NSS- 3

SPR 533

TITLE Loss of FW Incident (ALL B&W PLANTS)

RELATED SPRs _____

This SPR has been reviewed by Task Engineering Groups and is applicable to NSS- _____. The following is the status and/or resolution of this SPR on other contracts.

REMARKS

Action complete. See attached

ACTION COMPLETE ON ALL CONTRACTS

NSS- _____

BECHTEL NICOR

NSS - 03 SPR 533

Loss of FW Incident 5-18-73

Isolated Pressure Switch on Loss of Main Feed Pump - No Evidence Feed Pump Start -

NSS - 11 - No Problem
NSS - 03 - Corrected -
NSS - 04 - 18-00-00397F07
NSS - 09 - 18-00-00379 05
NSS - 08 - 18-00-00017C15
NSS - 05 - 18-00-00751D02
NSS - 06 - Not Found
NSS - 07 - 18-00-00413C01
NSS - 14 - 18-00-00137F12 (162F11)
NSS - 12 - 01-001-02-5002NC00
NSS - 13 - 01-001-02-5005NC00

The above is a list of AE prints that will require review for sensor location to insure non isolation - I believe that all contacts in testing around the time of SPR origination have site checked and corrected if required. Contacts listed above have been reviewed (AE P&ID drw.) and switch/xmitter locations are free of Cconfe problem.

F. N. Tinker
1-15-75

SPR CROSS-CONTRACT IMPLEMENTATION

ORIGINATING CONTRACT NSS ~~533~~ 3 SPR #533

TITLE: LOSS OF FEED WATER INCIDENT

FOR IMPLEMENTATION ON NSS ALL

TASK ENGINEER

IMPLEMENT RESOLUTION: X YES ____ NO

IF YES, PRIORITY: X DIRECTLY AFFECTS SYSTEM AND PLANT RELIABILITY
____ IMPROVES SYSTEM PERFORMANCE
____ COULD POSSIBLY AFFECT SYSTEM AND PLANT RELIABILITY

BRIEF DESCRIPTION OF RESOLUTION:

CHECK SECONDARY PLANT P&ID FOR LOCATION OF TAP, RELOCATE IF NECESSARY

IF NO, REASON FOR NOT, IMPLEMENTING:

Must see
ART McBRIDE → TASK ENGINEER'S SIGNATURE

PROJECT MANAGER

IMPLEMENT: ____ YES ____ NO

ESTIMATED DATE FOR IMPLEMENTATION ____

IF NO, REASON FOR NOT IMPLEMENTING:

PROJECT MANAGER'S SIGNATURE

NSS- 3
SPR 533

TITLE Loss of Feed Water Flow incident

RELATED SPRs

This SPR has been reviewed by Task Engineering Groups and is applicable to NSS- 04 — D14. The following is the status and/or resolution of this SPR on other contracts.

REMARKS This is a generic problem. Upon loss of both Fd. pumps with isolation values shut there should be a turbine trip.

NSS-3 — Has trip now

Letter sent to all P.M's to inform Cust. of this potential problem by B.A. Karnosh. (He reports all cust. have been notified).

NSS- 4&9

has trip.

Generically closed LLB

NSS- 5&6
Per J.D. Phinney Mat Ed & Jersey Central has turbine trip

NSS- 7 - Informed Clyde Barksdale Letter has not been sent yet. Ernie Hartlingen A&L report

NSS- 8 - Letters have been sent to cust. Taken care of by Fred R. Faust says problem not applicable
Land Attach DATE NOV 1974

NSS- 11 - Per Roger Maggs cust. has been notified.

NSS- 12&13 E. Coppola will revise procedures via letter from Winks on same proble from A P+L.

NSS- 14 - Letter has been sent to cust.

Refer to card index for status

NSS 3

SPR 533

SPR APPLICABILITY REVIEW

FEB 14 1974

TO: B A Karasche

FROM: D. L. Allison

Please review the attached SPR for applicability to other contracts. This is a general review and is intended to eliminate sending commitments to every task engineer in determining applicability.

Task Engineer's Comments:

Bruce, Please return SPR, and include in reply why not or why applicable.

The SPR is applicable to all Contracts. Recommendation has already been made to initiate Turbine trip and Emergency Feed on a positive signal indicating loss of main feedwater. Recent letter to R L Pittman on SPR 158 (NSS-4) also re-emphasizes the need to check out Emergency feed option.

Task Engineer: Bak.

Return to: D L Allison

H. Worsham

Return to ESW

TRANSMITTAL SLIP

File MSS- 3

12M2-SPT- 533

FIELD OPERATIONS SITE PROBLEM REPORT

To _____ for Action

CONTRACT 620-00 - 03

SPR 533

TITLE LOSS OF FW INCIDENT

To R J McConnell - S.R.M. (2) For Information

J. Kaelin

J. Kennedy

J. Pinkney

K. Suhrke

DATE 6-1-73

Date Reply to Be Submitted To Nuclear Service Support Engineer

Action Requested: DUKE has moved the pressure sensing location upstream (Feed Pump discharge) to preclude any possibility of the check valve interfering with pressure decay. The 1" bypass valve has also been opened.

R. F. Pittman
Nuclear Service Support Engineer

cc: C. E. Kultysch
E. G. Ward
H. M. Ellis
R. T. Schoner
N. S. Ambrey
J. McFarland
C. C. Plunkett - Contract Admin.
Central Engineering Files
E. V. DeCarli - Quality Assurance
H. Worsham
T. D. Carlton
G. Quale

MAN-HOUR LIMITS _____

COST LIMITS _____

CHARGE No. _____

APPROVED: _____
Project Manager

PROBLEM REPORT — BABCOCK & WILCOX-NPG

OWNER Duke Power Company | CONTRACT NO. NOS-3 | SPR NO. 533 | SPR REV NO. 0

VENDOR | P.O. NO. | COMP. NO. 22 | GROUP NO. 02 | SEQ NO. 01

PRIMARY DOCUMENTS: SPEC NOS. | PRIORITY

DWG NO. | EQUIP CODE/LEVEL/DATE

QA LEVEL | QA SPEC NO.

