ATTACHMENT 1

PROPOSED CHANGES TO APPENDIX A,

TECHNICAL SPECIFICATIONS, OF FACILITY

OPERATING LICENSES NPF-37 and NPF-66

Revised Page: 3/4 7-14

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

c. With one essential service water makeup pump inoperable, restore the essential service water makeup pump to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With the essential service water pump discharge water temperature not meeting the above requirement, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With the minimum Rock River water level not meeting the above requirement, notify the NRC within 1 hour in accordance with the procedure of 10 CFR 50.72 of actions or contingencies to ensure an adequate supply of cooling water to the Byron Station for a minimum of 30 days, verify the Rock River flow within 1 hour, and:

(1) If Rock River flow is less than 700* cubic feet per second (cfs) be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours, or

(2) If Rock River flow is equal to or greater than 700 cfs continued verification procedure every 12 hours ~~or~~ until Rock River water level exceeds 670.6 feet MSL (the provisions of Specification 3.0.4 are not applicable), or

(3) If Rock River level is equal to or less than 664.7 feet MSL be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours

f. With one deep well inoperable and:

(1) The Rock River water level predicted, through National Weather Service flood forecasts, to exceed 702 feet MSL, or

(2) The Rock River water level at or below 670.6 feet MSL, or

(3) A tornado watch issued by the NWS that includes the area for the Byron Station.

Notify the NRC within 1 hour in accordance with the procedure of 10 CFR 50.72 of actions or contingencies to ensure an adequate supply of cooling water to the Byron Station for a minimum of 30 days and restore both wells to OPERABLE status before the Rock River water level exceeds 702 feet MSL or the minimum Rock River level or flow falls below 664.7 feet MSL or 700* cfs, respectively, or within 72 hours, whichever occurs first, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.5 The UHS shall be determined OPERABLE at least once per:

a. 24 hours by verifying the water level in each UHS cooling tower basin to be greater than or equal to 873.75 feet MSL. (50%),

INSERT 1 →

INSERT 1

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*Operation with Rock River flow less than 700 cfs is permitted for 90 days following the date of issuance of this amendment provided the minimum water level in the UHS cooling tower basin is maintained greater than or equal to 876.53 feet MSL (99.5%). Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ATTACHMENT 2

BACKGROUND INFORMATION AND JUSTIFICATION

Technical Specification Limiting Condition for Operation (LCO) 3.7.5e requires a minimum Rock River water level at or above 670.6 feet Mean Sea Level (MSL), USGS datum, at the river screenhouse. If this LCO is not met then in accordance with Action Requirement 3.7.5e the NRC must be notified within 1 hour of actions or contingencies to ensure an adequate supply of cooling water for a minimum of 30 days. In addition, the Rock River flow must be verified within 1 hour and if flow is equal to or greater than 700 cubic feet per second (cfs), flow verification must be performed every 12 hours until the Rock River water level exceeds 670.6 MSL. If Rock River flow is less than 700 cfs both Byron Units 1 and 2 must be placed in Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours.

Due to drought conditions in Illinois, the level of the Rock River has been decreasing to the point where Action Requirement 3.7.5e (2) for the Ultimate Heat Sink Technical Specification was entered on June 16, 1988, because the river level had decreased below 670.6 feet MSL. Since this time, Rock River flow has been measured at least every 12 hours. Since entering the Action Requirement on June 16, 1988, the river level has fluctuated between 670 feet 8 inches and 670 feet 3 inches, and river flow has decreased from a maximum of around 2200 cfs to a current minimum of 1060 cfs. With the exception of a few days where scattered rain activity resulted in higher flows, the Rock River flow rate has been steadily decreasing. If substantial rainfall is not received in the near future, this trend indicates the flow rate will decrease below the Technical Specification limit of 700 cfs in August. However, since the flow rate can increase or decrease several hundred cfs daily it is difficult to accurately predict when the Technical Specification limit will be exceeded. It is projected that a rainfall of between 8 and 10 inches in a month would be required to saturate the ground and allow runoff into the river to begin recovery of the river level and flow. The weather service forecast does not project any substantial rainfall in the near future. Therefore, the possibility of Rock River flow decreasing below 700 cfs is imminent.

