UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
November 18, 1992

Docket Nos. 50-321
and 50-366

LICENSEE: Georgia Power Company, et al.

FACILITY: Hatch Nuclear Plant, Units 1 and 2

SUBJECT: MEETING SUMMARY OF OCTOBER 27, 1992, ON THE SHROUD ACCESS COVER AT HATCH UNIT 2 AND POST-MEETING ACTIONS (TAC No. M84756)

Introduction

On October 27, 1992, the NRC staff met with Georgia Power Company (GPC or licensee) and their consultants from General Electric (GE) in Rockville, Maryland. The meeting was held at NRC's request to discuss the licensee's inspection findings and action plan, prior to startup, for the shroud access cover. Enclosure 1 lists the attendees, and Enclosure 2 contains the meeting agenda.

Discussion

After brief introductory remarks, Mr. J. Heidt, GPC, described the physical location of the access hole covers and provided an overview of the inspection results at Plant Hatch. He also discussed GPC's actions from the time this generic issue was identified at Peach Bottom in January 1988. Enclosure 3 contains a copy of the viewgraphs used for his presentation.

Mr. T. Brinkman, GE, described the ultrasonic testing techniques used at Hatch and provided the results of the October 1992 inspection. He stated, among other things, that: (1) no radial cracking was detected; (2) no reportable indications were observed on one cover; and (3) two circumferential planar indications, about 70% through the plate thickness, were observed on the other cover. Enclosure 4 contains a copy of the viewgraphs used for his presentation.

Dr. Ranganath, GE, discussed the stress and crack growth analyses. He also provided the technical basis for continued operation of Hatch Unit 2 without performing any repair until the Spring 1994 outage. His conclusions were primarily based on GE's analysis that shows that the available average ligament is 0.26 inch which is well in excess of the required ligament of 0.14 inch. He also stated that even if the cover is separated, the change in core bypass flow will be readily detected and the plant can be brought to normal shutdown in accordance with the recommendations of GE Service Information Letter (SIL) 462. Enclosure 5 contains a copy of the viewgraphs used for his presentation. During Dr. Ranganath's presentation, the NRC staff requested a copy of the GE stress and crack growth analysis.

Following the above presentations, Mr J. Heidt, GPC, provided an overview of the probabilistic risk assessment implications and summarized the licensee's safety assessment. He stated that: (1) the failure of an access hole cover during operation would be rapidly detected, (2) the failure would not induce a loss-of-coolant accident, and (3) a postulated recirculation suction line break with a concurrent access hole cover failure and a simultaneous failure of one core spray pump does not result in the inability to maintain adequate core cooling. Based on the above, the licensee concluded that the circumferential access hole cracking is not a significant safety concern, and operation of Hatch Unit 2 for cycle 11 is justified without performing any repair until the Spring 1994 refueling outage. Enclosure 6 contains a copy of the viewgraphs used for Mr. Heidt's presentation.

Conclusion

In response to NRC comments, the licensee committed to the following:

(1) For Unit 1, the licensee will schedule the inspection for both access hole covers as early as possible in the forthcoming Spring 1993 refueling/ maintenance outage. The licensee will have a temporary repair available for implementation.

(2) For Unit 2, the licensee will schedule the inspection for both access hole covers as early as possible in the forthcoming Spring 1994 refueling/ maintenance outage. The licensee will repair the Unit 2 covers during that outage.

(3) For both units, the licensee will expeditiously inform the NRC of the inspection results.

The NRC staff stated that it will review the information provided by the licensee during the meeting and will inform the licensee of any comments in the near future. In the meantime, the licensee may proceed with the refueling/maintenance outage as scheduled.

Post-Meeting Actions

(1) On October 28, 1992, the NRC staff noticed that one of the viewgraphs used by Dr. Ranganath, during his presentation, titled "Effect of ECP on Crack Growth Rate Alloy 182 CAV vs. PLEDGE," was labeled as "GE Proprietary Information." As a result of discussions with GPC, they stated by letter dated November 10, 1992, that the viewgraph should not be considered proprietary.

(2) On October 29, 1992, the NRC staff (D. Matthews and K. Jabbour) called GPC (S. Bethay) to inform them of NRC comments regarding the restart of Unit 2. Mr. Matthews stated that the staff had no objection to GPC plans for starting-up Unit 2 without implementing repairs. Furthermore, Mr. Matthews reaffirmed GPC's commitment to implement the recommendations of GE SIL-462 to shut down the unit if core bypass flow is detected.

/s/

Kahtan N. Jabbour, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. List of Attendees
2. Meeting Agenda
3. - 6. Viewgraphs Used for Presentations

cc w/enclosures:
See next page

DISTRIBUTION:
Docket File
NRC/Local PDRs
PDII-3 Reading
Hatch Reading
FMurley/FMiraglia, 12G18
JPartlow, 12G18
SVarga
GLainas
DMatthews
LBerry
OGC, 15B18
EJordan, MNBB3701
KJabbour
ACRS (10), P-315
LPlisco, EDO, 17G21
EMerschoff, RII
M. Hartzman, 7E23
RJones, 8E23
RFrahm, 9D4
MRazzaque, 8E23
BLiaw, 7D26
RHermann, 7D4
WKoo, 7D4
JBlack

DOCUMENT NAME: G:\HATCH\MTS10-27

PDII-3:LA	PDII-3:PM	BC:EMCB	BC:SRXB	D:PDII-3
LBerry	KJabbour:cw	JStrosnider	RJones	DMatthews
11/19/92	11/17/92	11/10/92	11/13/92	11/18/92

(2) On October 29, 1992, the NRC staff (D. Matthews and K. Jabbour) called GPC (S. Bethay) to inform them of NRC comments regarding the restart of Unit 2. Mr. Matthews stated that the staff had no objection to GPC plans for starting-up Unit 2 without implementing repairs. Furthermore, Mr. Matthews reaffirmed GPC's commitment to implement the recommendations of GE SIL-462 to shut down the unit if core bypass flow is detected.

