



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

Central Files/  
Docket  
Files

December 13, 1996

Entergy Operations, Inc.  
ATTN: Michael B. Sellman  
Vice President, Operations  
Waterford, P.O. Box B  
Killona, LA 70066

SUBJECT: ENGINEERING INSPECTION AT WATERFORD 3 (NRC INSPECTION REPORT NO. 50-382/96-202)

Dear Mr. Sellman:

On October 10, 1996, the U.S. Nuclear Regulatory Commission (NRC) completed an engineering inspection at Waterford 3. The enclosed report presents the results of that inspection. The primary objective of the inspection was to conduct a safety system functional review of the component cooling water system (CCWS), auxiliary component cooling water system (ACCWS), and their support systems. The inspection team also evaluated your safety assessment and corrective action processes, design control programs and procedures, and engineering support for the station. At the exit meeting on October 10, 1996, the inspection team discussed its findings with you and members of your staff. Subsequently, on October 15 and 21, 1996, conference calls were held between members of the NRC staff and your staff to discuss issues associated with tornado missile protection and emergency diesel generator surveillance testing.

Overall, the team determined that the Waterford 3 engineering staff demonstrated good technical competence and familiarity with plant operations. However, the team noted deficiencies in the implementation of design control programs and procedures, and weak technical evaluations in support of plant operations. The technical evaluations or calculations to support the design bases were not always available. In some cases, the actual design values were inconsistent with those stated in the final safety analysis report (FSAR). The team identified weaknesses in both original design and recent engineering work. However, none of these issues resulted in system inoperability.

Through its walkdown, the inspection team identified components that may not be protected from tornado missiles. The team was concerned that your staff had previously identified this issue but the corrective actions did not adequately address the conditions. This issue indicated a lack of understanding of the design basis of the plant. We understand that your staff performed operability evaluations for continued operation. We also understand that you have committed to implement plant modifications to correct the unprotected cables and conduit installations by December 16, 1996, and to perform a comprehensive review of the design and licensing bases for tornado

230066

**NRC FILE CENTER COPY**

9612230211 961213  
PDR ADDOCK 05000382  
G PDR

11/16/96

M.B. Sellman

-2-


missile protection for Waterford 3 by January 31, 1997. These actions are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports.

The team determined that earlier root cause and operational experience engineering evaluations did not prevent problem recurrence. However, recent evaluations were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Many good issues were identified through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the self-assessments did not identify many of the issues raised by the team.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C.P. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,



Robert M. Gallo, Chief  
Special Inspection Branch  
Division of Inspection and Support Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

Distribution:

Docket File 50-382

PSIB R/F

FPGillespie, NRR

RMGallo, NRR

DPNorkin, NRR

CERossi, AEOD

JWRoe

WDBeckner

CPPatel

CMHawes

LEKeller, SRI

MEPoteat

Regional Administrators

Regional Division Directors

Inspection Team

PUBLIC

ACRS (3)

OGC (3)

IS Distribution

missile protection for Waterford 3 by January 31, 1997. These actions are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports.

The team determined that earlier root cause and operational experience engineering evaluations did not prevent problem recurrence. However, recent evaluations were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Many good issues were identified through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the self-assessments did not identify many of the issues raised by the team.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C.P. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Original signed by:

Robert M. Gallo, Chief  
Special Inspection Branch  
Division of Inspection and Support Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |               |  |             |  |             |  |            |  |          |  |
|--------|---------------|--|-------------|--|-------------|--|------------|--|----------|--|
| OFFICE | PSIB:DISP     |  | PSIB:DISP   |  | PIPB:DISP   |  | PDIV-1:DPR |  | RIV      |  |
| NAME   | RKMathew:sf * |  | MBranch *   |  | TD'Angelo * |  | CPatel *   |  | DAcker * |  |
| DATE   | 11/26/96      |  | 11/25/96    |  | 11/26/96    |  | 11/26/96   |  | 11/26/96 |  |
| OFFICE | PSIB:DISP     |  | PDIV-1:DPR  |  | PSIB:DISP   |  |            |  |          |  |
| NAME   | DPNorkin *    |  | WDBeckner * |  | RMGallo     |  |            |  |          |  |
| DATE   | 12/03/96      |  | 11/26/96    |  | 12/13/96    |  |            |  |          |  |

OFFICIAL RECORD COPY

missile protection for Waterford 3 by January 31, 1997. These actions are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports.

