OYSTER CREEK NUCLEAR GENERATING STATION

PROVISIONAL OPERATING LICENSE NO. DPR-16
DOCKET NO. 50-219
TECHNICAL SPECIFICATION CHANGE REQUEST NO. 147

Applicant hereby requests the Commission to change Appendix A to the above captioned license as below and, pursuant to 10CFR50.91, an analysis concerning the determination of no significant hazards considerations is also presented:

1. Section to be Changed

   Section 3.1, 3.1 Bases and Table 3.1.1

2. Extent of Change

   a. Section 3.1 Protective Instrumentation

      The bases are being revised to reflect: (1) the change in the high drywell pressure trip setting from $\leq$ 2.4 psig to $\leq$ 3.5 psig and (2) bypassing the high flow trip function of the isolation condenser system upon initiation of the alternate shutdown panel.

   b. Table 3.1.1 Protective Instrumentation Requirements

      The table is being revised to reflect the change in the high drywell pressure trip setting as it relates to the plant protective functions. A note has been added to identify bypassing the high flow trip of the "B" Isolation Condenser when initiating the alternate shutdown panel.

3. Change Requested

   The requested changes are shown on attached revised Technical Specification (TS) pages 3.1-3a, 3.1-4, 3.1-5, 3.1-7, 3.1-9, 3.1-10, and 3.1-14.

4. Discussion

   a. High Drywell Pressure

      The instrument setpoint for the High Drywell Pressure TS Limit of 2.4 psig was found to be unacceptable to maintain and achieve safe shutdown conditions for a postulated Appendix R event. For this event, the drywell cooling fans are assumed lost due to the fire, and the reactor is cooled by the isolation condenser with no feedwater flow. Thus, it is essential that the Automatic Depressurization System (ADS) logic does not actuate to further reduce reactor water level. The analysis for this event concluded, that the drywell pressure could reach 1.9 psig which would exceed the current instrument setpoint of 1.85 psig. Therefore, the three ADS actuation logic signals (Low-Low-Low reactor water level, high drywell pressure, and core spray pump discharge pressure) may be satisfied with the current instrument setpoint for high drywell pressure and would result in an inadvertent initiation of ADS. In order to prevent an inadvertent actuation of ADS during a postulated Appendix R event and to minimize spurious trips caused by instrument drift, a revised TS limit of 3.5 psig is requested for the drywell pressure.

For evaluating the acceptability of increasing the drywell pressure TS limit to 3.5 psig, the effect of the increased TS limit on anticipated plant operational occurrences and accidents was evaluated. Each of the protective functions listed below was examined to determine how each function will be altered by the new TS limit, and subsequently how this altered protective function response will affect the plant design response to the transients and accidents evaluated on the OCNGS docket.

Scram

The high drywell pressure scram function is provided to shut down the core following a LOCA. For most LOCA events, this function will precede a Low reactor water level scram signal. However, the OCNGS LOCA analyses which were submitted in response to 10CFR50.46 and 10CFR50, Appendix K, demonstrates for large breaks that shutdown will occur as a result of excessive voiding, not high drywell pressure. For small breaks, scram will occur at 0.3 seconds as a result of the loss of offsite power. Therefore, the scrams which would have been associated with high drywell pressure were not the determinant factors.

Small breaks without a loss of offsite power would be less severe due to feedwater availability. The core is adequately protected by a scram on Low reactor water level and a scram associated with MSIV closure at Low-Low reactor water level. In any case, the scram delay associated with a drywell pressure TS limit increase to 3.5 psig is minimal and is more than compensated for by the conservative scram reactivity curves used in the analyses. Further, the OCNGS normal operating drywell pressure is typically greater than atmospheric pressure which is assumed in the analyses, and thus the pressure difference and associated delay is less.

For large steam region breaks with feedwater available, the scram associated with high MSL flow, low system pressure and Low reactor water level would occur at approximately the same period of time as the high drywell pressure. In these cases, the effect of a TS limit increase to 3.5 psig would be negligible on the transient behavior. For small steam line breaks with feedwater, high drywell pressure is the only scram function. In these cases, the small increase in the setpoint would have a negligible effect on the transient severity.

In these cases, the vessel pressure and level remain within normal bounds so that the core is cooled in the normal manner. In this way, even a large delay in scram time on high drywell pressure would not have any impact on this LOCA. The operator could, in fact, proceed with an orderly shutdown if the scram does not occur.

Core Spray Pump Start

The core spray pumps will automatically start on either Low-Low reactor water level or high drywell pressure. Depending on the nature of the LOCA, either one or both of these signals will be available.