Kahtan N. Jabbour

Kahtan N. Jabbour, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. List of Attendees
2. Meeting Agenda
3. - 6. Viewgraphs Used for Presentations

cc w/enclosures:
See next page

cc:

Mr. Ernest L. Blake, Jr.
Shaw, Pittman, Potts and Trowbridge
2300 N Street, NW.
Washington, DC 20037

Mr. J. T. Beckham
Vice President - Plant Hatch
Georgia Power Company
P. O. Box 1295
Birmingham, Alabama 35201

Mr. S. J. Bethay
Manager Licensing - Hatch
Georgia Power Company
P. O. Box 1295
Birmingham, Alabama 35201

Mr. L. Sumner
General Manager, Nuclear Plant
Georgia Power Company
Route 1, Box 439
Baxley, Georgia 31513

Resident Inspector
U. S. Nuclear Regulatory Commission
Route 1, Box 725
Baxley, Georgia 31513

Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW. Suite 2900
Atlanta, Georgia 30323

Mr. Charles H. Badger
Office of Planning and Budget
Room 610
270 Washington Street, SW.
Atlanta, Georgia 30334

Harold Reheis, Director
Department of Natural Resources
205 Butler Street, SE., Suite 1252
Atlanta, Georgia 30334

Chairman
Appling County Commissioners
County Courthouse
Baxley, Georgia 31513

Mr. R. P. McDonald
Executive Vice President -
Nuclear Operations
Georgia Power Company
P. O. Box 1295
Birmingham, Alabama 35201

Mr. Alan R. Herdt, Chief
Project Branch #3
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. Dan Smith
Power Supply Operations
Oglethorpe Power Corporation
2100 East Exchange Place
Tucker, Georgia 30085-1349

Charles A. Patrizia, Esquire
Paul, Hastings Janofsky & Walker
12th Floor
1050 Connecticut Avenue, NW.
Washington, DC 20036

Mr. W. G. Hairston, III
Senior Vice President
Nuclear Operations
Georgia Power Company
P. O. Box 1295
Birmingham, Alabama 35201

ENCLOSURE 1

October 27, 1992

NRC/GPC Meeting

List of Attendees

NRC	GPC	GE
D. Matthews	J. Heidt	G. Gordon
K. Jabbour	S. Bethay	S. Ranganath
R. Jones	A. Maze	T. Brinkman
R. Frahm	M. Sims	C. Stoll
M. Razzaque	B. Syx	J. Clark
B. Liaw (Part-time)	R. Dyle	
R. Hermann		
W. Koo		
J. Black		

NRC MEETING
OCTOBER 27, 1992

PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

AGENDA

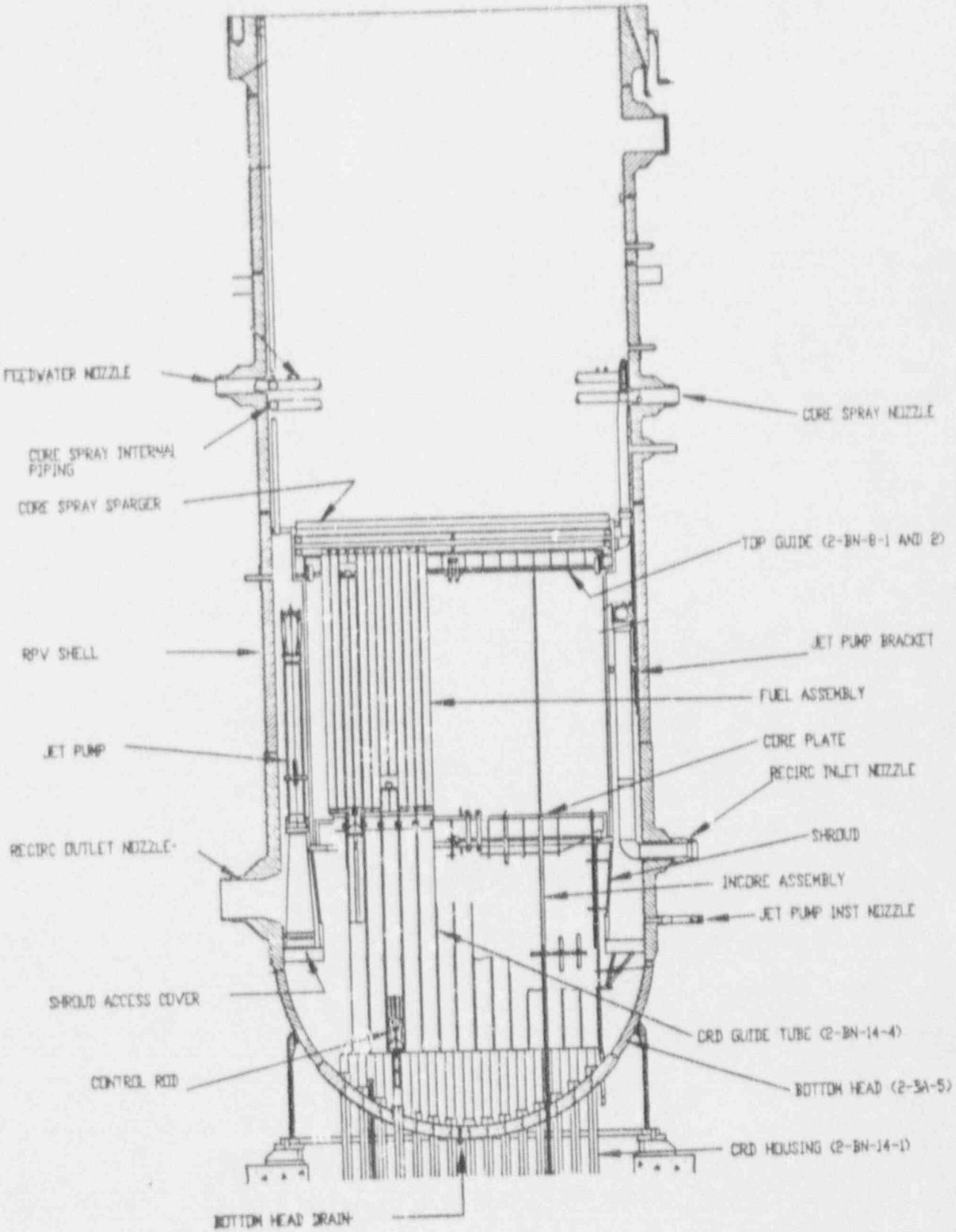
I.	INTRODUCTIONS/OPENING COMMENTS	GPC/NRC
II.	PHYSICAL DESCRIPTION	JIM HEIDT
III.	EXAMINATION/REPAIR CONSIDERATIONS	JIM HEIDT
III.	UT INSPECTION TECHNIQUES	TIM BRINKMAN
IV.	OCTOBER 1992 INSPECTION RESULTS	TIM BRINKMAN
V.	STRESS AND CRACK GROWTH ANALYSIS	SAM RANGANATH
VI.	SAFETY ASSESSMENT	JIM HEIDT
VII.	CONCLUSIONS	JIM HEIDT
VIII.	DISCUSSION	GPC/NRC

