



**Consumers
Power**

**POWERING
MICHIGAN'S PROGRESS**

Palisades Nuclear Plant: 27780 Blue Star Memorial Highway, Covert, MI 49043

April 1, 1996

U S Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

**DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT
DISPOSITION OF UNRESOLVED ITEM 255/95004-05, ADEQUACY OF FIRE AREA
BARRIERS**

On November 3, 1995, Consumers Power Company docketed a method and schedule for the disposition of Unresolved Item 255/95004-05 which is documented in NRC Inspection Report 255/95004 dated May 19, 1995. Unresolved Item (255/95004-05) concerns (1) the adequacy of the west wall of the Turbine Lube Oil Room to provide a three-hour fire barrier between the Turbine Lube Oil Room and the safety-related equipment located in the Turbine Building; and, (2) the adequacy of the Component Cooling Water (CCW) Pump Room wall to provide an acceptable fire barrier from the Turbine Building.

On October 24, 1995, during a meeting at Palisades with Region III staff, a commitment was made to provide specific responses for the disposition of Unresolved Item 255/95004-05 to the NRC by March 31, 1996. In a subsequent telephone conference call on November 30, 1995, Consumers Power Company agreed to accelerate the response to support an NRC site visit in mid-February 1996. The NRC confirmed this schedule in a letter dated December 5, 1995. On February 2, 1996, Consumers Power Company submitted a response to the unresolved item. Based on discussions during the February 12 and 13, 1996, NRC plant visit, we have revised our response to the unresolved item. This letter provides the current Palisades position on each issue and supersedes our letter dated February 2, 1996.

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Enclosure 1 lists the issues related to Unresolved Item 255/95004-05 concerning (1) the adequacy of the west wall of the Turbine Building Lube Oil Room to provide a three-hour fire barrier between the Turbine Lube Oil Room and the safety-related equipment located in the Turbine Building; and, (2) the adequacy of the CCW Pump Room wall to provide an acceptable barrier from the Turbine Building. Enclosure 1 also provides the Consumers Power Company response to each issue.

Enclosure 2 provides the detailed engineering evaluation which documents the adequacy of the west wall of the Turbine Building Lube Oil Room to provide acceptable fire barrier separation from the safety-related equipment located in the Turbine Building.

Enclosure 3 provides the detailed engineering evaluation which documents the adequacy of the Component Cooling Water Pump Room west wall to provide acceptable fire barrier separation from the Turbine Building.

The engineering evaluations that support the attached positions have received an independent review by Dr. Fred Mowrer, a fire protection Engineering Professor at the University of Maryland, who is a nationally known fire protection expert.

To enhance the fire protection capabilities at the west wall of the Turbine Lube Oil Room, a fire rated block wall will be constructed. This will provide a complete fire rated barrier between the Turbine Lube Oil Room and the safety related equipment in the Turbine Building. In addition, to enhance the fire protection capabilities near the CCW Pump Room pressure relief opening, the existing sprinkler system in the Turbine Building will be extended to provide sprinkler coverage on the Turbine side of the CCW Pump Room west wall.

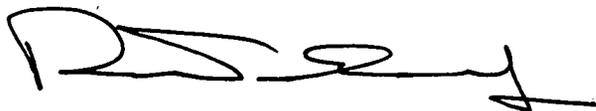
With the addition of the sprinklers on the turbine side of the CCW Pump Room west wall, the CCW Pump Room and the Turbine Building are considered two separate fire areas; therefore, an analysis documenting the ability to safely shutdown the plant with the Turbine Building and CCW Pump Room as a single fire area is not necessary.

The existing hourly fire tours which were established as a precautionary measure will remain in effect until final NRC disposition of Unresolved Item 255/95004-05 is received.

SUMMARY OF COMMITMENTS

This letter contains three new commitments and no revisions to existing commitments.

