07-229-91

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

N2-OP-101D

REVISION 01

POWER CHANGES

Approved By: R. B. Abbott — John T. Conway for RBA, Plant Manager, Unit 2 — 1/25/91 Date

THIS REVISION IS A GENERAL REWRITE

THIS REVISION SUPERSEDES TCNs 1-4

Effective Date: January 26, 1991

NOT TO BE USED AFTER January 1993
SUBJECT TO PERIODIC REVIEW

5/4/138

25

LIST OF EFFECTIVE PAGES

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.
i	16503				
ii					
1	16503				
2					
3	16503				
4	TCN-8				
5	16503				
6	16503				
7	16503				
8	TCN-5				
9					
10					
11	TCN-9				
12					
13					
14					
15	16373				
16					
17	TCN-6				
17a	TCN-6				
18	TCN-6				
18a	TCN-6				
19	15917				
20					

TABLE OF CONTENTS

A. REFERENCES AND COMMITMENTS

1.0 Technical Specifications

Due to the fact that most, if not all, of the technical specifications apply to plant power operation, they are not listed individually in this procedure.

2.0 Licensee Documentation

Updated Safety Analysis Report, USAR

Consult individual operating procedures as necessary.

3.0 Standards, Regulations, and Codes

NRC Bulletin 88-07 Supplement 1, Power Oscillations in BWR

4.0 Policies, Programs, and Procedures

Because power changes affect all systems all operating procedures are applicable.

5.0 Technical Information

5.1 Flow Diagrams

Consult individual operating procedures as necessary.

5.2 Electrical Diagrams

Consult individual operating procedures as necessary.

5.3 Vendor Manuals

Consult individual operating procedures as necessary.

5.4 System Instruction Manuals

Consult individual operating procedures as necessary.

6.0 Supplemental References

6.1 NMPC 865, GE Project Letter.

6.2 Safety Evaluation 90-124, Revision 2, Operation of NMP2 Reload 1/Cycle 2.

6.3 EAS 18-0390, NMP2 Cycle 2 Equipment Out of Service Analysis.

6.4 Safety Evaluation 91-049, Revision 0, Extended Load Line Limit Analysis. 16503

A. REFERENCES AND COMMITMENTS (Cont)

7.0 Commitments

Sequence Number	NCTS Number	Description
1	503479-02	Rapid Power Reduction

B. SYSTEM DESCRIPTION

As all plant systems are affected by the plant power operation, individual system descriptions will not be discussed in this procedure. See the individual operating procedures for descriptions of systems that are of interest.

C. OPERATING REQUIREMENTS

All systems and their auxiliaries must be in operation, or in a standby readiness in accordance with applicable operating procedure.

D. PRECAUTIONS AND LIMITATIONS

1.0 Power can be raised by control rod withdrawal OR raising reactor recirculation (recirc) flow. Power changes shall NOT be made by simultaneously using reactor recirc flow AND control rod withdrawal.

2.0 All control rod movement shall be in accordance with the rod sequence that is in effect as determined by the Reactor Engineering Department.

3.0 During power ascension, for each control rod sequence, fuel pre-conditioning rates shall be maintained and in accordance with Reactor Engineering instruction.

4.0 Recirculation Pump upshift OR pump start must be performed below 80% Rodline.

5.0 Reactor Engineering will provide and update Rodline information during orderly plant startup and shutdown. IF a Reactor Engineer is not on site the Assistant Station Shift Supervisor (ASSS) will verify the Rodline and update the posting at Panel P603.

6.0 Condenser back pressure shall be maintained less than 5" Hg (25" Hg Vac.)

7.0 Condensate water temperature shall be maintained less than 130°F.

8.0 Reactor recirculation flow control should be maintained in LOOP MANUAL during pre-conditioning ramps, soak time and control rod movement unless directed otherwise by the Reactor Engineer.

D. PRECAUTIONS AND LIMITATIONS (Cont)

9.0 Technical Specification Requirements During Power Changes

9.1 IF reactor power is greater than 25% of RATED THERMAL POWER and power is raised by more than 15%, THEN within 12 hours after completion of power rise N2-RESP-1, Power Distribution Limits Verification shall be performed.

9.2 IF reactor thermal power is changed by more than 15% of RATED THERMAL POWER in one hour, THEN Radiochemistry technician shall be notified to perform Isotopic Analysis for Iodine per Technical Specification 4.4.5-1.4.b.

9.3 WHEN reactor power is greater than 25%, AND the main steam bypass system is found inoperable OR the end-of-cycle recirculation pump trip system is found inoperable THEN within one hour, Reactor Engineering determine MCPR is greater than MCPR limit by completing the Instructions for Calculating MFLCPR as found in the Core Reactivity Control Book.

10.0 Extended Operating Domain and Equipment Out-of-Service Analyses has been performed for operations within extended operational boundaries and with various plant equipment out-of-service.

10.1 Extended Operating Domain

Operation is allowed above the 100% Rodline, provided 100% rated core thermal power is not exceeded. The region of the Power Flow Map above the 100% Rodline is known as the Extended Load Line Limit Analysis (ELLLA) Region. The region of the power flow map between 100% core flow and 105% core flow is known as the Increased Core Flow (ICF) region. | 16503 | 16503

10.2 Equipment Out-of-Service Analysis

NMP2 has been analyzed for operation with various plant equipment inoperable as follows:

10.2.1 End-of-Cycle Recirculation Pump Trip Out-of-Service - MCPR penalty as required by Technical Specification 3/4.2.3 and identified in Core Operating Limits Report Fig 3a/b.

10.2.2 Main Steam Bypass Out-of-Service - MCPR penalty as required by Technical Specification 3/4.2.3 and identified in Core Operating Limits Report Fig 3a/b if one of the bypass valves is inoperable.

10.2.3 Feedwater Heater Out-of-Service, see N2-OP-8 for analyzed feedwater temperature limits, Feedwater Heaters and Extraction Steam System.

10.2.4 Relief valve Out-of-Service: Any two SRVs may be inoperable as long as it is closed and has operable position indication (T.S. 3/4.4.2). No MCPR penalty is required.

