the Reactor Protection System (RPS). It is designed to start the auxiliary feedwater pumps and trip the main turbines following direction of loss of heat sink.

The system depicted in Attachment I could be procured, installed and be operational by the Fall of 1982.

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In order to meet the above implementation schedule, however, we are requesting that the NRC Staff complete the review of the proposed AMSAC design prior to April 10, 1981. Detailed engineering and procurement activities will commence immediately following the NRC Staff's approval.

The Authority's engineering personnel will be available at the Staff's convenience to discuss the proposed design.

Very truly yours,

J.P. Bayne
Senior Vice President
Nuclear Generation

Enclosures

cc: Mr. T. Rebelowski
Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 36
Buchanan, NY 10511

Mr. R. Barton
United Engineers & Constructors, Inc.
30 S.17th Street
Philadelphia, PA 19101

ATTACHMENT I

ANTICIPATED TRANSIENT WITHOUT SCRAM (ATWS)
DESCRIPTION OF THE PROPOSED
ATWS MITIGATING SYSTEM ACTUATION CIRCUITRY (AMSAC)

POWER AUTHORITY OF THE STATE OF NEW YORK
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
MARCH 16, 1981

1.0 INTRODUCTION

The purpose of this attachment is to provide a description of the proposed ATWS Mitigating System Actuation Circuitry (AMSAC) for the Indian Point 3 Nuclear Power Plant.

As required by the confirmatory order of February 11, 1980, the proposed AMSAC design is based on the Westinghouse analytical results contained in the December 30, 1979 letter from T.M. Anderson to S.H. Hanauer.

The aforementioned Westinghouse analytical results show that the Westinghouse design can withstand the pressure transients of the postulated ATWS events. It is also stated in the Westinghouse analysis that only ATWS events which lead to loss of heat sink will require mitigation functions. These functions are the actuation of the auxiliary feedwater system and the tripping of the main turbine. The ATWS events that do not result in a reduction of the secondary side inventory or heat sink do not require short term mitigating action.

2. SYSTEM DESCRIPTION

The function of the AMSAC system proposed for the Indian Point 3 Nuclear Power Plant is to provide means to initiate the auxiliary feedwater system and to trip the main turbine following an ATWS event. Normally, these functions are accomplished by the Reactor Protection System (RPS) logic. However, in the case of an ATWS event the RPS system is postulated to be unavailable. The proposed circuitry utilizes two independent flow transmitters on each of the four main feedwater lines to the steam generators. Refer to attached Figure IP3-1. This arrangement permits grouping of signals resulting in two independent and redundant channels, Train "A" and Train "B". Insufficient feedwater flow to the steam generators (less than 10% total plant flow) in coincidence with power level greater than 50% will trip the main turbine and start the auxiliary feedwater pumps.

The AMSAC system is completely independent from the Reactor Protection System and, therefore, not affected by common mode failures.

The selection of flow as the variable to be monitored provides a direct indication of loss of heat sink and at the same time maintains diversity between RPS and AMSAC variables. The use of redundant channels provides reliability as well as operational flexibility for maintenance and testing of the AMSAC equipment.

The set points for flow transmitters will be selected as to assure timely initiation as well as to minimize the probability of spurious activiation. The AMSAC permissive (power level greater than 50%) will be manually applied or removed from the control room under operating procedure guidelines. In addition continious indication will be provided in the control room for AMSAC bypassing and AMSAC initiation for each channel.

In addition to independence from the Reactor Protection System, the AMSAC design will include considerations for separation, redundancy, power supply reliability and single failure criteria.

