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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

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REFUELING OPERATIONS

CRANE TRAVEL - FUEL HANDLING BUILDING

LIMITING CONDITION FOR OPERATION

3.9.7 Loads in excess of 2430 pounds shall be prohibited from travel over fuel assemblies in the spent fuel pool or in the cask pit.

APPLICABILITY: With fuel assemblies and water in the spent fuel pool or in the cask pit.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.7 The weight of each load, other than a fuel assembly, shall be verified to be ≤ 2430 pounds prior to moving it over fuel assemblies in the spent fuel pool or cask pit.

REFUELING OPERATIONS

STORAGE POOL WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.11 As a minimum, 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated in the storage racks in the spent fuel pool or cask pit.

APPLICABILITY: Whenever irradiated fuel assemblies are in the spent fuel pool or cask pit. ~~storage pool.~~

ACTION:

With the requirement of the specification not satisfied, suspend all movement of fuel and crane operations with loads in the fuel storage area and restore the water level to within its limit within 4 hours. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.11 The water level in the spent fuel pool and cask pit ~~storage pool~~ shall be determined to be at least its minimum required depth at least once per 7 days when irradiated fuel assemblies are in these locations ~~the fuel storage pool~~.

REFUELING OPERATIONS

STORAGE POOL VENTILATION

LIMITING CONDITION FOR OPERATION

3.9.12 Two independent emergency ventilation systems servicing the storage pool area shall be OPERABLE.

APPLICABILITY: Whenever irradiated fuel is in the spent fuel pool or cask pit ~~storage pool~~.

ACTION:

a. With one emergency ventilation system servicing the storage pool area inoperable, fuel movement within the spent fuel pool or cask pit, ~~storage pool~~ or crane operation with loads over the spent fuel pool or cask pit, ~~storage pool~~ may proceed provided the OPERABLE emergency ventilation system servicing the storage pool area is in operation and discharging through at least one train of HEPA filters and charcoal adsorbers.

b. With no emergency ventilation system servicing the storage pool area OPERABLE, suspend all operations involving movement of fuel within the spent fuel pool or cask pit, ~~storage pool~~ or crane operation with loads over the spent fuel pool or cask pit, ~~storage pool~~ until at least one system is restored to OPERABLE status.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12.1 The above required emergency ventilation system servicing the storage pool area shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.6.5.1, and at least once each REFUELING INTERVAL by verifying that the emergency ventilation system servicing the storage pool area maintains the storage pool area at a negative pressure of ≥ 1/8 inches Water Gauge relative to the outside atmosphere during system operation.

4.9.12.2 The normal storage pool ventilation system shall be demonstrated OPERABLE at least once each REFUELING INTERVAL by verifying that the system fans stop automatically and that dampers automatically divert flow into the emergency ventilation system on a fuel storage area high radiation test signal.

REFUELING OPERATIONS

SPENT FUEL POOL FUEL ASSEMBLY STORAGE

LIMITING CONDITION FOR OPERATION

3.9.13 Fuel assemblies shall be placed in the spent fuel storage racks in accordance with the following criteria:

3.9.13 a. Fuel assemblies stored in the spent fuel pool shall be placed in the spent fuel storage racks in accordance with the criteria shown in Figure 3.9-1.

b. Fuel assemblies stored in the cask pit shall be placed in the spent fuel storage racks in accordance with the criteria shown in Figure 3.9-2.

APPLICABILITY: Whenever fuel assemblies are in the spent fuel pool or cask pit.