SITE ENGINEER	EARLY START DATE	ACTUAL START DATE	REQ'D COMP. DATE
E. Rinehart / J.D. Phinney			

TITLE (MAX. 30 SPACES) Loss of FW Incident (5/16/73)

DESCRIPTION OF PROBLEM

See attachment.

STATUS-ACTION TO DATE INCLUDING PERSONS CONTACTED, COMMITMENTS MADE, ETC.

1. Conducted a test to establish why the Emergency FW pump did not start.

2. Opened bypass around FW pump discharge valves.

FURTHER ACTION REQUIRED BY OTHER THAN SITE PERSONNEL

Evaluate system transient. (Reactimeter tape sent to Lynchburg.)

RECOMMENDED ACTION

1. Provide positive means of sensing loss of FW pumps to initiate Emergency FW flow and main turbine trip. (Customer)

2. Evaluate the SZM failure and correct. (CUSTOMER)

3. ADVISE OTHER CONTRACTS OF THIS PROBLEM (N.S)

APPROVAL

TITLE	ORIGINAL SIGNATURE	DATE
ORIGINATOR	G.D. Purvis	5/18/73
SITE CONSTR. REP.		
SITE OPER. MGR.	R.F. McConnell	5/18/73
NS SUPPORT ENGR.	R.F. Pittman	5/31/73
PROJECT MANAGER		

DOCUMENTS AFFECTED — ATTACHMENT NO.

- ☐ Drawings
- ☐ Proc. Specs
- ☐ Instr. Books
- ☐ Operating Procedures
- ☐ Tech. Specs
- ☐ PSAR/FSAR
- ☐
- ☐ Recommended Site Change

Field Change Req ☐

Field Change No.

DISTRIBUTION

SITE OPS MANAGER
PROJECT MANAGER
N.S. SUPPORT ENGR.
COGNIZANT ENGR.
CONTRACT ADMIN.
NPG QA
FILE 12M2 NOS 3 SPRS 3

Cost Category ☐ Main ☐ ☐ ☐ ☐ ☐ | Auth Charge No.

RESPONSIBILITY ASSIGN. DUKE

Date Completed | By

OTHER CONTRACTS AFFECTED

DEVIATIONS
☐ NONE
☐ SEE REV.

LOSS OF FW INCIDENT (5/16/73)

Description of Problem

At approximately 1540 hrs. the "A" main FW pump tripped due to loss of suction pressure. Sequence of events as follows:

1. Loss of all condensate booster pumps (operator error).
2. Main FW pump trip.
3. Loss of OTSG water inventory.
4. RCS temperature and pressure high.
5. Electromatic relief valve lifted.
6. Reactor trip on high pressure.
7. Main turbine trip.
8. Emergency FW pump started manually (auto start command not received).

Two automatic actions did not occur. The Emergency FW pump did not start on loss of FW pumps and the main turbine did not trip on loss of FW pumps. The device to initiate these actions is a pressure sensor on the main FW header downstream of the FW pump discharge valves and upstream of the FW line RB penetration check valves. The FW pump discharge valve automatically closed on FW pump trip and isolated the section of FW header that the pressure sensor is located in. The header remained above the 800 psig setpoint which, if reached, would have started the emergency FW pump (Main turbine trip setpoint is 700 psig.) A 1" bypass around the FW pump discharge valves is provided, but the bypass valve was closed.

Analysis of this incident is complicated by the failure of the Sequence of Events Monitor to log real time correctly. At the time of the FW pump trip, an error of ~30 minutes occurred.

Attached are system parameter curves produced from reactimeter data.

JDF/attachment.