1. Revise the Palisades Fire Protection Program to clearly identify and justify the as-built configurations of the Turbine Lube Oil Room and CCW Pump Room west walls by June 30, 1996.
2. Provide a fire rated barrier on the west end of the Turbine Lube Oil Room to separate it from the Feedwater Purity Pipe Tunnel.
3. Extend the existing sprinkler coverage over the Turbine Building 590'-0" elevation adjacent to the CCW Pump Room pressure release opening and reevaluate the adequacy of the existing sprinkler coverage on the east side of the Turbine Building.



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Enclosures

ENCLOSURE 1

**CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255**

Responses to NRC Issues Raised in The NRC Letter dated December 5, 1995

Responses to NRC Issues Raised in Letter Dated December 5, 1995

Issue 1:

Adequacy of the west wall of the Turbine Lube Oil Room to provide 3-hour separation from the safety-related equipment located in the Turbine Building.

Response to Issue 1:

Three action items were undertaken to address possible resolutions to this concern. Each of these items is addressed separately below.

A. Review the regulatory criterion for a 3-hour fire barrier.

The fire protection features at Palisades were compared to the NRC guidance in Appendix A to BTP APCS 9.5-1 regarding fire protection at nuclear plants during the licensing process. The specific guidance that addresses the Turbine Lube Oil Room is Section F.8 which states:

A blank fire wall having a minimum resistance rating of three hours should separate all areas containing safety-related systems and equipment from the turbine oil system. When a blank wall is not present, open head deluge protection should be provided for the turbine oil hazards and automatic open head water curtain protection should be provided for wall openings.

The current docketed Palisades commitment to this position is provided as an attachment to a Consumers Power Company letter to the NRC dated October 26, 1989. The stated position is as follows:

The Turbine Lube Oil Storage Area is completely separated in an interior structure inside the Turbine Building. The room is sprinklered and enclosed by three-hour fire walls except the west wall. The room has a recessed floor to contain the entire lube oil storage inventory without leakage.

In addition, the current docketed Fire Hazards Analysis Report (FHAR), submitted to the NRC in a Consumers Power Company letter dated July 31, 1989, provides the following discussion regarding the west wall of the Turbine Lube Oil Room:

The Turbine Lube Oil Room is isolated from adjacent fire areas by three-hour fire walls. Two south wall access doors

each have a three-hour fire rating. Openings exist between this room and the pipeway to the Feedwater Purity Building. Curbs are provided at each door to contain tank spillage within the designated fire area. The Turbine Lube Oil Room is physically located approximately 50 feet from the Auxiliary Feedwater Pump Room and approximately 40' from the Auxiliary Building.

The current NRC guidance, used for licensing newer plants, is based on NRC positions provided in NUREG 0800, BTP CMEB 9.5-1. This guidance includes a discussion on the Turbine Building in Section 7.h., which states:

The turbine building should be separated from adjacent structures containing safety-related equipment by a fire barrier with a minimum fire rating of 3 hours. The fire barriers should be designed so as to maintain structural integrity even in the event of a complete collapse of the turbine structure. Openings and penetrations in the fire barrier should be minimized and should not be located where the turbine oil system or generator hydrogen cooling system creates a direct fire exposure hazard to the barrier. Considering the severity of the fire hazards, defense in depth may dictate additional protection to ensure barrier integrity.

The Consumers Power Company statements in both the FHAR and the BTP APCSB 9.5-1, Appendix A comparison were documented in an engineering evaluation. As described in Item 1.B below, a new engineering analysis providing clarification has been performed to supersede the previous evaluation.

The NRC guidance documents regarding turbine building and turbine lube oil areas do not limit acceptable separation to three-hour fire rated barriers. Other options are provided for in the guidance documents. The current NRC guidance specifies that safety-related area fire barriers should minimize openings and penetrations in the fire barrier and any such openings should not be located where the turbine oil system creates a direct fire exposure hazard to the barrier. A direct fire exposure hazard is created by radiant energy from a fire and a line of sight fire barrier is adequate to meet this guidance position.

With an adequate technical basis for this configuration in preventing a direct fire exposure hazard to safety-related or safe shutdown components/circuits, the licensing basis can be met without the need for a three-hour rating on the west wall of the Turbine Lube Oil Room. The following section presents the technical basis for the existing configuration.

