ENCLOSURE 1

PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS

BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3

(DOCKET NOS. 50-259, 50-260, 50-296)

UNIT ONE

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.10.A Refueling Interlocks	4.10.A Refueling Interlocks
refueling interlocks shall be operable. b. A sufficient number of control rods shall be operable so that the core can be made subcritical with the strongest operable control rod fully withdrawn and all other operable control rods fully inserted, or all directional control valves for remaining control rods shall be disarmed electrically and sufficient margin to criticality shall be demonstrated. c. If maintenance is to be performed on two control rod drives they must be separated by more than two control cells in any direction. d. An appropriate number of SRM's are available as defined in specification 3.10.B.	
6. Any number of control rods may be withdrawn or removed from the reactor core providing the following conditions are satisfied: a. The reactor mode switch is locked in the "refuel" position. The refueling interlock which prevents more than one control rod from	3. With the mode selection switch in the refuel or shutdown mode, no control rod may be withdrawn until two licensed operators have confirmed that either all fuel has been removed from around that rod or that all control rods in immediately adjacent cells have been fully inserted and electrically disarmed.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.10.A Refueling Interlocks being withdrawn may be bypassed on a withdrawn control rod after the fuel assemblies in the cell containing (controlled by) that control rod have been removed from the reactor core. All other refueling interlocks shall be operable.	4.10.A Refueling Interlocks
B. Core Monitoring	B. Core Monitoring
1. During core alterations, except as in 3.10.B.2, two SRM's shall be operable, in or adjacent to any quadrant where fuel or control rods are being moved. For an SRM to be considered operable, the following shall be satisfied:	Prior to making any alterations to the core the SRM's shall be functionally tested and checked for neutron response. Thereafter, while required to be operable, the SRM's will be checked daily for response except as specified in 3.10.B.1.b.2.
a. The SRM shall be inserted to the normal operating level. (Use of special moveable, dunking type detectors during initial fuel loading and major core alterations in place of normal detectors is permissible as long as the detector is connected to the normal SRM circuit.)	
b.1 The SRM shall have a minimum of 3 cps with all rods fully inserted in the core, if one or more fuel assemblies are in the core, or,	
b.2 During a full core reload, SRM's (FLC's) may have a count rate of <3 cps provided that the SRM's are response checked at least once every 8 hours with a neutron source until >3 cps can be maintained.	

426 310

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
2. During a complete core removal, the SRM's shall have an initial minimum count rate of 3 cps prior to fuel removal, with all rods fully inserted and rendered electrically inoperable. The count rate will diminish during fuel removal. Individual control rods outside the periphery of the then existing fuel matrix may be electrically armed and moved for maintenance after all fuel in the cell containing (controlled by) that control rod have been removed from the reactor core.	
3.10.C Spent Fuel Pool Water	4.10.C Spent Fuel Pool Water
1. Whenever irradiated fuel is stored in the spent fuel pool, the pool water level shall be maintained at a depth of 8 1/2 feet or greater above the top of the spent fuel. A minimum of 6-1/2 feet of water shall be maintained over single irradiated fuel assemblies during transfer and handling operations.	1. Whenever irradiated fuel is stored in the spent fuel pool, the water level and temperature shall be recorded daily
2. Whenever irradiated fuel is in the fuel pool, the pool water temperature shall be $\leq 150^{\circ}F$.	2. A sample of fuel pool water shall be analyzed in accordance with the following specifications: a. At least daily for conductivity and chloride ion content. b. At least once per 8 hours for conductivity and chloride content when the fuel pool cleanup system is inoperable.
3. Fuel pool water shall be maintained within the following limits: conductivity $\leq$ 10 umhos/cm @25°C chlorides $\leq$ 0.5 ppm	

426 311

REFERENCES

1. Refueling interlocks (BFNP FSAR Subsection 7.6)

R. Core Monitoring

The SRM's are provided to monitor the core during periods of station shutdown and to guide the operator during refueling operations and station startup. Requiring two operable SRM's in or adjacent to any core quadrant where fuel or control rods are being moved assures adequate monitoring of that quadrant during such alterations. The requirement of 3 counts per second provides assurance that neutron flux is being monitored and ensures that startup is conducted only if the source range flux level is above the minimum assumed in the control rod drop accident.

During a full core reload SRM/FLC (Fuel Loading Chamber) operability will be verified using a portable external source at least once every 8 hours until sufficient fuel has been loaded to maintain 3 cps. A large number of fuel assemblies will not be required to maintain 3 cps. This increased surveillance rate assures proper detector operability until that time.