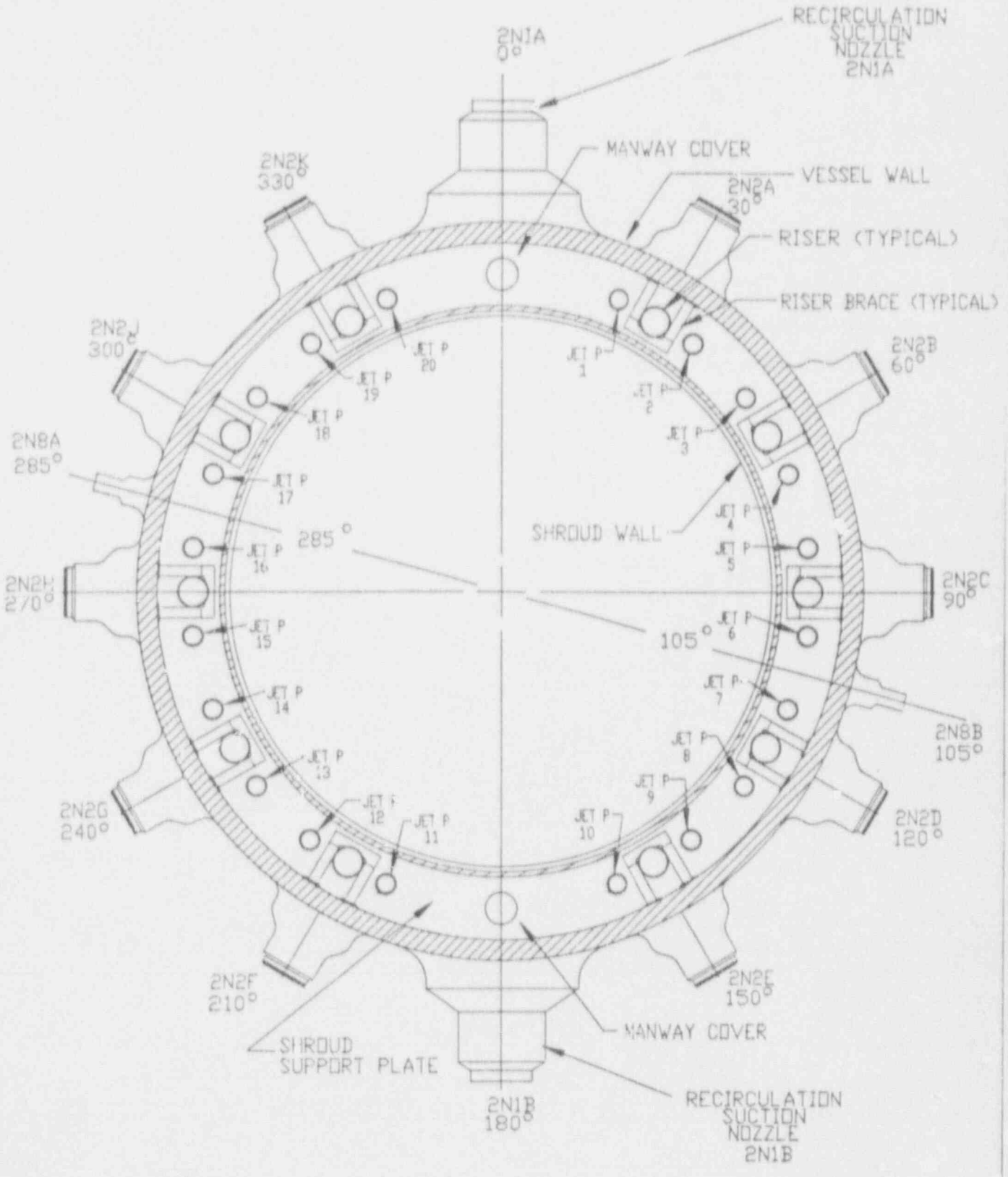
PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