B. Quantitatively analyze the existing configuration.

In order to provide a quantitative evaluation of the concern in this area, to supplement but not replace the qualitative evaluation, a fire model evaluation was made. The fire model chosen was FPETOOL as it is a generally accepted industry standard that is available as public domain software. The lack of software quality assurance on the use of FPETOOL requires that any results provided will be for information only and these results are not intended to be used as an exact prediction of the temperatures associated with an actual fire in this area.

The Turbine Lube Oil Room west wall was originally an exterior wall. Later, the Feedwater Purity Building was constructed and included a pipe tunnel that ran along the west wall of the Turbine Building and enclosed a portion of the Turbine Lube Oil Room wall. The lower 15 feet (approximately) of the Turbine Lube Oil Room west wall faced the new Feedwater Purity Building pipe tunnel, while the upper 6 feet (approximately) remained an exterior facing wall. This plant change was evaluated and documented as acceptable in the Fire Protection Program documents. These documents were submitted to the NRC as part of the information used to justify deletion of certain fire protection features from the Technical Specifications per Generic Letters 86-10 and 88-12.

New or updated engineering evaluations have now been prepared to document the combustible loading, the hydraulic capability of the automatic suppression system, the affect of a fire on fire area boundaries, and to identify post-fire safe shutdown components in the Turbine Lube Oil Room and adjacent areas of the Turbine Building. Actual sprinkler hydraulic analysis determined the Turbine Lube Oil Room spray density exceeds 0.55 gpm/ft² providing improved coverage over the design requirement of 0.30 gpm/ft². The remaining three separate engineering evaluations have been completed and the results are summarized below.

The combustible loading in the Turbine Lube Oil Room is very high due to the amount of lube oil stored in the various tanks within the room. Using a standard method of quantifying the fire loading, it is classified as greater than a nine hour fire loading. However, this standard method is very conservative in describing the realistic fire loading. By using fire modeling techniques and field measurements of the openings in the various fire area boundaries it has been determined that a fire in this room would be ventilation limited until the heat generated by the fire was sufficient to fail the sheet metal west wall. The temperatures required to fail the west wall would not be reached prior to

sprinkler actuation which would then control the fire until fire brigade activities could extinguish the fire.

The fire model utilized predicts a general area smoke and hot gas temperature of a ventilation limited fire after 20 minutes as being under 800°F. The 800°F temperature is significant as it is below the maximum average temperature limit of 1000°F allowed in determining the acceptability of fire proofing materials on building structural steel. The Turbine Lube Oil Room west wall is corrugated sheet metal attached directly to the structural steel on that end of the room. This means the sheet metal wall is expected to remain structurally sound as a radiant energy barrier for at least 20 minutes in a realistic fire. Conservatively, this analysis does not take credit for the automatic sprinkler system installed in the Turbine Lube Oil Room. Additionally, the plant fire brigade will have at least 20 minutes to establish manual fire fighting water flow to cool the wall or further control or extinguish the fire even if the automatic sprinkler system fails to control the fire. The automatic sprinklers serve a dual function as both heat detectors and water distribution nozzles. A water flow alarm is initiated to the Control Room upon sprinkler actuation. The conservative fire modeling, automatic sprinkler system and adequate time for appropriate fire brigade response provide a defense-in-depth assurance that Turbine Lube Oil Room fire area boundaries will remain intact.

Complete failure of the west wall would be a bounding worst case scenario with a maximum opening size of 504 ft². This failure could occur due to warpage or due to support failure from metal expansion at the high temperatures. Such a failure would allow the ventilation limited fire size to increase due to the increased ventilation area. However, the increased opening allows for more venting of hot gases and reduces the overall temperature compared to the 32 ft² vent opening. Ventilation opening sizes between the 32 ft² and 504 ft² extremes may create higher temperatures due to maximizing combustion air while minimizing smoke and hot gas venting, but the automatic suppression system will limit realistic fire temperatures below those predicted above.