D. PRECAUTIONS AND LIMITATIONS (Cont)

10.2.5 MSIV Out-of-Service is permitted under T.S. 3/4.4.7. (Refer to N2-OP-1)

10.2.6 Single Recirculation Loop Operation (SLO) in accordance with T.S 3/4.4.1

10.2.7 For a display of the allowable modes of operation with inoperable equipment refer to Table 1 below:

TABLE 1 FOR ALLOWED MODES OF OPERATION

NOTE:
1. Plant operating conditions will always be in at least one block.
2. Operation is analyzed for operation in a non-shaded block Tech. Spec. actions, if any, still apply in a non-shaded block. TCN- 8
3. Operation is not analyzed for operation in:
   a. A shaded block, or
   b. More than one block concurrently.

Inoperable Equipment	ALL** ELSE OPER'L	EOC-RPT OOS	TURB BP OOS	2 ADS OOS
Standard Operation * No EOOS				
SLO+ Standard Operation				
1 MSIV OOS Standard Operation		[redacted]		
SLO + 1 MSIV OOS + Standard Operation				

[redacted] Concurrent Equipment Out-of-Service (EOOS) Conditions not analyzed.

* Standard operational analysis includes Extended Load Line Limit (ELLLA), Increased Core Flow (ICF), and 2 SRV OOS. TCN- 8

** "ALL" only applies to equipment identified here. TCN- 8

11.0 Turbine operation with load less than 30% (345 MWE) and condenser vacuum below the low vacuum alarm point (24.6" Hg) is prohibited.

D. PRECAUTIONS AND LIMITATIONS (Cont)

12.0 WHEN reactor power is greater than 25% Reactor Engineering notification is required before raising reactor power with recirculation flow OR control rod withdrawal EXCEPT if power is being raised in accordance with Reactor Operating Instructions.

13.0 All reactivity changes shall be directly supervised by a Senior Reactor Operator. In order to provide this oversight, the SRO shall be stationed at the Controls Area of the Control Room. 16503

14.0 Precautions in each specific procedure referenced in this procedure are to be adhered to.

15.0 Because of many possible plant conditions, deviation from suggested sequence of operations is permitted as directed by the Station Shift Supervisor (SSS).

16.0 All evolutions described in this procedure shall be performed in accordance with applicable operating procedures.

E. STARTUP

1.0 Power Increase From 45% to 100%

NOTES: 1. Step D.9.0 Precautions and Limitations shall be observed when raising power.

2. Power ascents after power reductions shall be performed in accordance with Reactor Engineering Instruction.

1.1 Verify N2-OP-101A, Plant Start-up is completed as indicated by reactor power approximately 45%.

NOTE: During plant startup, the portion of the restricted region between 40% to 45% core flow (43.4 to 49 mlb/hr.) may be entered under guidance of the Reactor Engineer for fuel pre-conditioning concerns.

1.2 IF restricted region between 40% to 45% core flow (43.3 to 49 mlb/hr.) entered THEN perform the following:

1.2.1 Refer to required action per Technical Specification 3.4.1.1.c.

1.2.2 Contact Reactor Engineering to perform N2-RPSP-3.

E. STARTUP (Cont)

1.2.3 Monitor APRMs and LPRMs for positive indication of unstable neutron flux oscillations using one of the following criteria:

a. Oscillation greater than 10% peak to peak on any APRM

OR

b. Oscillation greater than 20% peak to peak on P603 Four Rod Display LPRM meters for currently selected rod

OR

c. Oscillation greater than 20% peak to peak on any LPRM periodically exceeding its upscale or downscale alarm point

1.2.4 IF positive indication of any neutron flux oscillation occurs, immediately place mode switch in SHUTDOWN and refer to N2-OP-101C.

NOTE: The Rodline should be periodically checked using OD-3 during power increase and the posting at P603 should be updated by Reactor Engineer (or ASSS, if the Reactor Engineer is not on site). The purpose of the Rodline notice is to aid in assuring that proper action is taken in the event of a core flow transient to below 45% of rated (49 mlb/hr).

1.3 Shift Technical Advisor or Reactor Engineer should monitor all power changes.

NOTES: 1. All reactivity changes shall be directly supervised by a Senior Reactor Operator. In order to provide this oversight, the SRO shall be stationed at the Controls Area of the Control Room. 16503

2. Control Rod withdrawal shall be in accordance with Startup Control Rod Sequence OR Individual Control Rod Movement Instructions (Attachment 4). Reactor Engineering will determine when to discontinue use of Startup Control Rod Sequence and begin using Individual Control Rod Movement Instructions.

1.4 Raise power in accordance with approved Reactivity Maneuver Request by withdrawing control rods OR raising recirculation flow and perform the following:

E. STARTUP (Cont)

1.4.1 Periodically monitor Rodline using OD-3.

NOTE: Rodline posting is updated by the Reactor Engineer if on site, if not by the ASSS. Purpose of posting is to provide operator aid in the event of a core flow transient below 45% of rated (49 mlb/hr).

1.4.2 Update Rodline notice at Panel P603.

1.4.3 IF Rated Thermal Power is changed by more than 15% in one hour, notify Radiochemistry to perform isotopic analysis in accordance with T.S. Table 4.4.5-1.4.1.

1.5 WHEN control rod movement specified in each Startup Control Rod Sequence page OR Individual Control Rod Movement Instruction, OR Rod Worth Minimizer Group has been completed a licensed reactor operator or other technically qualified member of the technical staff shall independently verify correct control rod position by selecting each rod in the group moved and compare four rod display indication to Startup Control Rod Sequence.

1.6 WHEN a control rod is withdrawn to position 48 verify its coupling integrity by applying a continuous withdraw signal and observe the following:

1.6.1 Position 48 indication remains illuminated on the four Rod Display.

1.6.2 Annunciator 603444, ROD OVERTRAVEL remains clear.

1.6.3 Control rod FULl OUT indicating light illuminated on Full Core Display.

1.7 Record coupling integrity check performed by initialing the appropriate block on the Startup Control Rod Sequence form OR Individual Control Rod Movement Instructions as applicable.