Under the special condition of removing the full core with all control rods inserted and electrically disarmed, it is permissible to allow SRM count rate to decrease below 3 cps. All fuel moves during core unloading will reduce reactivity. It is expected that the SRM's will drop below 3 cps before all of the fuel is unloaded. Since there will be no reactivity additions during this period, the low number of counts will not present a hazard. When all of the fuel has been removed to the spent fuel storage pool, SRM's will no longer be required. Requiring the SRM's to be functionally tested prior to fuel removal assures that the SRM's will be operable at the start of fuel removal. The daily response check of the SRM's ensures their continued operability until the count rate diminishes due to fuel removal. Control rods in cells from which all fuel has been removed and which are outside the periphery of the then existing fuel matrix may be armed electrically and moved for maintenance purposes during full core removal, provided all rods that control fuel are fully inserted and electrically disarmed.

REFERENCES

1. Neutron Monitoring System (BFNP FSAR Subsection 7.5)

2. Morgan, W. R. "In-Core Neutron Monitoring System for General Electric Boiling Water Reactors," General Electric Company, Atomic Power Equipment Department, November 1968, revised April 1969 (APED-5706)

426 312

C. Spent Fuel Pool Water

The design of the spent fuel storage pool provides a storage location for approximately 140 percent of the full core load of fuel assemblies in the reactor building which ensures adequate shielding, cooling, and reactivity control of irradiated fuel. An analysis has been performed which shows that a water level at or in excess of eight and one-half feet over the top of the stored assemblies will provide shielding such that the maximum calculated radiological doses do not exceed the limits of 10 CFR 20. The normal water level provides 14-1/2 feet of additional water shielding. The capacity of the skimmer surge tanks is available to maintain the water level at its normal height for three days in the absence of additional water input from the condensate storage tanks. All penetrations of the fuel pool have been installed at such a height that their presence does not provide a possible drainage route that could lower the normal water level more than one-half foot.

The fuel pool cooling system is designed to maintain the pool water temperature less than 125°F during normal heat loads. If the reactor core is completely unloaded when the pool contains two previous discharge batches, the temperature may increase to greater than 125°F. The RHR system supplemental fuel pool cooling mode will be used under these conditions to maintain the pool temperature to less than 125°F.

3.10.D/4.10.D BASES

Reactor Building Crane

The reactor building crane and 125-ton hoist are required to be operable for handling of the spent fuel in the reactor building. The controls for the 125-ton hoist are located in the crane cab. The 5-ton has both cab and pendant controls.

A visual inspection of the load-bearing hoist wire rope assures detection of signs of distress or wear so that corrections can be promptly made if needed.

The testing of the various limits and interlocks assures their proper operation when the crane is used.

3.10.E/4.10.E

Spent Fuel Cask

The spent fuel cask design incorporates removable lifting trunnions. The visual inspection of the trunnions and fasteners prior to attachment to the cask assures that no visual damage has occurred during prior handling. The trunnions must be properly attached to the cask for lifting of the cask and the visual inspection assures correct installation.

