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E. Christenbury, ELD  
 Generic Ltr. File

*J. M. Felton*

APR 1 1980

Docket Nos: 50-275  
 and 50-323

Mr. Malcolm H. Furbush  
 Vice President - General Counsel  
 Pacific Gas & Electric Company  
 77 Beale Street  
 San Francisco, California 94106

Dear Mr. Furbush:

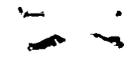
SUBJECT: POTENTIAL DESIGN DEFICIENCIES IN BYPASS, OVERRIDE, AND RESET  
 CIRCUITS OF ENGINEERED SAFETY FEATURES-DIABLO CANYON 1 AND 2

Discussion Of Deficiencies

Several instances have been reported where automatic closure of the containment ventilation/purge valves would not have occurred because the safety actuation signals were either manually overridden or bypassed (blocked) during normal plant operations. In addition, a related design deficiency with regard to the resetting of engineered safety feature actuation signals has been found at several operating facilities where, upon the reset of an ESF signal, certain safety related equipment would return to its non-safety mode.

Specifically, on June 25, 1978, Northeast Nuclear Energy Company discovered that intermittent containment purge operations had been conducted at Millstone Unit No. 2 with the safety actuation signals to redundant containment purge isolation valves (48 inch butterfly valves) manually overridden and inoperable. The isolation signals which are required to automatically close the purge valves to assure containment integrity were manually overridden to allow purging of containment with a high radiation signal present. The manual override circuitry designed by the plant's architect/engineer defeated not only the high radiation signal but also all other isolation signals to these valves. To manually override a safety actuation signal, the operator cycles the valve control switch to the closed position and then to the open position. This action energized a relay which blocked the safety signal and allowed manual operation independent of any safety actuation signal. This circuitry was designed to permit reopening of certain valves after an accident to allow manual operation of required safety equipment.

OFFICE						
SURNAME						
DATE					8.004240	520



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APR 1 1980

- 1) The overriding<sup>1</sup> of one type of safety actuation signal (e.g., particulate radiation) should not cause the blocking of any other type of safety actuation signal (e.g., iodine radiation, reactor pressure) for those valves that have no function other than containment isolation.
- 2) Physical features (e.g., key lock switches) should be provided to ensure adequate administrative controls.
- 3) A system level annunciation of the overridden status should be provided for every safety system impacted when any override is active. (See Regulatory Guide 1.47).
- 4) The following diverse signals should be provided to initiate isolation of the containment purge/ventilation system: containment high radiation, safety injection actuation, and containment high pressure (where containment high pressure is not a portion of safety injection actuation).
- 5) The instrumentation systems provided to initiate containment purge ventilation isolation should be designed and qualified to Class 1E criteria.
- 6) The overriding or resetting<sup>2</sup> of the ESF actuation signal should not cause any equipment to change position.

Accordingly, you are requested to review your protection system design to determine its degree of conformance to these criteria. You should report the results of your review to us by April 5, 1980, describing any departures from the criteria and the corrective actions to be implemented. Design departures for which no corrective action is planned should be justified.

Please advise if you have any questions on this matter.

This request for generic information was approved by GAO under blanket clearance number B180225 (R0072). This clearance expires July 31, 1980.

Sincerely,  
 Original signed by  
 John F. Stolz  
 John F. Stolz, Chief  
 Light Water Reactors Branch No. 1  
 Division of Project Management

\*See previous yellow for previous concurrence  
 cc: See next page

The following definitions are given for clarity.

<sup>1</sup>Override: The signal is still present, and it is blocked in order to perform a function contrary to the signal.

OELD

<sup>2</sup>Reset: The signal has come and gone, and the circuit is being cleared in LDDavis\* order to return it to the normal condition.

03/19/80

OFFICE	DPM: LWR #1	DPM: LWR #1	DPM: LWR #1	DRR: ADM	
SURNAME	EGHy1top: pcm	BCBuckley	JFStolz	JME: Koul	
DATE	03/28/80	03/28/80	03/28/80	03/31/80	

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author outlines the various methods used to collect and analyze the data. This includes both manual and automated techniques. The goal is to ensure that the information gathered is both reliable and comprehensive.

The third section provides a detailed breakdown of the results. It shows that there is a significant correlation between the variables studied. This finding is supported by statistical analysis and is consistent with previous research in the field.

Finally, the document concludes with a series of recommendations for future research. It suggests that further studies should be conducted to explore the underlying causes of the observed trends. This will help to refine the current model and provide more accurate predictions.

  
western union

Telegram

WDA496(1947)(1-031758M320002)PD 11/16/79 1625 1979 NOV 16 PH 7:50

ICS IPMSFSD SFO

1979 NOV 19 AM 11 31

04085 SANFRANCISCO CA 262 11-16 102P PST

PMS STUART EIZENSTAT, DLR

DOMESTIC AFFAIRS & POLICY ADVISOR

THE WHITE HOUSE

WASHINGTON DC 20500

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ON NOVEMBER 15, 1979.