1.8 IF both SRO and the Reactor Engineer concur, initial all changes on working copy and the reason is recorded in the Reactor Engineer Log Book THEN Deviation to control rod sequence is permitted. | 16503

1.9 WHEN reactor power is 65%, place fourth point heater drain pumps in operation in accordance with N2-OP-8, Feedwater Heaters and Extraction Steam System.

1.10 WHEN reactor power is 65%, verify clean steam reboiler steam supply auto transfer to extraction steam as indicated by the following valve operation at Panel P851:

E. STARTUP (Cont)

1.10.1 Open 2ESS-STV104, Clean Steam Reboiler Extraction Steam Supply Isol.

1.10.2 Closed 2ASS-STV112, Clean Steam Reboiler Main Steam Supply.

1.11 WHEN reactor power is greater than 65%, verify the following Reheat Steam Load Control Valves are full open:

1.11.1 2MSS-PV28A

1.11.2 2MSS-PV28B

1.11.3 2MSS-PV29A

1.11.4 2MSS-PV29B

1.12 WHEN reactor power is approximately 70%, ensure that Bldg. Int. Hx Steam Supply auto transfers to extraction steam as indicated by the following valve operation at Panel P203:

1.12.1 Closed 2ASS-STV143

1.12.2 Open 2ESS-STV105

1.13 IF plant startup is following operating cycle outage THEN at approximately 75%, perform the following:

1.13.1 N2-RESP-4, LPRM Calibration

1.13.2 N2-REP-14, TIP Uncertainty Calculation

1.13.3 If recording Turbine 1st Stage Pressure per N2-OP-3 (Condensate Demineralizer bypass manual valve closed), then increase frequency of readings to once per 30 minutes and complete the procedure (N2-OP-3 Section 11.0) prior to reactor power exceeding 85%. TCN-5

* *

CAUTION

Recirculation flow control should be maintained in Loop Manual during fuel preconditioning, soak time and control rod movement unless directed otherwise by the Reactor Engineer.

* *

1.14 WHEN directed by the Reactor Engineer, place the reactor recirculation control in one of the following positions in accordance with N2-OP-29, Reactor Recirculation System:

1.14.1 Flux Manual

1.14.2 Master Manual

E. STARTUP (Cont)

1.15 Raise reactor power as directed by Reactor Engineering instruction. Raise reactor power to maximum recirculation flow OR rated power. Power ramp guidelines are as follows:

1.15.1 Control rods may be adjusted as directed by Reactor Engineer during the power ramp.

1.15.2 AFTER terminating the load increase, a soak time of 12 hours at the new power level may be required for the fuel to be preconditioned at that power level.

1.15.3 IF it is necessary to interrupt the power ramp or soak for a load reduction, the unit will be returned to the power level recommended by the Reactor Engineer.

1.15.4 Recirculation flow changes should be made using Loop MANUAL mode.

1.15.5 IF the fuel has been preconditioned, THEN power ascents after power decrease shall be made at the rate determined by the Reactor Engineer.

1.16 WHEN required, start standby condensate and condensate booster pumps in accordance with N2-OP-3, Condensate and Feedwater System.

1.17 WHEN reactor power is approximately 90% perform N2-REP-11, Independent Methods for Determining Core Thermal Power.

1.18 IF required place additional condensate demineralizers into service at the recommendations of Chemistry in accordance with N2-OP-5, Condensate Demineralizer System.

NOTE: WHILE performing Step 1.19, a turbine throttle pressure of 978.5 psig shall NOT be exceeded.

1.19 WHEN reactor power is approximately 100% rated power, slowly raise EHC pressure set until EITHER reactor dome pressure is 1005 psig OR turbine throttle pressure is 978.5 psig (GETARS Channel 181-184).

F. NORMAL OPERATIONS

1.0 During late fall, winter, and early spring, Cooling Tower/Circulation Water temperature will have to be monitored closely to prevent freezing of the PVC piping in the cooling tower, see N2-OP-10A, Section F.

2.0 Steady state core thermal power should be equal to or less than 3323 MWT. Rated core thermal power may be exceeded provided the following criteria are observed.

2.1 The average core thermal power over any 8-hour shift should be equal to or less than 3323 MWT.

2.2 The exact 8-hour periods defined as shifts are up to plant management; however, they should remain the same from day to day.

2.3 It is permissible to briefly exceed rated core thermal power by as much as, but not more than, 2% for 15 minutes. (3389 MWT)

2.4 In no case should steady-state rated core thermal power be instantaneously exceeded for any period of time by more than 2%. (3389 MWT)

2.5 Lesser excursions for longer periods are allowed (1.5% for 30 minutes, 1.0% for 45 minutes).

2.6 There are no limits on the number of times these excursions may occur, or the time interval that must separate such excursions; however, the 8-hour average limit and the 2% instantaneous limit will prevent these excursions from becoming a safety issue.

3.0 Steady-state core flow should be equal to or less than 105% of rated core flow (113.925 mlb/hr) where rated core flow is equal to 108.5 mlb/hr. The steady-state core flow may be exceeded provided the following criteria are observed:

3.1 The average core flow over any 8-hour shift should be equal to or less than 113.925 mlb/hr core flow.

3.2 The exact 8-hour periods defined as shifts are up to plant management; however, they should remain the same from day to day.

3.3 It is permissible to briefly exceed 113.925 mlb/hr core flow by as much as, but not more than, 3% for 15 minutes (117.3 mlb/hr.).

3.4 In no case should steady-state core flow be instantaneously exceeded for any period of time by more than 3% (117.3 mlb/hr).

3.5 Lesser excursions for longer periods are allowed (1.5% for 30 minutes, 1.0% for 45 minutes).

F. NORMAL OPERATIONS (Cont)

3.6 There are no limits on the number of times these excursions may occur, or the time interval that must separate such excursions; however, the 8-hour average limit and the 3% instantaneous limit will prevent these excursions from becoming a safety issue.

4.0 During Single Loop Recirculation Pump operation, refer to N2-OP-29, Reactor Recirculation System, Section H.7.0 for Technical Specification compliance.

