

July 19, 1985

Docket No. 50-409

LICENSEE: Dairyland Power Cooperative

FACILITY: La Crosse Boiling Water Reactor (LACBWR)

SUBJECT: MEETING TO DISCUSS PROPERTY DAMAGE INSURANCE

On June 27, 1985 the NRC staff met with representatives of Dairyland Power Cooperative to discuss the licensee's requested exemption to reduce the insurance coverage from the currently required coverage of \$500 million. A list of attendees is provided as Enclosure 1.

Dairyland presented the results of a study performed to estimate the cost of clean-up from a TMI-type accident (100% clad failure; 50% fuel melt). Copies of viewgraphs presented are included in Enclosure 2. The licensee stated that LACBWR would not be returned to service in the event of a severe accident, hence costs were estimated for clean-up to the point at which normal decommissioning of the plant could begin. The study results indicate the clean-up costs at LACBWR would be approximately \$179 million. The NRC staff had no disagreement with the licensee's presentation and felt that the study was consistent with the clean-up costs estimated in NUREG-CR-2601, which forms the basis for newly proposed levels of insurance coverage. However, an Accident Evaluation Branch representative stated an opinion that licensees requesting exemptions from insurance requirements should be required to analyze accidents more severe than the licensing design basis and more severe than those in NUREG-CR-2601. Participants agreed that this issue should be referred to NRC management for prompt resolution.

Original Signature

Richard Dudley, Project Manager  
Operating Reactors Branch No. 5  
Division of Licensing

Enclosures:  
As stated

cc w/enclosure:  
See next page

DISTRIBUTION

Docket File

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07/19/85

SE01  
EX-38 11



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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A handwritten signature in cursive script, reading "Richard Dudley".

Richard Dudley, Project Manager  
Operating Reactors Branch No. 5  
Division of Licensing

Enclosures:  
As stated

cc w/enclosure:  
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General Manager  
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2615 East Avenue South  
La Crosse, Wisconsin 54601

## JUNE 27, 1985 ATTENDANCE

<u>REPRESENTATIVE</u>	<u>ORGANIZATION</u>
R. Dudley	NRC - ORB #5
W. Paulson	NRC - ORB #5
R. Wood	NRC - OSP
E. B. Tremmel	Dairyland-Washington
L. Soffer	NRC/DSI/AEB
L. G. Hulman	NRC/DSI/AEB
H. F. Devine	Dairyland
R. E. Shimshak	Dairyland Power
J. R. (Jack) May	Nuclear Energy Svcs.
W. J. (Bill) Manion	Nuclear Energy Svcs.

POSTACCIDENT RECOVERY COSTS  
FOR  
THE LA CROSSE BOILING WATER REACTOR  
  
DAIRYLAND POWER COOPERATIVE

JUNE 27, 1985

JUNE 27, 1985 PRESENTATION AGENDA

1. PURPOSE OF MEETING
2. DESCRIPTION OF LACBWR
3. DESCRIPTION OF THE ACCIDENT
4. DESCRIPTION OF RECOVERY
5. REVIEW OF RECOVERY COST ESTIMATE

## DESCRIPTION OF LACBWR

### . GENERAL PLANT INFORMATION

.. POWER RATING	50 MWE (NET)
.. DESIGN PRESSURE	1,400 PSIG
.. OPERATING PRESSURE	1,300 PSIA
.. POWER PRODUCTION	165 MWT
.. NUMBER OF FUEL ASSEMBLIES	72
.. URANIUM CONTENT	18,963 LBS
.. AVERAGE POWER DENSITY	41.4 Kw/LITER
.. ACTIVE CORE HEIGHT	83 IN