426 313

UNIT TWO

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.10.A Refueling Interlocks	4.10.A Refueling Interlocks
refueling interlocks shall be operable.	
b. A sufficient number of control rods shall be operable so that the core can be made subcritical with the strongest operable control rod fully withdrawn and all other operable control rods fully inserted, or all directional control valves for remaining control rods shall be disarmed electrically and sufficient margin to criticality shall be demonstrated.	
c. If maintenance is to be performed on two control rod drives they must be separated by more than two control cells in any direction.	
d. An appropriate number of SRM's are available as defined in specification 3.10.B.	
6. Any number of control rods may be withdrawn or removed from the reactor core providing the following conditions are satisfied:	3. With the mode selection switch in the refuel or shutdown mode, no control rod may be withdrawn until two licensed operators have confirmed that either all fuel has been removed from around that rod or that all control rods in immediately adjacent cells have been fully inserted and electrically disarmed.
a. The reactor mode switch is locked in the "refuel" position. The refueling interlock which prevents more than one control rod from	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.10.A Refueling Interlocks	4.10.A Refueling Interlocks
being withdrawn may be bypassed on a withdrawn control rod after the fuel assemblies in the cell containing (controlled by) that control rod have been removed from the reactor core. All other refueling interlocks shall be operable.	
B. Core Monitoring	B. Core Monitoring
1. During core alterations, except as in 3.10.B.2, two SRM's shall be operable, in or adjacent to any quadrant where fuel or control rods are being moved. For an SRM to be considered operable, the following shall be satisfied:	Prior to making any alterations to the core the SRM's shall be functionally tested and checked for neutron response. Thereafter, while required to be operable, the SRM's will be checked daily for response except as specified in 3.10.B.1.b.2.
a. The SRM shall be inserted to the normal operating level. (Use of special moveable, dunking type detectors during initial fuel loading and major core alterations in place of normal detectors is permissible as long as the detector is connected to the normal SRM circuit.)	
b.1 The SRM shall have a minimum of 3 cps with all rods fully inserted in the core, if one or more fuel assemblies are in the core, or,	
b.2 During a full core reload, SRM's (FLC's) may have a count rate of <3 cps provided that the SRM's are response checked at least once every 8 hours with a neutron source until >3 cps can be maintained.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
2. During a complete core removal, the SRM's shall have an initial minimum count rate of 3 cps prior to fuel removal, with all rods fully inserted and rendered electrically inoperable. The count rate will diminish during fuel removal. Individual control rods outside the periphery of the then existing fuel matrix may be electrically armed and moved for maintenance after all fuel in the cell containing (controlled by) that control rod have been removed from the reactor core.	
3.10.C Spent Fuel Pool Water	4.10.C Spent Fuel Pool Water
1. Whenever irradiated fuel is stored in the spent fuel pool, the pool water level shall be maintained at a depth of 8 1/2 feet or greater above the top of the spent fuel. A minimum of 6-1/2 feet of water shall be maintained over single irradiated fuel assemblies during transfer and handling operations.	1. Whenever irradiated fuel is stored in the spent fuel pool, the water level and temperature shall be recorded daily
2. Whenever irradiated fuel is in the fuel pool, the pool water temperature shall be $\leq 150^{\circ}F$.	2. A sample of fuel pool water shall be analyzed in accordance with the following specifications:
3. Fuel pool water shall be maintained within the following limits:	a. At least daily for conductivity and chloride ion content.
conductivity $\leq$ 10 umhos/cm @25°C	b. At least once per 8 hours for conductivity and chloride content when the fuel pool cleanup system is inoperable.
chlorides $\leq$ 0.5 ppm	

426 317

1.10 BASES

REFERENCES

1. Refueling interlocks (BFNP FSAR Subsection 7.6)

B. Core Monitoring

The SRM's are provided to monitor the core during periods of station shutdown and to guide the operator during refueling operations and station startup. Requiring two operable SRM's in or adjacent to any core quadrant where fuel or control rods are being moved assures adequate monitoring of that quadrant during such alterations. The requirement of 3 counts per second provides assurance that neutron flux is being monitored and ensures that startup is conducted only if the source range flux level is above the minimum assumed in the control rod drop accident.

During a full core reload SRM/FLC (Fuel Loading Chamber) operability will be verified using a portable external source at least once every 8 hours until sufficient fuel has been loaded to maintain 3 cps. A large number of fuel assemblies will not be required to maintain 3 cps. This increased surveillance rate assures proper detector operability until that time.

Under the special condition of removing the full core with all control rods inserted and electrically disarmed, it is permissible to allow SRM count rate to decrease below 3 cps. All fuel moves during core unloading will reduce reactivity. It is expected that the SRM's will drop below 3 cps before all of the fuel is unloaded. Since there will be no reactivity additions during this period, the low number of counts will not present a hazard. When all of the fuel has been removed to the spent fuel storage pool, SRM's will no longer be required. Requiring the SRM's to be functionally tested prior to fuel removal assures that the SRM's will be operable at the start of fuel removal. The daily response check of the SRM's ensures their continued operability until the count rate diminishes due to fuel removal. Control rods in cells from which all fuel has been removed and which are outside the periphery of the then existing fuel matrix may be armed electrically and moved for maintenance purposes during full core removal, provided all rods that control fuel are fully inserted and electrically disarmed.