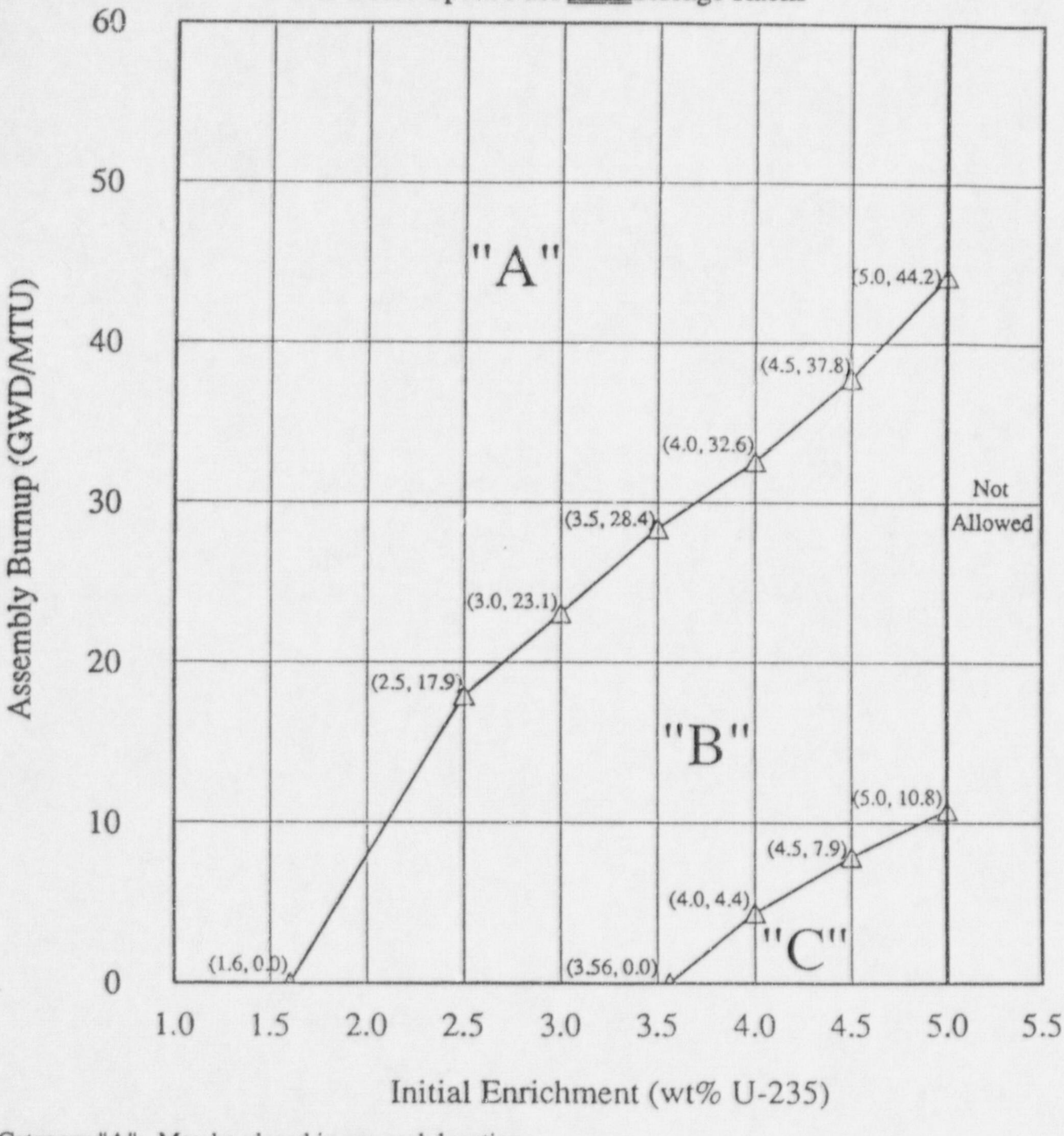
ACTION:

With the requirements of the above Specifications 3.9.13.a or 3.9.13.b not satisfied, suspend all other fuel movement within the spent fuel pool or cask pit and move the non-complying fuel assemblies to allowable locations in the spent fuel pool in accordance with Figure 3.9-1 for the spent fuel pool, or Figure 3.9-2 for the cask pit, as appropriate. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