The team determined that earlier root cause and operational experience engineering evaluations did not prevent problem recurrence. However, recent evaluations were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Many good issues were identified through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the self-assessments did not identify many of the issues raised by the team.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C.P. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Robert M. Gallo, Chief  
Special Inspection Branch  
Division of Inspection and Support Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |               |  |             |  |             |   |            |  |          |  |
|--------|---------------|--|-------------|--|-------------|---|------------|--|----------|--|
| OFFICE | PSIB:DISP     |  | PSIB:DISP   |  | PIPB:DISP   |   | PDIV-1:DPR |  | RIV      |  |
| NAME   | RKMathew:sf * |  | MBranch *   |  | TD'Angelo * |   | CPatel *   |  | DAcker * |  |
| DATE   | 11/26/96      |  | 11/25/96    |  | 11/26/96    |   | 11/26/96   |  | 11/26/96 |  |
| OFFICE | PSIB:DISP     |  | PDIV-1:DPR  |  | PSIB:DISP   | C |            |  |          |  |
| NAME   | DPNorkin *    |  | WDBeckner * |  | RMGallo     |   |            |  |          |  |
| DATE   | 12/03/96      |  | 11/26/96    |  | 12/ /96     |   |            |  |          |  |

OFFICIAL RECORD COPY

missile protection for Waterford 3 by January 31, 1997. These actions are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports.

The team determined that earlier root cause and operational experience engineering evaluations did not prevent problem recurrence. However, recent evaluations were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Many good issues were identified through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the self-assessments did not identify many of the issues raised by the team.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C.P. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Robert M. Gallo, Chief  
Special Inspection Branch  
Division of Inspection and Support Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |               |  |             |  |             |   |            |  |          |  |
|--------|---------------|--|-------------|--|-------------|---|------------|--|----------|--|
| OFFICE | PSIB:DISP     |  | PSIB:DISP   |  | PIPB:DISP   |   | PDIV-1:DPR |  | RIV      |  |
| NAME   | RKMathew:sf * |  | MBranch *   |  | TD'Angelo * |   | CPatel *   |  | DAcker * |  |
| DATE   | 11/26/96      |  | 11/25/96    |  | 11/26/96    |   | 11/26/96   |  | 11/26/96 |  |
| OFFICE | PSIB:DISP     |  | PDIV-1:DPR  |  | PSIB:DISP   | C |            |  |          |  |
| NAME   | DPNorkin *    |  | WDBeckner * |  | RMGallo     |   |            |  |          |  |
| DATE   | 12/03/96      |  | 11/26/96    |  | 12/ /96     |   |            |  |          |  |

OFFICIAL RECORD COPY

missile protection for Waterford 3 by January 31, 1997. These actions, are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports, as well as weaknesses in the original design and recent engineering work.

The team determined that earlier root cause and operational experience engineering evaluations reviewed did not prevent problem recurrence. However, recent evaluations were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Many good issues were identified through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the self-assessments did not identify many of the issues raised by the team.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C.P. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Robert M. Gallo, Chief  
Special Inspection Branch  
Division of Inspection and Support Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |               |             |             |            |          |
|--------|---------------|-------------|-------------|------------|----------|
| OFFICE | PSIB:DISP     | PSIB:DISP   | PIPB:DISP   | PDIV-1:DPR | RIV      |
| NAME   | RKMathew:sf * | MBranch *   | TD'Angelo * | CPatel *   | DAcker * |
| DATE   | 11/26/96      | 11/25/96    | 11/26/96    | 11/26/96   | 11/26/96 |
| OFFICE | PSIB:DISP     | PDIV-1:DPR  | PSIB:DISP   | C          |          |
| NAME   | DPNorkin      | WDBeckner * | RMGallo     |            |          |
| DATE   | 12/ /96       | 11/26/96    | 12/ /96     |            |          |

OFFICIAL RECORD COPY

missile protection for Waterford 3 by January 31, 1997. These actions, are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports, as well as weaknesses in the original and recent engineering work.

Earlier root cause and operational experience engineering evaluations reviewed did not prevent problem recurrence. However, recent evaluations reviewed were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Your recent self-assessments of the corrective action process, and engineering and technical supports were good. Many good issues were identified for resolution through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the safety system self-assessments did not identify many of the issues raised by the team. The design issues identified by the team raise concern regarding the extent of unknown problems in other systems. The team determined that your safety system assessments and corrective actions needed improvement.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Robert M. Gallo, Chief  
Special Inspection Branch  
Division of Inspection and Support Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |               |  |            |  |             |   |            |  |          |  |
|--------|---------------|--|------------|--|-------------|---|------------|--|----------|--|
| OFFICE | PSIB:DISP     |  | PSIB:DISP  |  | PIPB:DISP   |   | PDIV-1:DPR |  | RIV      |  |
| NAME   | RKMathew:sf * |  | MBranch *  |  | TD'Angelo * |   | CPatel *   |  | DAcker * |  |
| DATE   | 11/26/96      |  | 11/25/96   |  | 11/26/96    |   | 11/26/96   |  | 11/26/96 |  |
| OFFICE | PSIB:DISP     |  | PDIV-1:DPR |  | PSIB:DISP   | C |            |  |          |  |
| NAME   | DPNorkin      |  | WBeckner * |  | RMGallo     |   |            |  |          |  |
| DATE   | 11/ /96       |  | 11/26/96   |  | 11/ /96     |   |            |  |          |  |

OFFICIAL RECORD COPY



missile protection for Waterford 3 by January 31, 1997. These actions, are described in Entergy's correspondence (W3F1-96-0188) to the NRC dated October 21, 1996.