REFERENCES

1. Neutron Monitoring System (BFNP FSAR Subsection 7.5)

2. Morgan, W. R.,"In-Core Neutron Monitoring System for General Electric Boiling Water Reactors," General Electric Company, Atomic Power Equipment Department, November 1968, revised April 1969 (APED-5706)

426 318

C. Spent Fuel Pool Water

The design of the spent fuel storage pool provides a storage location for approximately 140 percent of the full core load of fuel assemblies in the reactor building which ensures adequate shielding, cooling, and reactivity control of irradiated fuel. An analysis has been performed which shows that a water level at or in excess of eight and one-half feet over the top of the stored assemblies will provide shielding such that the maximum calculated radiological doses do not exceed the limits of 10 CFR 20. The normal water level provides 14-1/2 feet of additional water shielding. The capacity of the skimmer surge tanks is available to maintain the water level at its normal height for three days in the absence of additional water input from the condensate storage tanks. All penetrations of the fuel pool have been installed at such a height that their presence does not provide a possible drainage route that could lower the normal water level more than one-half foot.

The fuel pool cooling system is designed to maintain the pool water temperature less than 125°F during normal heat loads. If the reactor core is completely unloaded when the pool contains two previous discharge batches, the temperature may increase to greater than 125°F. The RHR system supplemental fuel pool cooling mode will be used under these conditions to maintain the pool temperature to less than 125°F.

3.10.D/4.10.D BASES

Reactor Building Crane

The reactor building crane and 125-ton hoist are required to be operable for handling of the spent fuel in the reactor building. The controls for the 125-ton hoist are located in the crane cab. The 5-ton has both cab and pendant controls.

A visual inspection of the load-bearing hoist wire rope assures detection of signs of distress or wear so that corrections can be promptly made if needed.

The testing of the various limits and interlocks assures their proper operation when the crane is used.

3.10 E/4.10.E

Spent Fuel Cask

The spent fuel cask design incorporates removable lifting trunnions. The visual inspection of the trunnions and fasteners prior to attachment to the cask assures that no visual damage has occurred during prior handling. The trunnions must be properly attached to the cask for lifting of the cask and the visual inspection assures correct installation.

426 319

UNIT THREE

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.10 CORE ALTERATIONS	4.10 CORE ALTERATIONS
b. A sufficient number of control rods shall be operable so that the core can be made subcritical with the strongest operable control rod fully withdrawn and all other operable control rods fully inserted, or all directional control valves for remaining control rods shall be disarmed electrically and sufficient margin to criticality shall be demonstrated.	
c. If maintenance is to be performed on two control rod drives they must be separated by more than two control cells in any direction.	
d. An appropriate number of SRM's are available as defined in specification 3.10.B.	

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.10 CORE ALTERATIONS	4.10 CORE ALTERATIONS
B. Core Monitoring	B. Core Monitoring
1. During core alterations, except as in 3.10.B.2, two SRM's shall be operable, in or adjacent to any quadrant where fuel or control rods are being moved. For a SRM to be considered operable, the following shall be satisfied:	Prior to making any alterations to the core the SRM's shall be functionally tested and checked for neutron response. Thereafter, while required to be operable, the SRM's will be checked daily for response except as specified in 3.10.B.1.b.2.
a. The SRM shall be inserted to the normal operating level. (Use of special moveable, dunking type detectors during initial fuel loading and major core alterations in place of normal detectors is permissible as long as the detector is connected to the normal SRM circuit.)	
b.1 The SRM shall have a minimum of 3 cps with all rods fully inserted in the core, if one or more fuel assemblies are in the core, or	
b.2 During a full core reload, SRM's (FLC's) may have a count rate <3 cps provided that the SRM's are response checked at least once every 8 hours with a neutron source until >3 cps can be maintained.	

2. During a complete core removal, the SRM's shall have an initial minimum count rate of 3 cps prior to fuel removal, with all rods fully inserted and rendered electrically inoperable. The count rate will diminish during fuel removal. Individual control rods outside the periphery of the then existing fuel matrix may be electrically armed and moved for maintenance after all fuel in the cell containing (controlled by) that control rod have been removed from the reactor core.

3.10.C Spent Fuel Pool Water

1. Whenever irradiated fuel is stored in the spent fuel pool, the pool water level shall be maintained at a depth of 8 1/2 feet or greater above the top of the spent fuel. A minimum of 6-1/2 feet of water shall be maintained over single irradiated fuel assemblies during transfer and handling operations.

2. Whenever irradiated fuel is in the fuel pool, the pool water temperature shall be $\leq 150^{\circ}F$.

3. Fuel pool water shall be maintained within the following limits:

   conductivity $\leq$ 10 umhos/cm @ 25°C

   chlorides $\leq$ 0.5 ppm

4.10.C Spent Fuel Pool Water

1. Whenever irradiated fuel is stored in the spent fuel pool, the water level and temperature shall be recorded daily

2. A sample of fuel pool water shall be analyzed in accordance with the following specifications:

   a. At least daily for conductivity and chloride ion content.

   b. At least once per 8 hours for conductivity and chloride content when the fuel pool cleanup system is inoperable.