In all cases analyzed for OCNGS, the time required to depressurize the system to the 285 psig core spray permissive pressure is limiting with respect to core spray initiation. Thus, the core spray flow will begin at the same time for either a 2.4 or 3.5 psig high drywell pressure TS limit.

Containment Spray

The containment spray system will actuate automatically upon indication of high drywell pressure and Low-Low reactor water level. Depending upon the size and location of the break and whether or not feedwater is available, the high drywell pressure signal will occur either alone or in conjunction with Low-Low reactor water level. For all break sizes either above or below the core, without feedwater, high drywell pressure will occur prior to Low-Low reactor water level. A high drywell pressure TS limit increase from 2.4 to 3.5 psig will not change this result. Thus, Low-Low reactor water level is the limiting signal. For large breaks with feedwater, this conclusion is also valid. For small breaks with feedwater, Low-Low reactor water level may not occur and operator action will be required to initiate the sprays. Again, the increased high drywell pressure setpoint will not affect this conclusion. There are no LOCA events analyzed on the OCNGS docket for which the increase of 1.1 psig in the TS limit will prevent or delay the automatic initiation of the containment spray system.

Primary Containment and Reactor Building Isolation

Primary and secondary containment isolation results automatically from high drywell pressure or Low-Low reactor water level. The arguments presented earlier regarding the negligible delay in high drywell pressure indication associated with a 1.1 psig TS limit increase are applicable. Coupling this with the fact that high drywell pressure precedes Low-Low reactor water level for all break sizes and locations provides assurance that fuel damage will not have occurred as a result of a LOCA prior to isolation of the containment. The TS limit increase will not alter the order of signal initiation for all breaks analyzed. As indicated previously, even for very small steam breaks, the time delay associated with the 1.1 psig TS limit increase is negligible (approximately 40 seconds for a 0.01 ft^2 main steam line break.

Automatic Depressurization System (ADS)

The actuation of the ADS, which is required during a small break LOCA to depressurize the vessel and permit low pressure core spray flow, is limited in its initiation by the time required to reach Low-Low-Low reactor water vessel level. For small breaks with or without feedwater flow, high drywell pressure will be reached within seconds even for the smallest break analyzed on the Oyster Creek docket. The time required to reach Low-Low-Low reactor water level for these cases is much longer. If feedwater is available, Low-Low-Low reactor water level may not be reached in some cases and will be delayed in all cases. Thus, a high drywell pressure TS limit increase of 1.1 psig will not result in a change in the initiation time of ADS for any small break analyzed.

Standby Gas Treatment System Initiation (SGTS)

The SGTS treats and exhausts the atmosphere of the reactor building to the stack during containment isolation conditions. This prevents ground level leakage of fission products from the reactor building. This system is initiated by high drywell pressure or Low-Low reactor water level analogous to primary and secondary containment isolation.

The arguments pertaining to reactor building isolation are all applicable to the SGTS. Since both are initiated by the same signals, the SGTS will be available to perform its intended function simultaneously with isolation of the reactor building which is its normal mode of operation.

b. Isolation Condenser System

An alternate shutdown capability is being provided to assure safe shutdown and cooldown of the reactor in the event of a fire causing evacuation of the control room or loss of control room function due to fire damage in the cable spread rooms. This capability utilizes the isolation condenser for decay heat removal and reactor cooldown to establish a safe shutdown condition. Since a fire affecting cabling associated with the high flow isolation condenser trip function could result in a spurious isolation of the Isolation Condenser, the design includes a bypass of the trip function upon initiation of the alternate shutdown panel.

The high flow trip function is provided to isolate the system in the event of a line break outside primary containment. The occurrence of a fire requiring initiation of the alternate shutdown panel in conjunction with a line break accident is not considered a credible event. The alternate shutdown panel is initiated through transfer switches which are key locked and alarmed in the control room to prevent inadvertent actuation. Single failure of the switch will not preclude operation of the isolation condenser high flow trip in the event of a line break accident.

The design of the alternate shutdown system including bypassing the high flow trip function was reviewed and approved by the Nuclear Regulatory Commission in their Safety Evaluation Report dated March 24, 1986.

5. <u>Determination</u>

Based upon the above discussion, we have evaluated that this change request involves no significant hazards considerations. In summary, we have determined that the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated;

   a. The proposed change to the high drywell pressure TS limit does not alter the probability of any previously evaluated accident. For each case analyzed, the delay in high drywell pressure indication had minimal or no effects on the accident severity.

   b. Bypassing the isolation condenser high flow trip occurs only on initiation of the alternate shutdown panel and is unchanged during normal or accident conditions.