PHYSICAL DESCRIPTION

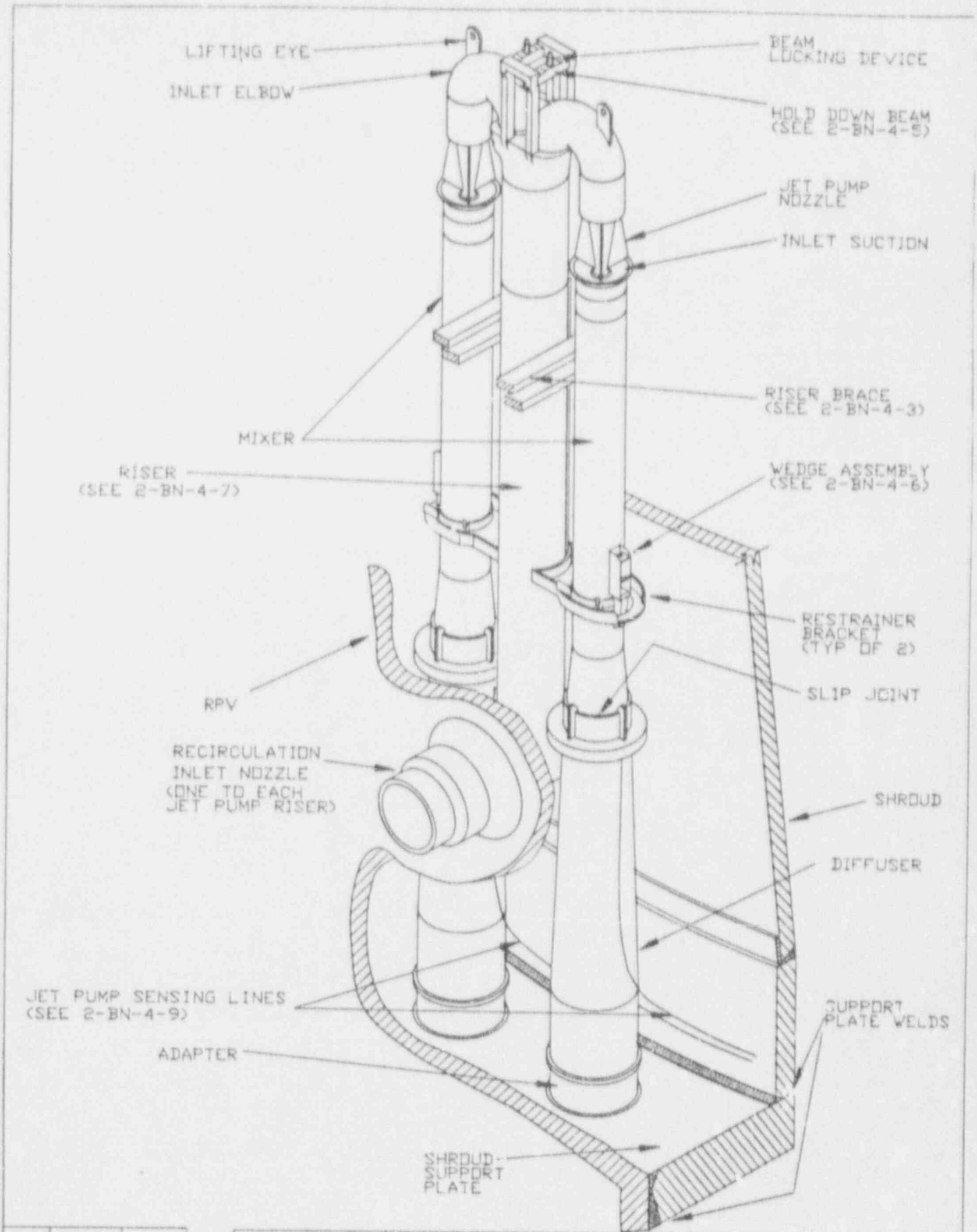
I. TWO ACCESS HOLE COVERS LOCATED AT 0^0 AND 180^0
APPROX. 18" DIRECTLY BELOW RECIRC SUCTION NOZZLES

II. EACH COVER IS INCONEL 600 -- 5/8" THICK, 20" DIAMETER


FEEDWATER NOZZLE
CORE SPRAY INTERNAL PIPING
CORE SPRAY SPARGER
RPV SHELL
JET PUMP
RECIRC OUTLET NOZZLE
SHROUD ACCESS COVER
CONTROL ROD
BOTTOM HEAD DRAIN
CORE SPRAY NOZZLE
TOP GUIDE (2-BN-8-1 AND 2)
JET PUMP BRACKET
FUEL ASSEMBLY
CORE PLATE
RECIRC INLET NOZZLE
SHROUD
INCORE ASSEMBLY
JET PUMP INST NOZZLE
CRD GUIDE TUBE (2-BN-14-4)
BOTTOM HEAD (2-3A-5)
CRD HOUSING (2-BN-14-1)



DATE	3-30-92		PROJECT: E I HATCH UNIT 2		TITLE: JET PUMP LAYOUT		
REV	1						
SOUTHERN NUCLEAR COMPANY		REFERENCE DRAWINGS: GE 197R629 REV B	ITS REVIEW: W. Cole	ITS APPL:	DRAWN BY: GS	SKETCH NUMBER: 2-BN-4-8	



DATE	3-30-92	
REV	1	

SOUTHERN NUCLEAR COMPANY

REFERENCE DRAWINGS
GE 1170
4353 REV 12
4355 REV 10 4379 REV 6 GE 729L647 REV 4
4371 REV 5 4534 REV 8 GE 729L692 REV 8
4584 REV 6

