

Attachment 1 to AEP:NRC:1167  
Corrected Technical Specifications Pages  
for Donald C. Cook Nuclear Plant  
Units 1 and Unit 2

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TABLE 3.3-2

REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	NOT APPLICABLE
2. Power Range, Neutron Flux (High and Low Setpoint)	Less than or equal to 0.5 seconds*
3. Power Range, Neutron Flux, High Positive Rate	NOT APPLICABLE
4. Power Range, Neutron Flux, High Negative Rate	Less than or equal to 0.5 seconds*
5. Intermediate Range, Neutron Flux	NOT APPLICABLE
6. Source Range, Neutron Flux	NOT APPLICABLE
7. Overtemperature delta T	Less than or equal to 6.0 seconds*
8. Overpower delta T	NOT APPLICABLE
9. Pressurizer Pressure--Low	Less than or equal to 1.0 seconds
10. Pressurizer Pressure--High	Less than or equal to 1.0 seconds
11. Pressurizer Water Level--High	Less than or equal to 2.0 seconds

\* Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

TABLE 3.3-2  
REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	NOT APPLICABLE
2. Power Range, Neutron Flux (High and Low Setpoint)	Less than or equal to 0.5 seconds*
3. Power Range, Neutron Flux, High Positive Rate	NOT APPLICABLE
4. Power Range, Neutron Flux High Negative Rate	Less than or equal to 0.5 seconds*
5. Intermediate Range, Neutron Flux	NOT APPLICABLE
6. Source Range, Neutron Flux	NOT APPLICABLE
7. Overtemperature Delta T	Less than or equal to 6.0 seconds*
8. Overpower Delta T	NOT APPLICABLE
9. Pressurizer Pressure--Low	Less than or equal to 2.0 seconds
10. Pressurizer Pressure--High	Less than or equal to 2.0 seconds
11. Pressurizer Water Level--High	Less than or equal to 2.0 seconds

\*Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

Attachment 2 to AEP:NRC:1167

Corrected Technical Specifications Pages  
Associated with our Submittal AEP:NRC:1140

TABLE 3.3-2

REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	NOT APPLICABLE
2. Power Range, Neutron Flux (High and Low Setpoint)	Less than or equal to 0.5 seconds*
3. Power Range, Neutron Flux, High Positive Rate	NOT APPLICABLE
4. Power Range, Neutron Flux, High Negative Rate	Less than or equal to 0.5 seconds*
5. Intermediate Range, Neutron Flux	NOT APPLICABLE
6. Source Range, Neutron Flux	NOT APPLICABLE
7. Overtemperature delta T	Less than or equal to 6.0 seconds*
8. Overpower delta T	Less than or equal to 6.0 seconds*
9. Pressurizer Pressure--Low	Less than or equal to 1.0 seconds
10. Pressurizer Pressure--High	Less than or equal to 1.0 seconds
11. Pressurizer Water Level--High	Less than or equal to 2.0 seconds

\* Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

TABLE 3.3-2  
REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	NOT APPLICABLE
2. Power Range, Neutron Flux (High and Low Setpoint)	Less than or equal to 0.5 seconds*
3. Power Range, Neutron Flux, High Positive Rate	NOT APPLICABLE
4. Power Range, Neutron Flux, High Negative Rate	Less than or equal to 0.5 seconds*
5. Intermediate Range, Neutron Flux	NOT APPLICABLE
6. Source Range, Neutron Flux	NOT APPLICABLE
7. Overtemperature Delta T	Less than or equal to 6.0 seconds*
8. Overpower Delta T	Less than or equal to 6.0 seconds*
9. Pressurizer Pressure--Low	Less than or equal to 2.0 seconds
10. Pressurizer Pressure--High	Less than or equal to 2.0 seconds
11. Pressurizer Water Level--High	Less than or equal to 2.0 seconds

\*Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

Attachment 3 to AEP:NRC:1167

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TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
<u>1. Manual</u>	
a. Safety Injection (ECCS)	Not Applicable
Feedwater Isolation	Not Applicable
Reactor Trip (SI)	Not Applicable
Containment Isolation-Phase "A"	Not Applicable
Containment Purge and Exhaust Isolation	Not Applicable
Auxiliary Feedwater Pumps	Not Applicable
Essential Service Water System	Not Applicable
b. Containment Spray	Not Applicable
Containment Isolation-Phase "B"	Not Applicable
Containment Purge and Exhaust Isolation	Not Applicable
Containment Air Recirculation Fan	Not Applicable
c. Containment Isolation-Phase "A"	Not Applicable
Containment Purge and Exhaust Isolation	Not Applicable
d. Steam Line Isolation	Not Applicable
<u>2. Containment Pressure-High</u>	
a. Safety Injection (ECCS)	Less than or equal to 27.0@@/27.0++
b. Reactor Trip (from SI)	Less than or equal to 3.0
c. Feedwater Isolation	Less than or equal to 8.0
d. Containment Isolation-Phase "A"	Less than or equal to 18.0##/28.0###
e. Containment Purge and Exhaust Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	Not Applicable
g. Essential Service Water System	Less than or equal to 13.0##/48.0###



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### 3/4.3.3 MONITORING INSTRUMENTATION

#### 3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

Noble gas effluent monitors provide information, during and following an accident, which is considered helpful to the operator in assessing the plant condition. It is desired that these monitors be OPERABLE at all times during plant operation, but they are not required for safe shutdown of the plant.