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THE HON. FRANK PRESS

SCIENCE ADVISOR TO THE PRESIDENT

THE WHITE HOUSE

WASHINGTON DC 20500

B- 045187

WASHINGTON DC 20500  
THE WHITE HOUSE  
SCIENCE ADVISOR TO THE PRESIDENT  
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ON NOVEMBER 12, 1979.  
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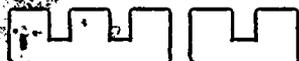
WASHINGTON DC 20500  
THE WHITE HOUSE

DOMESTIC AFFAIRS & POLICY ADVISOR  
RMS STUART EIZENSTAT, DLR

04082 SAN FRANCISCO CA 94111-1059 PST

ICS 1PM5FD 2FO

WD4496(1947)(1-03128M320005)PD 11/16/79 1652

  
western union

Telegram

AS YOU COMPLETE YOUR REVIEW OF THE KEMENY COMMISSION'S REPORT ON IMI-2 AND PREPARE RECOMMENDATIONS FOR SUBMITTAL TO THE PRESIDENT, I URGE THAT YOU CONSIDER A PROCEDURE TO PERMIT THE EARLY LICENSING OF THOSE NUCLEAR PLANTS WHICH WOULD NOW BE LICENSED BUT FOR THREE MILE ISLAND.

THERE ARE SEVERAL POWER PLANTS CURRENTLY AWAITING OPERATING LICENSES FROM THE NRC INCLUDING OUR DIABLO CANYON PLANT. THESE PLANTS WOULD IN ALL LIKELIHOOD BE OPERATING TODAY IF IT WERE NOT FOR THE ACCIDENT AND RESULTANT LICENSING DELAYS. SEVEN YEARS AGO WE FILED FOR AN OPERATING LICENSE FOR UNIT 1 AT DIABLO CANYON. THE PLANT HAS BEEN CHARACTERIZED BY THE ASLB AS THE MOST INTENSIVELY REVIEWED PLANT IN HISTORY.

WE HAVE ALREADY INITIATED CHANGES AS A RESULT OF LESSONS LEARNED.

WE HAVE ALREADY INITIATED CHANGES AS A RESULT OF LESSONS LEARNED

REVIEWED PLANT IN HISTORY.

PLANT HAS BEEN CHARACTERIZED BY THE ASLR AS THE MOST INTENSIVELY  
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FOR THE ACCIDENT AND RESULTANT LICENSING DELAYS. SEVEN YEARS AGO  
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THREE MILE ISLAND.

OF THOSE NUCLEAR PLANTS WHICH WOULD NOW BE LICENSED BUT FOR

I URGE THAT YOU CONSIDER A PROCEDURE TO PERMIT THE EARLY LICENSING

ON TMI-2 AND PREPARE RECOMMENDATIONS FOR SUBMITTAL TO THE PRESIDENT,

AS YOU COMPLETE YOUR REVIEW OF THE KEMENY COMMISSION'S REPORT

B-045188

**WU**  
western union

**Telegram**

AT THREE MILE ISLAND. FURTHER CHANGES NECESSARY TO MEET THE RECOMMENDATIONS OF THE KEMENY COMMISSION AND THE NRC LESSONS LEARNED TASK FORCE CAN BE PROCESSED JUST AS THEY WILL BE DONE AT PRESENTLY OPERATING PLANTS.

WE NEED THE 2200 MEGAWATTS THE PLANT WILL PROVIDE TO ASSURE RELIABLE SERVICE. THE PLANT WILL ENABLE US TO REDUCE OUR DEPENDENCE UPON IMPORTED OIL BY 20 MILLION BARRELS A YEAR WHEN BOTH UNITS ARE IN OPERATION. FURTHERMORE, DELAY COSTS OUR CUSTOMERS OVER \$60 MILLION A MONTH IN ADDITIONAL COSTS.

THANK YOU FOR YOUR CONSIDERATION OF THIS IMPORTANT MATTER.

BARTON W. SHACKELFORD

PRESIDENT AND CHIEF OPERATING OFFICER

PACIFIC GAS AND ELECTRIC COMPANY

77 BEALE STREET

77 BEALE STREET

PACIFIC GAS AND ELECTRIC COMPANY

PRESIDENT AND CHIEF OPERATING OFFICER

BARTON W. CHACKELFORD

THANK YOU FOR YOUR CONSIDERATION OF THIS IMPORTANT MATTER.

A MONTH IN ADDITIONAL COSTS.