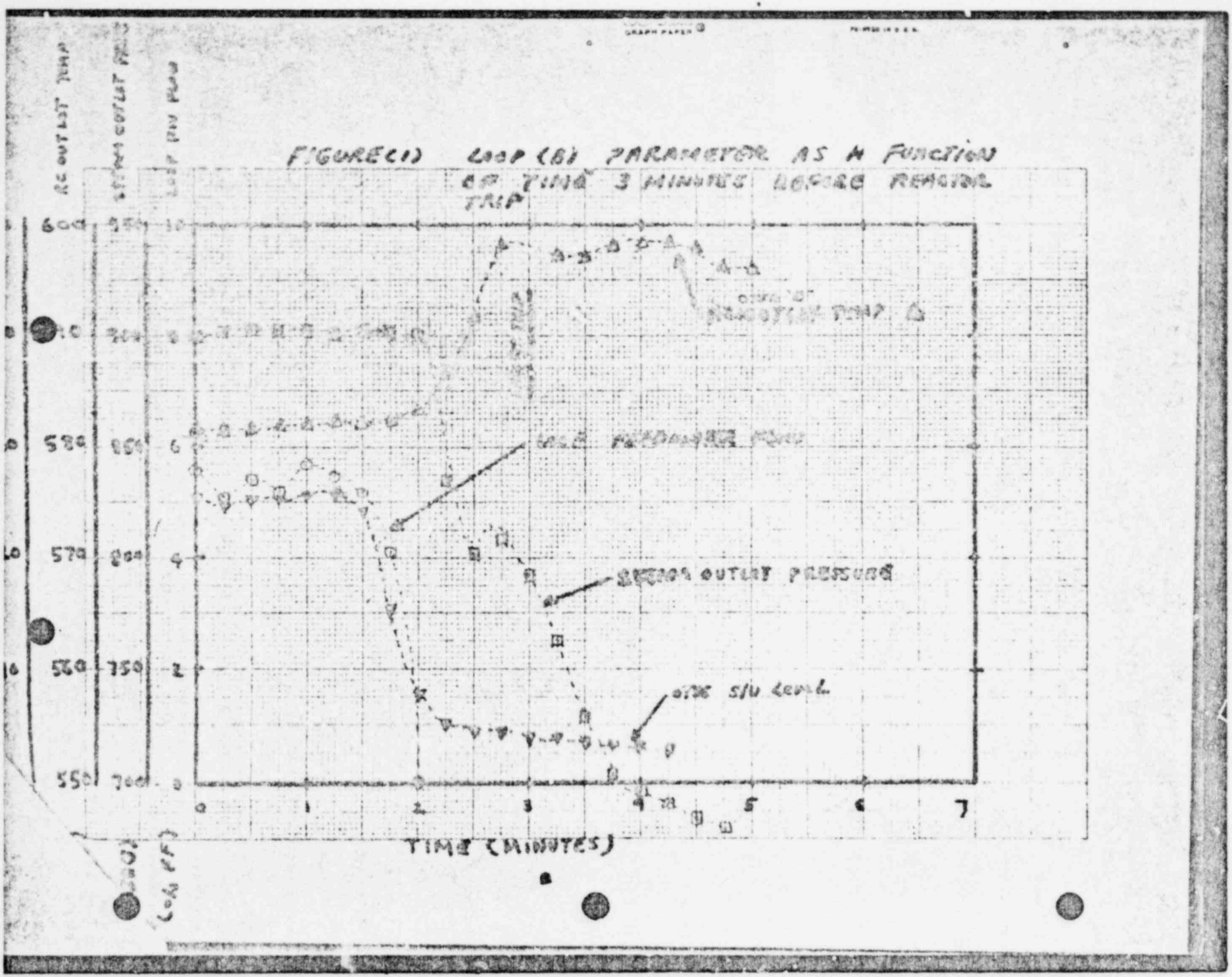

FIGURE (1) LOOP (B) PARAMETER AS A FUNCTION OF TIME 3 MINUTES BEFORE REACTOR TRIP

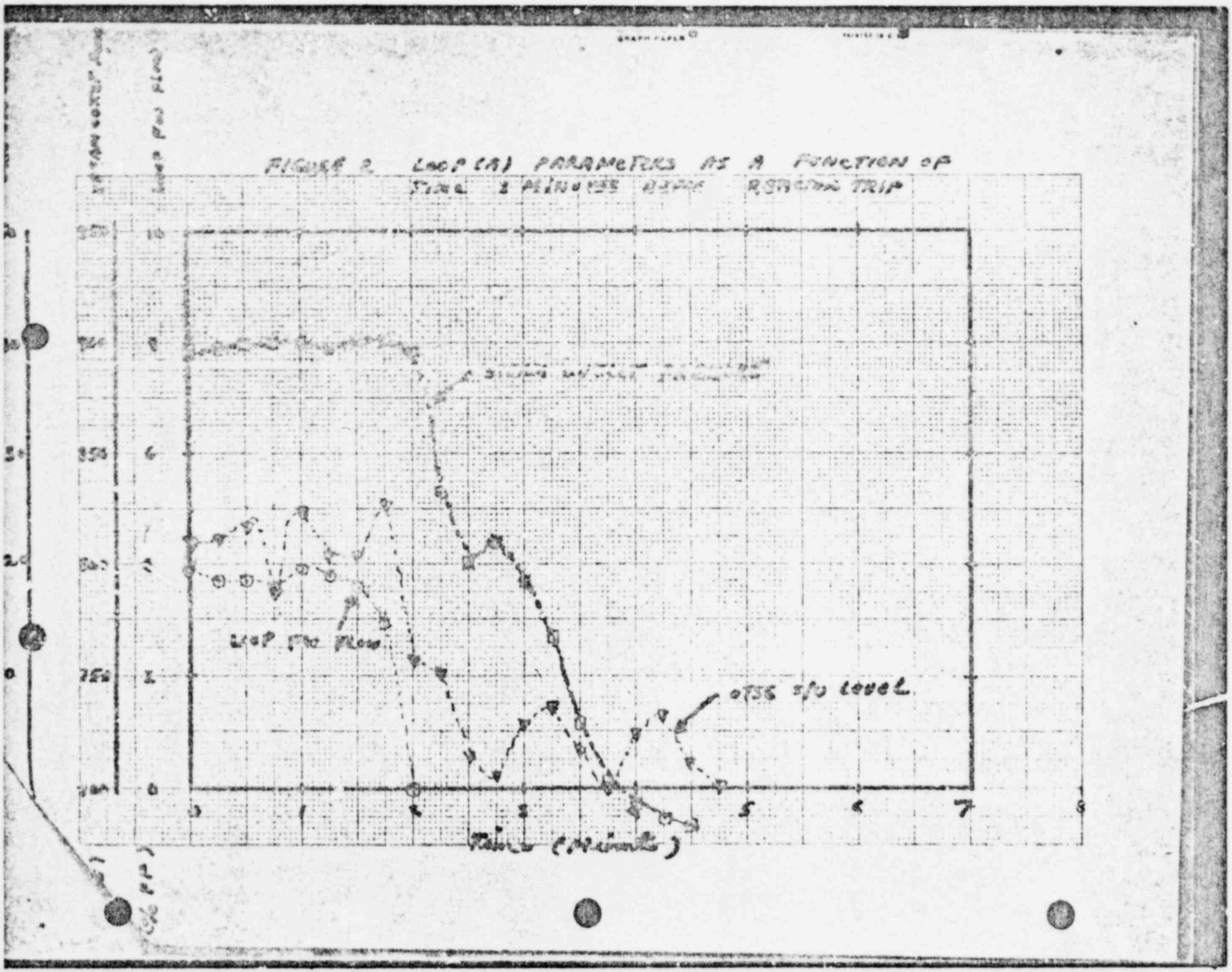
FIGURE 2 LOOP (A) PARAMETERS AS A FUNCTION OF
TIME FOLLOWING A TURBINE TRIP
LOOP (A) FLOW
OTSG S/G LEVEL
TIME (minutes)

TRANSMITTAL SLIP

FIELD OPERATIONS SITE PROBLEM REPORT

*** CLEARED ***

To R. J. McConnell For Information

J. D CARLTON

G. E. Kulynych - Sr. Project Manager

C. C. Plunkett - Contract Admin.

Central Eng'neering Files

E. V. DeCarli - Quality Assurance

FILE: 1242
Contract 620-00 -03

SPR 533

TITLE LOSS OF EW INCIDENT

DATE 8/27/73

The attached, cleared SPR is submitted for your information.