In addition, a minimum of two in containment radiation-level monitors with a maximum range of  $10^7$  R/hr for photon only should be OPERABLE at all times except for cold shutdown and refueling outages. In case of failure of the monitor, appropriate actions should be taken to restore its operational capability as soon as possible.

Table 3.3-6 is based on the following Alarm/Trip Setpoints and Measurement Ranges for each instrument listed. For the unit vent noble gas monitors, it should be noted that there is an automatic switchover from the low/mid-range channels to the high-range channel when the upper limits of the low- and mid-range channel measurement ranges are reached. In this case there is no flow to the low- and mid-range channels from the unit vent sample line. This is considered to represent proper operation of the monitor. Therefore, if automatic switchover to the high-range should occur, and the low- and mid-range detectors are capable of functioning when flow is re-established, the low- and mid-range channels should not be declared inoperable and the ACTION statement in the Technical Specification does not apply. This is also true while purging the low- and mid-range chambers following a large activity excursion prior to resumption of low-level monitoring and establishment of a new background.

<u>INSTRUMENT</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE*</u>
1) Area Monitor- Upper Containment (VRS 1101/1201)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	$10^{-4}$ R/hr to 10R/hr.

\* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

## INSTRUMENTATION

### BASES

#### Radiation Monitoring Instrumentation (Continued)

<u>INSTRUMENT</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE*</u>
2) Area Monitor Containment High Range (VRA 1310/ 1410)	The monitor setpoint was selected to reflect the guidance provided in Generic Letter 83-37 for NUREG-0737 Technical Specifications	1R/hr to $1 \times 10^7$ R/hr Photons.
3) Process Monitor Particulate (ERS 1301/1401)	The monitor trip setpoint is based on 10 CFR 20 The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulates to Noble gases.	$1.5 \times 10^{-4}$ uCi to 7.5 uCi
4) Process Monitor Noble Gas (ERS 1305/1405)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc
5) Steam Generator PORV (MRA 1601) (MRA 1602) (MRA 1701) (MRA 1702)	Not Applicable.**	0.1uCi/cc to $1.0 \times 10^2$ uCi/cc.

\* This is the minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

\*\* These monitors are used to provide data to assist in post-accident off-site dose assessment.

INSTRUMENTATION

BASES

Radiation Monitoring Instrumentation (Continued)

<u>INSTRUMENT</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE*</u>
6) Noble Gas Unit Vent Monitors		
a) Low Range (VRS 1505)	See Bases Section 3/4.3.3.10	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc
b) Mid Range (VRS 1507)	Not Applicable**	$1.3 \times 10^{-3}$ uCi/cc to $7.5 \times 10^2$ uCi/cc
c) High Range (VRS 1509)	Not Applicable**	$2.9 \times 10^{-2}$ uCi/cc to $1.6 \times 10^4$ uCi/cc
7) Gland Steam Condenser Vent Noble Gas Monitor		
a) Low Range (SRA 1805)	See Bases Section 3/4.3.3.10	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc
8) Steam Jet Air Ejector Vent Noble Gas Monitor		
a) Low Range (SRA 1905)	See Bases Section 3/4.3.3.10	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/ cc.
b) Mid Range (SRA 1907)	Not applicable.**	$1.3 \times 10^{-3}$ uCi/cc to $7.5 \times 10^2$ uCi/ cc.
c) High Range (SRA 1909)	Not Applicable.**	$2.9 \times 10^{-2}$ uCi/cc to $1.6 \times 10^4$ uCi/ cc.
9) Spent Fuel Storage (RRC-330)	The monitor setpoint is selected to alarm and trip consistent with 10 CFR 70.24(a) (2)	$1 \times 10^{-1}$ mR/hr to $1 \times 10^4$ mR/hr

\* This is minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

\*\* These monitors are used to provide data to assist in post-accident off-site dose assessment.