2. Create the probability of a new or different kind of accident from any accident previously evaluated;

   a. The proposed change (high drywell pressure limit) involves an increase to an established trip setting which initiates automatic protective actions, and it does not involve a change of any of the limiting safety system settings listed in Section 2.3 of the Technical Specifications.

   b. Bypassing the isolation condenser high flow trip occurs only on initiation of the alternate shutdown panel and is unchanged during normal or accident conditions.

3. Involve a significant reduction in a margin of safety;

   a. This change (high drywell pressure limit) will increase the separation between the containment operating pressure and the pressure trip setting. However, each of the protective functions associated with a high drywell pressure indication was reviewed with respect to the effect of a 1.1 psig TS limit increase on their behavior for the loss-of-coolant accident analyses performed on the OCNGS docket. For those functions which require a coincident reduced reactor water level and high drywell pressure indications, the time difference between the coincident signals is large in comparison with the delay in high drywell pressure associated with a TS limit increase of 1.1 psig. For those functions which require high drywell pressure or another signal, the delay is considered negligible. With respect to scram time, the OCNGS docketed LOCA analyses demonstrated that the high drywell pressure signal was not the limiting signal for scram initiation.

   b. Bypassing of the isolation condenser high flow trip occurs only on initiation of the alternate shutdown panel in response to a fire condition. The bypassing of this function assures operability of the shutdown system; therefore, the margin of safety is not reduced.

The manual scram associated with moving the mode switch to shutdown is used merely to provide a mechanism whereby the reactor protection system scram logic channels and the reactor manual control system can be energized. The ability to reset a scram twenty (20) seconds after going into the shutdown mode provides the beneficial function of relieving scram pressure from the control rod drives which will increase their expected lifetime.

To permit plant operation to generate adequate steam and pressure to establish turbine seals and condenser vacuum at relatively low reactor power, the main condenser vacuum trip is bypassed until 600 psig. This bypass also applies to the main steam isolation valves for the same reason.

The action required when the minimum instrument logic conditions are not met is chosen so as to bring plant operation promptly to such a condition that the particular protection instrument is not required; or the plant is placed in the protective or safe condition that the instrument initiates. This is accomplished in a normal manner without subjecting the plant to abnormal operating conditions. The action and out-of-service requirements apply to all instrumentation within a particular function, e.g., if the requirements on any one of the ten scram functions cannot be met then control rods shall be inserted.

The trip level settings not specified in Specification 2.3 have been included in this specification. The bases for these settings are discussed below.

The high drywell pressure trip setting is $\leq$ 3.5 psig. This trip will scram the reactor, initiate reactor isolation, initiate containment spray in conjunction with low low reactor water level, initiate core spray, initiate primary containment isolation, initiate automatic depressurization in conjunction with low-low-low-reactor water level, initiate the standby gas treatment system and isolate the reactor building. The scram function shuts the core down during the loss-of-coolant accidents. A steam leak of about 15 gpm and a liquid leak of about 35 gpm from the primary system will cause drywell pressure to reach the scram point; and, therefore the scram provides protection for breaks greater than the above.

High drywell pressure provides a second means of initiating the core spray to mitigate the consequences of a loss-of-coolant accident. Its trip setting of $\leq$ 3.5 psig initiates the core spray in time to provide adequate core cooling. The break-size coverage of high drywell pressure was discussed above. Low-Low water level and high drywell pressure in addition to initiating core spray also causes isolation valve closure. These settings are adequate to cause isolation to minimize the offsite dose within required limits.

It is permissible to make the drywell pressure instrument channels inoperable during performance of the integrated primary containment leakage rate test provided the reactor is in the cold shutdown condition. The reason for this is that the Engineered Safety Features, which are effective in case of a LOCA under these conditions, will still be effective because they will be activated by low-low reactor water level.

The scram discharge volume has two separate instrument volumes utilized to detect water accumulation. The high water level is based on the design that the water in the SDIV's, as detected by either set of level instruments, shall not be allowed to exceed 29.0 gallons; thereby, permitting 137 control rods to scram. To provide further margin, an accumulation of not more than 14.0 gallons of water, as detected by either instrument volume, will result in a rod block and an alarm. The accumulation of not more than 7.0 gallons of water, as detected in either instrument volume will result in an alarm.

Detailed analyses of transients have shown that sufficient protection is provided by other scrams below 45% power to permit bypassing of the turbine trip and generator load rejection scrams. However, for operational convenience, 40% of rated power has been chosen as the setpoint below which these trips are bypassed. This setpoint is coincident with bypass valve capacity.