As a result of hot weather this summer, the Commonwealth Edison system load has already reached a new peak of 17,017 on August 2, 1988. This peak load exceeds three other peak loads previously achieved this year of 16,138 MW on June 21, 1988, 16,211 MW on July 15, 1988, and 16,858 MW on August 1, 1988. Due to the drought conditions the hydroelectric generation capability in Canada, which supports load demands in several midwestern states, has been affected. The daily loads are projected but because of variables such as actual demand exceeding anticipated demand or unexpected derating, shutdown or trips of any other units, the available MW generation capability may not be sufficient to supply the required load. Therefore, we are requesting a Technical Specification amendment to allow continued operation of Byron Units 1 and 2, each rated at 1175 MW, when Rock River flow decreases below 700 cfs.

The Rock River is one of two makeup sources for the ultimate heat sink at Byron Station. The essential service water pumps are located at the river screenhouse and take their suction from the Rock River. The essential service water makeup system is designed to withstand all design basis natural phenomena events and combinations of events except for seismic events during low Rock River flow rates, design basis tornado events and river flood events. The other ultimate heat sink makeup source is the deep wells and they are designed to withstand a design basis tornado event and river flood event.

The Rock River level and flow requirements are designed to ensure a cooling capability for 30 days is available for one unit following a LOCA with the second unit proceeding to an orderly shutdown. The 670.6 foot Rock River level in the Technical Specifications is the level at which sufficient river flow is available such that with the postulated failure of the Oregon dam the river level would remain above 664 feet, thereby ensuring adequate net positive suction head (NPSH) for the essential service water makeup pumps. Below 670.6 feet, level is not an accurate indication of an adequate water source for the essential service water makeup pumps, so flow must be measured. Sargent and Lundy modeling and analysis of the Rock River has determined that at a flow of 700 cfs with the postulated failure of the Oregon dam, an adequate NPSH for the essential service water makeup pumps would be maintained. This flow rate corresponds to a level of 664.7 feet. A more detailed discussion of the derivation of these level and flow values is included in a July 18, 1988 letter from F.G. Lentine to T.E. Murley.

To support continued operation of Byron Units 1 and 2 below a Rock River flow rate of 700 cfs, an analysis has been performed which evaluates the cooling water requirements for the essential service water system following a LOCA on one unit with the second unit proceeding to an orderly shutdown. The UHS cooling towers are designed such that either redundant UHS train is capable of removing the design bases LOCA heat load without exceeding a pump discharge temperature of 98°F. The 98°F limit allows a 2°F margin to the design basis value of 100°F. The post accident temperature profile is weather dependent but follows a curve similar to that presented in Figure 1. Using the data presented in FSAR Table 9.2-6 "LOCA Unit Heat Rejection Summary" and combining it with the heat load for the unit shutting down normally ($24 \times 10^6$ Btu/hr), the predicted heat load as a function of time was calculated and is presented in Table 1.

The evaporation rates were calculated and are shown in Table 2. Integrating the evaporative losses over a one day and three day time interval, provides the water consumption requirements assuming the basin temperature remained at its peak value. The one day water consumption requirements for post accident operation are determined to be 510,000 gallons and the three day requirement is 1,020,000 gallons. Integrating the evaporative losses over the time interval of 30 days results in a predicted total water volume required for makeup of 9,707,000 gallons.

Technical Specification 3.7.5 requires the UHS cooling tower basin level to be maintained greater than 50% (873.75 feet MSL). The UHS basin is Seismic Category I. If the UHS basin level was raised to 99.5% (to maintain indication for the operators) the UHS basin would contain approximately 1,250,000 gallons. Loss of NPSH would not occur instantaneously with the loss of the Oregon Dam and, therefore, a substantial source of water would still be available from the river. The UHS basin volume provides over a 200,000 gallon margin over the water consumption requirement for the first three days following post accident operation.