PROJECT
E I HATCH UNIT 2

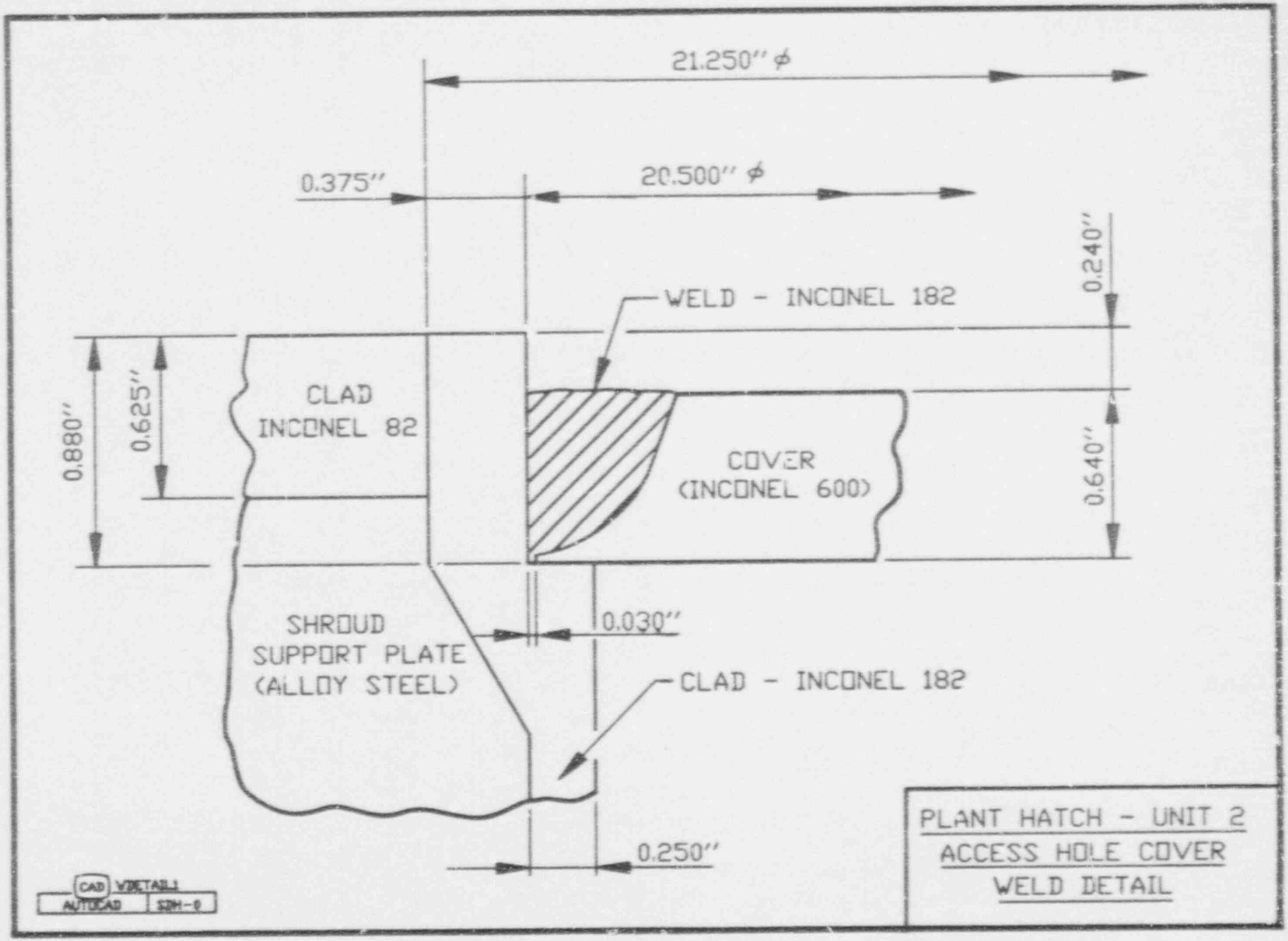
TITLE
JET PUMP ASSEMBLY ISOMETRIC VIEW

ITS REVIEW

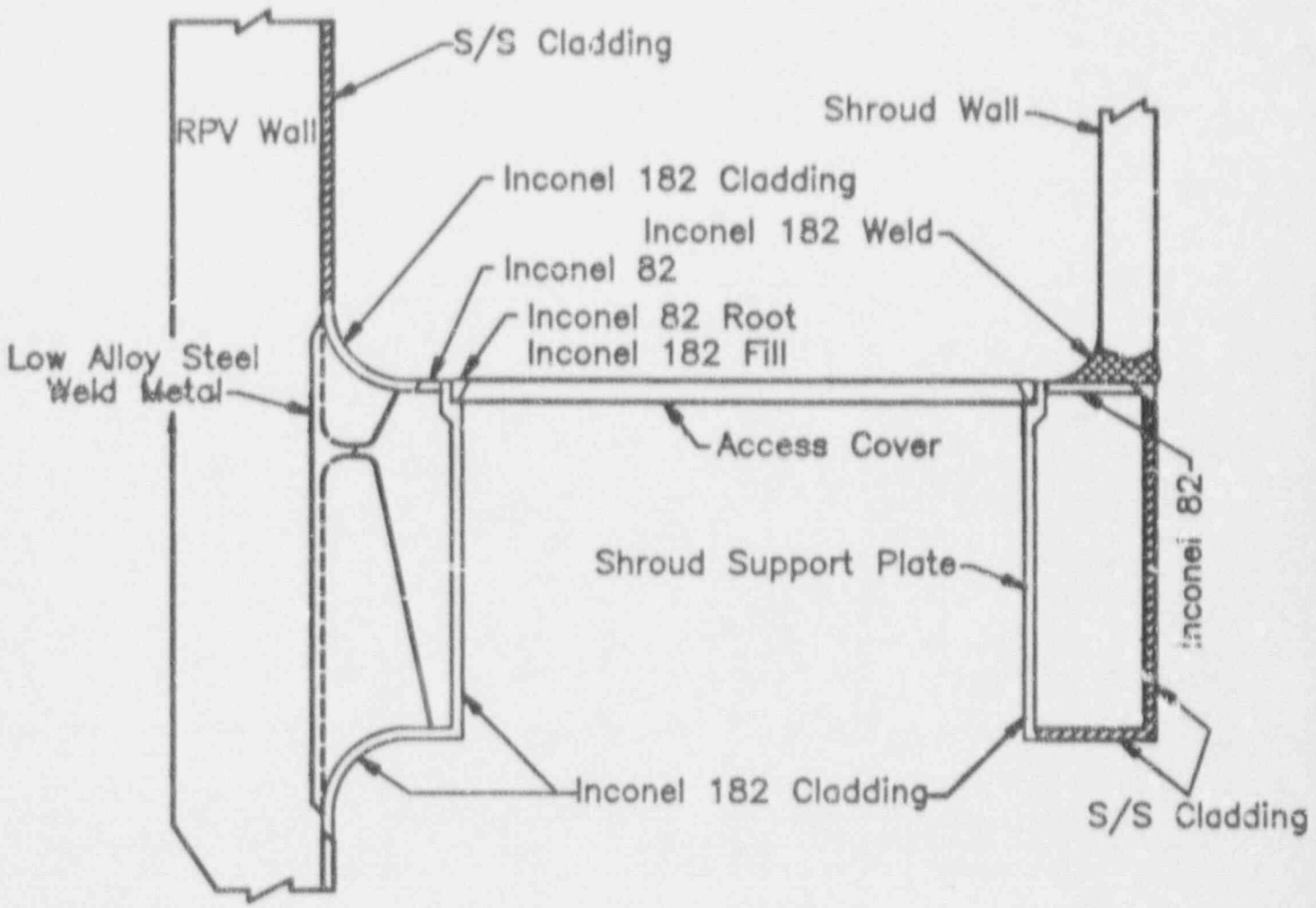
ITS APPR.