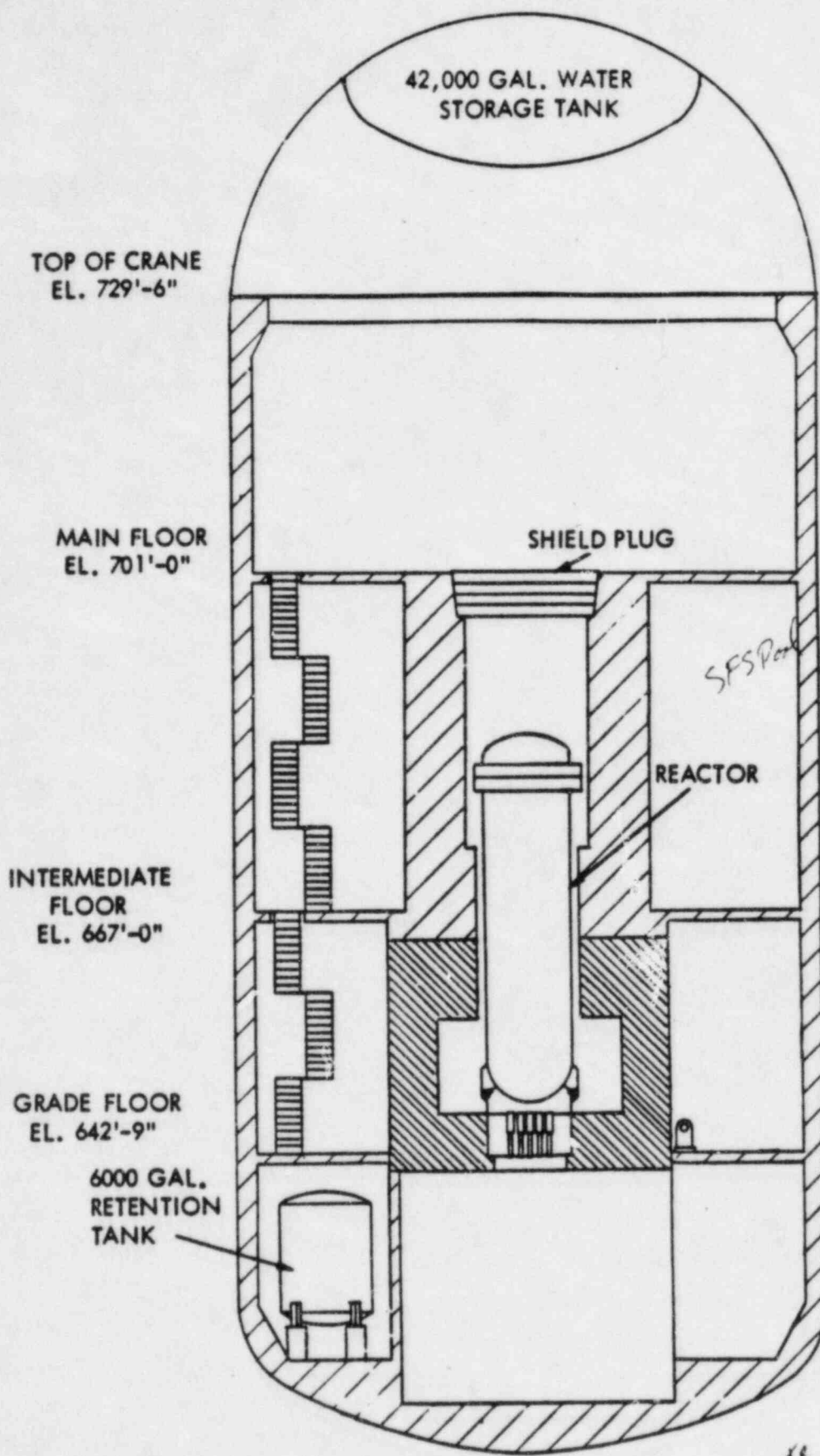
### . CONTAINMENT

.. INTERNAL HEIGHT	144 FT
.. INSIDE DIAMETER	60 FT
.. STEEL SHELL THICKNESS	1.61 IN
.. STEEL DOME THICKNESS	0.60 IN
.. CONCRETE WEIGHT	14,150,000 LBS
.. CONCRETE ANNULUS THICKNESS	9-24 IN

### . REACTOR VESSEL

.. MATERIAL	A302B C.S. W/304L CLADDING
.. INSIDE DIAMETER	8.25 FT
.. SHELL THICKNESS	4 IN
.. INTERNAL HEIGHT	37 FT
.. WEIGHT	26.5 TONS