Smoke and hot gases will vent from the Turbine Lube Oil Room west wall openings into the Feedwater Purity Building pipe tunnel. However, the minimal combustible materials located in the pipe tunnel do not extend within 20 feet of the pipe tunnel opening into the Turbine Building on the south end. The various openings of the pipe tunnel along the east side do not contain any significant combustible materials to propagate the fire into the Turbine Building. In addition, no significant combustible materials are present inside the adjacent Turbine Building areas for a distance in excess of 20 feet on the 590'-0" elevation. Although smoke and hot gases will be present in the Feedwater Purity Building pipe tunnel and Turbine Building, the separation distance to any

significant quantity of combustible material minimizes the risk of fire propagation into the Turbine Building.

The Turbine Lube Oil Room west wall is exposed to the exterior for approximately the upper 6 feet. The expected failure mechanism, if failure does occur, would be for the upper wall to fail first due to higher temperatures in this region. Such a failure would vent the majority of smoke and hot gases to the outside area away from safety-related or safe shutdown equipment located in the Turbine Building. This venting would also reduce the likelihood of a fire reaching flashover temperatures in this area.

The Turbine Building contains post-fire safe shutdown components on the same elevation as the Turbine Lube Oil Room. No post-fire safe shutdown or safety-related equipment is located in the Turbine Lube Oil Room, Feedwater Purity Building or pipe tunnel. The smoke and hot gases leaving the openings in the Turbine Lube Oil Room west wall are not expected to adversely affect the post-fire safe shutdown components in the Turbine Building for several reasons. The volume of the Turbine Building, which is open from the 590'-0" elevation up two levels to the operating floor, is very large and will dilute the smoke and hot gases and prevent heat buildup on the lower levels. The post-fire safe shutdown components located in the Turbine Building on the 590'-0" and 607'-6" elevations are all located greater than 20 feet away from the openings of the Feedwater Purity Building pipe tunnel into the Turbine Building. Generally, these components are located behind large metal or structural components such that any radiant energy emitted from the Feedwater Purity Building pipe tunnel openings would be shielded. It would conservatively take a fire size of greater than 11.7 MW to cause radiant energy damage to IEEE-383 cable at a distance of 20 feet. IEEE-383 cable would be the most heat sensitive part of the safe shutdown components. The realistic fire size in the Turbine Lube Oil Room should be ventilation limited to 2.9 MW prior to sprinkler actuation, which is well below the damage threshold limit. Although larger openings in the wall, or complete wall failure, will increase the potential fire size, the activation of the sprinkler system will realistically limit fire size below the ventilation limited value as wall failure is not postulated prior to sprinkler operation.

The closest adjacent structure containing safety related equipment is the Component Cooling Water Pump Room located on the east side of the Turbine Building. The openings in the Component Cooling Water (CCW) Pump Room wall facing the Turbine Building are over 100 feet away from the Turbine Lube Oil Room west wall and the pipe tunnel openings. A fire would have to propagate across minimal combustible loading areas, and also across sprinkler protected areas in the Turbine Building to reach the CCW Pump Room wall

openings. A separate discussion is provided for the adequacy of the CCW Pump Room openings.

In summary, the existing plant configuration of the Turbine Lube Oil Room west wall will prevent a direct fire exposure hazard to safe shutdown components in the Turbine Building or openings in safety-related area fire barriers such as the CCW Pump Room openings. Therefore, requirements of the approved Fire Protection Program are met by the Plant as-built condition.

C. Perform further studies to evaluate modifying the west wall in the Turbine Lube Oil Room.

Several options were researched to evaluate possible 3-hour fire barrier upgrades or water curtain installations to the Turbine Lube Oil Room west wall. The options reviewed include:

- Replacement with a complete covering of sheet metal coated with cementitious material
- Replacement with a concrete block wall
- Replacement with a gypsum board and metal stud wall
- Replacement with a reinforced poured concrete wall
- Installation of a water curtain on the inside of the Turbine Lube Oil Room west wall
- Installation of a water curtain on the outside of the Turbine Lube Oil Room west wall
- Installation of smoke/heat vents in the ceiling of the Feedwater Purity Tunnel ceiling along the area adjacent to the Turbine Lube Oil Room.