DRAWN BY
GS

SKETCH NUMBER
2-BN-4-1


21.250" ϕ
0.375"
20.500" ϕ
0.240"
WELD - INCONEL 182
0.880"
0.625"
CLAD
INCONEL 82
COVER
(INCONEL 600)
0.640"
SHROUD
SUPPORT PLATE
(ALLOY STEEL)
0.030"
CLAD - INCONEL 182
0.250"
CAD VDETAIL1
AUTOCAD SDH-0
PLANT HATCH - UNIT 2
ACCESS HOLE COVER
WELD DETAIL

Plant Hatch Unit 2
RPV Access Hole Cover Welds



PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

EXAMINATION/REPAIR CONSIDERATIONS

JAN. 21, 1988	PEACH BOTTOM 3 FOUND EXTENSIVE AHC CRACKING. TEMPORARY REPAIR INSTALLED.
FEB. 1, 1988	SIL-462 ISSUED RECOMMENDING EXAMINATION.
FEB. 2, 1988	IN 88-03 ISSUED TO ADVISE INDUSTRY OF THE CONCERN WITH AHC CRACKING.
MARCH 1988	HATCH 2 AHC INSPECTION FROM THE COVER SIDE REVEALED NO CIRCUMFERENTIAL CRACKING.
FEB. 22, 1989	SIL-462, SUPPLEMENT 1 ISSUED TO PROVIDE UPDATE OF INSPECTION RESULTS. RECOMMENDED INSPECTION IF SHROUD HEAD BOLT CRACKING HAD BEEN EXPERIENCED.
AUG. 10, 1990	SIL-462, SUPPLEMENT 2 ISSUED TO PROVIDE UPDATE OF INSPECTION RESULTS AT 8 PLANTS. RECOMMENDED INSPECTION AT 10 YEAR INTERVALS.
JUNE 4, 1992	GPC REQUESTED GE TO DEVELOP A TEMPORARY BLOCKING DEVICE DESIGN.
JUNE 10, 1992	INFORMATION RELATED TO RADIAL CRACKING WAS PRESENTED TO THE NRC BY THE BWROG.
AUG. 4, 1992	GPC MADE THE FOLLOWING MANAGEMENT DECISIONS:

1. UNIT 2 VT AND UT EXAMS DURING THE FALL 1992 OUTAGE WERE WARRANTED BASED ON THE INFORMATION AVAILABLE.

2. NO UNIT 2 PRE-EMPTIVE REPAIRS WOULD BE SCHEDULED BASED ON:

   * CIRCUMFERENTIAL CRACKING NOT A SAFETY ISSUE

   * RADIAL CRACKING NOT AN IMMEDIATE SAFETY ISSUE

   * LACK OF A PERMANENT DESIGN FOR UNIT 2 TO ACCOMMODATE RADIAL CRACKING.