5.0 For the following conditions: Single recirculation loop operation, one steamline Out-of-Service or 2 SRVs Out-of-Service, plant operation is allowed in the combinations identified in Step D.10.2.7, Table 1, TABLE FOR ALLOWED MODES OF OPERATION of this procedure.

6.0 During steady state plant operation the high vibration turbine trip disable switch will be in the ON position, during periods of changing plant load the turbine high vibration disable switch will be placed in the DISABLE position, if approved by the Operations Manager. TCN-9

G. SHUTDOWN

1.0 Power Reduction from 100% to 45%

NOTES: 1. IF Rated Thermal Power is changed by more than 15% in one hour, a radiochemistry isotopic analysis is required. (T.S. Table 4.4.5-1.4.b)

2. During reactor power reduction the reactor Rodline should be periodically checked using OD-3.

1.1 Notify Load Dispatcher of power reduction.

1.2 Obtain authorization from Station Shift Supervisor (SSS) to reduce power.

* *

CAUTIONS

1. WHEN reactor rodline is greater than 80%, core flow shall not be intentionally reduced below 45% of rated (49 mlb/hr).

2. During reactor power reductions, an operator should be sent to 2CES-IPNL203 to ensure proper transfer of steam supplied to building heating intermediate heat exchangers (2ESS-STV105 closes and 2ASS-STV143 opens).

* *

1.3 Reduce reactor power to the desired power level OR to 65% by reducing reactor recirculation flow by throttling 2RCS*HYV17A(B), Recirculation Flow Control Valve AND perform the following:

G. SHUTDOWN (Cont)

1.3.1 IF core flow is reduced below 45% of rated (49 mlb/hr) refer to Section H.2.0 of this procedure.

1.3.2 Periodically monitor Rodline using OD-3.

NOTE: Rodline posting is updated by the Reactor Engineer if on site, if not by the ASSS. Purpose of posting is to provide operator aid in the event of a core flow transient below 45% of rated (49mlb/hr).

1.3.3 Update Rodline notice at Panel P603.

1.3.4 IF Rated Thermal Power is changed by more than 15% in one hour, notify Radiochemistry to perform isotopic analysis in accordance with T.S. Table 4.4.5-1.4.b.

1.4 WHEN reactor power is approximately 65%, transfer reactor recirculation flow control to LOOP MANUAL by depressing MAN pushbutton on LOOP FLOW CONTROL M/A stations.

1.5 WHEN required, remove one of three operating condensate and/or condensate booster pumps from service in accordance with N2-OP-3, Condensate and Feedwater System.

1.6 WHEN reactor power is 65%, verify clean steam reboiler steam supply auto transfer to Main Steam as indicated by the following valve operation at Panel P851:

1.6.1 Open 2ASS-STV112, Clean Steam Reboiler Main Steam Supply.

1.6.2 Closed 2ESS-STV104, Clean Steam Reboiler Extraction Steam Supply Isol.

NOTE: Before removing the heater drain pumps from service, sufficient condensate demineralizers should be in service to handle the increase in condensate system flow which will result from shutdown of the heater drain pumps. Operation with an extra demineralizer until all the heater drain pumps are removed from service may be required.

1.7 Remove condensate demineralizer from service as required and at the recommendations of Chemistry in accordance with N2-OP-5, Condensate Demineralizer System.

1.8 Insert control rods in accordance with Reactor Engineering instructions until reactor power is approximately 45%.

1.9 IF continued power reduction is necessary, refer to N2-OP-101C, Plant Shutdown to continue power reduction.

H. OFF-NORMAL OPERATIONS

1.0 (NCTS 1) Rapid Power Reduction

* *

CAUTION

WHEN Reactor rodline is greater than 80%, core flow shall not be intentionally reduced below 45% of rated (49 mlb/hr).

* *

1.1 IF core flow is reduced below 45% of rated (49 mlb/hr) refer to Section H.2.0 of this procedure.

1.2 Reduce power as necessary by reducing reactor recirculation flow by throttling 2RCH*HYV17A(B), Recirculation Flow Control Valve until recirculation flow is equal to or greater than 49 mlb/hr total core flow.

1.3 Transfer recirculation flow controls to LOOP MANUAL by depressing MAN pushbutton on the LOOP FLOW CONTROLLER M/A stations.

1.4 IF further power reduction is required, insert CRAM rods in accordance with Reactor Engineering Instruction.

1.5 IF further power reduction is required after CRAM rods are inserted, continue to reduce power in accordance with Reactor Engineering Instruction.

1.6 IF reactor power is less than 35% and rapid power reduction is required, insert control rods in the reverse order of the Startup Control Sequence.

2.0 Sudden Decrease in Core Flow

NOTES: 1. Attachment 3 contains the same information as this section of the procedure and may be used in lieu of the following written instructions.

2. Many operational events could result in a sudden decrease in core flow. Examples of these events are: single pumps trips, pump downshifts, and manual or automatic FCV runbacks.

2.1 IF the recirculation pump(s) trip results in natural circulation AND the reactor mode switch is in RUN perform the following:

2.1.1 Immediately place the reactor mode switch in the SHUTDOWN position.

2.1.2 Follow N2-OP-101C, Plant Shutdown for scram recovery.

H. OFF-NORMAL OPERATIONS (Cont)

2.2 Determine the Rodline by referring to Operator Aids on Panel P603.

2.3 Determine core flow by referring to Total Core Flow/Core Plate dP recorders.

2.4 IF operation is above the 100% Rodline with Total Core Flow equal to or less than 45% (49 mlb/hr) perform the following:

2.4.1 Immediately place the reactor mode switch in the SHUTDOWN position.

2.4.2 Refer to N2-OP-101C for scram response.

2.5 IF operation is between 100 and 80% Rodline with Total Core Flow equal to or less than 45% (49 mlb/hr) perform the following:

* *

CAUTION

In this region the reactor is highly susceptible to unstable neutron flux oscillations.