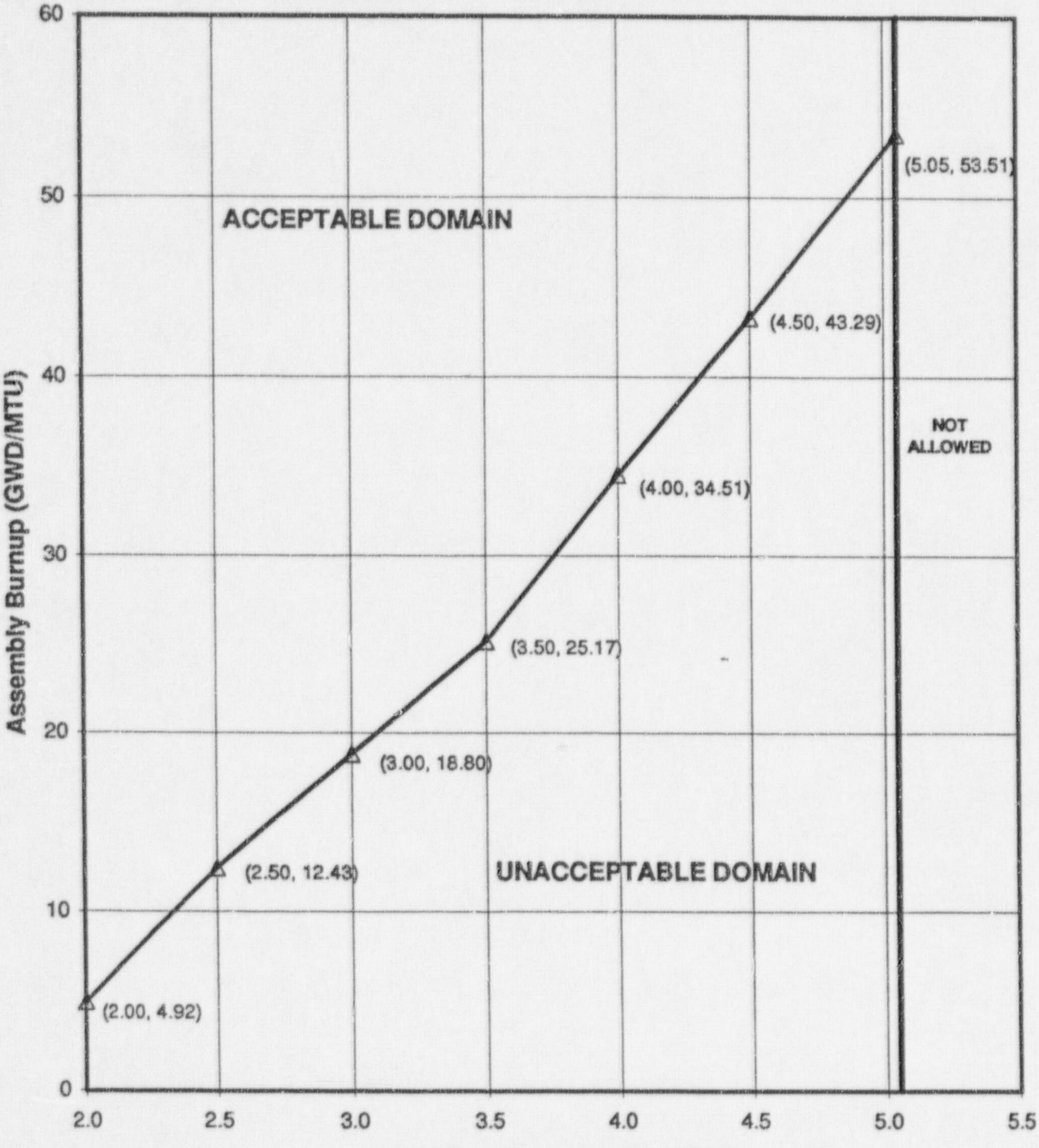
4.9.13.1 Prior to storing a the fuel assembly in the spent fuel pool or cask pit, verify by administrative means that the initial enrichment and burnup of the fuel assembly are in accordance with Figure 3.9-1 for the spent fuel pool, or Figure 3.9-2 for the cask pit, as appropriate.

Figure 3.9-1
Burnup vs. Enrichment Curves For
Davis-Besse Spent Fuel Pool Storage Racks



Category "A": May be placed in any rack location
Category "B": Must not be placed directly adjacent to Category "C" assemblies
Category "C": May only be placed directly adjacent to Category "A" assemblies or non-fuel locations

Figure 3.9-2
Burnup vs. Enrichment Curve for Davis-Besse Cask Pit Storage Racks



Note: Fuel assembies with initial enrichments less than 2.0 wt% U-235 will conservatively be required to meet the burnup requirements of 2.0 wt% U-235 assemblies.