A low condenser vacuum scram trip of 23" Hg has been provided to protect the main condenser in the event that vacuum is lost. A loss of condenser vacuum would cause the turbine stop valves to close, resulting in a turbine trip transient. The low condenser vacuum trip anticipates this transient and scrams the reactor. The condenser is capable of receiving bypass steam until 7" Hg vacuum thereby mitigating the transient and providing a margin.

Main steamline high radiation is an indication of excessive fuel failure. Scram and reactor isolation are initiated when high activity is detected in the main steam lines. These actions prevent further release of fission products to the environment. This is accomplished by setting the trip at 10 times normal rated power background. Although these actions are initiated at this level, at lower activities the monitoring system also provides for continuous monitoring of radioactivity in the primary steam lines as discussed in Section VII-6 of the FDSAR. Such capability provides the operator with a prompt indication of any release of fission products from the fuel to the reactor coolant above normal rated power background. The gross failure of any single fuel rod could release a sufficient amount of activity to approximately double the background activity at normal rated power. This would be indicative of the onset of fuel failures and would alert the operator to the need for appropriate action, as defined by Section 6 of these specifications.

The settings to isolate the isolation condenser in the event of a break in the steam or condensate lines are based on the predicted maximum flows that these systems would experience during operation, thus permitting operation while affording protection in the event of a break. The settings correspond to a flow rate of less than three times the normal flow rate of 3.2×10^5 lb/hr. Upon initiation of the alternate shutdown panel, this function is bypassed to prevent spurious isolation due to fire induced circuit faults.

The setting of ten times the stack release limit for isolation of the air-ejector offgas line is to permit the operator to perform normal, immediate remedial action if the stack limit is exceeded. The time necessary for this action would be extremely short when considering the annual averaging which is allowed under 10 CFR 20.106, and, therefore, would produce insignificant effects on doses to the public.

Four radiation monitors are provided which initiate isolation of the reactor building and operation of the standby gas treatment system. Two monitors are located in the ventilation ducts, one is located in the area of the refueling pool and one is located in the reactor vessel head storage area. The trip logic is basically a 1 out of 4 system. Any upscale trip will cause the desired action. Trip settings of 17 mr/hr in the duct and 100 mr/hr on the refueling floor are based upon initiating standby gas treatment system so as not to exceed allowed dose rates of 10CFR20 at the nearest site boundary.

The SRM upscale of 5×10^5 CPS initiates a rod block so that the chamber can be relocated to a lower flux area to maintain SRM capability as power is increased to the IRM range. Full scale reading is 1×10^6 CPS. This rod block is bypassed in IRM Ranges 8 and higher since a level of 5×10^5 CPS is reached and the SRM chamber is at its fully withdrawn position.

The SRM downscale rod block of 100 CPS prevents the instrument chamber from being withdrawn too far from the core during the

TABLE 3.1.1 PROTECTIVE INSTRUMENTATION REQUIREMENTS

Function	Trip Setting	Reactor Modes in which Function Must Be Operable: Shutdown	Refuel	Startup	Run	Min. No. of Operable or Operating [tripped] Trip Systems	Min. No. of Instrument Channels Per Operable Trip Systems	Action Required*
A. Scram								Insert control
1. Manual Scram		X	X	X	X	2	1	
2. High Reactor Pressure	**		X(s)	X	X	2	2	
3. High Drywell Pressure	≤ 3.5 psig		X(u)	X(u)	X	2	2	
4. Low Reactor Water Level	**		X	X	X	2	2	
5. a. High Water Level in Scram Discharge Volume North Side	≤ 29 gal.		X(a)	X(z)	X(z)	2	2	
b. High Water Level in Scram Discharge Volume South Side	≤ 29 gal.		X(a)	X(z)	X(z)	2	2	
6. Low Condenser Vacuum	≥ 23" hg.		X(b)	X(b)	X	2	2	