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing document changes and condition reports, as well as weaknesses in the original and recent engineering work.

Earlier root cause and operational experience engineering evaluations reviewed did not prevent problem recurrence. However, recent evaluations reviewed were effective in identifying and correcting problems. In some cases, followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Your recent self-assessments of the corrective action process, and engineering and technical supports were good. Many good issues were identified for resolution through the safety system self-assessments of the ultimate heat sink and emergency feedwater (EFW). However, the safety system self-assessments did not identify many of the issues raised by the team. The design issues identified by the team raise concern regarding the extent of unknown problems in other systems. The team determined that your safety system assessments and corrective actions needed improvement.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Robert M. Gallo, Chief  
 Special Inspection Branch  
 Division of Inspection and Support Programs  
 Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |                     |                       |                      |                  |                |
|--------|---------------------|-----------------------|----------------------|------------------|----------------|
| OFFICE | PSIB:DISP <i>RW</i> | PSIB:DISP             | PIPB:DISP            | PDIV-1:DPR       | RIV <i>ADK</i> |
| NAME   | RKMathew:sf         | MBranch *             | TD'Angelo <i>ADK</i> | CPatel <i>CP</i> | DAcker         |
| DATE   | 11/26/96            | 11/ /96               | 11/26/96             | 11/26/96         | 11/26/96       |
| OFFICE | PSIB:DISP           | PDIV-1:DPR <i>WDB</i> | PSIB:DISP            | C                |                |
| NAME   | DPNorkin            | WDBeckner             | RMGallo              |                  |                |
| DATE   | 11/ /96             | 11/26/96              | 11/ /96              |                  |                |

The 10 CFR 50.59 evaluations for the plant modifications were generally adequate. However, the team identified examples of inadequate 10 CFR 50.59 evaluations performed in support of calculations, licensing design changes and condition reports, as well as weaknesses in the original and recent engineering work. Followup and corrective actions for degraded or non-conforming conditions were not always timely or thorough in addressing the problem areas. Recent root cause evaluations reviewed were effective in identifying and correcting problems. However, earlier root cause evaluations reviewed did not prevent problem recurrence. Several earlier operational experience engineering evaluations of industry information were weak in addressing the issues. The engineering staff was not meeting the established timeliness goals for corrective action evaluation and implementation, and the safety system self-assessment of the ultimate heat sink and emergency feedwater (EFW) did not identify many of the issues raised by the team.

The design issues identified by the team raise concern regarding the extent of unknown problems in other systems. In addition, the team determined that your safety system assessments and corrective actions needed improvement.

The team recognizes that you have established a "focus plan" and implemented recent management changes to address various issues at Waterford 3. However, the effectiveness of these initiatives were not evident at the time of the inspection.

No response to this letter is required. The NRC Region IV Office will issue any enforcement actions resulting from this inspection. In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosure will be placed in the NRC Public Document Room. If you have any questions about this inspection, please contact the NRC Project Manager, Mr. C. Patel, or the inspection team leader, Mr. R.K. Mathew. Messrs. Patel and Mathew can be reached at (301) 415-3025 and (301) 415-2965, respectively.

Sincerely,

Robert M. Gallo, Chief  
 Special Inspection Branch  
 Division of Inspection and Support Programs  
 Office of Nuclear Reactor Regulation

Docket No.: 50-382

Enclosure: Inspection Report No. 50-382/96-202

cc w/encls: See page 3

\* See previous concurrence

DOCUMENT NAME: G:\WATER.RPT

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

|        |             |            |           |            |         |
|--------|-------------|------------|-----------|------------|---------|
| OFFICE | PSIB:DISP   | PSIB:DISP  | PIPB:DISP | PDIV-1:DPR | RIV     |
| NAME   | RKMathew:sf | MBranch    | TD'Angelo | CPatel     | DAcker  |
| DATE   | 11/ /96     | 11/25/96   | 11/ /96   | 11/ /96    | 11/ /96 |
| OFFICE | PSIB:DISP   | PDIV-1:DPR | PSIB:DISP | C          |         |
| NAME   | DPNorkin    | WDBeckner  | RMGallo   |            |         |
| DATE   | 11/ /96     | 11/ /96    | 11/ /96   |            |         |