TO:
- ✓ J. N. Kaelin-Arkansas
- ✓ J. P. Kennedy-SMUD
- ✓ K. E. Suhrke
- ~~H. J. Worsham~~
- ✓ J. D. Phinney-Met Ed

Attached is one copy of Site Problem Report No. 533 which has been processed on Contract 620-00-03. Your contract or contracts may have the potential for a similar problem. The Site Problem Report is being forwarded for your information and use to prevent problems from recurring on following contracts. A more complete file on the problem is available in the Nuclear Service area.

REMARKS: OTHER Sites are advised of this problem at Oconee via transmittal of the SPR

cc: G. QUALE

R. L. Pittman
NUCLEAR SERVICE SUPPORT ENG'NEER

EPORT

& WILCOX-NPG

wer Company | CONTRACT NO. NSS-3 | SPR NO. 553 | SPR REV NO. C

P.O NO. | COMP NO. 22 | GROUP NO. 02 | SEQ NO. 01

SPEC NOS.
EQUIP CODE/LEVEL/DATE
CA SPEC NO.

PRIORITY

.D. Phinney	EARLY START DATE	ACTUAL START DATE	REQ'D COMP. DATE

SPACES) Loss of FW Incide (5/16/73)

PROBLEM

achment.

TO DATE INCLUDING PERSONS CONTACTED, COMMITMENTS MADE, ETC.

ucted a test to establish why the Emergency FW pump did not start.

ed bypass around FW pump discharge valves.

N REQUIRED BY OTHER THAN SITE PERSONNEL

e system transient. (Reactimeter tape sent to Lynchburg.)

CTION

vide positive means of sensing loss of FW pumps to initiate Emergency FW flow and main turbine trip. (Customer) Comp. by Customer some time

luate the SEM failure and correct. (CUSTOMER) Still Open ✓

DUKE OTHER CONTRACTS OF THIS PROBLEM (N.S)
#5 STR #273 ALSO DOCUMENT THIS TRIP.
JCW 6/23

	APPROVAL SIGNATURE	DATE
	G.D. Phinney	5/18/73
R. REP.		
NGR.	B. Tim Conwell	5/18/73
ENGR.	E.L. Pattman	5/31/73
ANAGER		

DOCUMENTS AFFECTED
- Drawings
- Proc. Specs
- Instr. Books
- Operating Procedures
- Tech. Specs
- PSAR/FSAR
- Recommended Spec. Change

ACTION TAKEN

ACTION

AGER
AGER
T ENGR.
NGR.
MEN.
NSS 3
533

Cost Category: Main A B C D E F
Auth Charge No.

RESPONSIBILITY ASSIGN. DUKE

Date Completed
By:

Field Change Req ☐
Field Change No.

OTHER CONTRACTS AFFECTED

DEVIATIONS
☐ NONE
☐ SEE REV.

Complete
Tim Conwell
6/23/73

LOSS OF FW INCIDENT (5/16/73)

Description of Problem

At approximately 1540 hrs. the "A" main FW pump tripped due to loss of suction pressure. Sequence of events as follows:

1. Loss of all condensate booster pumps (operator error).
2. Main FW pump trip.
3. Loss of OTSG water inventory.
4. RCS temperature and pressure high.
5. Electromatic relief valve lifted.
6. Reactor trip on high pressure.
7. Main turbine trip.
8. Emergency FW pump started manually (auto start command not received).

Two automatic actions did not occur. The Emergency FW pump did not start on loss of FW pumps and the main turbine did not trip on loss of FW pumps. The device to initiate these actions is a pressure sensor on the main FW header downstream of the FW pump discharge valves and upstream of the FW line B3 penetration check valves. The FW pump discharge valve automatically closed on FW pump trip and isolated the section of FW header that the pressure sensor is located in. The header remained above the 800 psig setpoint which, if reached, would have started the emergency FW pump (Main turbine trip setpoint is 700 psig.) A 1" bypass around the FW pump discharge valves is provided, but the bypass valve was closed.

Analysis of this incident is complicated by the failure of the Sequence of Events Monitor to log real time correctly. At the time of the FW pump trip, an error of ~30 minutes occurred.

Attached are system parameter curves produced from reactimeter data.

JDP/attachment.