GE Inspection Services

Access Hole Cover Examinations at Plant Hatch - Unit 2

Prepared for USNRC-NRR

October 27, 1992

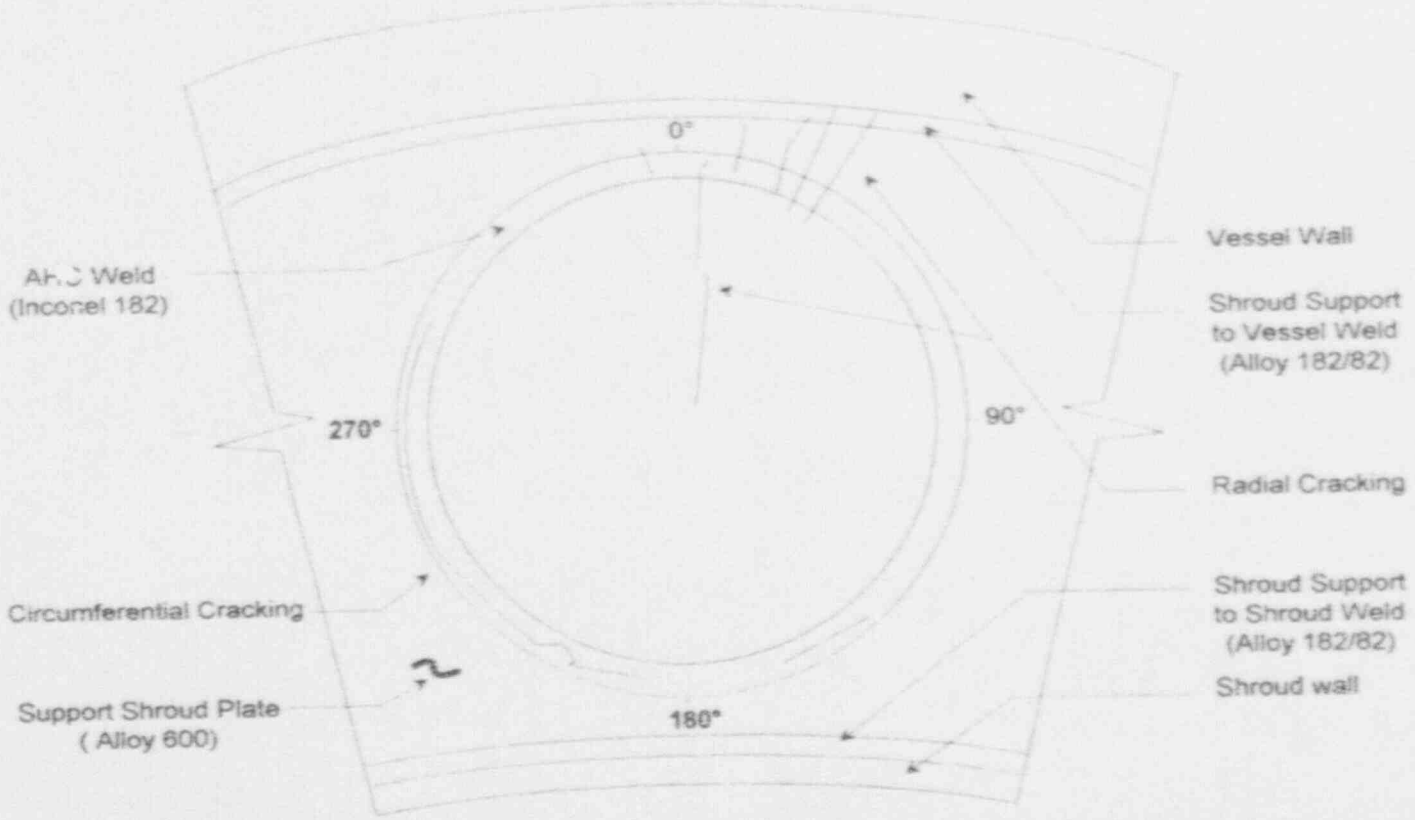
T. L. Brinkman

Project Manager, NDE - Application Technology

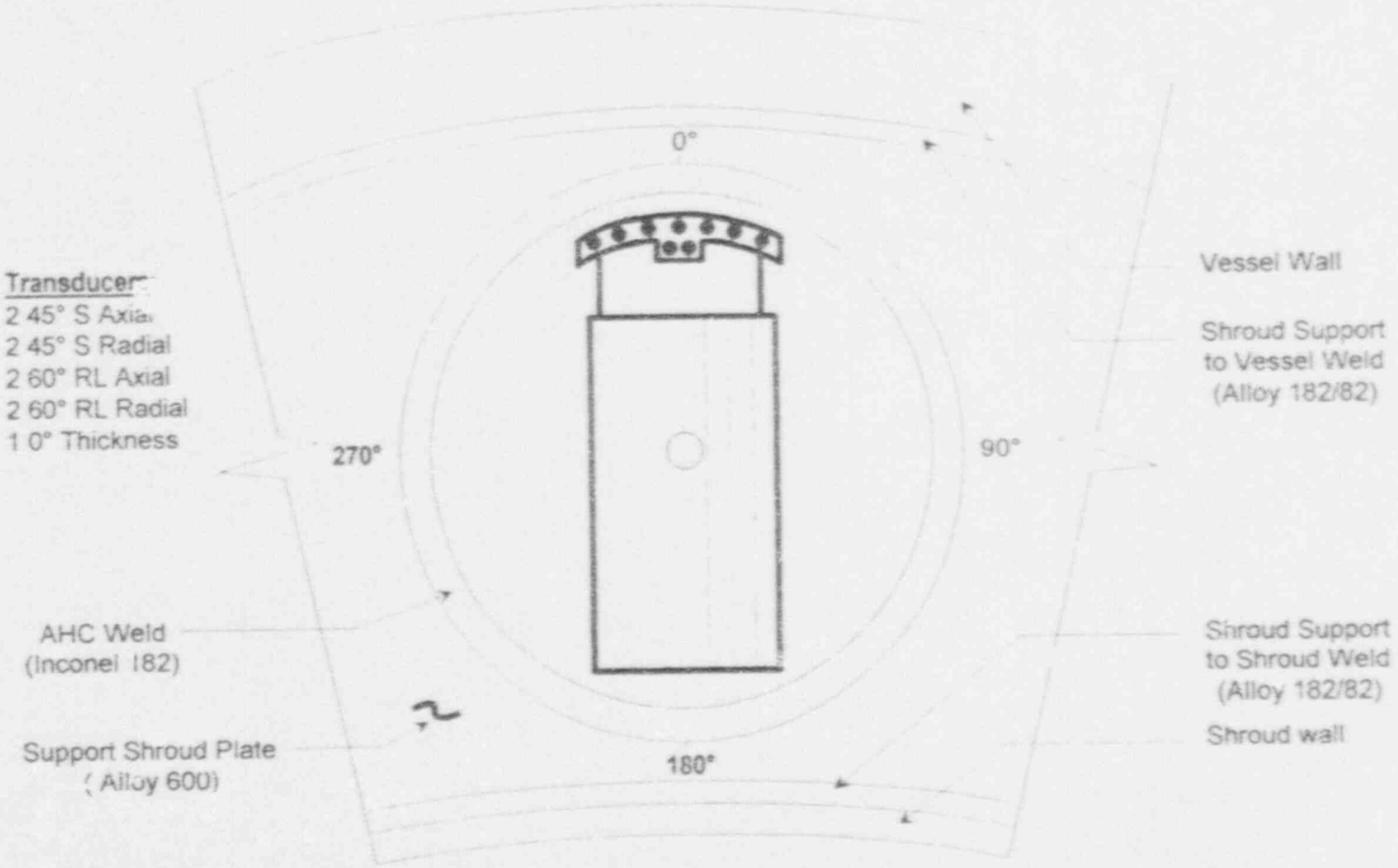
ENCLOSURE 4

Radial cracking

- Recent Visual examination reveals ***Radial Cracking***
- Crack growth extending toward vessel wall
- SIL 462 updated and issued June 8, 1992



New ID scanner



F[illegible]92 Access Hole Cover exams

- Examination technique utilized to detect radial and circumferential cracking
  - Examine from cover and shroud ledge side
  - 45 degree shear and 60 degree RL for weld and base metal interrogation