OPERATION. FURTHERMORE, DELAY COSTS OUR CUSTOMERS OVER 200 MILLION

IMPORTED OIL BY 20 MILLION BARRELS A YEAR WHEN BOTH UNITS ARE IN

SERVICE. THE PLANT WILL ENABLE US TO REDUCE OUR DEPENDENCE UPON

WE NEED THE 2300 MEGAWATTS THE PLANT WILL PROVIDE TO ASSURE RELIABLE

PRESENTLY OPERATING PLANTS.

LEARNED TASK FORCE CAN BE PROCESSED JUST AS THEY WILL BE DONE AT

RECOMMENDATIONS OF THE KEMENY COMMISSION AND THE NRC LESSONS

AT THREE MILE ISLAND. FURTHER CHANGES NECESSARY TO MEET THE

B-045189

  
western union

Telegram

SAN FRANCISCO CA 94106

NNNN

SAN FRANCISCO CA 94102

NAME

B- 045190

On September 8, 1978, the staff was advised that, as a matter of routine, Salem Unit No. 1 had been venting the containment through the containment ventilation system valves to reduce pressure. In certain instances this venting has occurred with the containment high particulate radiation monitor isolation signal to the purge and pressure-vacuum relief valves overridden. The override of this containment isolation signal was accomplished by re-setting the train A and B reset buttons. Under these circumstances, six valves in the containment vent and purge systems could be opened with the radiation isolation signal present. This override was performed after verifying that the actual containment particulate levels were acceptable for venting. The licensee, after further investigation of this practice, determined that the reset of the particulate radiation monitor alarm also overrides the containment isolation signal to the purge valves such that the purge valves would not have automatically closed on an emergency core cooling system (ECCS) safety injection signal.

A related design deficiency was discovered during a review of system operation following a recent unit trip and subsequent safety injection at North Anna No. 1. Specifically, it was found that certain equipment important to safety (for example, control room habitability system dampers) would return to its non-safety mode following the reset of an ESF signal.

In addition, many utilities do not have safety grade radiation monitors to initiate containment isolation.

Safety Significance

The overriding of certain containment ventilation isolation signals could also bypass other safety actuation signals and thus prevent valve closure when the other isolation signals are present. Although such designs may be acceptable, and even necessary, to accomplish certain reactor functions, they are generally unacceptable where they result in the unnecessary bypassing of safety actuation signals. Where such bypassing is also inadvertent, a more serious situation is created especially where there is no bypass indication system to alert the operator.

Where the resetting of ESF actuation signals, such as safety injection, directly causes equipment important to safety to return to its non-safety mode, protective actions of the affected systems could be prematurely negated when the associated actuation signal is reset. Prompt operator action would be required to assure that the necessary equipment is returned to its emergency mode.

The use of a non-safety grade monitor to initiate containment isolation could seriously degrade the reliability of the isolation system.

Staff Position

It is our position that, in addition to other applicable criteria, the following should be satisfied for all operating license applications currently under review:

OFFICE ▶	.....	.....	.....	.....	.....
SURNAME ▶	.....	.....	.....	.....	.....
DATE ▶	.....	.....	.....	.....	.....



100-100000

100-100000

Mr. Malcolm H. Furbush

- 3 -

- 1) The overriding<sup>1</sup> of one type of safety actuation signal (e.g., particulate radiation) should not cause the blocking of any other type of safety actuation signal (e.g., iodine radiation, reactor pressure) for those valves that have no function other than containment isolation.
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- 5) The instrumentation systems provided to initiate containment purge ventilation isolation should be designed and qualified to Class 1E criteria.
- 6) The overriding or resetting<sup>2</sup> of the ESF actuation signal should not cause any equipment to change position.

Accordingly, you are requested to review your protection system design to determine its degree of conformance to these criteria. You should report the results of your review to us by April 15, 1980, describing any departures from the criteria and the corrective actions to be implemented. Design departures for which no corrective action is planned should be justified.

Please advise if you have any questions on this matter.

Sincerely,

John F. Stolz, Chief  
Light Water Reactors Branch No. 1  
Division of Project Management

cc: See next page

The following definitions are given for clarity.

<sup>1</sup>Override: The signal is still present, and it is blocked in order to perform a function contrary to the signal.

<sup>2</sup>Reset: The signal has come and gone, and the circuit is being cleared in order to return it to the normal condition.

OFFICE	DPM: LWR #1	DPM: LWR #1	DPM: LWR #1		
SURNAME	EGG, J. Con: pcm	BC Buckley	JF Stolz		
DATE	03/14/80	03/14/80	03/14/80		



Mr. Malcolm H. Furbush

APR 1 1980

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11-11-73

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Mr. Malcolm H. Furbush

APR 1 1980

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