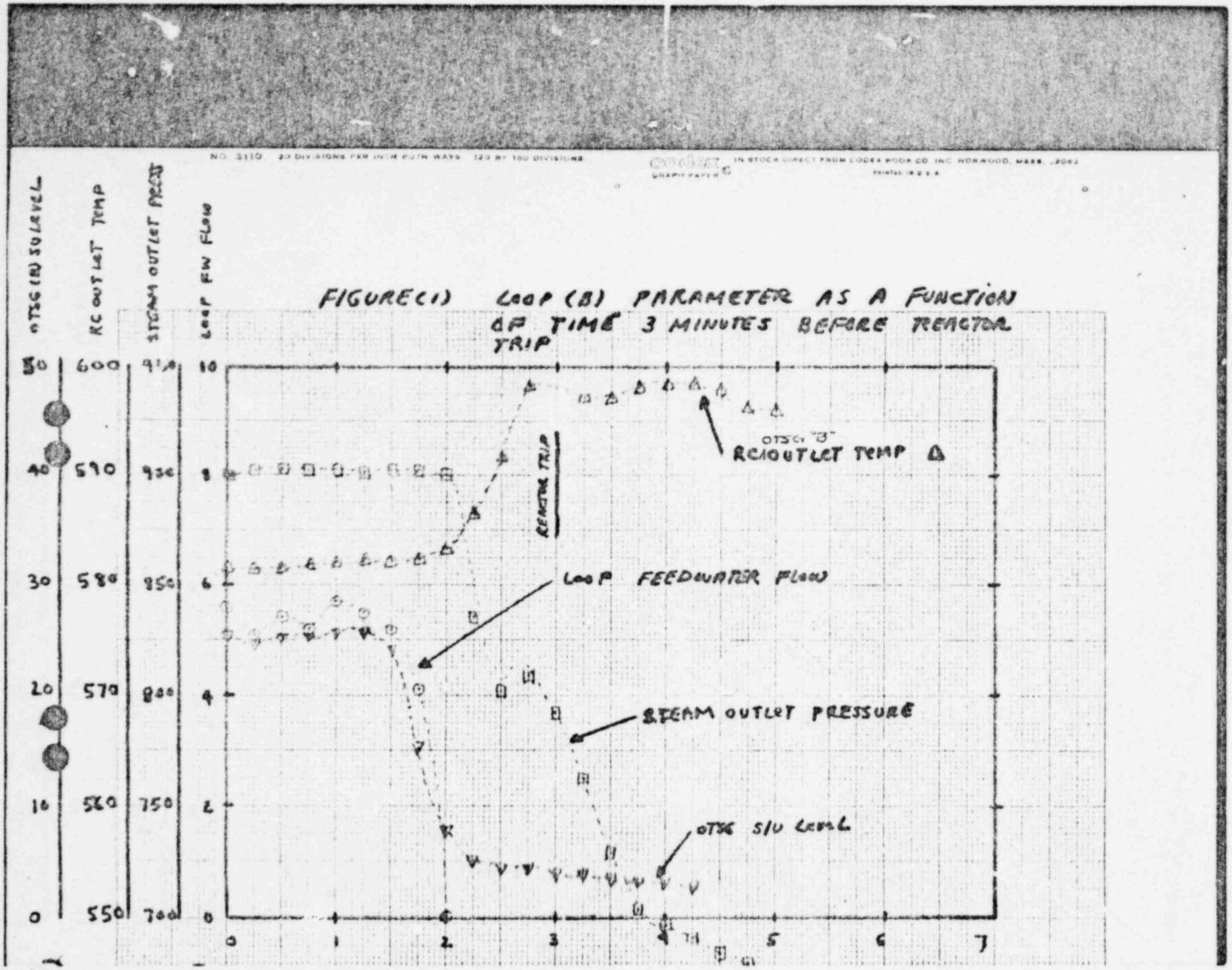

FIGURE (1) LOOP (B) PARAMETER AS A FUNCTION OF TIME 3 MINUTES BEFORE REACTOR TRIP

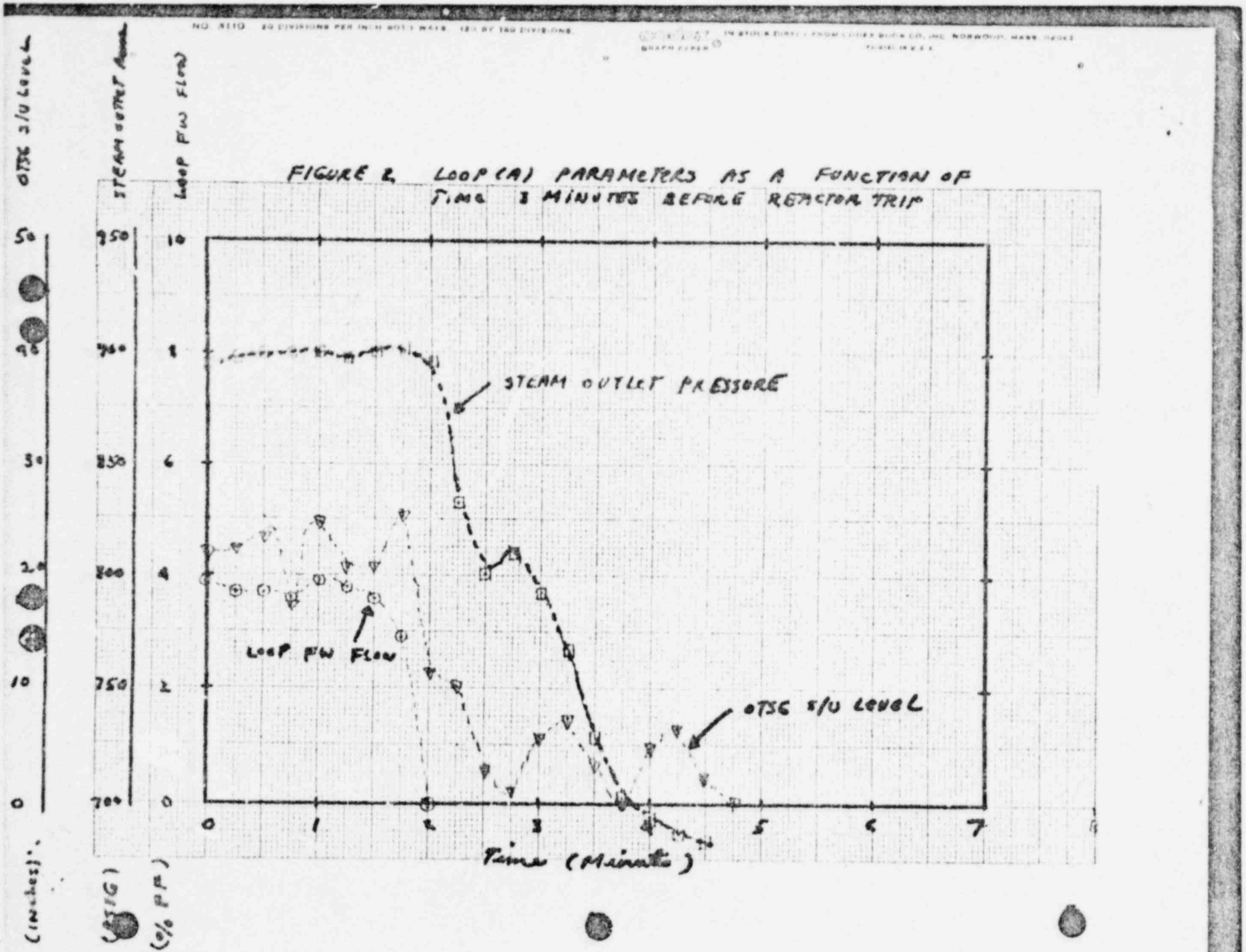

FIGURE 2 LOOP (A) PARAMETERS AS A FUNCTION OF TIME 8 MINUTES BEFORE REACTOR TRIP

File MSS- 3

12M2-SPR- 533

TRANSMITTAL SLIP

FIELD OPERATIONS SITE PROBLEM REPORT

To _____ For Action

CONTRACT 620-00 - 03

SPR 533

TITLE LOSS OF

To R.J. McConnell - S.O.H. (2) For Information

FW INCIDENT

J. Kaelin

J. Kennedy

J. Phinney

K. Suhrke

DATE 6-1-73

Date Reply to Be Submitted To Nuclear Service Support Engineer

—

Action Requested: DUKE has moved the pressure sensing location upstream (Feed Pump discharge) to preclude any possibility of the check valve interfering with pressure decay. The 1" bypass valve has also been opened.

R. L. Pittman
Nuclear Service Support Engineer

cc: G. E. Kulynych
E. G. Ward
G. M. Olds
R. T. Schomer
N. S. Embrey
J. McFarland
C. C. Plunkett - Contract Admin.
Central Engineering Files
E. V. DeCarli - Quality Assurance
H. Worsham
J. D. Carlton
G. Quale

MANHOUR LIMITS _____

COST LIMITS _____

CHARGE No. _____

APPROVED: _____
Project Manager

FORM 0091-1

SITE PROBLEM REPORT

BABCOCK & WILCOX-NPG

CUSTOMER Duke Power Company | CONTRACT NO. NSS-3 | SPR NO. 533 | SPR REV. NO. 0

VENDOR | P.O. NO. | COMP. NO. 22 | GROUP NO. 02 | SEQ NO. 01

PRIMARY DOCUMENTS: SPEC NOS. | DWG NO. | EQUIP CODE/LEVEL/DATE | QA LEVEL | QA SPEC NO.

PRIORITY

SITE ENGINEER	EARLY START DATE	ACTUAL START DATE	REQ'D COMP. DATE
ER Michael / J.D. Phinney			

TITLE (MAX. 30 SPACES) Loss of FW Incident (5/16/73)

DESCRIPTION OF PROBLEM

See attachment.

STATUS-ACTION TO DATE INCLUDING PERSONS CONTACTED, COMMITMENTS MADE, ETC.

1. Conducted a test to establish why the Emergency FW pump did not start.
2. Opened bypass around FW pump discharge valves.

FURTHER ACTION REQUIRED BY OTHER THAN SITE PERSONNEL

Evaluate system transient. (Reactimeter tape sent to Lynchburg.)

RECOMMENDED ACTION