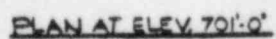


CONTAINMENT BUILDING ELEVATION

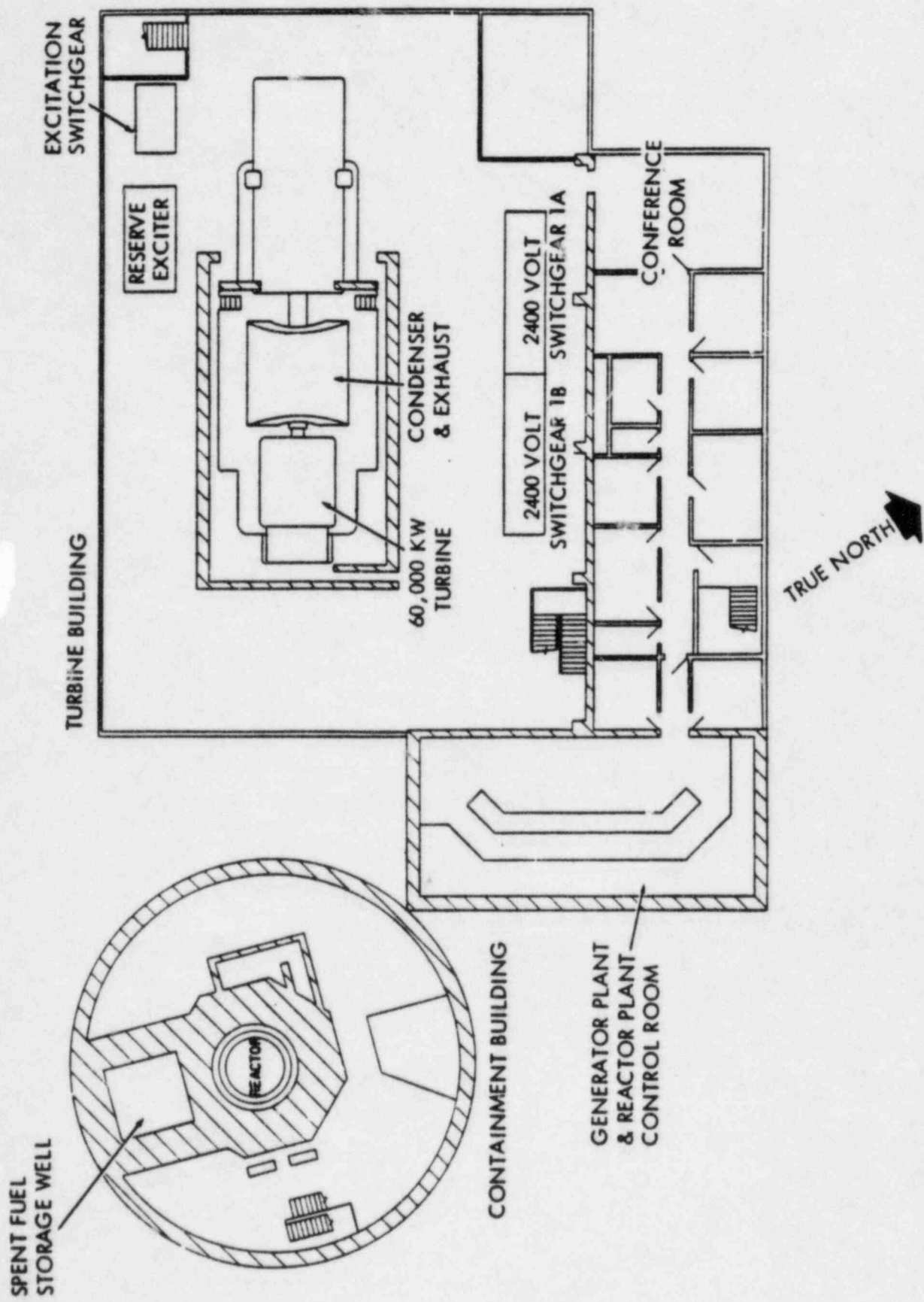
*Operate Unit  
2000-2010*

FIG. 10.4



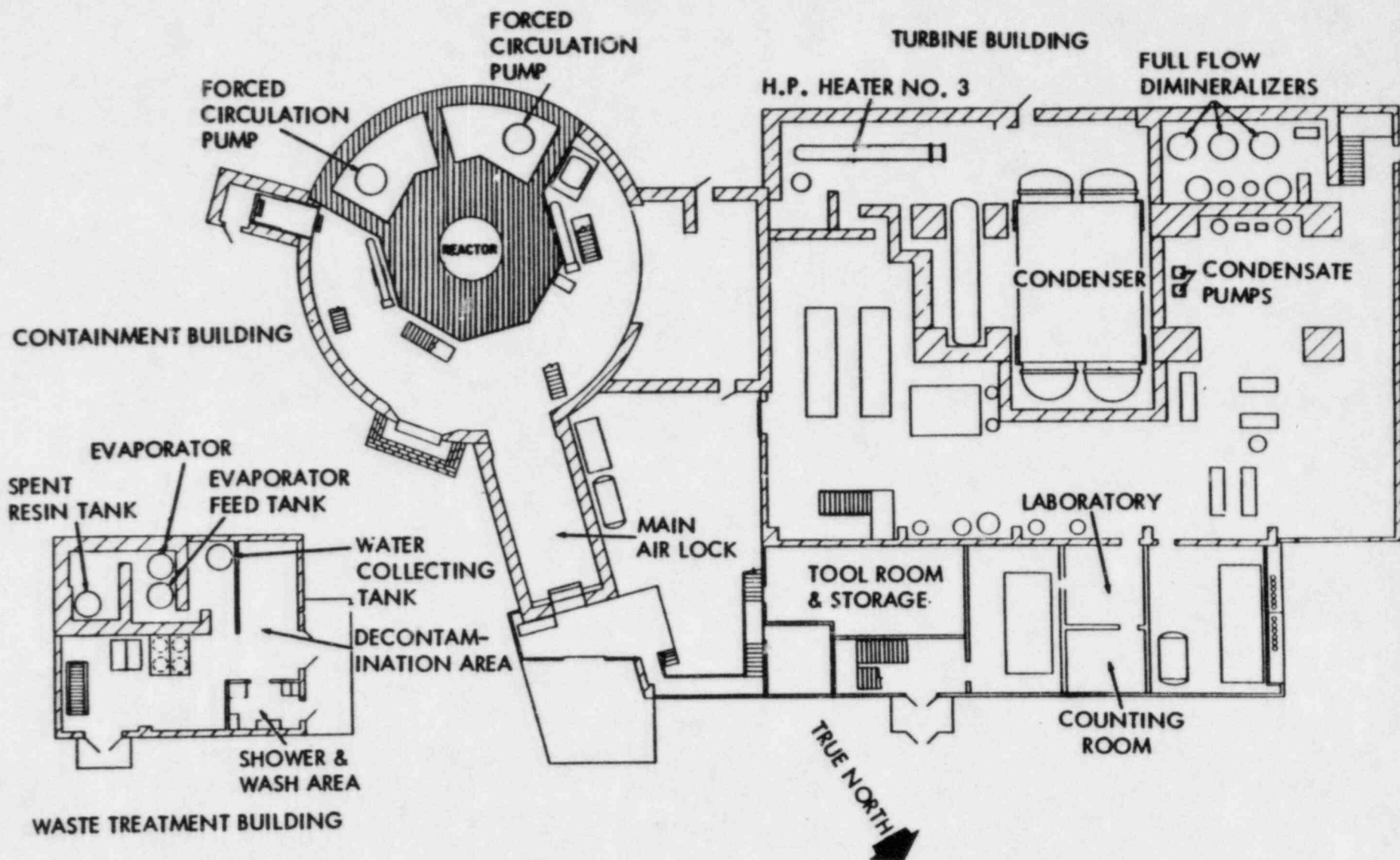


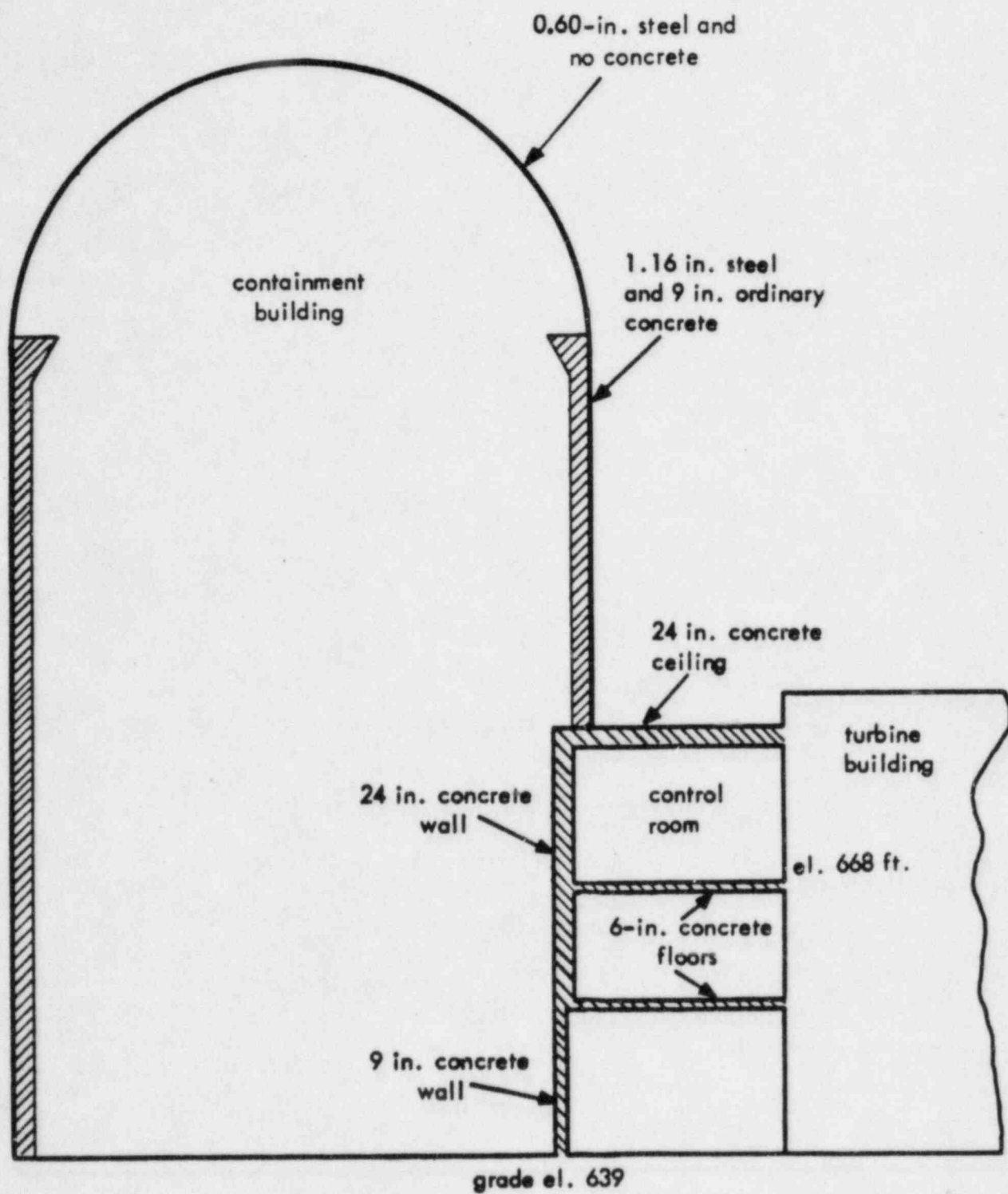
PLAN AT ELEV. 701'-0"



MAIN FLOOR OF TURBINE BLDG, EL. 668' -0"

FIG. 10.1





CONTROL ROOM SHIELDING

FIG. 10.7

Bill Marion

## DESCRIPTION OF THE ACCIDENT

### . CORE HISTORY AT ACCIDENT

- .. AVERAGE CORE EXPOSURE - 17,000 MWD/MT
- .. OPERATING POWER LEVEL - 100 PERCENT

### . EVENT

- .. LARGE BELOW-CORE UNISOLABLE BREAK
- .. HIGH PRESSURE CORE SPRAY AND AUXILIARY CORE SPRAY ACTUATE
- .. CONTAINMENT FLOODED TO CORE MID-PLANE
- .. CORE CONDITION

J. H. Homan  
No containment failure  
or bypass assumed

Compared to SERP  
LOCA

all recovery  
stall

- ... REFERENCE CASE - 100 PERCENT CLAD FAILURE, NO FUEL MELTING
- ... WORST CASE - 100 PERCENT CLAD FAILURE, 50 PERCENT FUEL MELTING
- .. EXPOSURE RATE ON OPERATING FLOOR LEVEL TWO YEARS AFTER ACCIDENT
  - ... REFERENCE CASE - 64 mREM/HR
  - ... WORST CASE - 280 mREM/HR

How are these  
calculated?

