



Telegram

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ABNORMAL OCCURRENCE REPORT - PALISADES PLANT:

1. REPORT NUMBER
2. DATE - APRIL 15, 1974
3. OCCURRENCE DATE - APRIL 7, 1974
4. FACILITY - PALISADES PLANT

SF-1201 (R5-69)

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5. IDENTIFICATION OF OCCURRENCE - PLEXIGLASS DROPPED INTO REACTOR CAVITY

6. CONDITIONS PRIOR TO OCCURRENCE - REFUELING IN PROGRESS

7. DESCRIPTION OF OCCURRENCE

WHILE INSERTING FUEL ASSEMBLIES INTO THE REACTOR, THE UNDERWATER LIGHTS ARE NORMALLY ADJUSTED TO BETTER ILLUMINATE THE FIELD OF VIEW OF THE REFUELING MACHINE TV CAMERA. ONE OF THE LIGHTS WHICH IS USED IS POSITIONED THRU A VIEWING PORT ON THE DECK OF THE REFUELING MACHINE TROLLEY. THE VIEWING PORT HAS STANDARD 3 X 1 DECK GRATING WHICH RESTS OVER A PIECE OF PLEXIGLASS. THE GRATING PROVIDES SUPPORT FOR PERSONNEL STANDING IN THE VICINITY AND THE PLEXIGLASS IS PROVIDED TO PREVENT OBJECTS FROM FALLING THRU THE GRATING INTO THE REACTOR CAVITY.

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DURING THE INSERTION OF THE UNDERWATER LIGHT, A PIECE OF THE PLEXIGLASS - ESTIMATED TO BE THREE INCHES WIDE AND EIGHTEEN INCHES LONG AND 1/16 INCH THICK; BROKE OFF THE LARGE PIECE AND FELL INTO THE REACTOR CAVITY. A THOROUGH SEARCH OF THE REACTOR VESSEL, REACTOR CAVITY, AND TILT PIT REVEALED THAT THE PLEXIGLASS PIECE HAD COME TO REST ON THE TOP OF THE CORE SHROUD FORMER PLATE AT THE NORTHEAST SIDE OF THE REACTOR. WHILE ATTEMPTING TO RETRIEVE THE PLEXIGLASS IT SUBSEQUENTLY FELL THRU THE ANNULUS BETWEEN THE SHROUD FORMER PLATE AND THE CORE SUPPORT BARREL.

8. DESIGNATION OF APPARENT CAUSE OF THE OCCURRENCE - INADEQUATE DESIGN OF THE VIEWING PORT

8F-1201 (R5-89)



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DURING THE INSERTION OF THE UNDERWATER LIGHT, A PIECE OF THE PLEXIGLASS - ESTIMATED TO BE THREE INCHES WIDE AND EIGHTEEN INCHES LONG AND 1/16 INCH THICK; BROKE OFF THE LARGE PIECE AND FELL INTO THE REACTOR CAVITY. A THOROUGH SEARCH OF THE REACTOR VESSEL, REACTOR CAVITY, AND TILT PIT REVEALED THAT THE PLEXIGLASS PIECE HAD COME TO REST ON THE TOP OF THE CORE SHROUD FORMER PLATE AT THE NORTHEAST SIDE OF THE REACTOR. WHILE ATTEMPTING TO RETRIEVE THE PLEXIGLASS IT SUBSEQUENTLY FELL THRU THE ANNULUS BETWEEN THE SHROUD FORMER PLATE AND THE CORE SUPPORT BARREL.

8. DESIGNATION OF APPARENT CAUSE OF THE OCCURRENCE - INADEQUATE DESIGN OF THE VIEWING PORT

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9. ANALYSIS OF OCCURRENCE:

A. THE POSITION TO WHICH THE PLEXIGLASS FELL MAKES IT IR-RETRIEVABLE.

B. BELOW THE TOP FORMER PLATE THERE ARE SEVEN ADDITIONAL FORMERS, UPON WHICH THE PLEXIGLASS MAY HAVE COME TO REST. IF IT CONTINUED TO FALL, IT MAY HAVE REACHED THE CORE SUPPORT PLATE BEHIND THE CORE SHROUD. IT COULD NOT HAVE FALLEN ANY FARTHER SINCE THE LARGEST HOLES IN THE CORE SUPPORT PLATE BEHIND THE SHROUD ARE 3/4 INCH IN DIAMETER.