REFUELING OPERATIONS

BASES

3/4.9.6 FUEL HANDLING BRIDGE OPERABILITY

The OPERABILITY requirements of the hoist bridges used for movement of fuel assemblies ensures that: 1) fuel handling bridges will be used for movement of control rods and fuel assemblies, 2) each hoist has sufficient load capacity to lift a fuel element, and 3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - FUEL HANDLING BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel assembly in a failed fuel container over other fuel assemblies in the spent fuel pool or cask pit ~~storage pool~~ ensures that in the event this load is dropped (1) the activity release will not exceed the source term assumed in the design basis fuel handling accident for outside containment ~~be limited to that contained in a single fuel assembly~~, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. ~~This assumption is consistent with the activity release assumed in the accident analyses.~~

3/4.9.8 COOLANT CIRCULATION

The requirement that at least one decay heat removal loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two DHR loops OPERABLE when there is less than 23 feet of water above the core ensures that a single failure of the operating DHR loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating DHR loop, adequate time is provided to initiate emergency procedures to cool the core.

In MODE 6, the RCS boron concentration is typically somewhat higher than the boron concentration required by Specification 3.9.1, and could be higher than the boron concentration of normal sources of water addition. The flowrate through the decay heat system may at times be reduced to somewhat less than 2800 gpm. In this situation, if water with a boron concentration equal to or greater than the boron concentration required by Specification 3.9.1 is added to the RCS, the RCS is assured to remain above the Specification 3.9.1 requirement, and a flowrate of less than 2800 gpm is not of concern.

3/4.9.9 CONTAINMENT PURGE AND EXHAUST ISOLATION SYSTEM

Deleted

3/4.9.10 and 3/4.9.11 WATER LEVEL - REACTOR VESSEL AND STORAGE POOL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

REFUELING OPERATIONS

BASES

3/4.9.12 STORAGE POOL VENTILATION

The requirements on the emergency ventilation system servicing the storage pool area to be operating or OPERABLE ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses.

3/4.9.13 SPENT FUEL ~~POOL FUEL~~ ASSEMBLY STORAGE

The restrictions on the placement of fuel assemblies within the spent fuel pool and cask pit, as dictated by Figure 3.9-1 and Figure 3.9-2, ensure that the k-effective of the spent fuel pool and cask pit will always remain less than 0.95 assuming the spent fuel pool and cask pit ~~pool~~ to be flooded with non-borated water. The restrictions delineated in Figure 3.9-1 and Figure 3.9-2, and the action statement, are consistent with the criticality safety analyses~~is~~ performed for the spent fuel pool and cask pit.

5.0 DESIGN FEATURES

5.1 Site Location

The Davis-Besse Nuclear Power Station, Unit Number 1, site is located on Lake Erie in Ottawa County, Ohio, approximately six miles northeast from Oak Harbor, Ohio and 21 miles east from Toledo, Ohio. The exclusion area boundary has a minimum radius of 2400 feet from the center of the plant.

5.2 (Deleted)

5.3 Reactor Core

ADDITIONAL CHANGES PREVIOUSLY PROPOSED BY LETTER
Serial No. 2552 Date 9/8/98

5.3.1 Fuel Assemblies

The reactor core shall contain 177 fuel assemblies. Each assembly shall consist of a matrix of zircaloy or ZIRLO clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

5.3.2 Control Rods

The reactor core shall contain 53 safety and regulating control rod assemblies and 8 axial power shaping rod (APSR) assemblies. The nominal values of absorber material for the safety and regulating control rods shall be 80 percent silver, 15 percent indium and 5 percent cadmium. The absorber material for the APSRs shall be 100 percent Inconel.

5.4 (Deleted)

5.5 (Deleted)

5.6 Fuel Storage

5.6.1 Criticality

5.6.1.1 The spent fuel <u>pool</u> storage racks are designed and shall be maintained with:

a. A K_{eff} equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance of 1% delta k/k for calculation uncertainty.

(continued)

5.6 Fuel Storage (continued)

b. A rectangular array of stainless steel cells spaced 12 31/32 inches on centers in one direction and 13 3/16 inches on centers in the other direction. Fuel assemblies stored in the spent fuel pool shall be placed in a stainless steel cell of 0.125 inches nominal thickness or in a failed fuel container.

c. Fuel assemblies stored in the spent fuel pool in accordance with Technical Specification 3.9.13.

