

UNIT 1
PROPOSED CHANGES

S103110 440

TABLE 3.2.F

Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	H ₂ M - 76 - 37 H ₂ M - 76 - 39	Drywell H ₂ Concentration	0.1 - 20%	(1)
1	H ₂ M - 76 - 38	Suppression Chamber H ₂ Concentration	0.1 - 20%	(1)
2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential pressure	Indicator 0 to 2 psid	(1) (2) (5)
2 (1 per header)	LM-85-85A, B, C, D	Ultrasonic Water Level Monitor on the Reactor Scram Discharge Header	Alarm at $1.25 \pm .25$ in. or instrument malfunction (6) (7)	

NOTES FOR TABLE 3.2.F

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding thirty days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, either the requirements of 3.5.H shall be complied with or an orderly shutdown shall be initiated and the reactor shall be in a Cold Condition within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a Cold Condition within 24 hours.
- (6) The continuous monitoring system shall be operable during reactor operation except as specified below. The ultrasonic water level monitor consists of four transducer channels, two per reactor scram discharge header. If the number of operable channels becomes less than one per header, within eight hours perform a manual check for water in the SDV and institute procedures for a manual check of the SDV each shift and following each scram until the system is operable. When not fully operable, the system should be used to the extent practical in addition to the manual checks.

If the system is not operable within seven days, the frequency of the manual check should be increased to once every four hours. If the system is not operable within 30 days, the plant shall be shut down.
- (7) Immediate operator action will be taken upon receipt of alarm.



TABLE 4.2.F
MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
1) Reactor Water Level	Once/6 months	Each Shift
2) Reactor Pressure	Once/6 months	Each Shift
3) Drywell Pressure	Once/6 months	Each Shift
4) Drywell Temperature	Once/6 months	Each Shift
5) Suppression Chamber Air Temperature	Once/6 months	Each Shift
6) Suppression Chamber Water Temperature	Once/6 months	Each Shift
7) Suppression Chamber Water Level	Once/6 months	Each Shift
8) Control Rod Position	NA	Each Shift
9) Neutron Monitoring	(2)	Each Shift
10) Drywell Pressure (PS-64-67)	Once/6 months	NA
11) Drywell Pressure (PS-64-58B)	Once/6 months	NA
12) Drywell Temperature (TR-64-52)	Once/6 months	NA
13) Timer (IS-64-67)	Once/6 months	NA
14) CAD Tank Level	Once/6 months	Once/day
15) Containment Atmosphere Monitors	Once/6 months	Once/day
16) Drywell to Suppression Chamber Differential Pressure	Once /6 months	Each Shift
17) Ultrasonic Water Level Monitor in the Reactor Scram Discharge Header	Once /6 months (24)	NA

NOTES FOR TABLES 4.2.A THROUGH 4.2.H (Continued)

14. Upscale trip is functionally tested during functional test time as required by section 4.7.B.1.a and 4.7.C.1.c.
15. The flow bias comparator will be tested by putting one flow unit in "Test" (producing 1/2 scram) and adjusting the test input to obtain comparator rod block. The flow bias upscale will be verified by observing a local upscale trip light during operation and verified that it will produce a rod block during the operating cycle.
16. Performed during operating cycle. Portions of the logic is checked more frequently during functional tests of the functions that produce a rod block.
17. This calibration consists of removing the function from service and performing an electronic calibration of the channel.
18. Functional test is limited to the condition where secondary containment integrity is not required as specified in sections 3.7.C.2 and 3.7.C.3.
19. Functional test is limited to the time where the SGTs is required to meet the requirements of section 4.7.C.1.c.
20. Calibration of the comparator requires the inputs from both recirculation loops to be interrupted, thereby removing the flow bias signal to the APRM and RBM and scrambling the reactor. This calibration can only be performed during an outage.
21. Logic test is limited to the time where actual operation of the equipment is permissible.
22. One channel of either the reactor zone or refueling zone Reactor Building Ventilation Radiation Monitoring System may be administratively bypassed for a period not to exceed 24 hours for functional testing and calibration.
23. The Reactor Cleanup System Space Temperature monitors are RTD's that feed a temperature switch in the control room. The temperature switch may be tested monthly by using a simulated signal. The RTD itself is a highly reliable instrument and less frequent testing is necessary.
24. In addition, once per operating cycle and during startup after plant outages where maintenance may have taken place near the water level monitoring system, the channel shall be calibrated and functionally tested by introducing water into the scram discharge header using the manual UT system as a standard.