After three days, the heat load to be dissipated has substantially decreased and the makeup water requirements have accordingly been reduced. During this three day period, the onsite and offsite water sources can be evaluated for availability. One probable source of available water is from the two condensate storage tanks onsite. Each tank is sized at 500,000 gallons. Technical Specification 3.7.1.3 requires the condensate storage tanks to be maintained at greater than or equal to 40% level. The tanks can easily be maintained above 60% level and efforts will be made during periods of operation with Rock River flow less than 700 cfs to keep the tank's volumes closer to 100%. With the tank levels maintained above 60% during periods of low river flow, an additional 300,000 gallons of basin makeup would be available (the second tank would be reserved to hold the non-accident unit in hot standby via auxiliary feedwater operation). This would provide additional margin to the water available in the UHS basin.

The condensate storage tanks are not Seismic Category I by design. However, we believe these tanks will withstand a design basis earthquake and continue to function for several reasons. The fragility data from the Zion Probabilistic Safety Study shows that similar tanks and piping are capable of withstanding a median ground acceleration of .83 and 1.40 G's. The design basis seismic event for the Byron Station assumed a .26 median ground acceleration. Therefore, the condensate storage tanks should have several orders of magnitude greater seismic capability than the anticipated seismic activity in the Byron area. Recent quakes in Mexico and El Salvador also demonstrate that tanks of this type will withstand seismic events and still function.

The water makeup requirements have been calculated to dissipate the heat loads from the fourth through the thirtieth day following the accident. It has been determined that approximately an average of 230 gpm will be required for the remaining 27 days. The potential water sources to provide makeup have been identified and following is a discussion of their capacity and potential availability.

1. Rock River

The Rock River has the potential for an unlimited source of water for an unlimited period of time. Even if the river flow and level are below 700 cfs and 670.6 feet MSL respectively, when a seismic event occurs that removes the Oregon Dam, there is the potential for water still being available in the river channel. If the water is below 663.5 feet MSL, which is the elevation of the top of the basemat for the river screenhouse, provisions can be made to move the water which still exists in the river channel to the makeup pump sump (elevation 660.5 feet MSL) to provide a sufficient suction supply for at least one of the essential service water makeup pumps.

The historic low flow in the Rock River at the river screenhouse is estimated to be 400 cfs, from the measured low flows at Rockton and Como gaging stations (Byron FSAR, Sec. 2.4).

The water levels in the Rock River at the river screenhouse, corresponding to low flows are shown in the table below. These water levels were obtained by a backwater computation performed by Sargent & Lundy for the Rock River, with and without the Oregon dam, downstream of the screenhouse.

| Flow (cfs) | Water Level in the Rock River at the river screenhouse (ft. MSL) | |
|---|---|---|
| | with Oregon dam | without Oregon dam |
| 1000 | 670.7 | 665.1 |
| 700 | 670.6 | 664.7 |
| 400 | 670.5 | 664.2 |
| 280* | 670.4 | 664.0 |

*Estimated by extrapolation corresponding to water level 664.0 ft. without the Oregon dam.

Since the minimum design operating level for essential service water makeup pumps is 664.0 ft., it appears that the essential service water makeup pumps can pump water even if the flow in Rock River is approximately 280 cfs.

It should be noted that the measured water levels at the screenhouse corresponding to the estimated low flows are lower than the water levels shown in the table above with Oregon dam. For example, the flow in the river is approximately 1400 cfs for a measured water level in the river near the screenhouse of 670'-5".

An assumption has been made in this analysis that the Oregon dam fails catastrophically and, therefore, the essential service water makeup system is not available for lack of a suction source. Sargent & Lundy has performed a preliminary analysis of the Oregon dam and has determined the structure and foundation soils have seismic capability. As reported in the response to FSAR Question 371.13, the dam capability is expected to be at least 0.1g. The analysis considered sliding, liquefication of soils and seepage conditions. Certain structure, strength and durability of materials criteria were assumed for the evaluation and, therefore, would need to be verified by field measurements. However, if the dam does not fail catastrophically then there is a high probability that the Rock River can continue to provide a suction source for the essential service water makeup pumps to provide cooling capability for the 30 day post accident period.