5.6.1.2 The new fuel storage racks are designed and shall be maintained with:

a. A K_{eff} equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance of 1% delta k/k for uncertainties as described in Section 9.1 of the USAR.

b. A K_{eff} equivalent to less than or equal to 0.98 when immersed in a hydrogenous "mist" of such a density that provides optimum moderation (i.e., highest value of K_{eff}), which includes a conservative allowance of 1% delta k/k for uncertainties as described in Section 9.1 of the USAR.

c. A nominal 21 inch center-to-center distance between fuel assemblies placed in the storage racks.

d. Fuel assemblies having a maximum initial enrichment of 5.0 weight percent uranium-235.

5.6.1.3 The cask pit storage racks are designed and shall be maintained with:

a. A K_{eff} equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance for manufacturing tolerances and calculation uncertainty.

b. A rectangular array of stainless steel cells spaced a nominal 9.22 inches on center in both directions. Boral neutron absorber material is utilized between each cell for criticality considerations. Fuel assemblies stored in the cask pit shall be placed in a stainless steel cell with walls of 0.075 inches nominal thickness.

c. Fuel assemblies stored in the cask pit in accordance with Technical Specification 3.9.13.

5.6 Fuel Storage (continued)

5.6.2 Drainage

The spent fuel storage pool and cask pit are ~~is~~ designed and shall be maintained to prevent inadvertent draining ~~of the pool~~ below 9 feet above the top of the fuel storage racks.

5.6.3 Capacity

a. The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 735 fuel assemblies.

b. The cask pit is designed and shall be maintained with a storage capacity limited to no more than 289 fuel assemblies.

5.7 (Deleted)

ENVIRONMENTAL ASSESSMENT
FOR
LICENSE AMENDMENT REQUEST NUMBER 98-0007

Identification of Proposed Action

This proposed action involves the Davis-Besse Nuclear Power Station (DBNPS), Unit 1, Operating License Number NPF-3, Appendix A, Technical Specifications (TS). The proposed license amendment application involves TS 3/4.9.7, Refueling Operations - Crane Travel - Fuel Handling Building, and associated Bases; TS 3/4.9.11, Refueling Operations - Storage Pool Water Level; TS 3/4.9.12, Refueling Operations - Storage Pool Ventilation; TS 3/4.9.13, Refueling Operations - Spent Fuel Pool Fuel Assembly Storage, and associated Bases; TS 5.6, Design Features - Fuel Storage; and related changes to the TS Index.

The proposed TS changes would expand the present spent fuel storage capability by up to 289 storage locations by allowing the use of spent fuel racks in the cask pit area adjacent to the spent fuel pool (SFP). The cask pit is accessible from the SFP through a gated opening in the wall dividing the two pool areas.

Need for the Proposed Action

A facility for the long-term storage of spent nuclear fuel assemblies from commercial nuclear power reactors is to be provided by the United States Department of Energy. However, since such a facility is not yet available or expected to be available until at least the year 2010, commercial nuclear power plants, such as the DBNPS, have had to provide for additional spent fuel storage.

The DBNPS began the current operating Cycle 12 with insufficient storage capacity in the SFP to fully offload the entire reactor core (177 fuel assemblies). The current spent fuel storage capacity in the spent fuel pool is 735 fuel assemblies. There are currently only 114 empty storage locations available in the spent fuel pool. A full core offload into the spent fuel pool is required for the performance of the ten-year Inservice Inspection activities required during the Twelfth Refueling Outage (12RFO), which is scheduled to commence in April 2000.

Following the core reload during 12RFO, with 72 fuel assemblies scheduled to be permanently discharged, there would be only 42 empty storage locations available in the spent fuel pool. Refueling of the reactor during the Thirteenth Refueling Outage (13RFO), which is scheduled to commence in Spring 2002, would not be possible since there would be insufficient empty storage locations available to hold the 72 fuel assemblies scheduled to be permanently discharged.