## BASES

### 3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criteria 19 of 10 CFR 50.

#### 3/4.3.3.5.1 APPENDIX R REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the Appendix R remote shutdown instrumentation ensures that sufficient instrumentation is available to permit shutdown of the facility to COLD SHUTDOWN conditions at the local shutdown indication (LSI) panel. In the event of a fire, normal power to the LSI panels may be lost. As a result, capability to repair the LSI panels from Unit 2 has been provided. If the alternate power supply is not available, fire watches will be established in those fire areas where loss of normal power to the LSI panels could occur in the event of fire. This will consist of either establishing continuous fire watches or verifying OPERABILITY of fire detectors per Specification 4.3.3.7 and establishing hourly fire watches. The details of how these fire watches are to be implemented are included in a plant procedure.

#### 3/4.3.3.7 FIRE DETECTION INSTRUMENTATION (SYSTEMS/DETECTORS)

OPERABILITY of the fire detection systems/detectors ensures that adequate detection capability is available for the prompt detection of fires. This capability is required in order to detect and locate fires in their early stages. Prompt detection of the fires will reduce the potential for damage to safety related systems or components in the areas of the specified systems and is an integral element in the overall facility fire protection program. In the event that a portion of the fire detection systems is inoperable, the ACTION statements provided maintain the facility's fire protection program and allows for continued operation of the facility until the inoperable system(s)/detector(s) are restored to OPERABILITY. However, it is not our intent to rely upon the compensatory action for an extended period of time and action will be taken to restore the minimum number of detectors to OPERABLE status within a reasonable period.

#### 3/4.3.3.8 POST-ACCIDENT INSTRUMENTATION

The OPERABILITY of the post-accident instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident.

The containment water level and containment sump level transmitters will be modified or replaced and OPERABLE by the end of the refueling outage to begin in February 1989.

\*Amendment 112 (Effective before startup following refueling outage currently scheduled in 2/89).

## EMERGENCY CORE COOLING SYSTEMS

### BASES

#### 3/4.5.5 REFUELING WATER STORAGE TANK

The OPERABILITY of the RWST as part of the ECCS ensures that sufficient negative reactivity is injected into the core to counteract any positive increase in reactivity caused by RCS system cooldown, and ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. Reactor coolant system cooldown can be caused by inadvertent depressurization, a loss of coolant accident or a steam line rupture. The limits on RWST minimum volume and boron concentration ensure that 1) sufficient water is available within containment to permit recirculation cooling flow to the core, and 2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.6 and 9.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The ECCS analyses to determine  $F_Q$  limits in Specifications 3.2.2 and 3.2.6 assumed a RWST water temperature of 70°F. This temperature value of the RWST water determines that of the spray water initially delivered to the containment following LOCA. It is one of the factors which determines the containment back-pressure in the ECCS analyses, performed in accordance with the provisions of 10 CFR 50.46 and Appendix K to 10 CFR 50. The value of the minimum RWST temperature in Technical Specification 3.5.5 has been conservatively changed to 80°F to increase the consistency between Units 1 and 2. The lower RWST temperature results in lower containment pressure from containment spray and safeguards flow assumed to exit the break. Lower containment pressure results in increased flow resistance of steam exiting the core thereby slowing reflood and increasing PCT.

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TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION

RESPONSE TIME IN SECONDS

1. Manual

- |    |   |                |
|----|---|----------------|
| a. | Safety Injection (ECCS)                 | Not Applicable |
|    | Feedwater Isolation                     | Not Applicable |
|    | Reactor Trip (SI)                       | Not Applicable |
|    | Containment Isolation-Phase "A"         | Not Applicable |
|    | Containment Purge and Exhaust Isolation | Not Applicable |
|    | Auxiliary Feedwater Pumps               | Not Applicable |
|    | Essential Service Water System          | Not Applicable |
| b. | Containment Spray                       | Not Applicable |
|    | Containment Isolation-Phase "B"         | Not Applicable |
|    | Containment Purge and Exhaust Isolation | Not Applicable |
|    | Containment Air Recirculation Fan       | Not Applicable |
| c. | Containment Isolation-Phase "A"         | Not Applicable |
|    | Containment Purge and Exhaust Isolation | Not Applicable |
| d. | Steam Line Isolation                    | Not Applicable |

2. Containment Pressure-High

- |    |   |  |
|----|---|--|
| a. | Safety Injection (ECCS)                 | Less than or equal to<br>27.0@@/27.0++ |
| b. | Reactor Trip (from SI)                  | Less than or equal to 3.0              |
| c. | Feedwater Isolation                     | Less than or equal to 8.0              |
| d. | Containment Isolation-Phase "A"         | Not Applicable                         |
| e. | Containment Purge and Exhaust Isolation | Not Applicable                         |
| f. | Auxiliary Feedwater Pumps               | Not Applicable                         |
| g. | Essential Service Water System          | Not Applicable                         |

## INSTRUMENTATION (Continued)

### BASES

ESF response times specified in Table 3.3-5 which include sequential operation of the RWST and VCT valves (Notes @ and @@) are based on values assumed in the non-LOCA safety analyses. These analyses take credit for injection of borated water from the RWST. Injection of borated water is assumed not to occur until the VCT charging pump suction valves are closed following opening of the RWST charging pump suction valves. When sequential operation of the RWST and VCT valves is not included in the response times (Note ++); the values specified are based on the LOCA analyses. The LOCA analyses take credit for injection flow regardless of the source. Verification of the response times specified in Table 3.3-5 will assure that the assumption used for VCT and RWST valves are valid.