2. Deep Wells

The deep wells are not currently seismically qualified. But, based upon an evaluation of the seismicity of the site area, historical record of the effects of earthquake on groundwater wells in Illinois and California, and the type of well construction on site, it is Sargent and Lundy's opinion that the groundwater wells at the Byron site will not be damaged nor will pumpage be impaired due to the design earthquake. Also, an EPRI report NP-5616 entitled "Investigation of the San Salvador Earthquake of October 10, 1986" reports data that would support the seismic qualification of the Byron deep wells. The subject report indicates that wells experienced ground accelerations in excess of a factor of two times the Byron design ground acceleration without sustaining damage to the pumps or pump casings. These findings support qualifying the Byron deep wells for the design seismic event. If the deep wells remain available they can provide a sufficient water source to the UHS basin to satisfy consumptive requirements during the design basis event. Like the Rock River, the deep wells have the potential for an unlimited capacity for an unlimited period of time. The deep wells combined can provide at least 1100 gpm which is a significant margin above the anticipated average makeup requirements of 230 gpm for the final 27 days of the 30 day post accident period.

The deep well pumps are routinely run as a source of makeup water for the Makeup Demineralizers (MUDS). Any time a Makeup Demineralizer train is in service or undergoing a regeneration, water is supplied from the Filtered Water Storage Tank. The only source of water to the Filtered Water Storage Tank is from the deep well pumps via the sandfilters. In order to maintain a relatively constant level in the Filtered Water Storage Tank, flow through the sandfilters is maintained equal to MUD train usage which is approximately 160 gpm for one train or 320 gpm for two trains. MUD trains are normally in operation from 4 to 7 days per week. In addition, Technical Specifications 4.7.5e4 and 4.7.5i requires the deep well pumps to be operated for 15 minutes every 31 days and to verify flow rate greater than 550 gpm every 18 months. Flow rates observed on these pumps are generally in excess of 600 gpm. On one pump run in June 1988, both deep well pumps were operated for approximately 2 hours with the valve internals removed. Flow was maintained in excess of 800 gpm during the entire two hours for each pump. Based on the routine operation of the pumps and the surveillance performance, the deep wells can provide an adequate water source for an extended period of time.

3. Circulating Water Sources

Circulating water is stored in the Flume and the circulating water tower cold water basins. The flume has dimensions of 500 feet long, 32 feet wide and 22 feet deep. These dimensions provide a capacity of approximately 2.5 million gallons (352,000 cubic feet by approximately 7 gallons per cubic foot). The 16 foot diameter piping from the Circulating Water pumps to the Main Condensers and back to the Towers contain approximately an equal amount of water but the elevation of the piping may limit accessibility. This structure is not Seismic Category I but if it remained intact, it is reasonable to assume that approximately 2 million gallons of water could be extracted from the Circulating Water System flume. Since this water is also the primary suction source of plant fire water, fire suppression requirements may limit the available water. The circulating water tower cold water basins have a total capacity of greater than 10,000,000 gallons and drain by gravity into the flume. A temporary pump might be required to transfer the water to the UHS basin. If the 12 million gallons of water were to be used in the UHS and transferred at the rate of 230 gpm, the water could provide cooling capability for approximately 36 days.

4. Onsite Tankage

The following onsite tanks exist but they would have to be evaluated for availability following a SSE since they are not seismically qualified:

a. Primary Water Storage Tanks (2 ea. @500,000 gallon capacity, total capacity 1,000,000 gallons)

b. OWW Filtered Water Storage tank (@150,000 gallon capacity).

c. OWM Filtered Water Storage tank (@15,000 gallon capacity).

d. Blowdown Monitor Tanks (3 ea. @20,000 gallon capacity, total capacity 60,000 gallons).

e. Turbine Building Equipment Drain tanks (2 ea. @12,000 gallon capacity, total capacity 24,000 gallons).

f. Turbine Building Floor Drain tank (@13,000 gallon capacity).

The maximum capacity available would be 1.262 million gallons. However since these tanks are not filled to 100% capacity the actual volume available would be less.