Function	Trip Setting	Shutdown	Refuel	Startup	Run	Min. No. of Operable or Operating [tripped] Trip Systems	Min. No. of Operable Instrument Channels Per Operable Trip Systems	Action Required*
		Reactor Modes in which Function Must Be Operable						
B. Core Spray								Consider the respective core spray loop in-operable, & comply with Spec. 3.4
1. Low-Low Reactor Water Level	**	X(t)	X(t)	X(t)	X	2	2	
2. High Drywell Pressure	≤ 3.5 psig	X(t)	X(t)	X(t)	X	2(k)	2(k)	
3. Low Reactor Pressure (valve permissive)	≥ 285 psig	X(t)	X(t)	X(t)	X	2	2	
E. Containment Spray								
1. High Drywell Pressure	≤ 3.5 psig	X(u)	X(u)	X(u)	X	2(k)	2(k)	Consider the containment spray loop in operable and comply with Spec. 3.4
2. Low-Low Reactor Water Level	≥ 7'2" above top of active fuel	X(u)	X(u)	X(u)	X	2	2	
F. Primary Containment Isolation								
1. High Drywell Pressure	≤ 3.5 psig	X(u)	X(u)	X(u)	X	2(k)	2(k)	Isolate containment or place in cold shutdown condition
2. Low-Low Reactor Water Level	≥ 7'2" above top of active fuel	X(u)	X(u)	X(u)	X	2	2	
G. Automatic Depressurization								
1. High Drywell Pressure	≤ 3.5 psig	X(v)	X(v)	X(v)	X	2(k)	2(k)	See note h

TABLE 3.1.1 PROTECTIVE INSTRUMENTATION REQUIREMENTS (Cont'd)

Function	Trip Setting	Reactor Modes in which Function Must Be Operable: Shutdown	Refuel	Startup	Run	Min. No. of Operable or Operating [tripped] Trip Systems	Min. No. of Operable Instrument Channels Per Operable Trip Systems	Action Required*
2. Low-Low-Low Reactor Water Level	≥ 4'8" above top of active fuel	X(v)	X(v)	X(v)	X	2	2	See note h
3. AC Voltage	NA			X(v)	X	2	2	Prevent auto depressurization on loss of AC power See note i
H. Isolation Condenser Isolation (See Note hh)								
1. High Flow Steam Line	≤ 20 psig P	X(s)	X(s)	X	X	2	2	Isolate Affected Isolation condensor comply with spec. 3.8. See note dd
2. High Flow Condensate Line	≤ 27" P H_2O	X(s)	X(s)	X	X	2	2	
I. Offgas System Isolation								
1. High Radiation In Offgas Line (e)	≤ 10 x Stack Release limit (See 3.6-A.1)	X(s)	X(s)	X	X	1	2	Isolate reactor or trip the Inoperable instrument channel
J. Reactor Building Isolation and Standby Gas Treatment System Initiation								Isolate Reactor Bldg. & Initiate Standby Gas Treatment System or Manual Surveillance for not more than 24 hours (total for all instruments under J) in any 30-day period
1. High Radiation Reactor Building Operation Floor	≤ 100 Mr/Hr	X(w)	X(w)		X	1	1	
2. Reactor Bldg. Ventilation Exhaust	≤ 17 Mr/Hr	X(w)	X(w)	X	X	1	1	
3. High Drywell Pressure	≤ 3.5 psig	X(u)	X(u)	X	X	1(k)	2(k)	
4. Low Low Reactor Water Level	≥ 7'2" above top of active fuel	X(gg)	X	X	X	1	2	

v. These functions not required to be operable when the ADS is not required to be operable.

w. These functions must be operable only when irradiated fuel is in the fuel pool or reactor vessel and secondary containment integrity is required per specification 3.5.B.

y. The number of operable channels may be reduced to 2 per Specification 3.9-E and F.

z. The bypass function to permit scram reset in the shutdown or refuel mode with control rod block must be operable in this mode.

aa. Pump circuit breakers will be tripped in 10 seconds $\pm$ 15% during a LOCA by relays SK7A and SK8A.

bb. Pump circuit breakers will trip instantaneously during a LOCA.

cc. Only applicable during startup mode while operating in IRM range 10.

dd. If an isolation condenser inlet (steam side) isolation valve becomes or is made inoperable in the open position during the run mode comply with Specification 3.8.E. If an AC motor-operated outlet (condensate return) isolation valve becomes or is made inoperable in the open position during the run mode comply with Specification 3.8.F.

ee. With the number of operable channels one less than the Min. No. of Operable Instrument Channels per Operable Trip Systems, operation may proceed until performance of the next required Channel Functional Test provided the inoperable channel is placed in the tripped condition within 1 hour.

ff. This function is not required to be operable when the associated safety bus is not required to be energized or fully operable as per applicable sections of these technical specifications.

*gg. These functions are not required to be operable when secondary containment is not required to be maintained or when the conditions of Section 3.5.b.1.a, b, c, and d are met, and reactor water level is closely monitored and logged hourly. The Standby Gas Treatment System will be manually initiated if reactor water level drops to the low level trip set point.

hh. The high flow trip function for "B" Isolation Condenser is bypassed upon initiation of the alternate shutdown panel. This prevents a spurious trip of the isolation condenser in the event of fire induced circuit damage.

* This note is applicable only during the Cycle 10M outage.