C. THE MAXIMUM FLOW RATE AT ANY POSITION THAT IT FELL IS ESTIMATED TO BE 6 FT/SEC - IN THE ANNULUS BETWEEN THE SHROUD

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FORMER AND THE CORE BARREL. ALTHOUGH THIS VELOCITY IS PROBABLY SUFFICIENT TO MOVE THE PIECE OF PLEXIGLASS, IT IS HIGHLY IMPROBABLE THAT IT WOULD STOP IN A POSITION WHERE THE VELOCITY WAS THAT HIGH AND THEREFORE IT IS MOST LIKELY TRAPPED INSIDE THE SHROUD.

D. PRELIMINARY TESTS INDICATE THAT AT 350 DEGREES F THE PLEXIGLASS IS VERY SOFT AND PLIABLE AND IT IS EXPECTED THAT IT WILL BE FLUID BEFORE THE MINIMUM TEMPERATURE FOR CRITICAL 525 DEGREES F IS REACHED. AUTOCLAVE TESTS WILL BE PERFORMED BE CE TO DETERMINE ACTUAL CONDITIONS AT 532 DEGREES F AND 1800 PSIA.

E. IF THE PLEXIGLASS WERE TO GET INTO THE FLOW STREAM IT MAY
SF-1201 (RS-69) WORK ITS WAY INTO THE STEAM GENERATOR WHERE IT WOULD BE TRAPPED



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UNTIL IT BECAME FLUID ENOUGH TO FLOW THRU THE TUBES. IF IT BECAME FLUID ENOUGH TO FLOW THRU THE TUBES IT WOULD THEN PASS THRU THE PRIMARY COOLANT PUMPS, DOWN THE OUTSIDE OF THE CORE SUPPORT BARREL AND, IF IT MADE IT AROUND THE TURN, IT WOULD EVENTUALLY REACH THE FUEL ASSEMBLIES, BUT DUE TO THE TORTUOUS PATH IT WOULD BE VERY STRINGY AND THEREFORE WELL DISPERSED.

F. PLEXIGLASS IS A METHYL METHACRYLIATIC HYDROCARBON WHICH IS COMPOSED OF ONLY HYDROGEN, CARBON AND OXYGEN. THE HYDROCARBON WILL DECOMPOSE DUE TO TEMPERATURE. WE HAVE SELECTED CE TO PERFORM AUTOCLAVE TEST TO VERIFY DECOMPOSITION AND ALSO TO RUN CORROSION TEST. THIS DATA WILL BE AVAILABLE LATER THIS WEEK AND THE RESULTS WILL BE FORWARDED TO YOU.

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10. CORRECTIVE ACTION

A. A SCREEN WILL BE USED TO REPLACE THE PLEXIGLASS SO THAT IT IS NOT LIKELY TO FALL OFF, AND EVEN IF IT DOES FALL OFF IT WILL BE EASIER TO RETRIEVE.

R B DE WITT
CONSUMERS POWER COMPANY
PALISADES PLANT
ALL HO APR 17 1974
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UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

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A. RO Inspection Report No. _____

Transmittal Date : _____

Distribution:
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RO:HQ (5)
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Regulatory Standards (3)
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Distribution:
RO Chief, FS&EB
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B. RO Inquiry Report No. _____

Transmittal Date : _____

Distribution:
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Regulatory Standards (3)
Licensing (13)
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C. Incident Notification From: Consumers Power Co. Docket No. 50-255
(Licensee & Docket No. (or License No.))

Transmittal Date : April 23, 1974

Distribution:
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*Incident
50-255*