As mentioned in the previous discussion, the Condensate Storage Tanks (2 @ 500,000 gallon capacity, total capacity 1,000,000 gallons) would also be available and the seismic evaluation indicates a high probability they will remain functional. One Condensate Storage Tank will be available for essential service water makeup and the other tank will provide Auxiliary Feedwater for the Unit undergoing the normal shutdown.

On site tankage that has not been considered for UHS consumptive makeup include the following:

a. Refueling Water Storage Tanks

b. Oil, Fuel Oil and Chemical Storage Tanks

c. Radiologically Contaminated Tanks

d. The condenser hotwell of the normal shutdown Unit (the Unit not undergoing a LOCA) should not be used for UHS makeup until after that Unit has gone on RHR cooling. Also since that water is hot (approximately 120 degrees F) its use would add to the UHS cooling tower heat load as it was being injected (there are 2 hotwells @70,000 gallon normal level, total expected capacity 140,000 gallons).

e. The Heater Drain tank's water would also add to the UHS cooling tower heat load and for that reason should be reserved until they have cooled down (there are 2 tanks @14,000 gallon normal level, total expected capacity 28,000 gallons).

If the above cited water sources do not provide an adequate inventory, water will be brought in from offsite as required.

Byron procedure 1/2 BOA ENV-2 provides contingency measures to make up to the UHS tower basins. These contingency measures were discussed in the July 18, 1988 letter from F. G. Lentine to T. E. Murley. In many cases a method of transferring the water from the available source to the UHS basin is required. This water could be transferred via several methods. The fire pumps could be used to supply water to hydrants from which hoses could be run to the UHS basin. The Service Water pumps, if available, could be used to supply water to the fire protection headers and again from the hydrants to the UHS basin. There are also two temporary pumps located in the turbine building basement which can be connected to the Condenser Water Box dewatering piping and from there through suitable discharge hosing, pump the water to the UHS basin. The capacity of these temporary pumps is on the order of 350 to 500 gpm each.

A Special Procedure (SPP) is being written to identify water sources which may be available as a makeup source for the Ultimate Heat Sink. This SPP will be specific in that connection points, equipment required and valve alignments will be identified. Cautions on the use of each water supply will be included if that water supply has another primary purpose that needs to be considered prior to its commitment to the UHS. Installed pumps will be utilized where they are available with temporary pumps and connection points identified as alternatives.

The heat loads identified assumed one unit undergoing a LOCA while the other unit shuts down. Operation with Rock River flow less than 700 cfs has been requested for a period of 90 days following issuance of this Technical Specification amendment. It should be noted that Unit 1 is currently scheduled for a refueling outage which is to commence on September 3, 1988 and end on November 13, 1988. Since Unit 1 will be in Mode 6 for a period of about 2 months, the heat loads that must be removed are further decreased. Byron Unit 2 is scheduled for a refueling outage to begin on January 6, 1988 and end on March 17, 1989.

Commonwealth Edison (CECo) has committed to the Illinois Department of Conservation to adhere to certain Rock River low flow restrictions. CECo has agreed to incorporate two flow stipulations as part of the Corps of Engineers permits to construct the river screenhouse and blowdown structures at Byron Station. The first restriction limits the water withdrawal from the Rock River for makeup to a maximum of 125 cfs. The second restriction limits the net water consumption to no more than 9% of the Rock River's flow when the flow is at or below 679 cfs, the one day, ten-year low. Meeting these limits is dependent upon several factors including temperature, humidity, Unit power level and makeup system operation. These restrictions are mentioned to indicate that Unit derating and ultimately shutdown may be required to meet these commitments. No relaxation is currently being sought for these commitments.

A probabilistic assessment has also been performed on the likelihood of exceeding the design conditions at Byron Station under the drought induced low river level conditions. Two analysis were performed. The first is an assessment of the likelihood under "classical" licensing assumptions. The second is a more realistic (but still conservative) assessment considering the available information on seismic fragility of key plant features.

