



GULF STATES UTILITIES COMPANY

RIVER BEND STATION POST OFFICE BOX 120 ST FRANCISVILLE, LOUISIANA 70775
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August 12, 1988
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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

River Bend Station - Unit 1
Docket No. 50-458

Gulf States Utilities (GSU) Company hereby files an amendment to the River Bend Station - Unit 1 Facility Operating License NPF-47, pursuant to 10CFR50.90. This application is filed to reduce the minimum water coverage required by Technical Specification Surveillance Requirements 4.9.6.1.c and 4.9.6.2.c for irradiated fuel and control rods during their handling. The attachment to this letter includes the proposed revisions to the Technical Specifications and justifications for this change.

Pursuant to 10CFR170.12, GSU has enclosed a check in the amount of one hundred fifty dollars (\$150.00) for the license amendment application fee. Your prompt attention to this application is appreciated.

Sincerely,

J. E. Booker
Manager-River Bend Oversight
River Bend Nuclear Group

JEB/LAE/RJK/DAS/ch

Attachment

cc: U. S. Nuclear Regulatory Commission
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

STATE OF LOUISIANA)

PARISH OF WEST FELICIANA)

In the Matter of)

GULF STATES UTILITIES COMPANY)

Docket No. 50-458

(River Bend Station - Unit 1)

AFFIDAVIT

J. E. Booker, being duly sworn, states that he is Manager-River Bend Oversight for Gulf States Utilities Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the documents attached hereto; that he has read all of the statements contained in such documents attached thereto and made a part thereof; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.

J. E. Booker
J. E. Booker

Subscribed and sworn to before me, a Notary Public in and for the State and Parish above named, this 12th day of August, 1988. My Commission expires with Life.

Claudia J. Hunt
Notary Public in and for
West Feliciana Parish, Louisiana

ATTACHMENT
GULF STATES UTILITIES COMPANY
RIVER BEND STATION
DOCKET 50-458/LICENSE NO. NPF-47

REFUELING AND FUEL HANDLING PLATFORMS

Licensing Document Involved:

Technical Specifications

ITEMS: 4.9.6.1(c)
4.9.6.2(c)

PAGES: 3/4 9-8
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REASON FOR REQUEST

This proposed amendment to the River Bend Station (RBS) Unit 1 Technical Specifications, Appendix A to Facility Operating License NPF-47, is being requested in accordance with 10CFR50.90. Technical Specification Surveillance Requirement 4.9.6.1, "Refueling Platform", currently requires that operation of the uptravel stop interlock be demonstrated to provide a minimum water coverage of 8 feet 6 inches above the top of active irradiated fuel or control rods in order for the refueling platform hoists to be declared operable to be used for refueling operations.

For active irradiated fuel, compliance with the required water coverage has resulted in an unnecessary operational hardship due to the narrow operating bands for pool levels in the containment and fuel buildings. The narrow operating bands have made it difficult to maintain the pool levels where the high or low water level annunciators are not actuated.

For control rods, the minimum water coverage prevents transfer of control rods through the portable radiation shield, and prevents placement of a control rod on the hangers provided for their storage in the fuel building pool.

For these reasons, it is being requested that the minimum required water coverage over the top of active irradiated fuel be reduced from 8 feet 6 inches to 8 feet 2 inches, and the minimum required water coverage over irradiated control rods be reduced from 8 feet 6 inches to 6 feet 9 inches (see Figure 1).

It is also being requested that Surveillance Requirement 4.9.6.2, "Fuel Handling Platform", be revised in a congruent manner (see Figure 2) to permit placement of the control rods on hangers provided in the spent fuel storage pool in the fuel building, and to maintain consistency (i.e., the same minimum water coverages as specified for the refueling platform) in the RBS Technical Specifications.

DESCRIPTION

The proposed Technical Specification change separates Surveillance Requirements 4.9.6.1.c and 4.9.6.2.c each into two surveillance requirements. The first surveillance requirement will be to demonstrate that the main hoist

normal uptravel stop limit switch provides at least 8 feet 2 inches of water coverage over the top of active irradiated fuel. The second surveillance requirement will be to demonstrate that the auxiliary hoist(s) normal uptravel stop limit switch provides at least 6 feet 9 inches of water coverage over the top of irradiated control rods.