In view of all the above and after further review, we plan to add a fire rated concrete block wall on the west end of the Turbine Lube Oil Room separating it from the Feedwater Purity Pipe Tunnel. This wall is being added to enhance overall plant fire protection capabilities.

The above information was prepared after extensive research and analysis subsequent to the NRC identified Unresolved Item 255/95004-05 in Inspection Report 255/95004

dated May 19, 1995. Based on this information, the existing configuration of the Turbine Lube Oil Room west wall is consistent with NRC guidance for defense-in-depth protection of post-fire safe shutdown and safety-related components. However, the configuration is not adequately identified or justified in the existing Palisades Fire Protection Program. Therefore, a revision to the appropriate documents will be prepared to clearly identify and justify the existing configuration using the information gathered as a result of the inspection report item. This revision will be completed along with the current effort to update the Appendix R safe shutdown documentation. This update is scheduled to be completed by the end of June 1996.

Issue 2:

Adequacy of the Component Cooling Water (CCW) Pump Room wall openings to provide fire area boundary separation from the Turbine Building.

Response to Issue 2:

Similar to Issue 1, three action items were undertaken to address possible resolutions to this concern. Each of these items are addressed separately below.

A. Review the regulatory criterion for a 3-hour fire barrier.

An opening is required in the CCW Pump Room wall to release pressure from a postulated main steam or main feedwater line break in the CCW Pump Room. During the licensing process at Palisades discussions whether to have a pressure release opening or a fire barrier resulted in the existing configuration at Palisades.

Appendix A to BTP APCS 9.5-1 has a generic section addressing the pertinent fire barrier concerns. The generic barrier standard described in Section D.1(j) reads as follows:

For plants with a docketed application, but construction permit not received as of 7/1/76 the criterion states: Floors, walls and ceilings enclosing separate fire areas should have minimum fire rating of three hours. Penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself. Door openings should be protected with equivalent rated doors, frames and hardware that have been tested and approved by a nationally

recognized laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room. Penetrations for ventilation system should be protected by a standard "fire door damper" where required.

For plants under construction and operating plants the following guidance is provided: SAME. The fire hazard in each area should be evaluated to determine barrier requirements. If barrier fire resistance cannot be made adequate, fire detection and suppression should be provided, such as: (i) water curtain in case of fire, (ii) flame retardant coatings, (iii) additional fire barriers.

The latter guidance applies to Palisades as the construction permit was received prior to 7/1/76. The NRC also issued Generic Letter 86-10, "Implementation of Fire Protection Requirements" on April 24, 1986, to further clarify certain issues for licensees. In Enclosure 1, Item 4, "Fire Area Boundaries" it states:

The term "fire area" as used in Appendix R means an area sufficiently bounded to withstand the hazards associated with the area and, as necessary, to protect important equipment within the area from a fire outside the area. In order to meet the regulation, fire area boundaries need not be completely sealed floor-to-ceiling, wall-to-wall boundaries. However, all unsealed openings should be identified and considered in evaluating the effectiveness of the overall barrier. Where fire area boundaries are not wall-to-wall, floor-to-ceiling boundaries with all penetrations sealed to the fire rating required of the boundaries, licensees must perform an evaluation to assess the adequacy of fire boundaries in their plants to determine if the boundaries will withstand the hazards associated with the area. This analysis must be performed by at least a fire protection engineer and, if required, a systems engineer. Although not required, licensees may submit their evaluations for staff review and concurrence. However, if certain cable penetrations were identified as open SER items at the time Appendix R became effective, Section III.M of the rule applies (see 10 CFR 50.48(b)), and any variation from the requirements of Section III.M requires an exemption. In any event, these analyses must be retained by the licensees for subsequent NRC audits.

The current docketed FHAR, submitted to the NRC in a July 31, 1989, addresses the specific configurations for the CCW Pump Room as follows:

The pump room enclosure is bounded by three-hour fire walls. Access is provided to the north-end corridor via a watertight door and an inner door and to the 607'-6" level above via an open stairway. Pump spacing is 12' center to center. A pressure release opening is located in the wall to the Turbine Building. The annuli around the main steam pipes and feedwater pipes are not sealed. These openings are negligible when compared to the pressure release opening.