3.2 BASES

For each parameter monitored, as listed in Table 3.2.F, there are two channels of instrumentation except as noted. By comparing readings between the two channels, a near continuous surveillance of instrument performance is available. Any deviation in readings will initiate an early recalibration, thereby maintaining the quality of the instrument readings.

Instrumentation is provided for isolating the control room and initiating a pressurizing system that processes outside air before supplying it to the control room. An accident signal that isolates primary containment will also automatically isolate the control room and initiate the emergency pressurization system. In addition, there are radiation monitors in the normal ventilation system that will isolate the control room and initiate the emergency pressurization system. Activity required to cause automatic actuation is about one mRem/hr.

Because of the constant surveillance and control exercised by TVA over the Tennessee Valley, flood levels of large magnitudes can be predicted in advance of their actual occurrence. In all cases, full advantage will be taken of advance warning to take appropriate action whenever reservoir levels above normal pool are predicted; however, the plant flood protection is always in place and does not depend in any way on advanced warning. Therefore, during flood conditions, the plant will be permitted to operate until water begins to run across the top of the pumping station at elevation 565. Seismically qualified, redundant level switches each powered from a separate division of power are provided at the pumping station to give main control room indication of this condition. At that time an orderly shutdown of the plant will be initiated, although surges even to a depth of several feet over the pumping station deck will not cause the loss of the main condenser circulating water pumps.

The operability of the meteorological instrumentation ensures that sufficient meteorological data is available for estimating potential radiation dose to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public.

The operability of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for Browns Ferry Nuclear Plant. The instrumentation provided is consistent with specific portions of the recommendations of Regulatory Guide 1.12 "Instrumentation for Earthquakes."

The ultrasonic water level system on the reactor scram discharge header detects the presence of a preset level of water in the header and initiates an alarm when that level is reached. The monitoring system includes four transducers, two of which are mounted on each of the two scram discharge header banks. Each transducer is connected to an ultrasonic signal processor which provides output to an annunciator in the control room in the event of high water level or instrument failure.

UNIT 2
PROPOSED CHANGES

TABLE 3.2.F

Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	H ₂ M - 76 - 94 H ₂ M - 76 - 104	Drywell and Torus Hydrogen Concentration	0.1 - 20%	(1)
2 (1 per header)	LM-85-85A, B, C, D	Ultrasnic Water Level Monitor on the Reactor Scram Discharge Header	Alarm at $1.25 \pm .25$ in. or instrument malfunction.	(6) (7)
2	FdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential pressure.	Indicator 0 to 2 psid	(1) (2) (5)



NOTES FOR TABLE J.2.F

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding thirty days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, either the requirements of J.S.H shall be complied with or an orderly shutdown shall be initiated and the reactor shall be in a Cold Condition within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a Cold Condition within 24 hours.
- (6) The continuous monitoring system shall be operable during reactor operation except as specified below. The ultrasonic water level monitor consists of four transducer channels, two per reactor scram discharge header. If the number of operable channels becomes less than one per header, within eight hours perform a manual check for water in the SDV and institute procedures for a manual check of the SDV each shift and following each scram until the system is operable. When not fully operable, the system should be used to the extent practical in addition to the manual checks.

If the system is not operable within seven days, the frequency of the manual check should be increased to once every four hours. If the system is not operable within 30 days, the plant shall be shut down.
- (7) Immediate operator action will be taken upon receipt of alarm.



TABLE 4.2.F
MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
1) Reactor Water Level	Once/6 months	Each Shift
2) Reactor Pressure	Once/6 months	Each Shift
3) Drywell Pressure	Once/6 months	Each Shift
4) Drywell Temperature	Once/6 months	Each Shift
5) Suppression Chamber Air Temperature	Once/6 months	Each Shift
6) Suppression Chamber Water Temperature	Once/6 months	Each Shift
7) Suppression Chamber Water Level	Once/6 months	Each Shift
8) Control Rod Position	NA	Each Shift
9) Neutron Monitoring	(2)	Each Shift
10) Drywell Pressure (PS-64-67)	Once/6 months	NA
11) Drywell Pressure (PS-64-58B)	Once/6 months	NA
12) Drywell Temperature (TR-64-52)	Once/6 months	NA
13) Timer (IS-64-67)	Once/6 months	NA
14) CAD Tank Level	Once/6 months	Once/day
15) Containment Atmosphere Monitors	Once/6 months	Once/day
16) Drywell to Suppression Chamber Differential Pressure	Once /6 months	Each Shift
17) Ultrasonic Water Level Monitor in the Reactor Scram Discharge Header	Once /6 months (24)	NA