REDUCED WATER COVERAGE OVER SPENT FUEL

An increase in the allowable pool level range is necessary to provide meaningful pool level alarms for the main control room operators, and thereby, reduce the chances of pool overflow or violation of the minimum water coverage requirements of the Technical Specifications. Although it is proposed to reduce the required minimum water shielding over an irradiated fuel assembly from 8 feet 6 inches to 8 feet 2 inches, this is still greater than the 8 feet 0 inches specified by the Standard BWR/6 Technical Specifications and by technical specifications of other BWR/6 plants.

The original design configuration of the upper containment pool low level alarm and the refueling platform would not permit removal of spent fuel from the reactor cavity due to an interference of one inch between the bottom of the fuel assembly and the top of the portable radiation shield which is installed over the reactor vessel-drywell annulus during refueling operations. A modification was performed prior to the first refueling outage which raised the normal uptravel stop interlock of the main hoist on the refueling platform by 3 inches to eliminate this interference, and raised the low water level limit in the containment building pools by 5-1/8 inches. This modification also raised the low water limit in the fuel building pools by 9 inches.

The net result of these modifications allowed fuel to be moved within the Technical Specification limits; however, the sharp reduction in the allowable operating range for pool water level made it difficult to maintain the pool levels such that an alarm was not actuated. Currently, there is 5-7/8 inches between the lower allowable pool level in the containment, as specified by the Technical Specifications, and the pool level above which flooding of certain electrical boxes will occur. With the necessary allowances for instrument calibration accuracy, instrument channel tolerances, setpoint adjustment range ("leave as-is zone"), and instrument reset band (deadband), there is very little range available for level to vary without actuating either a high or a low level alarm. During the first refueling outage, surveillance of the pool levels was maintained primarily through direct visual means by operators on the refueling floor. This proposed change would allow the pool levels to be monitored from the control room as originally intended by the plant design.

The worst case dose rate at the pool surface from an irradiated fuel assembly, based on the currently required minimum water coverage of 8 feet 6 inches, is 10.8 mRem/hr. A reduction in the water level above the top of active irradiated fuel from 8 feet 6 inches to 8 feet 2 inches is calculated to increase the worst case radiation level at the pool surface to 17.7 mRem/hr during irradiated fuel movement. These calculated dose rates are very conservative because they assume the transfer of a peak power bundle irradiated at 105% of the design power level (3039 MWt) with only 24 hours of decay time. The current schedule for RBS' second refueling outage is to begin moving fuel 5 days after plant shutdown. No BWR to date is known to

have started fuel movement earlier than 3 days after plant shutdown. Therefore, actual decay time is expected to be longer than that assumed in the calculation. A typical radiation dose rate to personnel on the refueling platform during irradiated fuel transfer is estimated to be less than 0.2 mRem/hr, assuming an average power fuel bundle, 5 days decay time, and pool water level at mid-range. On this basis, the incremental effect on personnel radiation dose over the plant life due to the proposed reduced water coverage over irradiated fuel is estimated to be less than 0.2 man-Rem.

REDUCED WATER COVERAGE OVER A CONTROL ROD

The RBS Technical Specifications currently require a minimum of 8 feet 6 inches of water shielding be provided for a control rod when it is handled by the refueling platform or the fuel handling platform. Unlike spent fuel assemblies, no mention of a minimum required water coverage over control rods is made in the Standard Technical Specifications, GESSAR II, or the RBS Updated Safety Analysis Report (USAR).

The present design configuration of RBS does not permit the removal of irradiated control rods from the reactor cavity given the current water shielding requirement. With the current minimum pool water level and with 8 feet 6 inches of water coverage over the top of the control rod, there would be an interference of approximately 1 foot 3 inches between the bottom of the control rod and the top of the portable radiation shield. Thus, a change to the current Technical Specifications is necessary to allow control rods to be removed from the reactor cavity without resorting to unorthodox means (e.g. by transferring them horizontally).