426 323

provides primary reactivity control for the fuel assemblies in the cell associated with that control rod.

Thus, removal of an entire cell (fuel assemblies plus control rod) results in a lower reactivity potential of the core. The requirements for SRM operability during these core alterations assure sufficient core monitoring.

REFERENCES

1. Refueling interlocks (BFNP FSAR Subsection 7.6)

B. Core Monitoring

The SRM's are provided to monitor the core during periods of station shutdown and to guide the operator during refueling operations and station startup. Requiring two operable SRM's in or adjacent to any core quadrant where fuel or control rods are being moved assures adequate monitoring of that quadrant during such alterations. The requirement of 3 counts per second provides assurance that neutron flux is being monitored and insures that startup is conducted only if the source range flux level is above the minimum assumed in the control rod drop accident.

During a full core reload SRM/FLC (Fuel Loading Chamber) operability will be verified using a portable external source at least once every 8 hours until sufficient fuel has been loaded to maintain 3 cps. A large number of fuel assemblies will not be required to maintain 3 cps. This increased surveillance rate assures proper detector operability until that time.

Under the special condition of removing the full core with all control rods inserted and electrically disarmed, it is permissible to allow SRM count rate to decrease below 3 cps. All fuel moves during core unloading will reduce reactivity. It is expected that the SRM's will drop below 3 cps before all of the fuel is unloaded. Since there will be no reactivity additions during this period, the low number of counts will not present a hazard. When all of the fuel has been removed to the spent fuel storage pool, SRM's will no longer be required. Requiring the SRM's to be functionally tested prior to fuel removal assures that the SRM's will be operable at the start of fuel removal. The daily response check of the SRM's ensures their continued operability until the count rate diminishes due to fuel removal. Control rods in cells from which all fuel has been removed may be armed electrically and moved for maintenance purposes during full core removal, provided all rods that control fuel are fully inserted and electrically disarmed.

426 324

REFERENCES

1. Neutron Monitoring System (BFNP FSAR Subsection 7.5)

2. Morgan, W. R., "In-Core Neutron Monitoring System for General Electric Boiling Water Reactors," General Electric Company, Atomic Power Equipment Department, November 1968, revised April 1969 (APED-5706)

C. Spent Fuel Pool Water

The design of the spent fuel storage pool provides a storage location for approximately 140 percent of the full core load of fuel assemblies in the reactor building which ensures adequate shielding, cooling, and reactivity control of irradiated fuel. An analysis has been performed which shows that a water level at or in excess of eight and one-half feet over the top of the stored assemblies will provide shielding such that the maximum calculated radiological doses do not exceed the limits of 10 CFR 20. The normal water level provides 14-1/2 feet of additional water shielding. The capacity of the skimmer surge tanks is available to maintain the water level at its normal height for three days in absence of additional water input from the condensate storage tanks. All penetrations of the fuel pool have been installed at such a height that their presence does not provide a possible drainage route that could lower the normal water level more than one-half foot.

The fuel pool cooling system is designed to maintain the pool water temperature less than 125°F during normal heat loads. If the reactor core is completely unloaded when the pool contains two previous discharge batches, the temperatures may increase to greater than 125°F. The RHR system supplemental fuel pool cooling mode will be used under these conditions to maintain the pool temperature to less than 125°F.

426 325

ENCLOSURE 2

JUSTIFICATIONS AND REASONS FOR PROPOSED TECHNICAL SPECIFICATION CHANGES

Justification

During removal of fuel from the core the count rate indication of the source range monitors (SRMS's) will drop. During a complete core unloading it is expected that the count rate of the SRM's will drop below three counts per second (cps) before all of the fuel is unloaded. Since there will be no reactivity additions a lower number of counts will not present a hazard. The surveillance interval of eight hours on the SRM's ensures that these detectors are operable and can be relied on even when the count rate may go below three cps. Please refer to Safety Evaluation for Amendment 27 to license DPR-63, Nine Mile Point Nuclear Station Unit 1, submitted by letter from T. A. Ippolito to Donald P. Dise dated March 2, 1979.

Reason

The reason for this technical specification change is to eliminate the need for a high count rate neutron source when performing a full core reload. One change (page 304) is needed to correct a typographical error.