The input values are as follows:

Let $P_d$ be defined as the probability of a drought induced low river level reaching the Technical Specification limit. $P_d = 1.0$

Let $P_{dba}$ be the probability of the design basis LOCA.
$P_{dba} = 10^{-4}$ per year

Let $P_{dbe}$ be the probability of the design basis earthquake.
$P_{dbe} = 10^{-4}$ per year

Let the conditional probability of dam failure, $P_{df}$, be 1.0 given a seismic event.

Let $P_{wf}$ be the conditional probability of well failure and use a value of 0.1 for this parameter.

Let $P_{tf}$ be the conditional probability of Condensate Storage Tank failure. A value of $10^{-3}$ per event is used.

Let $P_e$ be the probability of exceeding the design basis.

For the Classical case the probability of exceeding the design basis during the 90 days of operation with Rock River flow less than 700 cfs is:

$$P_e = P_d * P_{dba} * P_{dbe} * (90/365)^2$$

$$P_e = 1.0 * (10^{-4} * 90/365)^2$$

$$P_e = 6 \times 10^{-10}$$

For the Realistic case the probability of exceeding the design basis during the 90 days of operation with Rock River flow less than 700 cfs is:

$$P_e = P_d * P_{dba} * P_{dbe} * P_{df} * P_{wf} * P_{tf} * (90/365)^2$$

$$P_e = 1.0 * 10^{-4} * 10^{-4} * 1.0 * 10^{-1} * 10^{-3} * (90/365)^2$$

$$P_e = 6 \times 10^{-14}$$

The likelihood of exceeding design conditions, let alone progressing to serious core damage is extremely small for the conditions evaluated. The probability is even further reduced for operation in this condition with one Unit in a refueling outage. It is also felt that the input parameters considered above are conservative relative to the probability of a dam failure during a drought condition as presented in the response to FSAR question 371.13. If a LOCA occurs independent of a seismic event, the makeup water sources to the UHS are not affected so the provisions for supplying a 30 day cooling capability are not impacted. If a seismic event occurs independent of a LOCA the heat loads that must be dissipated would be reduced since they would just be the heat loads for normal shutdown of one or two units. As a result the cooling capability required would also be reduced.

To briefly summarize, the Station believes the safety of the plant is not compromised if operation is permitted with a Rock River flow rate less than 700 cfs. The LOCA heat loads and makeup water requirements have been identified for the 30 day period that UHS cooling capability must be provided. Our analysis demonstrates that a seismically qualified water source would be available to provide cooling for a minimum of 3 days following the accident. During that period, the availability of the non seismically qualified water sources would be assessed. Based on seismic evaluations we believe the essential service water makeup system taking suction from the Rock River will have a usable suction source, also the deep wells and condensate storage tanks should be available. In addition, there are onsite water sources from the circulating water system and various tanks. Provisions will be in place to transport the available water sources to the UHS basin as required for makeup.

During the period the proposed Technical Specification amendment would be applicable, one unit will be shutdown for approximately 2 months for a refueling outage. This will decrease the consumptive makeup water requirements. In addition, we have commitments to the Illinois Department of Conservation which may result in a derating or shutdown of a unit, also reducing the water makeup requirements. The probability of this accident scenario occurring during the period this Technical Specification amendment is applicable was demonstrated to be highly unlikely. As a result we believe it is reasonable to allow Byron operation during low flow conditions to continue to provide electrical output for the high demand required without significantly impacting the safe operation of Byron Units 1 and 2.

The note was added to Action Requirement 3.7.5e(1) to specify that operation is permitted below 700 cfs for 90 days following the issuance of this Technical Specification amendment. The note was also added to Action Requirement 3.7.5f to clarify that if one deep well becomes inoperable the part of the Action Requirement that would apply would be the requirement to restore the deep well to operable status within 72 hours or shutdown the Units. This is consistent with the analysis and evaluations presented in this Technical Specification amendment request.

Finally, an editorial change was made to Action Requirement 3.7.5e(2) to delete the word "or" after the words "...12 hours" to clarify the action.