Available water coverage above the control rod storage hangers in the fuel building storage pool is approximately 7 feet. A reduction in the minimum required water coverage from 8 feet 6 inches to 6 feet 9 inches would allow transfer of control rods through the portable radiation shield, and allow the use of the control rod storage hangers in the fuel building storage pool.

The primary source of radiation from an irradiated control rod is from the stellite guide rollers located in the top corners of the cruciform blades. Neutron activation of the Cobalt-59 in the rollers produces radioactive Cobalt-60. The maximum dose rate at the pool surface from an irradiated control rod during transfer has been calculated to be approximately 45 mRem/hr with a minimum of 6 feet 9 inches of water shielding. It was assumed in this calculation that the control rod reached its burnout limit (i.e., a 10% reduction in the relative reactivity worth) within approximately 3 years. While it is possible that a control rod might be damaged and have to be removed earlier, it is expected that no control rods will have to be replaced at RBS because of burnout until the tenth or eleventh refueling outage. Since the same total neutron dose will be accumulated over a much longer time, actual radiation levels from control rods when they are replaced are expected to be much lower than indicated by the results of the above calculation. This results from the additional decay of Cobalt-60 which will occur before the control rod is removed from the reactor. The expected personnel dose rate on the refueling platform from a control rod at that time is estimated to be less than 0.3 mRem/hr assuming pool water level is at the mid-range.

Because of the "control cell" core concept currently used at RBS, only 29 control rods receive appreciable exposure during a fuel cycle. During the first nine or ten refueling outages, control rods will be shuffled within the core to equalize their exposure. At the tenth or eleventh outage, 29 control rods will be removed and replaced. Due to the relatively few control rods that it is anticipated will have to be removed from the reactor cavity over the plant life, the impact on operator radiation dose will be very small. The incremental effect on personnel radiation exposure over the plant life is estimated to be less than 0.01 man-Rem.

The proposed Technical Specification change will, therefore, permit removal of control rods from the reactor cavity with only a minimal impact on personnel radiation exposure.

SIGNIFICANT HAZARDS CONSIDERATION

In accordance with the requirements of 10CFR50.92, the following discussion is provided in support of the determination that no significant hazards are created or increased by the changes proposed in this amendment request.

1. No significant increase in the probability or the consequences of an accident previously evaluated results from the proposed changes because:

The only previously analyzed accident which is potentially affected by this change is the fuel handling accident described in Section 15.7.4 of the RBS USAR. The USAR assumes a fuel handling accident occurs as a result of the failure of the fuel assembly lifting mechanism. The proposed change does not affect the operation or design of the main hoist or the fuel grapple and, therefore, does not increase the probability of this accident.

The consequences of a fuel handling accident have also been analyzed in Section 15.7.4 of the USAR. As indicated in the USAR, the most severe fuel handling accident from a radiological release viewpoint, is the drop of a channeled spent fuel bundle onto unchanneled spent fuel located in the spent fuel racks in the fuel building. The maximum height the fuel assembly will be lifted above the spent fuel racks will not be changed by the implementation of this proposed change. The minimum of 23 feet water coverage specified above spent fuel in the storage racks and above the reactor flange (for the purpose of iodine absorption from ruptured fuel rods as a result of a fuel handling accident) also will not be changed. Additionally, the consequences of dropping a control rod are still bounded by the drop of a fuel assembly due to the much lower weight of the control rod (218 lbs. in air). Therefore, the proposed change does not affect the input parameters, initial conditions, or assumptions used in the accident analysis and the proposed change remains bounded by the current fuel handling accident analysis presented in USAR Section 15.7.4.

Based on these considerations, it is concluded that the proposed change does not increase the probability or the consequences of any accident previously evaluated.

2. The proposed change will not create the possibility of a new or different kind of accident than any previously evaluated because:

Fuel handling accidents in both the containment and fuel buildings have been considered in the USAR. The proposed change is limited to the containment and fuel handling pools. Significant plant operating parameters which may cause a malfunction of equipment are not altered by this proposed change. No new accident scenario or unanalyzed condition is introduced by revising the water coverage above the active irradiated fuel or irradiated control rods because no new failure modes are introduced. Therefore, the proposed change cannot create the possibility of a new or different kind of accident from any previously evaluated.