The Consumers Power Company statements in the FHAR were documented by a more detailed engineering evaluation. As described in Item 2.B below a new engineering evaluation has been performed to supersede the previous evaluation. The position that the CCW Pump Room wall to the Turbine Building contained openings in the fire rated barrier is stated in the docketed information.

B. Quantitatively analyze the existing configuration.

New or updated engineering evaluations were prepared to document the combustible loading, the affect of a fire on fire area boundaries, and identify post-fire safe shutdown components in the CCW Pump Room and adjacent areas of the Turbine Building. The results are summarized below.

The CCW Pump Room wall providing separation from the Turbine Building has a pressure release opening and unsealed penetration openings around the main feedwater and main steam lines. The pressure release opening is on the 590'-0" elevation and is 7 feet wide by 9 feet high (previously incorrectly listed as a 10' X 12' opening) with a substantial metal covering over the lower 5 feet providing flood protection from the Turbine Building side of the barrier. This lower portion contains panels with break away supports to allow steam to vent from the CCW Pump Room side of the barrier. The upper 4 feet of the opening is protected by metal bars to prevent unauthorized personnel entry and allows free air flow between the two areas. The two main feedwater pipe penetrations are located above the 590'-0" elevation with annular gaps ranging from approximately 1-inch to 5-inches in the 24-inch thick wall. One feedwater pipe penetration is approximately 5 feet above the floor level and the other is over 10 feet above floor level. The main steam lines are both above the 607'-6" floor grating elevation. A single large opening is provided that is substantially blocked by

massive pipe supports and the main steam lines. The open spaces around the main steam pipes and supports range in size from approximately 2-inches to 9-inches.

The fire loading in the CCW Pump Room is negligible and is quantified as less than a one-minute fire loading. The in-situ combustibles are located greater than 20 feet away from the pressure release and piping penetration openings on the 590'-0" elevation. The fire loading in the Turbine Building Main Feed Pump area outside the CCW Pump Room wall is quantified as approximately a 54 minute fire loading from material located primarily on the 590'-0" elevation. None of this fire loading is located near the CCW Pump Room wall openings. In fact, the in-situ combustibles are located greater than 30 feet away from the CCW Pump Room openings on the Turbine Building side at the 590'-0" elevation. No significant combustibles are located within 20 feet of either side of the CCW Pump Room wall at the 607'-6" elevation. Various large ceiling openings exist between the 607'-6" elevation and the upper operating floor of the Turbine Building to prevent the confinement of any smoke and hot gases produced from a fire on the 590'-0" elevation.

Based on the fire loading inside the CCW Pump Room there is insufficient material to challenge the fire barrier openings all located above 5 feet from the floor level. Therefore, there is negligible risk of a fire spreading from the CCW Pump Room into the Turbine Building from the existing openings.

The turbine lube oil piping located in this area is a double pipe arrangement that would require failure of two pipes before leakage could occur. Therefore, the Turbine Building fire loading that could realistically propagate near the openings is primarily composed of Main Feedwater Pump (MFP) lube oil that is located over 30 feet away from the feed water pipe penetration and over 60 feet away from the pressure release opening. Floor drains are provided around the MFP lube oil areas and in the intervening area between the MFP lube oil and the CCW Pump Room wall. Drainage near the CCW Pump Room is away from the CCW Pump Room wall back toward the MFP lube oil areas. In addition, a wet-pipe sprinkler system is provided over the MFP lube oil and cable tray raceway areas. Potential fires near the wall are floor based and the openings that are susceptible to fire propagation are above 5 feet from the floor. The wall/barrier below the 5 feet opening areas maintains either a 3-hour barrier rating or a radiant energy barrier. Also, with no significant combustible material located within 20 feet on the CCW Pump Room side of the barrier, there is negligible risk of fire propagation into the CCW Pump Room from a Turbine Building fire. The volume of the Turbine Building, which is open from the 590'-0" elevation up two levels to the operating floor, is very large and will dilute smoke and hot gases and prevent heat buildup on the lower levels.