FIGURE 1

General Profile, Byron DSW Tower Basin
Temperature Post LOCA

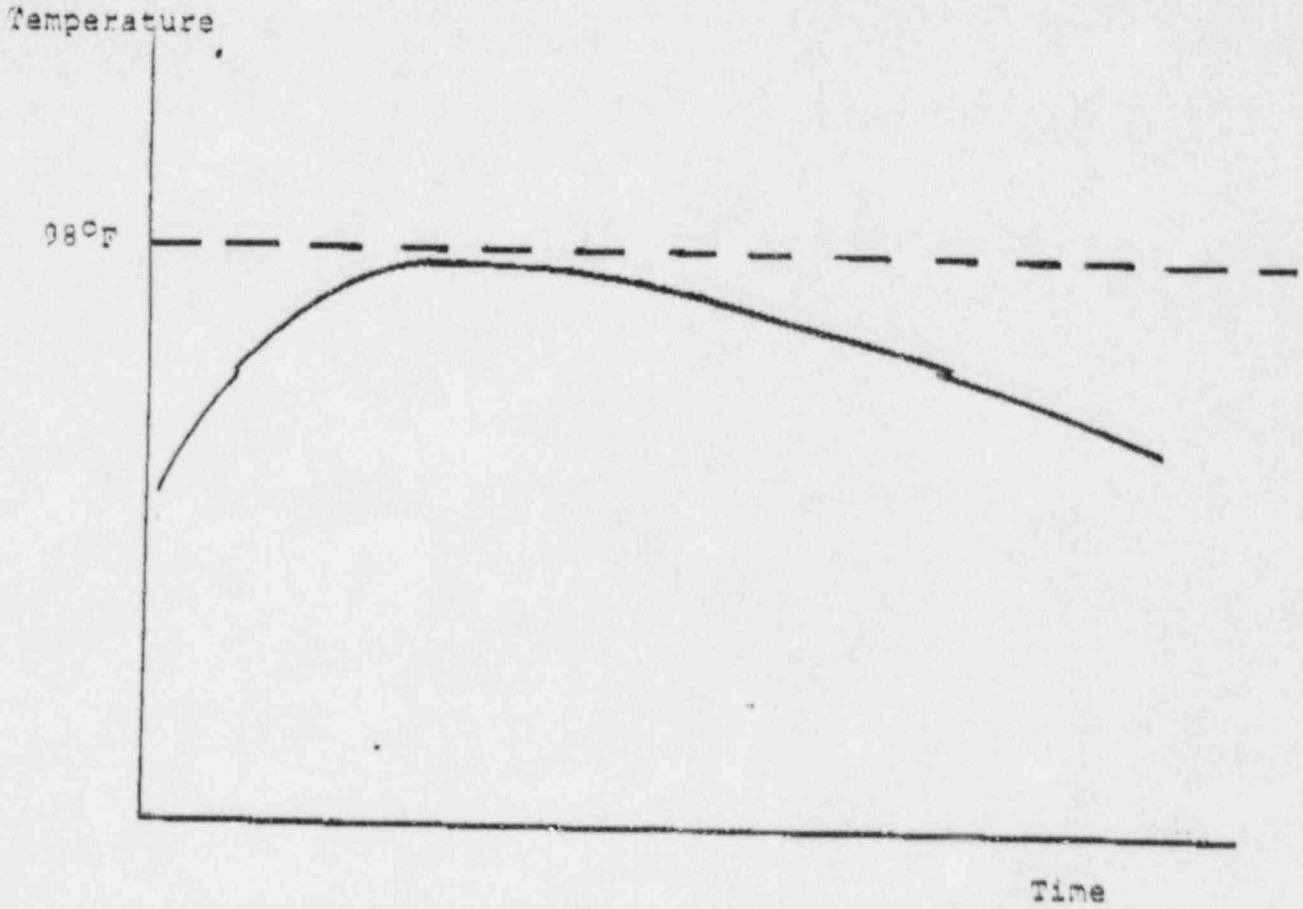

TABLE 1

HEAT LOAD AS A FUNCTION OF TIME

| Time | Heat Load, Q (x $10^6$ Btu/hr) |
|---|---|
| 45 secs | 539 |
| 100 secs | 580 |
| 600 secs | 503 |
| 1000 secs | 441 |
| 2011 secs | 373 |
| 1 hr | 325 |
| 2 hrs | 254 |
| 5 hrs | 209 |
| 10 hrs | 186 |
| 20 hrs | 154 |
| 28 hrs | 143 |
| 2 days | 130 |
| 5 days | 112 |
| 10 days | 103 |
| 20 days | 96 |
| 30 days | 92 |
| 50 days | 78 |