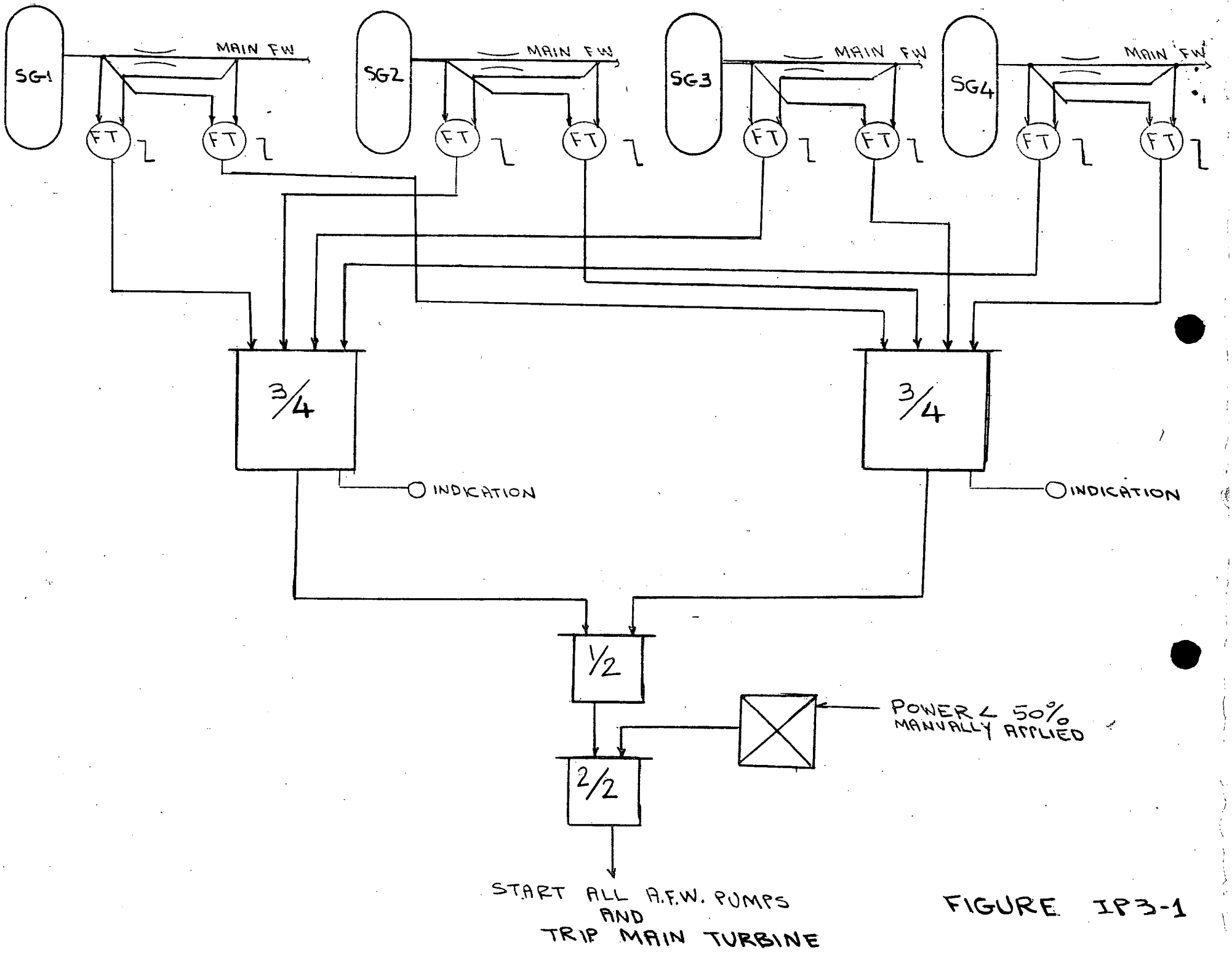
SG1
SG2
SG3
SG4
MAIN FW
MAIN FW
MAIN FW
MAIN FW
FT
3/4
3/4
INDICATION
INDICATION
1/2
2/2
POWER < 50%
MANUALLY APPLIED
START ALL A.F.W. PUMPS
AND
TRIP MAIN TURBINE

FIGURE IP3-1