* *

2.5.1 Monitor APRMs and LPRMs for positive indication of unstable neutron flux oscillations using one of the following criteria:

a. Oscillations greater than 10% peak to peak on any APRM

OR

b. Oscillations greater than 20% peak to peak on LPRM meters at the Four Rod Display for the currently selected rod at Panel P603

OR

c. Oscillations greater than 20% peak to peak on any LPRM periodically exceeding its upscale or downscale alarm point.

2.5.2 IF positive indication of unstable neutron flux oscillations exist, immediately place the mode switch in the SHUTDOWN position. Refer to N2-OP-101C, Plant Shutdown.

* *

CAUTION

Starting or upshifting a recirculation pump is not allowed in this region.

* *

2.5.3 Immediately exit the Region by:

a. Raising core flow using 2RCS*HYV17A(B), Recirculation Flow Control Valve until core flow is equal to or greater than 45% (49 mlbs/hr).

OR

b.1 Inserting Cram Rods as directed by the EMERGENCY POWER REDUCTION section of the REACTOR OPERATING INSTRUCTIONS until core thermal power is less than 36% (1195 MWT). |16373

b.2 Monitor and maintain power less than 36% (1195 MWT). |16373

2.5.4 AFTER exiting the restricted region of power flow map AND unstable neutron flux oscillation does NOT exist, determine the cause of the core flow reduction and recover in accordance with the following procedures;

a. N2-OP-29 to restart the tripped pump, reset the flow control valve partial runback or upshift the recirculation pump.

b. N2-OP-101A or N2-OP-101D for reactor power changes.

3.0 Use of Cram Rods to Control Rodline

NOTE: The SSS may direct the use of Cram Rods to reduce the rod line during or following certain operational events. Examples of these events are: pressure oscillations due to EHC malfunction, rapid power reduction using recirc flow or loss of feedwater heating.

* *

CAUTION

In the event of loss of feedwater heating the following steps are to be taken ONLY after the power reduction required by N2-OP-8, Feedwater Heaters and Extraction Steam System.

* *

3.1 Fully insert control rods in the order specified in accordance with one of the following:

H. OFF-NORMAL OPERATIONS (Cont)

3.1.1 IF available, Rapid Power Reduction Sequence, Section F.3.0 of N2-OP-95A, Rod Worth Minimizer.

3.1.2 IF Rod Worth Minimizer is unavailable THEN in accordance with Core Reactivity Control Book.

NOTE: The rod line calculated by the Process Computer/3D Monicore is inaccurate during power transients.

3.2 Monitor plant status on the power/flow map using APRMs and Core Flow recorder.

3.3 If possible, attempt to insert sufficient control rods to achieve core symmetry.

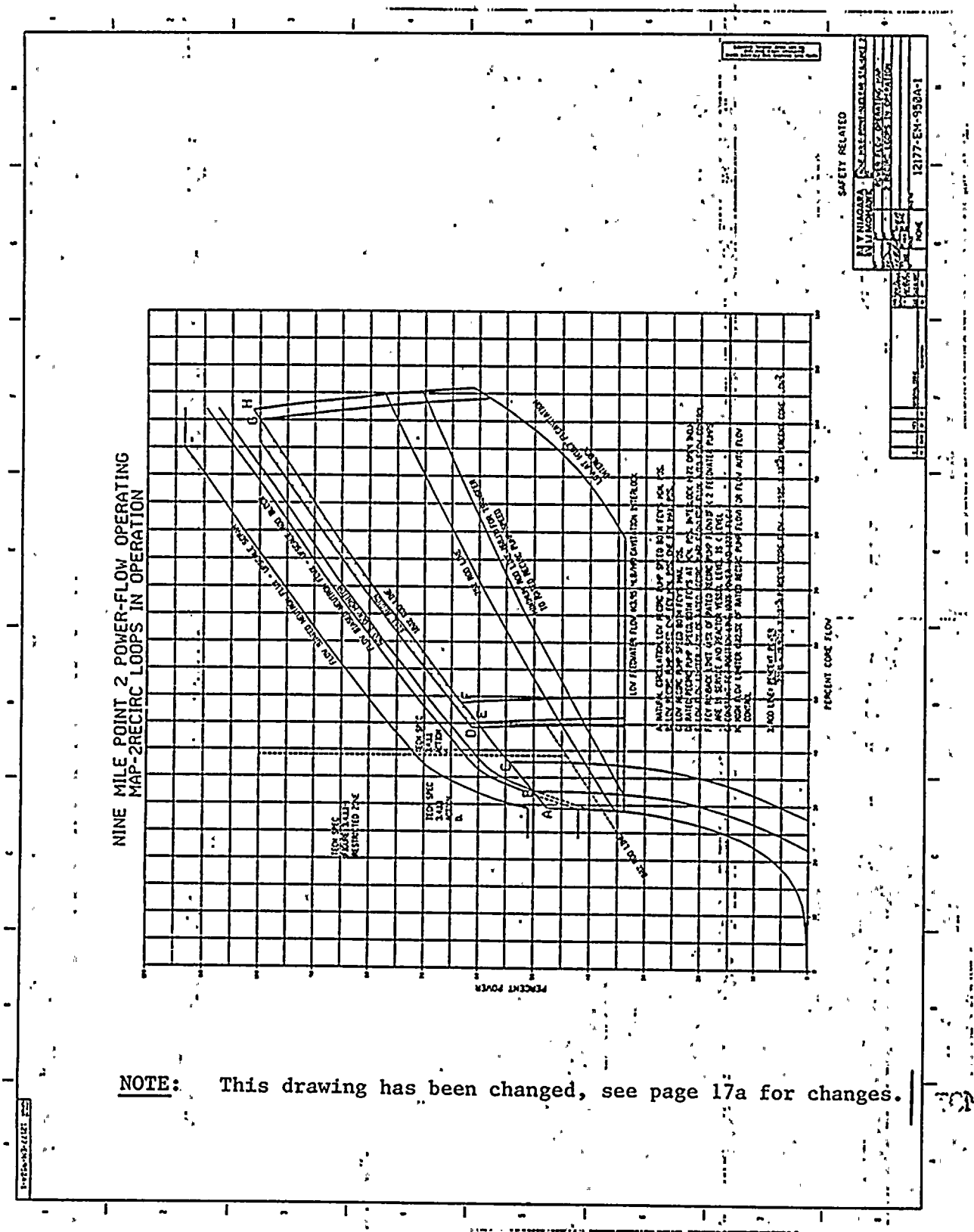
3.4 Insert enough Cram rods to achieve the desired rod line.

