U-600233
058-85(08-23)-L
1A.120

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

August 23, 1985

Docket No. 50-461

Director of Nuclear Reactor Regulation
Attn: Mr. W. R. Butler, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Clinton Power Station Unit #1
Technical Specifications

Dear Mr. Butler:

Consistent with NRC requirements outlined in the Clinton Power Station Safety Evaluation Report (SSER-2) Illinois Power Company is providing information for your review and approval pertaining to Technical Specifications for the Nuclear Systems Protection System - Self Test System (STS).

Attachment I contains excerpts, from SSER-2, and responses describing the implementation of the Staff requirements for STS. Attachment II provides the Definition, Limiting Condition for Operation, Surveillance Requirements and BASES for the STS which were prepared and approved by General Electric Company and Clinton Power Station personnel. Attachment III provides additional information on those portions of the Nuclear System Protection System (NSPS) that are not tested by the STS and which have been subsequently identified as Untested Islands (UTI's). An analysis was performed by General Electric Company specifically for Clinton Power Station which establishes the allowable out-of-service time (AOT) for STS. This analysis is proprietary and is available for your review in either General Electric or Illinois Power Company office upon request.

We request a timely review to support issuing the "Proof and Review" copy of the Clinton Power Station Technical Specifications (CPS-TS) to allow Clinton to initiate and implement procedures and train plant personnel to fulfill the Staff's requirements.

We are ready to meet with you to answer any questions you may have in order to achieve resolution of your concerns and approval of the CPS-TS.

B001
1/1

Should you have any questions or require additional information, please contact this office.

Sincerely yours,

F. A. Spangenberg
Director - Nuclear Licensing
Nuclear Station Engineering

RFP/kaf

Attachments

cc: B. L. Siegel Clinton Licensing Project Manager, w/o enclosure
NRC Resident Office, w/o enclosure
Regional Administrator, Region III, USNRC, w/o enclosure
Illinois Department of Nuclear Safety, w/o enclosure
C. S. Schulten NRC Technical Specification Review Group, w/enclosure
USNRC
Mail Stop 509
Washington, DC 20555

Attachment I

DISCUSSION OF SSER REQUIREMENTS

Excerpts from SSER-2 p. 7-3, 7-4

> "The applicant has requested NRC staff approval for use of the STS to perform various surveillance testing functions to satisfy Technical Specification requirements. This testing includes logic system functional tests and response time testing. In addition, the STS will be used to augment conventional testing methods to perform channel checks, channel functional tests, and channel calibrations."

The above statements describe the CPS request for use of the STS.

> "The STS includes a "monitor compare function" that calls up all four transmitter outputs (ATM inputs) for a selected parameter and displays them side by side for comparison."

The above statement indicates how STS can be used in performance of CHANNEL CHECKS.

> "The operability of the associated vertical indicators on the main control board and the nuclenet CRT displays must be determined separately."

CPS procedures for CHANNEL CHECKS and CHANNEL CALIBRATIONS verify operability of vertical indicators, ATM displays, and CRT displays.

> "Each of the four STC's contains circuitry that can determine the exact trip set points of its divisionally associated ATM's by ramping a current signal (0-50 mA) into the ATM input and displaying the value at which the ATM trips. This test function must be manually initiated."

The above trip check is completed by a performance of a segment of the CPS procedures for CHANNEL CALIBRATION.

> "The operability of the annunciators (and computer printout) must be verified separately."

As stated previously, the annunciators and computer printouts are demonstrated operable during performance of the CHANNEL FUNCTIONAL TESTS.

Attachment I

"Sensors must be calibrated separately."

Sensors are calibrated by performing appropriate sections of the CHANNEL CALIBRATION procedure.

"The STS will not detect failures within logic seal-in or latching circuits. These circuits will be tested by conventional methods before installation for those boards containing latching or seal-in circuits that cannot be verified operable by manually tripping and resetting the channel. Further, the STS will not detect failures in the pulse-limiting capacitor/resistor circuits that momentarily block the NSPS functional inputs and strobe test data through the NSPS circuits. Periodic verification of the operability of these circuits must be performed separately."