### 3/4.3.3 MONITORING INSTRUMENTATION

#### 3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

Noble gas effluent monitors provide information, during and following an accident, which is considered helpful to the operator in assessing the plant condition. It is desired that these monitors be OPERABLE at all times during plant operation, but they are not required for safe shutdown of the plant.

In addition, a minimum of two in containment radiation-level monitors with a maximum range of  $10^7$  R/hr for photon only should be OPERABLE at all times except for cold shutdown and refueling outages. In case of failure of the monitor, appropriate actions should be taken to restore its operational capability as soon as possible.

Table 3.3-6 is based on the following Alarm/Trip Setpoints and Measurement Ranges for each instrument listed. For the unit vent noble gas monitors, it should be noted that there is an automatic switchover from the low/mid-range channels to the high-range channel when the upper limits of the low- and mid-range channel measurement ranges are reached. In this case there is no flow to the low- and mid-range channels from the unit vent sample line. This is considered to represent proper operation of this monitor. Therefore, if automatic switchover to the high-range should occur, and the low- and mid-range detectors are capable of functioning when flow is re-established, the low- and mid-range channels should not be declared inoperable and the ACTION statement in the Technical Specification does not apply. This is also true while purging the low- and mid-range chambers following a large activity excursion prior to resumption of low-level monitoring and establishment of a new background.

INSTRUMENTATION

BASES

Radiation Monitoring Instrumentation (Continued)

<u>INSTRUMENT</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE*</u>
1) Area Monitor- Upper Containment (VRS 2101/2201)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogenous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	$10^{-4}$ R/hr to 10R/hr.
2) Area Monitor- Containment High Range (VRA 2310/ 2410)	The monitor setpoint was selected to reflect the guidance provided in Generic Letter 83-37 for NUREG-0737 Technical Specifications.	1R/hr to $1 \times 10^7$ R/hr Photons.
3) Process Monitor Particulate (ERS 2301/2401)	The monitor trip setpoint is based on 10 CFR 20 The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulate to Noble gases.	$1.5 \times 10^{-4}$ uCi to 7.5 uCi.
4) Process Monitor Noble Gas (ERS 2305/2405)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogenous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc
5) Steam Generator PORV (MRA 2601) (MRA 2602) (MRA 2701) (MRA 2702)	Not Applicable.**	0.1uCi/cc to $1.0 \times 10^2$ uCi/cc.

\*This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

\*\*These monitors are used to provide data to assist in post-accident off-site dose assessment.

INSTRUMENTATION

BASES

Radiation Monitoring Instrumentation (Continued)

<u>INSTRUMENT</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE*</u>
6) Noble Gas Unit Vent Monitors		
a) Low Range (VRS 2505)	See Bases Section 3/4.3.3.10	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc.
b) Mid Range (VRS 2507)	Not Applicable**	$1.3 \times 10^{-3}$ uCi/cc to $7.5 \times 10^{-2}$ uCi/cc
c) High Range (VRS 2509)	Not Applicable**	$2.9 \times 10^{-2}$ uCi/cc to $1.6 \times 10^4$ uCi/cc
7) Gland Steam Condenser Vent Noble Gas Monitor		
a) Low Range (SRA 2805)	See Bases Section 3/4.3.3.10	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc.
8) Steam Jet Air Ejector Vent Noble Gas Monitor		
a) Low Range (SRA 2905)	See Bases Section 3/4.3.3.10	$5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc.
b) Mid Range (SRA 2907)	Not applicable.**	$1.3 \times 10^{-3}$ uCi/cc to $7.5 \times 10^2$ uCi/cc.
c) High Range (SRA 2909)	Not Applicable.**	$2.9 \times 10^{-2}$ uCi/cc to $1.6 \times 10^4$ uCi/cc.
9) Spent Fuel Storage (RRC-330)	The monitor setpoint is selected to alarm and trip consistent with 10 CFR 70.24(a) (2)	$1 \times 10^{-1}$ mR/hr to $1 \times 10^4$ mR/hr

\* This is minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

\*\* These monitors are used to provide data to assist in post-accident off-site dose assessment.