3.5 Contact Reactor Engineering to recover any control rods inserted.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS

N/A

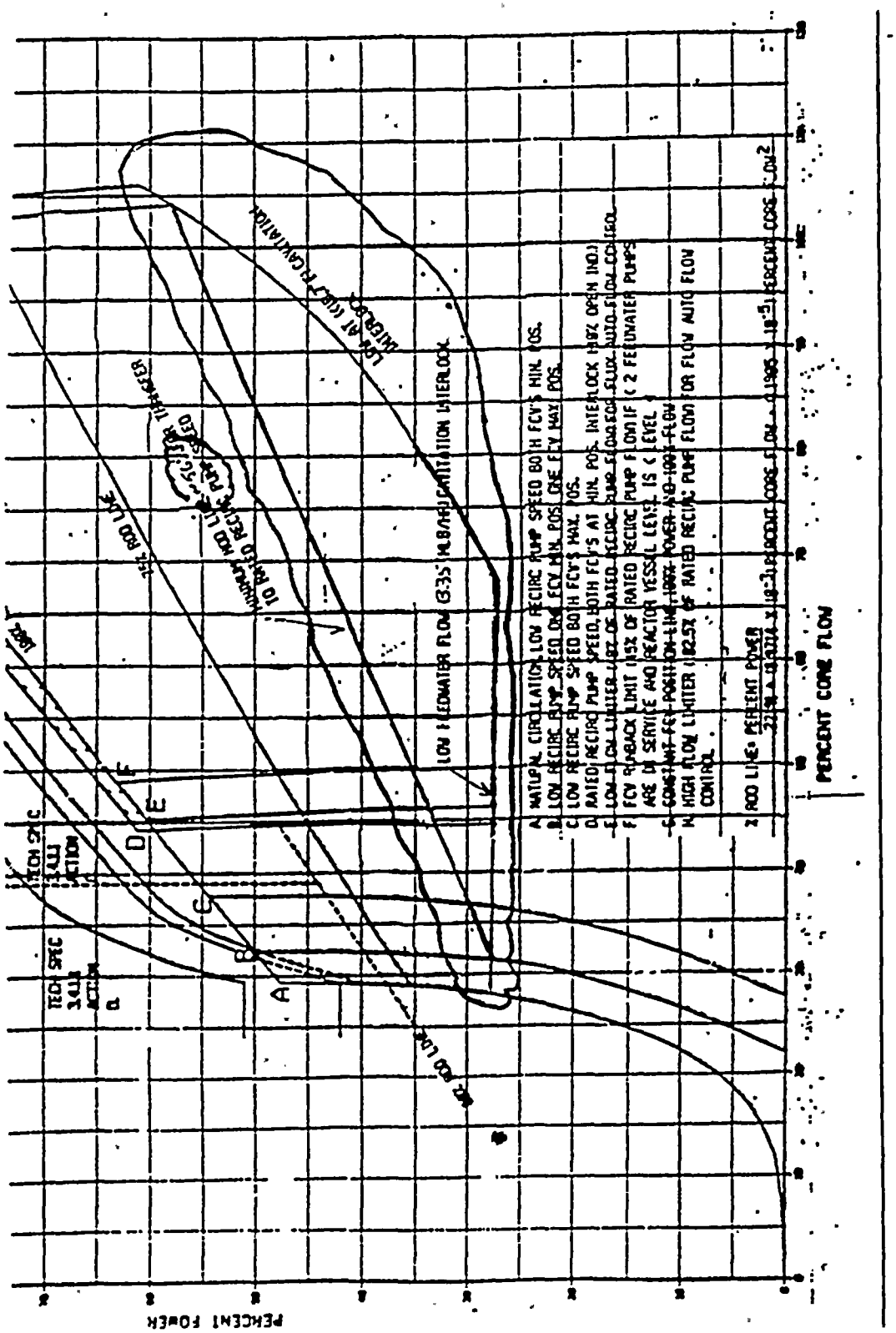
ATTACHMENT 1
PLANT OPERATING CONTROL MAP TWO LOOP OPERATION



NOTE: This drawing has been changed, see page 17a for changes. TCN 6-1