### . IMPACT OF BELOW-CORE BREAK

- .. MAXIMIZES RECOVERY COST
- .. WORST CASE CONTAINMENT ENTRY, REACTOR DEFUELING, AND DECONTAMINATION
- .. CREATES LARGEST WATER CLEANUP BURDEN - ADDED PROCESSING EQUIPMENT COSTS, ENERGY COSTS, AND HIGH SOLID WASTE SHIPPING AND BURIAL COSTS

SIGNIFICANT RELEASED RADIOACTIVE INVENTORY

AFTER TWO YEARS

<u>RADIONUCLIDE</u>	<u>100% CLADDING FAILURE; No FUEL MELT - CI</u>	<u>100% CLADDING FAILURE; 50% FUEL MELT - CI</u>
KR-85	$1.2 \times 10^3$	$1.92 \times 10^4$
SR-90	$3.7 \times 10^{-1}$	$1.86 \times 10^4$
Cs-134	$4.5 \times 10^4$	$3.94 \times 10^5$
Cs-137	$2.3 \times 10^4$	$1.97 \times 10^5$
TOTAL	$6.9 \times 10^4$	$64.4 \times 10^4$



## DESCRIPTION OF RECOVERY

### . PREPARATION

*Entry into CB after 2 years*

- .. RECOVERY ENGINEERING
- .. TEMPORARY OFFICES/CRAFT FACILITIES
- .. MOCK-UP INSTALLATION
- .. LAYDOWN FACILITY CONSTRUCTION
- .. WASTE STORAGE FACILITY CONSTRUCTION
- .. CONTAINMENT WATER PROCESSING FACILITY INSTALLATION
- .. AUGMENTED LAUNDRY FACILITY INSTALLATION
- .. CONTAINMENT VENT INSTALLATION
- .. CONTAINMENT ACCESS STRUCTURE CONSTRUCTION
- .. CONTAINMENT AIR LOCK CONSTRUCTION
- .. PROCESSING OF CONTAINMENT WATER
- .. VENTING OF CONTAINMENT
- .. FLOOD CONTAINMENT TO OPERATING FLOOR + 30 feet

### . CONTAINMENT ENTRY AND DECONTAMINATION

- .. INITIAL ENTRY
- .. INSTALL CLOSED-CIRCUIT TVS AND RAD MONITORING EQUIPMENT
- .. DECONTAMINATE ABOVE 701 FOOT LEVEL
- .. REFURBISH CRANE
- .. INSTALL CONTAMINATION CONTROL ENVELOPE
- .. REMOVE REACTOR VESSEL HEAD
- .. SEGMENT AND STORE CORE SPRAY BUNDLE
- .. EXAMINE CORE
- .. INSTALL DAMAGED FUEL STORAGE RACK
- .. PERFORM MOCK-UP TRAINING
- .. REMOVE DAMAGED FUEL AND STORE
- .. SEGMENT AND STORE VESSEL INTERNALS
- .. INSTALL RECIRCULATION NOZZLE PLUGS
- .. COMMENCE CONTAINMENT WATER DRAINING/EXPOSED AREA DECONTAMINATION
- .. DECONTAMINATE RECIRC PUMP CUBICLES VIA HATCHES
- .. COMPLETE CONTAINMENT WALL/SURFACE DECONTAMINATION

*Big Rock study  
lost too much  
in this area*

DESCRIPTION OF RECOVERY

(CONTINUED)

- . FUEL AND CORE RUBBLE DISPOSAL
  - .. REFURBISH MAIN AIR LOCK
  - .. COMMENCE CASK LOADING AND SHIPPING OF DAMAGED FUEL
- . COMMENCE CONVENTIONAL DISMANTLEMENT

## REVIEW OF RECOVERY COST ESTIMATE

### . ESTIMATING METHOD

- .. Building Block Approach
- .. Sequential Definition/Scheduling of Activities
- .. Activity Dependent Costs
- .. Period Dependent Costs
- .. Significant References
  
- ... NUREG/CR-2601
- ... Three Mile Island Unit 2 Program Reports
- ... Department of Energy Decommissioning Handbook
- ... Atomic Industrial Forum Decommissioning Study

### . SUMMARY OF POSTACCIDENT RECOVERY COSTS\*

<u>Category</u>	<u>Reference Case, 1984 \$</u>	<u>50% Fuel Melt, 1984 \$</u>	<u>Comment</u>
Plant Structures, Systems, and Structures	115,155,000	142,438,000	Cost increase factors: Recovery plan/implementation \$ 4.3 MM Fuel equipment 12.5 MM Waste disposal 6.0 MM Mock-ups 2.5 MM Supplies 1.9 MM
Disposal of Damaged Fuel	17,716,000	17,716,000	Reference case based on Scenario 3 of NUREG-2601.
Impact on Facility Decommissioning	19,171,000	19,171,000	---
Total Recovery Cost	152,042,000	179,325,000	

$\Delta = \$27,283,000$

\*25 percent contingency included.