3. This request would not involve a significant reduction in the margin of safety because:

Technical Specification Bases 3/4.9.6 address the operability of the refueling platform for handling control rods and fuel assemblies, load capacities of the hoists, and protection of the reactor pressure vessel internals. The proposed change has no effect on these bases. Technical Specification Bases 3/4.9.8 and 3/4.9.9 address that the minimum water level of 23 feet above stored, irradiated fuel in the pool is necessary to ensure removal of 99% of iodine released by ruptured irradiated fuel rods in the event of a fuel handling accident. The proposed change does not alter this required minimum water level. Thus, it is concluded that the proposed change does not result in any change to the current bases.

The radiological consequences of a fuel handling accident are discussed in Section 15.7.4 of the Standard Review Plan (NUREG-0800) and Section 15.7.4 of the USAR. The offsite dose consequences of a postulated fuel handling accident are well within the 10CFR100 guidelines and are not affected by the proposed Technical Specification change. The number of fuel rods damaged during the limiting fuel handling accident will remain unchanged since the height the fuel assembly can be lifted above the storage racks is unchanged. The consequences of dropping a control rod are still bounded by the drop of a fuel assembly due to the much lower weight of the control rod. As mentioned previously, the minimum water level (23 feet above the fuel in the storage racks or above the reactor vessel flange) assumed to be available for removal of iodine released by ruptured fuel rods in the event of a fuel handling accident, is not changed. Therefore, the results of the transient and accident analyses discussed in the USAR has not been affected and continue to agree with the guidance in the Standard Review Plan.

The Light Load Handling System, as it relates to refueling, is discussed in Section 9.1.4 of the Standard Review Plan and Section 9.1.4 of the USAR. A reduction in the minimum required water coverage above the top of active irradiated fuel and above the top of irradiated control rods will result in an modest increase in the radiation dose rate at the pool surface during transfer of ~~these~~ components through the portable radiation shield. However, as shown above, this increase is not significant. Administrative procedures and controls are in place as described in Section 12.5 of the USAR to maintain radiation exposure as far below the regulatory limits as possible (ALARA). The proposed Technical

Specification change does not result in an unacceptable or excessive radiation exposure and therefore, still meets the acceptance criteria of Section 9.1.4 of the Standard Review Plan.

In conclusion, the proposed change does not increase the possibility or the consequences of a previously evaluated accident, does not create a new or different kind of accident from any previously evaluated, and does not involve a significant reduction in the margin of safety. Therefore, Gulf States Utilities Company proposes that no significant hazards considerations are involved.

REVISED TECHNICAL SPECIFICATIONS

The requested revision is provided in the Enclosure.

SCHEDULE FOR ATTAINING COMPLIANCE

As indicated above, RBS is currently in compliance with the applicable Technical Specifications. However, to provide the operational flexibility required in meeting the second refueling outage schedule for RBS and allow transfer of the spent fuel and removal (if required) of control rods, GSU requests the proposed change be approved by December 31, 1988. This will allow adequate advanced planning prior to the refueling outage, currently scheduled to begin March 15, 1989.

NOTIFICATION OF STATE PERSONNEL

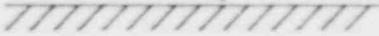
A copy of the amendment application and this submittal has been provided to the State of Louisiana, Department of Environmental Quality - Nuclear Energy Division.

ENVIRONMENTAL IMPACT APPRAISAL

Gulf States Utilities Company (GSU) has reviewed the proposed Technical Specification change against the criteria of 10 CFR 51.22 for environmental considerations. As shown above, the proposed change does not involve a significant hazards consideration, nor increase the types and amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, GSU concludes that the proposed Technical Specification change meets the criteria given in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

FIGURE 1
 PROPOSED WATER COVERAGE LIMITS
 (CONTAINMENT FUEL POOLS)

REFUEL FLOOR (EL. 186'-3")



FLOOD LEVEL (EL. 186'-0")

TECH SPEC LIMIT
 EL. 185'-2 3/4"

TECH SPEC LIMIT (EL. 185'-2")