TCN-6

ATTACHMENT 1
PLANT OPERATING CONTROL MAP TWO LOOP OPERATION



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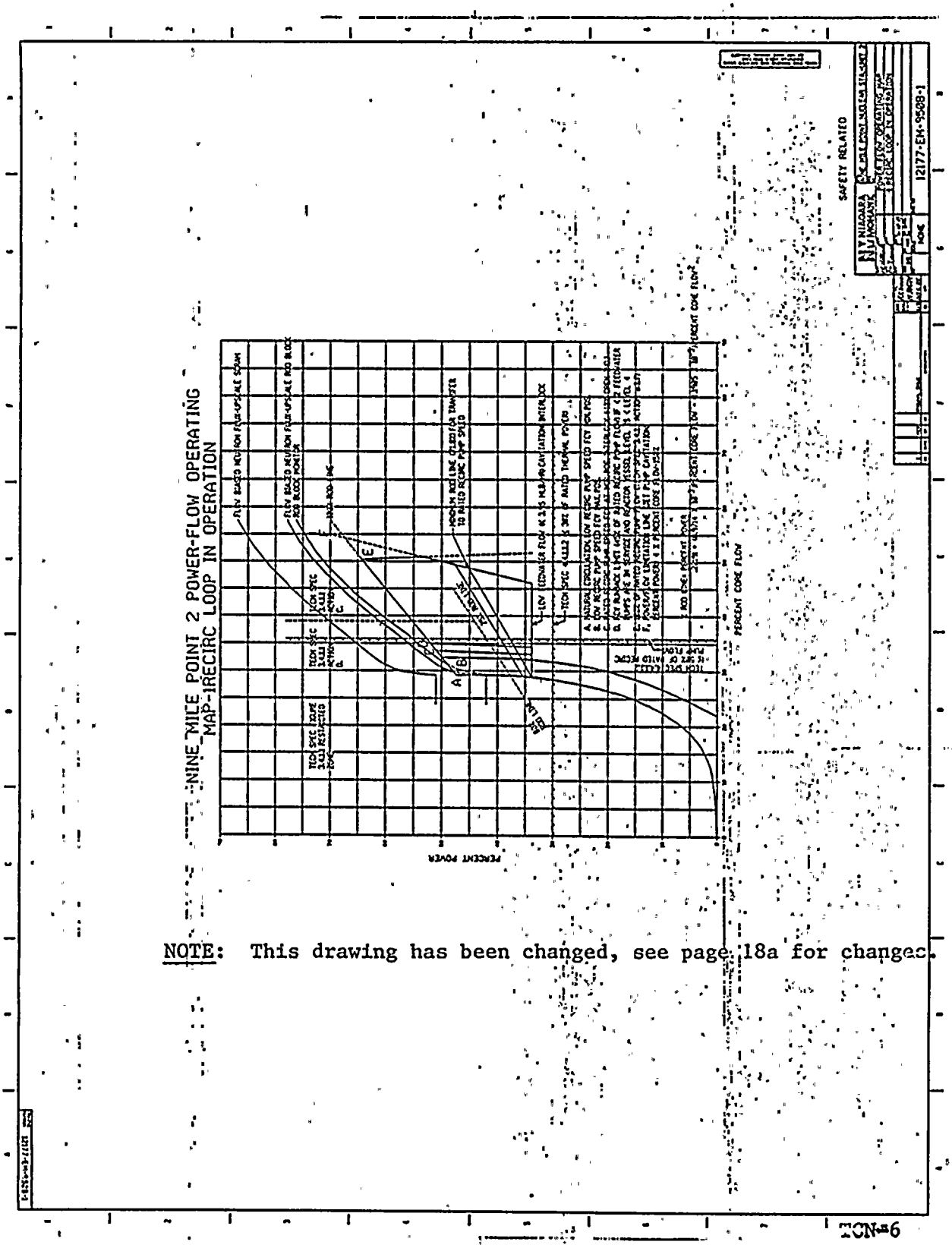
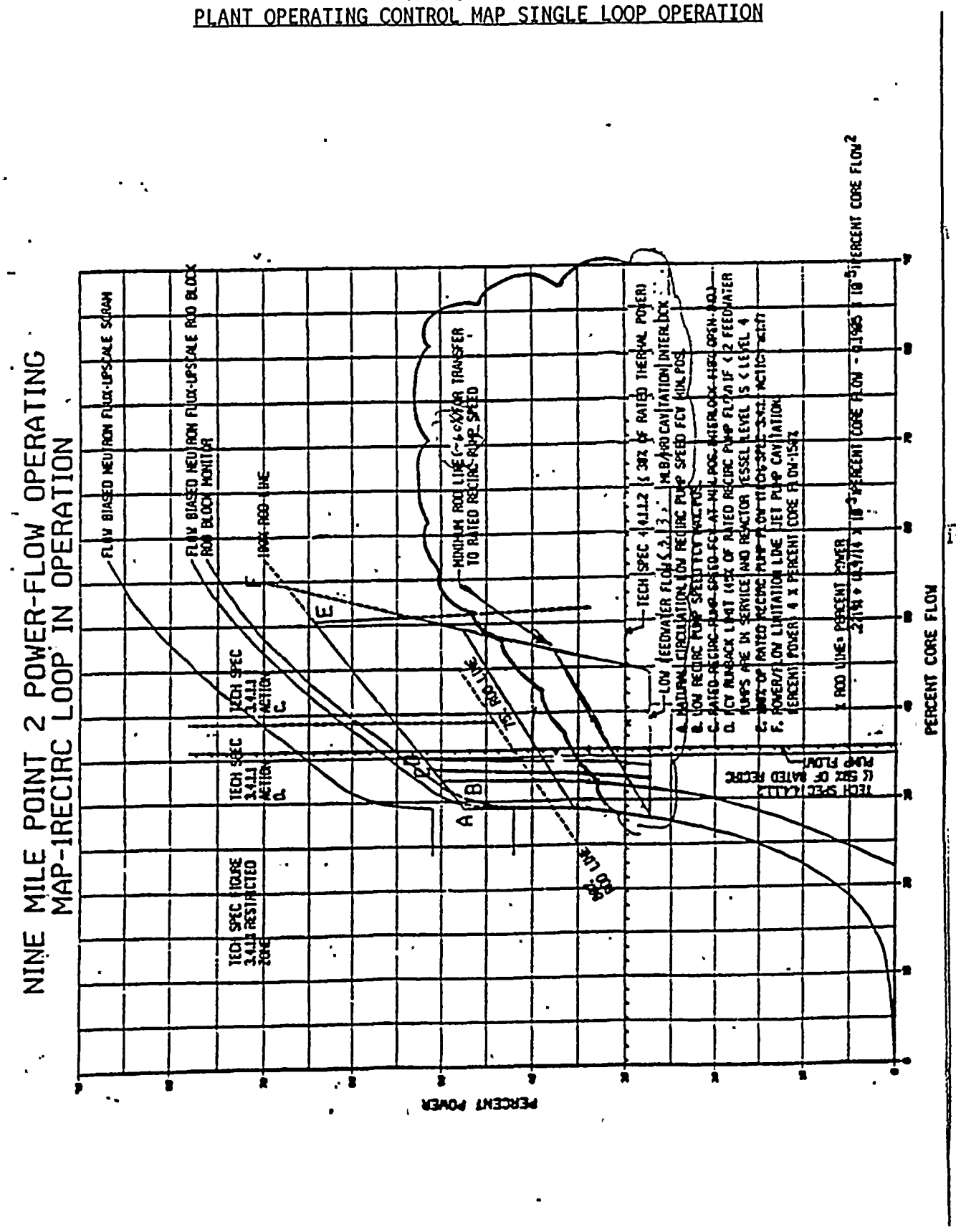
ATTACHMENT 2
PLANT OPERATING CONTROL MAP SINGLE LOOP OPERATION