The location and spacing of floor drains around the Main Feedwater Pump lube oil tanks should limit a lube oil spill, based on engineering judgement, to a 10 foot diameter pool size. A postulated 10 foot diameter lube oil fire located at the Main Feedwater Pumps was evaluated for potential radiant energy damage to targets inside the CCW Pump Room. This evaluation assumed an exposed IEEE-383 cable located at the pressure release opening, when actually there are none, and determined the minimum fire size needed to reach the target damage threshold. The estimated fire size was calculated as approximately 9.4 MW, while the amount of energy at a distance of 50 feet (60 feet separation minus the 10 foot diameter lube oil fire) needed to damage IEEE-383 cable is approximately 72.6 MW. This conservative evaluation further quantifies the adequacy of the CCW Pump Room west wall. The 30 foot separation to the feedwater line penetration was not evaluated as worst case because it does not provide a line of sight target from a floor based fire to components inside the CCW Pump Room. This is due to the elevation of the pipe penetration above the floor, the thickness of the wall, and the small size of the annular gap. No intervening combustibles are located between the Main Feedwater Pumps and the CCW Pump Room west wall.

Transient combustibles are controlled by plant procedures for the areas described here. The area adjacent to the CCW Pump Room pressure release opening on the Turbine Building side is blocked by the stairway leading up to the 607'-6" elevation. The remaining area is congested with piping, heat exchangers and tanks except for the narrow walkway to the stairs. These factors ensure that any significant storage of transient combustibles on the Turbine Building side is impractical. Similarly, on the CCW Pump Room side of the barrier the area adjacent to the openings on the 590'-0" elevation are essentially blocked by piping, heat exchangers and valves such that it is impractical to store transient combustibles in this area. No additional administrative controls are deemed necessary to control transient combustibles.

The ventilation air flow is designed to be neutral between the Turbine Building and the CCW Pump Room. The design air flow with all ventilation operating is from the CCW Pump Room into the Turbine Building. There is a low probability that the independent fan cycling of various ventilation units in the Turbine Building would lead to positive pressure and air flow back into the CCW Pump Room. However, this is a low probability event of short duration and the 20 feet of separation from the CCW Pump Room wall to the nearest combustible material would continue to ensure negligible risk of fire damage or spreading from the Turbine Building into the CCW Pump Room.

C. Perform further studies to evaluate modifying the west wall of the CCW Pump Room.

Due to the pressure release requirements on the CCW Pump Room wall no barrier type enclosures were considered reasonable. Any material used for a fire or radiant energy barrier would become a potential missile concern without massive supports to retain the barrier that must retain blow-out capability during a postulated steam line break. The use of water curtains for the openings were also considered unlikely to perform adequately due to the lack of credible hot gas buildup in the area to activate the water flow. This is due to the large vent area in the Turbine Building and lack of a ceiling near the openings to retain the heat near the openings. The lack of potential fire spread across the CCW Pump Room openings described above shows that no modification is required to meet the defense-in-depth design basis for fire protection features associated with this wall. However, the existing sprinkler protection over the Turbine Building 590'-0" elevation adjacent to the CCW Pump Room pressure release opening will be extended to enhance overall plant fire protection capabilities by providing additional defense in depth for this area. In addition, a review of the adequacy of the existing sprinkler protection over the main feedwater pumps and cable trays on the east side of the Turbine Building will be performed.

The above information was prepared after extensive research and analysis subsequent to the NRC identified Unresolved Item 255/95004-05 in Inspection Report 255/95004 dated May 19, 1995. Revision to the appropriate documents will be prepared to clearly identify and justify the existing configuration using the information gathered as a result of the inspection report item. This revision will be completed along with the current effort to update the Appendix R safe shutdown documentation. This update is scheduled to be completed by the end of June 1996.

ENCLOSURE 2

**CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255**

**Analysis of the Effects of a Fire on the West wall of the Turbine Lube Oil Room
Adjacent to the Pipe Tunnel Between the Turbine Building
and the Feedwater Purity Building**