The above circuits have been classified as Untested Islands (UTI's). General Electric Company and Illinois Power identified the types and established the procedures for testing UTI's. The identified UTI's have been evaluated for failures and a summary analysis of each type is provided in Attachment IV. The recommended testing frequencies range from 18 months to 6 years. Plant surveillance procedures will ensure that the UTI's are tested in accordance with the methods and frequencies recommended by the manufacturer.

> "The NRC staff concludes that use of the STS installed at Clinton to perform certain surveillance testing required by plant Technical Specifications is acceptable. It is not intended that the STS eliminate the need for other surveillance testing. Although the STS utilized advanced technology for performing various tests on the NSPS circuitry, it is not capable of replacing conventional testing methods in some areas. A combination of STS and conventional tests will be necessary to accomplish complete end-to-end overlap testing of the NSPS circuitry to verify its operability."

Clinton procedures demonstrate this concept. This concept is also explained in the BASES of the CPS-TS as proposed. CPS procedures accomplishing the combinations of CHANNEL CHECK, CHANNEL FUNCTIONAL, LOGIC SYSTEM FUNCTIONAL, RESPONSE TIME, and CHANNEL CALIBRATION, tests are used to demonstrate operability in accordance with the frequencies delineated in the CPS-TS.

> "Special tests will also be conducted during plant operations to verify the set point of the analog trip modules and to verify the operability of the control room annunciators and vertical indicators on the main control board."

CPS CHANNEL CALIBRATION and CHANNEL FUNCTIONAL tests performed at the frequencies listed in the CPS-TS demonstrate CPS compliance with this statement.

> "It should be noted that there will be Technical Specification limiting conditions for operation and surveillance requirements on the STS itself as well as the NSPS circuits."

CPS has proposed a CPS-TS for the STS (3/4.3.0). Other CPS-TS (3/4.3.1, 3/4.3.2, 3/4/3.3, 3/4.3.5, and 3/4.3.9) provide coverage of NSPS.

> "The NRC staff will require that Clinton Technical Specifications include appropriate surveillance requirements for those RPS and ESF components not tested or fully tested by the STS."

We believe the existing Technical Specifications for NSPS, stated above, and our proposal the for STS meet the Staffs concerns for those RPS and ESF components not fully tested by the STS.

DEFINITION

SELF TEST SYSTEM

1.39 The automatic SELF TEST SYSTEM injects short-duration pulses into the solid state nuclear system protection system (NSPS) circuits and verifies proper response to various input combinations. The SELF TEST SYSTEM is designed to maintain surveillance over all NSPS cabinet circuitry essential to the Reactor Protection System, Emergency Core Cooling Systems, and the Nuclear Steam Supply Shutoff System on a continuous cyclic basis.

The SELF TEST SYSTEM may be used to perform various surveillance testing functions to satisfy technical specifications requirements for those components it is designed to monitor. The STS will be used to augment conventional testing methods to perform CHANNEL CHECKS, CHANNEL FUNCTIONAL TESTS, CHANNEL CALIBRATIONS, RESPONSE TIME TESTS and LOGIC SYSTEM FUNCTIONAL TESTS.

Attachment II

3/4.3 INSTRUMENTATION

3/4.3.0 NUCLEAR SYSTEM PROTECTION SYSTEM-SELF TEST SYSTEM

LIMITING CONDITIONS FOR OPERATION

3.3.0 The SELF TEST SYSTEM (STS) of the Nuclear System Protection System shall be OPERABLE and operating in the fully automatic mode.

APPLICABILITY: OPERATIONAL CONDITIONS 1,2,3,4 and 5.

ACTION:

a. With the STS not operating in the fully automatic mode initiate corrective action within 24 hours to restore the STS to automatic operation for the maximum number of divisions available.

b. If the STS is not restored to fully automatic operation within 30 days, be in at least HOT SHUTDOWN within the next 12 hours and COLD SHUTDOWN within the following 24 hours.

c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS:

4.3.0.1 Status indications of the STS shall be obtained at least once per 24 hours, whenever the STS is operating in the fully or partially automatic mode.