NOTE: This drawing has been changed, see page 18a for changes. TCN-6

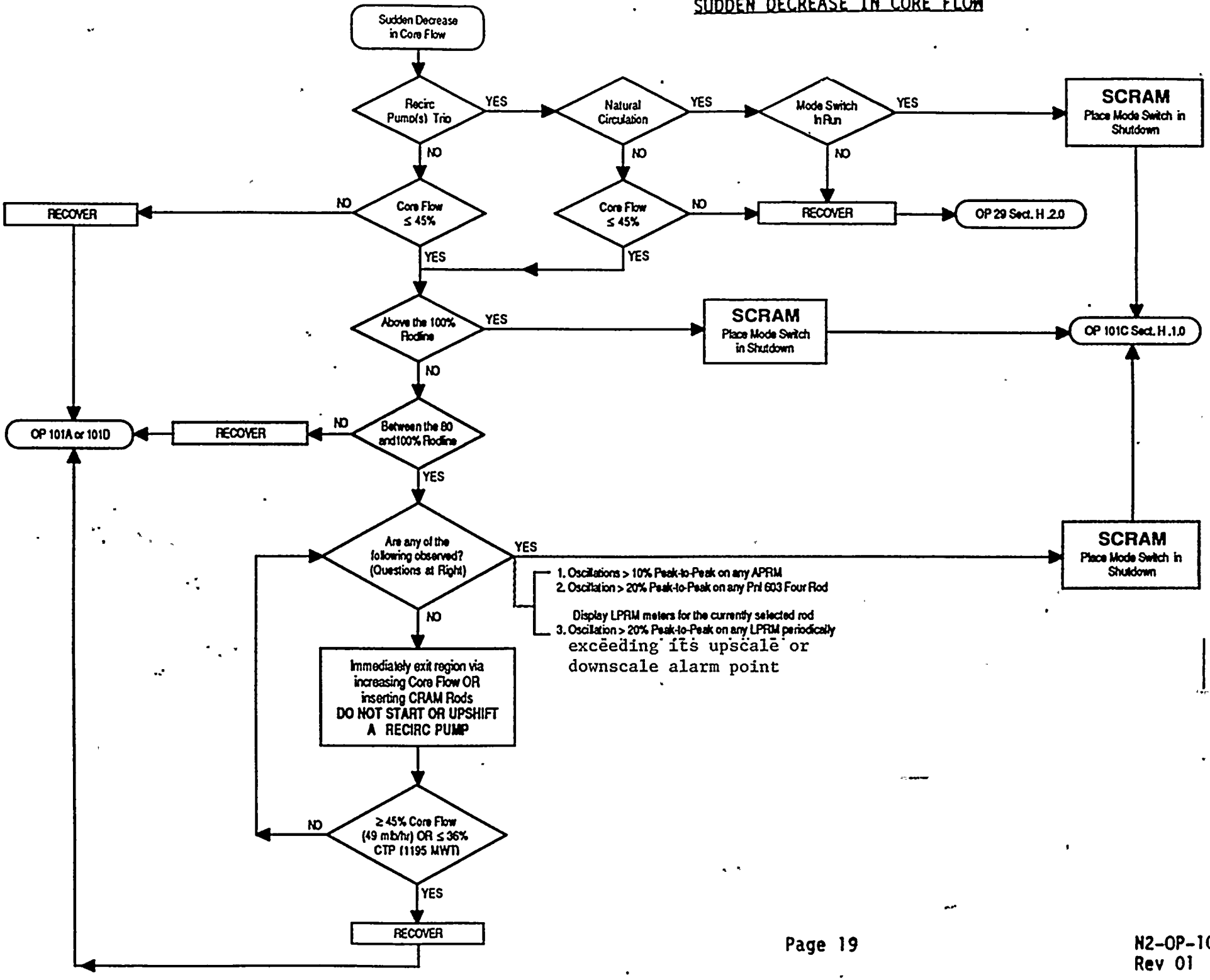
TCN-6

ATTACHMENT 2
PLANT OPERATING CONTROL MAP SINGLE LOOP OPERATION



TCN-6

SUDDEN DECREASE IN CORE FLOW



15917

ATTACHMENT 4
INDIVIDUAL CONTROL ROD MOVEMENT INSTRUCTIONS

INDIVIDUAL CONTROL ROD MOVEMENT INSTRUCTIONS

DATE _____ CYCLE EXPOSURE _____ MWD/ST

ROD I.D.	FROM	TO	COUPLING CHECK	COMPLETE	VERIFIED
1) ROD #1	36	44	_____	_____	
2) ROD #2	36	44	_____	_____	
3) ROD #3	36	44	_____	_____	
4) ROD #4	36	44	_____	_____	
RESELECT RODS AND VERIFY POSITION					_____
5) ROD #5	00	12	_____	_____	
6) ROD #6	00	12	_____	_____	
7) ROD #7	00	12	_____	_____	
8) ROD #8	00	12	_____	_____	
RESELECT RODS AND VERIFY POSITION					_____
9) ROD #9	00	12	_____	_____	
10) ROD #10	00	12	_____	_____	
11) ROD #11	00	12	_____	_____	
12) ROD #12	00	12	_____	_____	
RESELECT RODS AND VERIFY POSITION					_____
13) ROD #13	00	12	_____	_____	
14) ROD #14	00	12	_____	_____	
15) ROD #15	00	12	_____	_____	
16) ROD #16	00	12	_____	_____	
RESELECT RODS AND VERIFY POSITION					_____
17) ROD #17	00	12	_____	_____	
18) ROD #18	00	12	_____	_____	
19) ROD #19	00	12	_____	_____	
20) ROD #20	00	12	_____	_____	
RESELECT RODS AND VERIFY POSITION					_____

PREPARED BY:

_____

PAGE __ of __

NOTE: This is only a sample, actual Individual Control Rod Movement Instructions may vary slightly