NOTES FOR TABLES 4.2.A THROUGH 4.2.H (Continued)

14. Upscale trip is functionally tested during functional test time as required by section 4.7.B.1.a and 4.7.C.1.c.
15. The flow bias comparator will be tested by putting one flow unit in "Test" (producing 1/2 scram) and adjusting the test input to obtain comparator rod block. The flow bias upscale will be verified by observing a local upscale trip light during operation and verified that it will produce a rod block during the operating cycle.
16. Performed during operating cycle. Portions of the logic is checked more frequently during functional tests of the functions that produce a rod block.
17. This calibration consists of removing the function from service and performing an electronic calibration of the channel.
18. Functional test is limited to the condition where secondary containment integrity is not required as specified in sections 3.7.C.2 and 3.7.C.3.
19. Functional test is limited to the time where the SGTS is required to meet the requirements of section 4.7.C.1.c.
20. Calibration of the comparator requires the inputs from both recirculation loops to be interrupted, thereby removing the flow bias signal to the APRM and RBM and scrambling the reactor. This calibration can only be performed during an outage.
21. Logic test is limited to the time where actual operation of the equipment is permissible.
22. One channel of either the reactor zone or refueling zone Reactor Building Ventilation Radiation Monitoring System may be administratively bypassed for a period not to exceed 24 hours for functional testing and calibration.
23. The Reactor Cleanup System Space Temperature monitors are RTD's that feed a temperature switch in the control room. The temperature switch may be tested monthly by using a simulated signal. The RTD itself is a highly reliable instrument and less frequent testing is necessary.
24. In addition, once per operating cycle and during startup after plant outages where maintenance may have taken place near the water level monitoring system, the channel shall be calibrated and functionally tested by introducing water into the scram discharge header using the manual UT system as a standard.

3.2 BASES

For each parameter monitored, as listed in Table 3.2.F, there are two channels of instrumentation except as noted. By comparing readings between the two channels, a near continuous surveillance of instrument performance is available. Any deviation in readings will initiate an early recalibration, thereby maintaining the quality of the instrument readings.

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UNIT 3
PROPOSED CHANGES

TABLE 3.2.F

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2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential pressure	Indicator 0 to 2 psid	(1) (2) (5)

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5) Suppression Chamber Air Temperature	Once/6 months	Each Shift
6) Suppression Chamber Water Temperature	Once/6 months	Each Shift
7) Suppression Chamber Water Level	Once/6 months	Each Shift
8) Control Rod Position	NA	Each Shift
9) Neutron Monitoring	(2)	Each Shift
10) Drywell Pressure (PS-64-67)	Once/6 months	NA
11) Drywell Pressure (PS-64-58B)	Once/6 months	NA
12) Drywell Temperature (TR-64-52)	Once/6 months	NA
13) Timer (IS-64-67)	Once/6 months	NA
14) CAD Tank Level	Once/6 months	Once/day
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NOTES FOR TABLES 4.2.A THROUGH 4.2.H (Continued)

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19. Functional test is limited to the time where the SGTs is required to meet the requirements of section 4.7.C.1.c.
20. Calibration of the comparator requires the inputs from both recirculation loops to be interrupted, thereby removing the flow bias signal to the APRM and RBM and scrambling the reactor. This calibration can only be performed during an outage.
21. Logic test is limited to the time where actual operation of the equipment is permissible.
22. One channel of either the reactor zone or refueling zone Reactor Building Ventilation Radiation Monitoring System may be administratively bypassed for a period not to exceed 24 hours for functional testing and calibration.
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24. In addition, once per operating cycle and during startup after plant outages where maintenance may have taken place near the water level monitoring system, the channel shall be calibrated and functionally tested by introducing water into the scram discharge header using the manual UT system as a standard.

The operability of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for Browns Ferry Nuclear Plant. The instrumentation provided is consistent with specific portions of the recommendations of Regulatory Guide 1.12 "Instrumentation for Earthquakes."

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