Attachment II

BASES

3/4.3.0 SELF TEST SYSTEM (STS)

This specification provides the limiting conditions for operation necessary to preserve the STS's ability to perform its intended function of detecting and determining the location of a fault in the functional NSPS.

The Self Test System (STS) is an overlay testing and surveillance subsystem which provides the capability to continuously and automatically perform testing of all active circuitry within the NSPS panels, essential to the safe shutdown of the reactor. The primary purpose of the STS is to enhance the availability of the NSPS by optimizing the time to detect and determine the location of a failure in the functional system. Each of the four NSPS cabinets, with one cabinet associated with each of the four Class 1E powered NSPS divisions, contains its own controller (STC). The STS will be used to augment conventional testing methods which include CHANNEL CHECKS, CHANNEL FUNCTIONAL TESTS, CHANNEL CALIBRATIONS, RESPONSE TIME TESTS and LOGIC SYSTEM FUNCTIONAL TESTS. While the overall availability of the NSPS with the STS totally inoperable for 30 days, is shown by analysis to be adequate, requiring the STS to be in operation in a partially automatic mode whenever possible provides even further enhancement of NSPS availability.

Attachment III

NSPS UNTESTED ISLANDS TEST FREQUENCY

	ISLAND TYPE	Failure Rate (per million hours)	Total No. of Devices (4 Div.)	Meantime Between (Year)	Recommended Testing (Nx18 Mo.)
1)	A. Logic Self-Test Coupling Circuit	$0.033/10^6$	309	11.19	6 Yr.
	B. ATM Self-Test Coupling Circuit	$0.033/10^6$	159	21.76	6 Yr.
	C. OSC Self-Test Coupling Circuit	$0.064/10^6$	101	17.66	6 Yr.
2)	A. 1-999 and 0.1-99.9 Second Time Delay Card Switch	0.94	29+2=31	3.92	18 Mo.
	B. RC Delay and Filter Circuit	0.157	31	23.44	6 Yr.
3)	A. Logic Power on Initialization Circuit	0.0353	42	76.99	6 Yr.
	B. 0.1-99.9, 1-999 Sec TD PON Circuit	0.0353	31	104.34	6 Yr.
	C. ATM PON Circuit	0.0353	159	20.35	6 Yr.
	D. LD PON Circuit	0.0353	100	32.34	6 Yr.
4)	Isolated Lamp Driver Output Circuit	0.4969	23	9.99	6 Yr.
5)	20 mSEC Latch	0.6224	83	2.21	18 Mo.
6)	250 mSEC Latch	0.452	5	50.51	6 Yr.
7)	Load Driver Output Circuit	0.6610	90	1.92	18 Mo.
8)	High Power Input ISOL 100 mSEC Circuit	0.094	36	33.74	6 Yr.
9)	Logic Input ISOL Circuit	0.0277	63	65.4	6 Yr.
10)	Analog Input/Output Isolator	17.75	14	0.46	18 Mo.
11)	INV High Level Output ISOL	0.74	19	8.12	6 Yr.

Island Type (cont'd)

12)	High Level Output ISOL Output Circuit	1.65	75	0.923	18 Mo.
13)	Floating Low Level Output ISOL	0.371	38	8.097	6 Yr.
14)	A. Analog Trip Module Gross Failure Latch	0.0911	159	7.88	6 Yr.
	B. ATM Hysteries Tine Delay CRT	0.0911	159	7.88	6 Yr.
15)	Field Contact Input Isolator	1.54	39	1.90	18 Mo.
16)	Power Monitor Card	3.47	8	4.11	18 Mo.
17)	Logic output ISOL Circuit	0.042	63	43.14	6 Yr.
18)	Digital Signal Conditioner Input Circuit	0.0136	101	83.30	6 Yr.