HIGH LEVEL ALARM (EL. 185'-10 1/16")
 6 3/8" OPERATING BAND
 LOW LEVEL ALARM (EL. 185'-3 11/15")
 TECH SPEC LIMIT (EL. 185'-2 1/8")

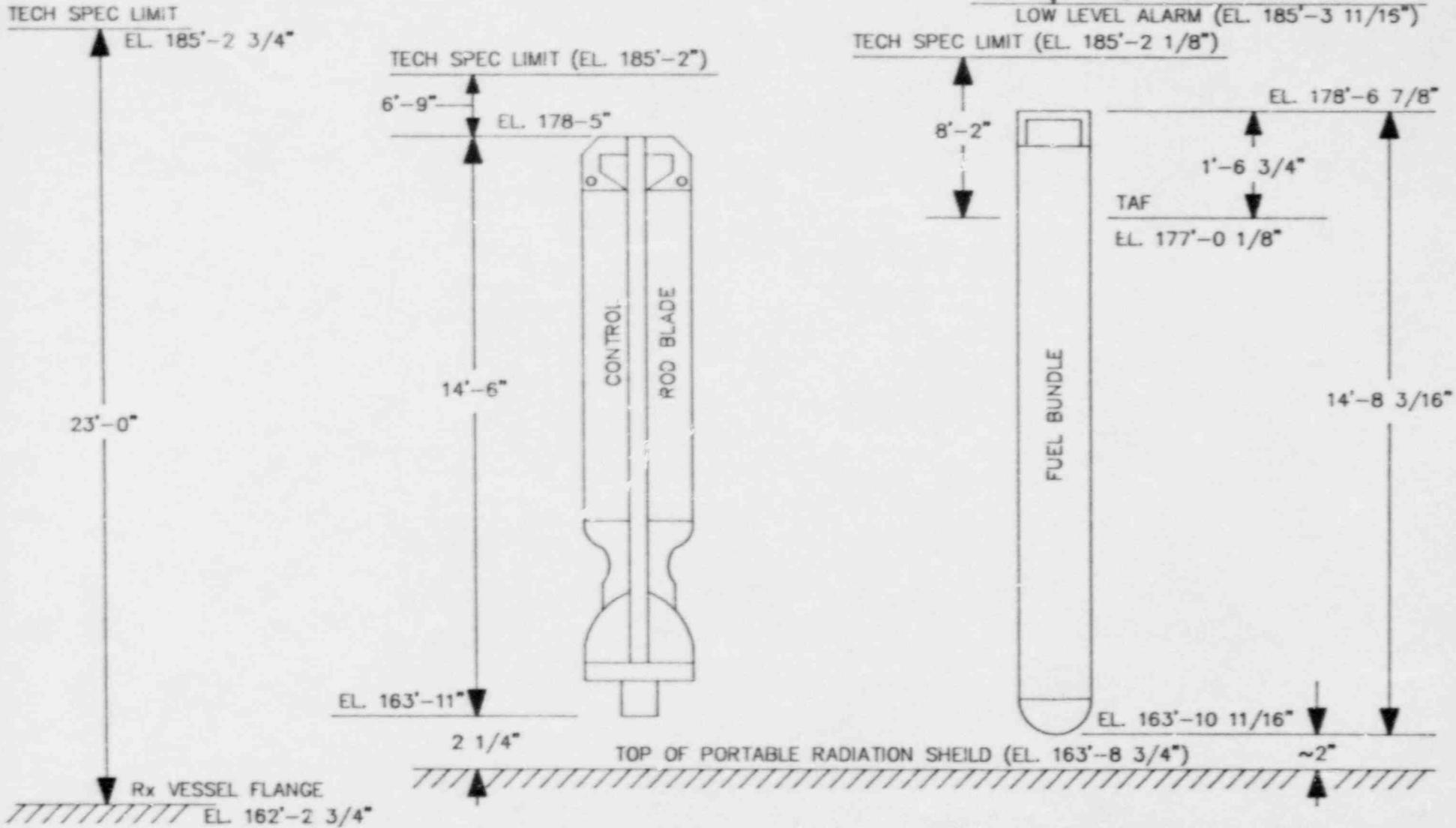
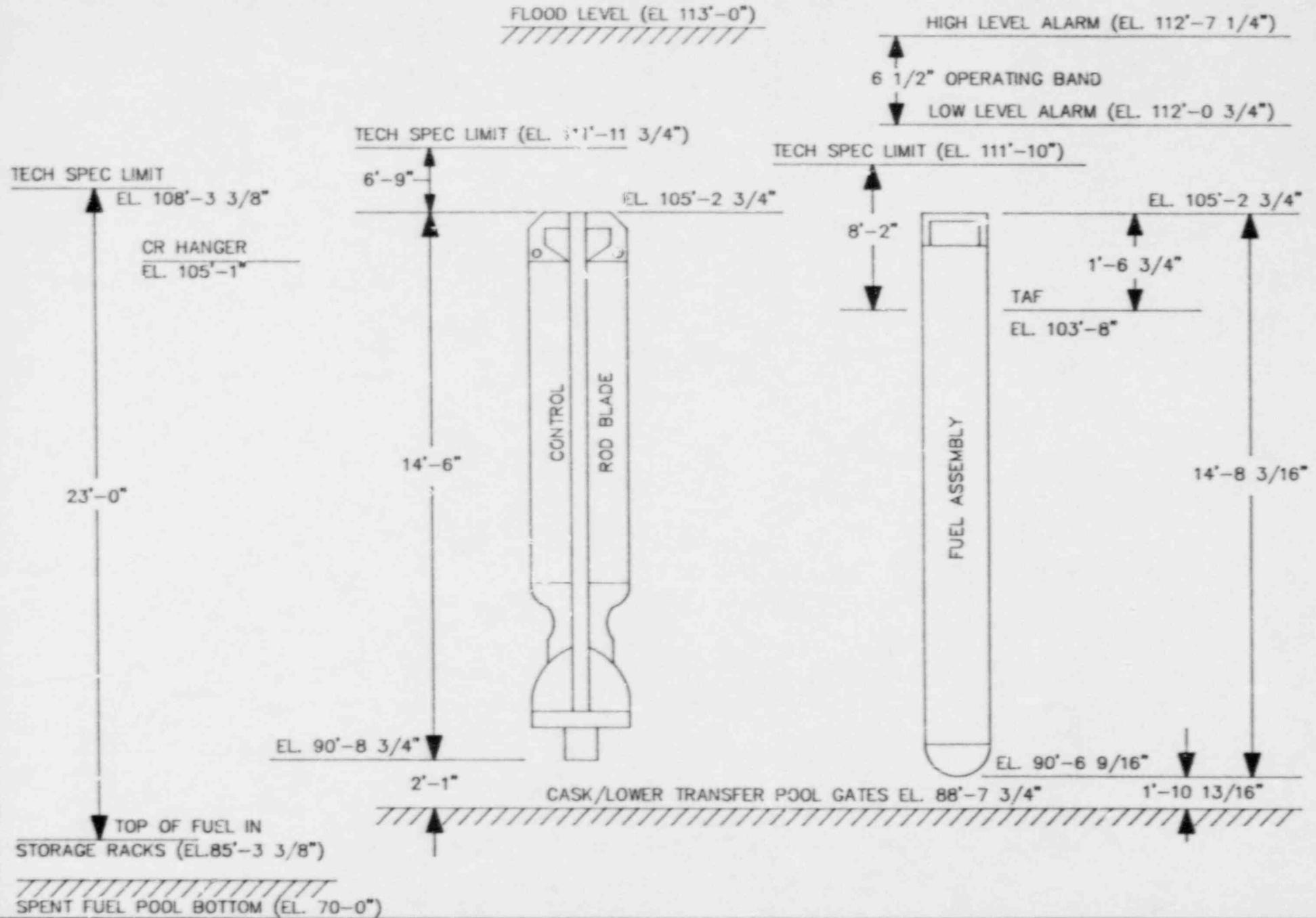


FIGURE 2
 PROPOSED WATER COVERAGE LIMITS
 (FUEL BUILDING POOLS)



ENCLOSURE