TABLE 2

EVAPORATION RATE AS A FUNCTION OF TIME

| Time | Evaporation Rate, E (gpm) |
|---|---|
| 45 secs | 861.77 |
| 100 secs | 922.04 |
| 600 secs | 808.85 |
| 1000 secs | 717.71 |
| 2011 secs | 617.75 |
| 1 hr | 547.19 |
| 2 hrs | 442.82 |
| 5 hrs | 376.67 |
| 10 hrs | 342.86 |
| 20 hrs | 295.82 |
| 28 hrs | 279.65 |
| 2 days | 260.54 |
| 5 days | 234.08 |
| 10 days | 220.85 |
| 20 days | 210.56 |
| 30 days | 204.68 |
| 50 days | 184.1 |

ATTACHMENT 3

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the amendment would not:

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

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

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

The Rock River is one of two makeup sources for the ultimate heat sink at Byron Station. This proposed amendment revises a technical specification action requirement concerning Rock River flow. The action requirement is being revised to state that Byron Unit 1 and Unit 2 operation with Rock River flow less than 700 cfs is permitted for 90 days from the date of issuance of this Technical Specification amendment. Continued operation is contingent upon maintaining UHS cooling tower basin level equal to or greater than 99.5%, otherwise the Units must be in Hot Standby in 6 hours and in Cold Shutdown within the following 30 hours. Also, an editorial change is proposed to delete an "or" from Specification 3.7.5.e(2).

Water flow in the Rock River and an editorial change have no effect on the probability of previously evaluated accidents. Therefore, the probability of previously evaluated accidents will not be increased.

Because of seismic capability concerns with the Oregon dam, Rock River level and flow restrictions were included in the Technical Specification to help ensure an adequate NPSH would be available for the essential service water makeup pumps in the event of a failure of the Oregon dam. The essential service water makeup pumps provide one source of makeup to the UHS basin which provides a cooling capability for 30 days following a LOCA on one unit with the second unit shutting down. An analysis has been performed to demonstrate a seismically qualified source of water is available in the UHS cooling tower basin to dissipate the post accident heat loads for a minimum of three days. During this period the availability of water sources will be evaluated to provide the remaining cooling needs. Evaluations of the dam, deep wells and certain onsite tanks has demonstrated there is a high probability they will be available to supply the required cooling needs. In addition, contingency plans have been established to provide UHS basin makeup as required. Therefore, it is anticipated that for the short 90 day period of operation permitted with Rock River flow less than 700 cfs, the consequences of an accident will not be significantly increased. The editorial change provides clarification and does not affect any accident analysis results.

Since the availability of the essential service water system is not an initiating or contributing factor to an accident, operation of Byron Units 1 and 2 with a Rock River flow rate of less than 700 cfs should not create the possibility of a new or different kind of accident. The editorial change is non-technical in nature and should not create the possibility of a new or different kind of accident.

The design of the UHS is to provide a cooling capability for 30 days of post accident operation. There are several sources of makeup to the UHS cooling tower basins to maintain the 30 day cooling requirements. Even though these sources are not all seismically qualified, there is a high degree of confidence the deep wells, essential service water makeup system and several tank sources will remain functional following a seismic event of the magnitude expected to occur in northern Illinois. In addition, operation with flow less than 700 cfs is permitted for a relatively short period of time and the probability of an accident scenario occurring which will require the UHS is statistically insignificant. Also, one Unit is scheduled for a refueling outage during the period for which the exemption is requested. This will reduce the post accident heat loads that must be dissipated. Therefore, the proposed amendment does not involve a significant reduction in a margin of safety. The editorial change is administrative and does not affect any margin of safety.

For the reason stated above, Commonwealth Edison believes this proposed amendment involves no significant hazards consideration.

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