Environmental Impact of the Proposed Action

As described in the Safety Assessment and Significant Hazards Consideration (SASHC) for the proposed license amendment application, the DBNPS has determined that the structures, systems, and components which could be affected by the proposed license amendment, will continue to be capable of performing their safety functions.

The proposed license amendment application involves a change to a requirement with respect to the use of plant components located within the restricted area as defined in 10 CFR Part 20. As discussed in the SASHC, this proposed license amendment does not involve a significant hazards consideration. The proposed change to allow the use of spent fuel racks installed in the cask pit area does not alter source terms, containment isolation, or allowable releases. In addition, as described in further detail below, the proposed change does not involve an increase in the amounts, and no change in the types, of any radiological effluents that may be allowed to be released offsite. Furthermore, as also described in further detail below, there is no increase in the individual or cumulative occupational radiation exposure.

The spent fuel pool cooling and cleanup system currently generates approximately 50 cubic feet of solid radioactive waste annually. The necessity for pool filtration resin replacement is determined primarily by the need for water clarity, and the resin is normally changed about once every 18 months. The additional number of fuel assemblies in storage is not expected to significantly affect the resin replacement frequency. Therefore, no significant increase in the volume of solid radioactive waste is expected from operating with expanded spent fuel storage capacity.

The number of stored spent fuel assemblies does not affect the release of radioactive liquids from the plant. The contribution from the stored fuel assemblies of radioactive materials in the spent fuel pool water is insignificant relative to other sources of activity, such as the reactor coolant system. The volume of spent fuel pool water processed for discharge is independent of the quantity of stored spent fuel assemblies.

The contribution of gaseous releases from the fuel storage area is negligible in comparison to other releases, and no significant increase due to the increased quantity of stored spent fuel assemblies is expected. The discharge of gaseous radioactive effluents will continue to be a small fraction of regulatory limits.

During normal operations, personnel working in the fuel storage area are exposed to radiation from the spent fuel pool. Operating experience has shown that area radiation dose rates originate primarily from radionuclides in the pool water. During refueling and other fuel movement operations, pool water concentrations might be expected to increase somewhat due to crud deposits spalling from fuel assemblies and due to activities carried into the pool from the primary system. Should dose rates above and around the cask pit perimeter increase, this change would be identified by routine radiation surveys, and the appropriate radiological controls would be revised as required.

Radiation dose rates in accessible areas around the spent fuel storage and transfer zones have been conservatively evaluated based on realistic fuel parameters. Dose rates will remain within regulatory limits. No changes to the radiation zone designations described in the DBNPS Updated Safety Analysis Report (USAR) are anticipated.

Operating experience has also shown that there have been negligible concentrations of airborne radioactivity in the spent fuel pool area. No increase in airborne radioactivity is expected as a result of the expanded storage capacity.

The proposed change does not result in new surveillances which would require additional personnel entry into radiation controlled areas.

With regard to potential non-radiological impacts, the proposed license amendment involves no increase in the amounts or change in the types of any non-radiological effluents that may be released offsite, and has no other environmental impact.

Based on the above, the DBNPS concludes that there are no significant radiological or non-radiological environmental impacts associated with the proposed license amendment.

Alternatives to the Proposed Action

Since the DBNPS has concluded that the environmental effects of the proposed action are not significant, any alternatives will have only similar or greater environmental impacts. The principal alternative would be to not grant the license amendment. Since the environmental impacts of the proposed action are not significant, denial of the proposed license amendment would not significantly reduce the environmental impacts attributable to the plant.

Alternative Use of Resources

This action does not involve the use of resources not previously considered in the Final Environmental Statement Related to the Operation of the Davis-Besse Nuclear Power Station, Unit Number 1 (NUREG 75/097).

Finding of No Significant Impact

The DBNPS has reviewed the proposed license amendment against the categorical exclusion criteria of 10 CFR 51.22(c)(9) for an environmental assessment. As demonstrated in the proposed license amendment's SASHC, the proposed changes do not involve a significant hazards consideration, do not increase the types or amounts of effluents that may be released offsite, and do not increase individual or cumulative occupational radiation exposures. Accordingly, the DBNPS finds that the proposed license amendment, if approved by the

Nuclear Regulatory Commission, will have no significant impact on the environment and that no environmental assessment is required.