1. Provide positive means of sensing loss of FW pumps to initiate Emergency FW flow and main turbine trip. (Customer)
2. Evaluate the SEM failure and correct. (Customer)
3. Advise other contract of this problem (N.S.)

APPROVALS

TITLE	APPROVAL SIGNATURE	DATE
ORIGINATOR	J.D. Phinney	5/18/73
SITE CONSTR. REP.		
SITE OPER. MGR.	R.F.M. Conrad	5/18/73
NS SUPPORT ENGR.	L. Pittman	5/31/73
PROJECT MANAGER		

DOCUMENTS AFFECTED

- ☐ Drawings
- ☐ Proc. Specs.
- ☐ Instr. Books
- ☐ Operating Procedures
- ☐ Tech. Specs.
- ☐ PSAR/FSAR
- ☐
- ☐ Recommended Site Change

ACTION TAKEN

Field Change Rqd. ☐

Field Change No. ____

DISTRIBUTION

SITE OPS MANAGER
PROJECT MANAGER
N.S. SUPPORT ENGR.
COGNIZANT ENGR.
CONTRACT ADMIN.
NPG QA
FILE 12M2 NSS 3 SPR 533

Cost Category: ☐ Main ☐ ☐ ☐ ☐ ☐

Auth. Charge No.

RESPONSIBILITY ASSIGN. DUKE

Date Completed ____

By: ____

OTHER CONTRACTS AFFECTED

DEVIATIONS

- ☐ NONE
- ☐ SEE REV. ____

INSTRUCTIONS FOR FDS-21091 – SITE PROBLEM REPORT

Initiated by Site Nuclear Services

1. ORIGINATOR – FILL IN: Customer; Contract No.; Vendor; PO No.; Component No.; Group No.; Sequence No.; Drawing No., Title; Description of Problem; Status; Further Action Required by Other Than Site Personnel; Recommended Action; Approval Signature; Date.

2. SITE OPERATIONS MANAGER – FILL IN: SPR No. and Rev. No.; Priority; Site Engineer, Early Start Date; Required Completion Date; Approval Signature; Date.

   Note: Assign priority No. 1 or 2 defined as follows:

   1. Implementation must be complete by required completion date to avoid delay in project completion.
   2. Implementation must be complete by required completion date to obtain maximum project effectiveness.

3. NUCLEAR SERVICE SUPPORT ENGINEER – FILL IN: Primary Documents; Documents Affected; Cost Category, Authorized Charge No.; Responsibility Assignment; Other Contracts Affected.

   Verify or establish proposed resolution working with appropriate engineering units, purchasing, and others as required.

   If field change is not required and additional costs (over and above normal nuclear service expenditures) are not to be incurred, take the following steps: (a) Approve SPR, (b) Indicate "Not Required" in space provided for project manager's approval, and (c) Distribute as indicated in step 5 below.

   If field change is not required but additional costs (over and above normal nuclear service expenditures) are to be incurred, approve SPR and forward to project manager for approval (step 4).

   If field change is required, see procedure No. NPG-0402-07; obtain field change No. from project manager, and indicate field change No. on SPR.

4. PROJECT MANAGER – Approve SPR and Return to Nuclear Service Support Engineer.

5. NUCLEAR SERVICE SUPPORT ENGINEER – Distribute in Accordance With Procedure No. NPG-0402-04; Initial Action Taken Box (on Support Engineer's File Copy) When Documents Affected Have Been Corrected.

6. SITE OPERATIONS MANAGER – Implement Resolution; Upon Completion, Fill in Actual Start Date, Date Completed, and By.

   Note: If necessary to deviate from the approved SPR, note deviation on approved SPR and obtain revised SPR in accordance with procedure No. NPG-0402-04. Return completed SPR to nuclear service support engineer.

Initiated by B&W Construction Company

1. ORIGINATOR – FILL IN: Customer; Contract No.; Vendor; PO No.; Component No.; Group No.; Sequence No.; Drawing No., Title; Description of Problem; Status; Further Action Required by Other Than Site Personnel; Recommended Action; Approval Signature; Date.

2. SENIOR CONSTR. CO. SITE REPRESENTATIVE – FILL IN: SPR No. and Rev. No.; Priority; Site Engineer, Early Start Date, Required Completion Date; Approval Signature, Date.

   Note: Assign priority No. 1 or 2 defined as follows:

   1. Implementation must be complete by required completion date to avoid delay in project completion.
   2. Implementation must be complete by required completion date to obtain maximum project effectiveness.

3. PROJECT MANAGER – FILL IN: Primary Documents; Documents Affected; Cost Category; Authorized Charge No.; Responsibility Assignment; Other Contracts Affected.

   Verify or establish proposed resolution working with appropriate engineering units, purchasing, and others as required.

   If field change is not required and additional costs (over and above normal construction Co. expenditures) are not to be incurred, take the following steps: (a) Approve SPR, and (b) Distribute in accordance with procedure No. NPG-0402-05.

   If field change is not required but additional costs (over and above normal construction Co. expenditures) are to be incurred, obtain abnormal cost charge No. from contract administration; approve and distribute in accordance with procedure No. NPG-0402-05.

   If field change is required, see procedure No. NPG-0402-07; assign field change No., have approved and distribute in accordance with procedure No. NPG-0402-05.

4. SENIOR CONSTR. CO. SITE REPRESENTATIVE – Implement Resolution; Upon Completion, Fill in Actual Start Date, Date Completed, and By.

   Note: If necessary to deviate from the approved SPR, note deviation on approved SPR and obtain revised SPR in accordance with procedure No. NPG-0402-05. Return completed SPR to the project manager.

LOSS OF FW INCIDENT (5/16/73)

Description of Problem

At approximately 1540 hrs. the "A" main FW pump tripped due to loss of suction pressure. Sequence of events as follows:

1. Loss of all condensate booster pumps (operator error).
2. Main FW pump trip.
3. Loss of OTSG water inventory.
4. RCS temperature and pressure high.
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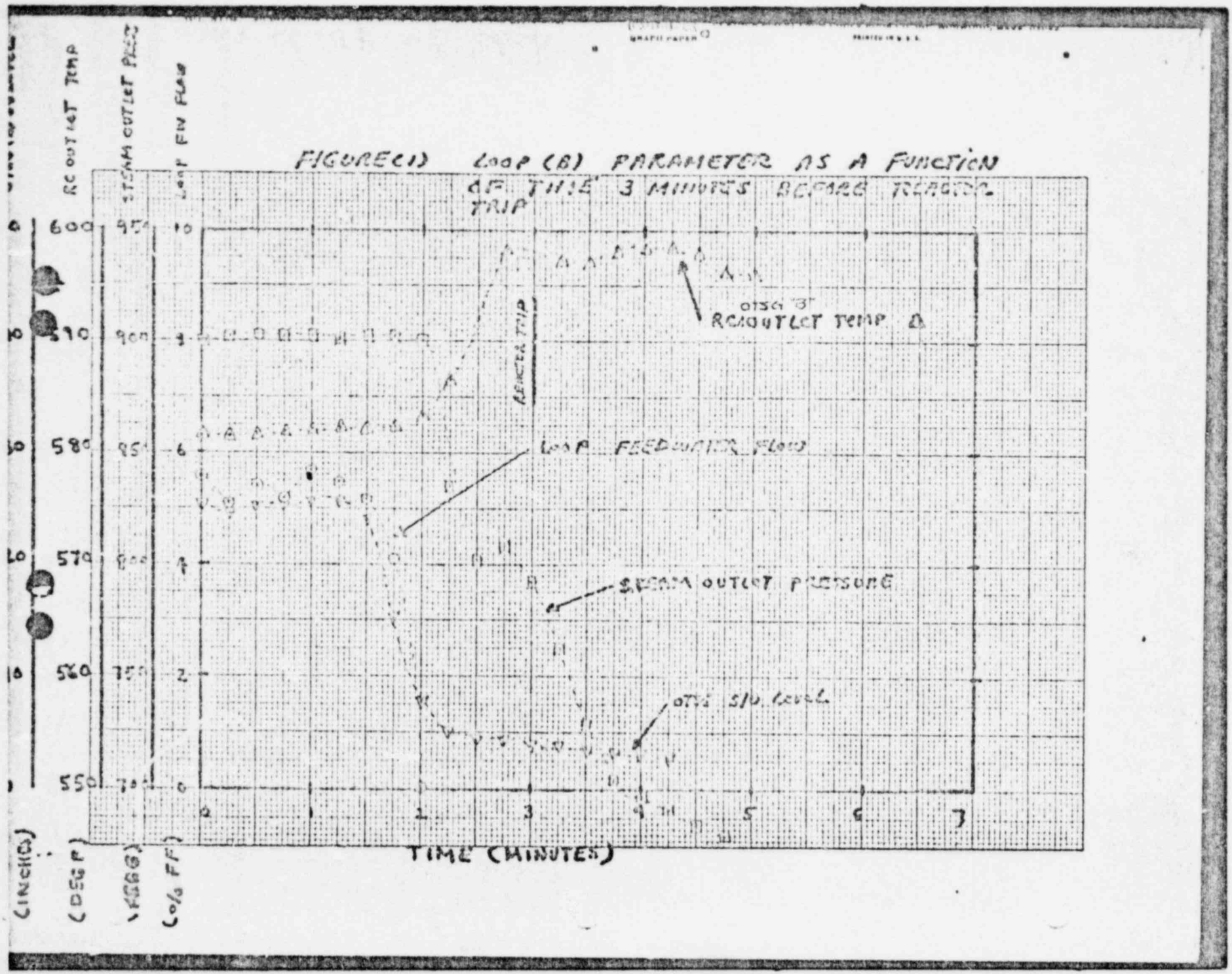
Analysis of this incident is complicated by the failure of the Sequence of Events Monitor to log real time correctly. At the time of the FW pump trip, an error of ~30 minutes occurred.

Attached are system parameter curves produced from reactimeter data.

DP/attachment.



FIGURE(1) LOOP (B) PARAMETER AS A FUNCTION OF TIME 3 MINUTES BEFORE REACTOR TRIP

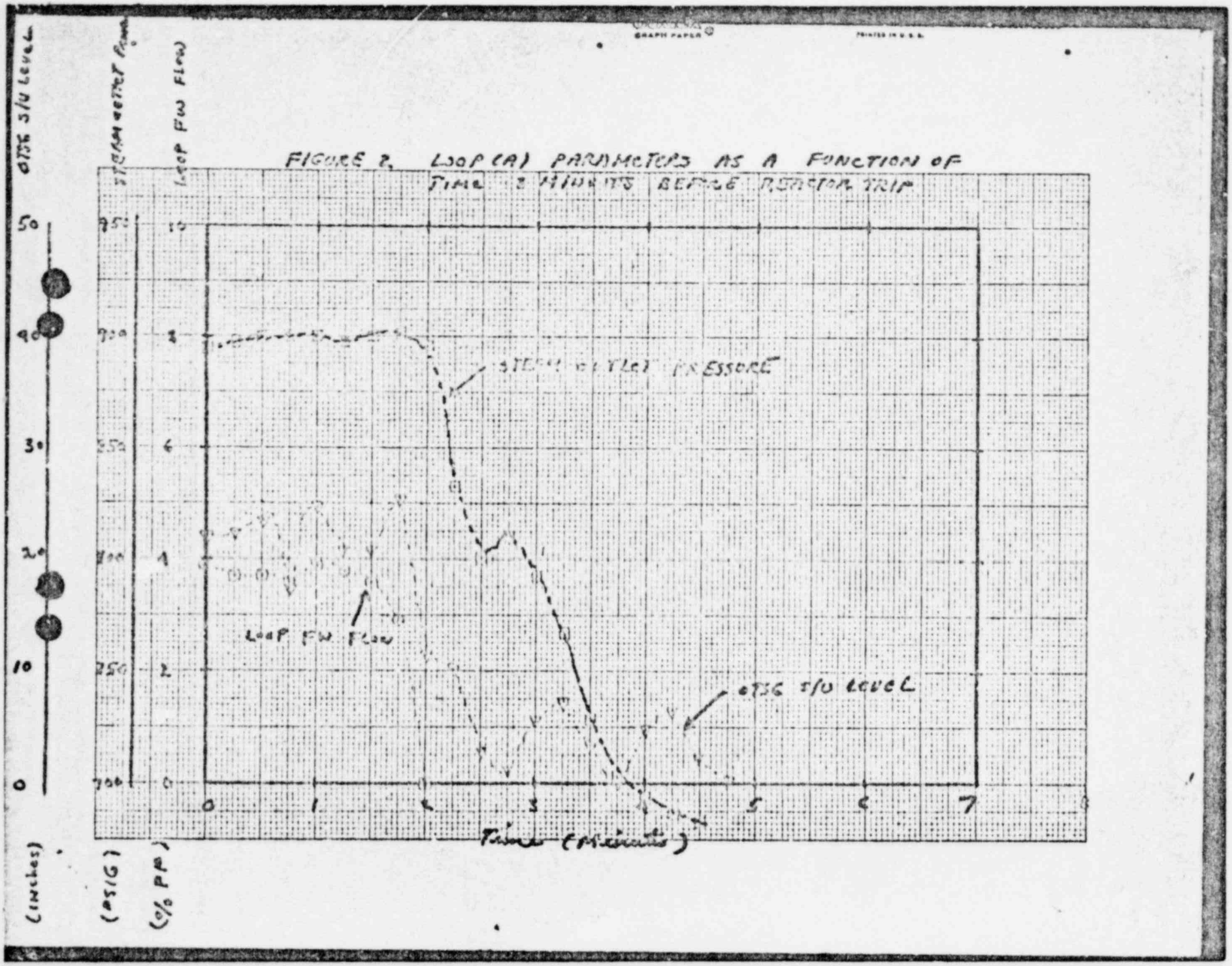


FIGURE 2. LOOP (A) PARAMETERS AS A FUNCTION OF TIME 3 MINUTES BEFORE REACTOR TRIP
STEAM GENERATOR PRESSURE
LOOP FW FLOW
OTSG S/U LEVEL
Time (minutes)
0
1
2
3
4
5
6
7
(INCHES)
(PSIG)
(% FP)