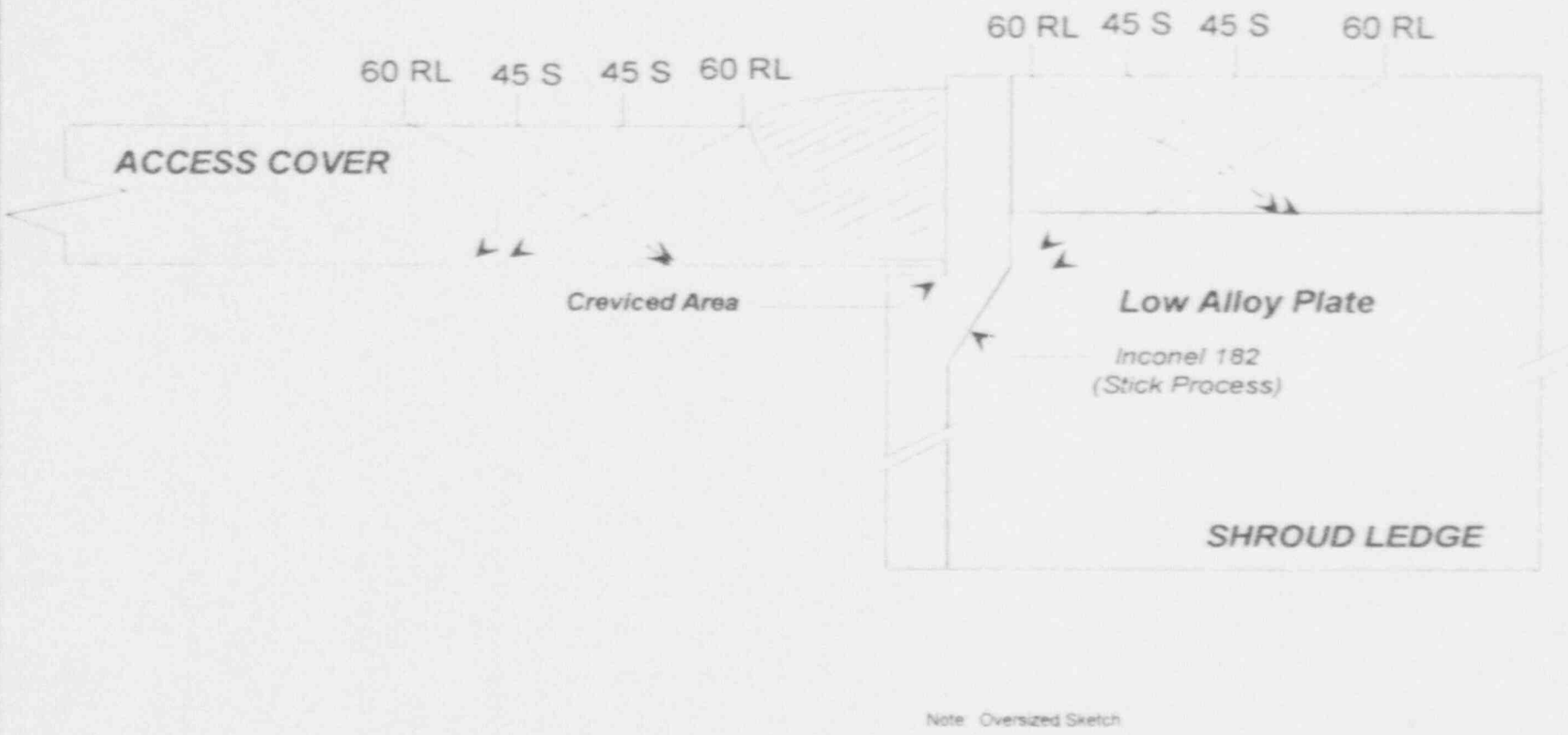
- Techniques qualified based on actual cracked specimans
  - Visual confirmation
  - Circumferential and radial cracks

- Remote automated exams
  - New scanner and technique for improved accuracy
  - Utilized proven ***Smart 2000*** data acquisition system

Hatch - Unit 2 180 Access Hole Cover - Exam Coverage

26-Oct-92

Cross-Sectional View



Note Oversized Sketch

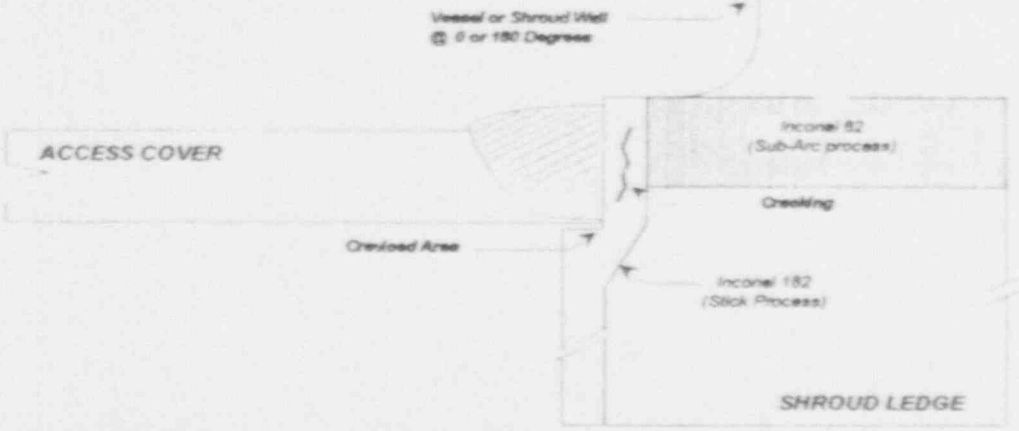
Examination results

- 0° cover shows no reportable indications
- 180° cover has 2 circumferential planar indications
  - Indication 1 is from 25° to 135°
  - Indication 2 is from 215° to 335°
    - No axial exam on ledge side from 335° to 25° & from 135° to 215° due to RPV and Shroud wall
  - Indication location verified by ultrasonic landmarks and design dimensions
  - Indication has characteristics similar to IGSCC
    - Facetted appearance
    - Strong echo-dynamic pattern
- No radial cracking detected

Hatch - Unit 2 180 Access Hole Cover Exam Results

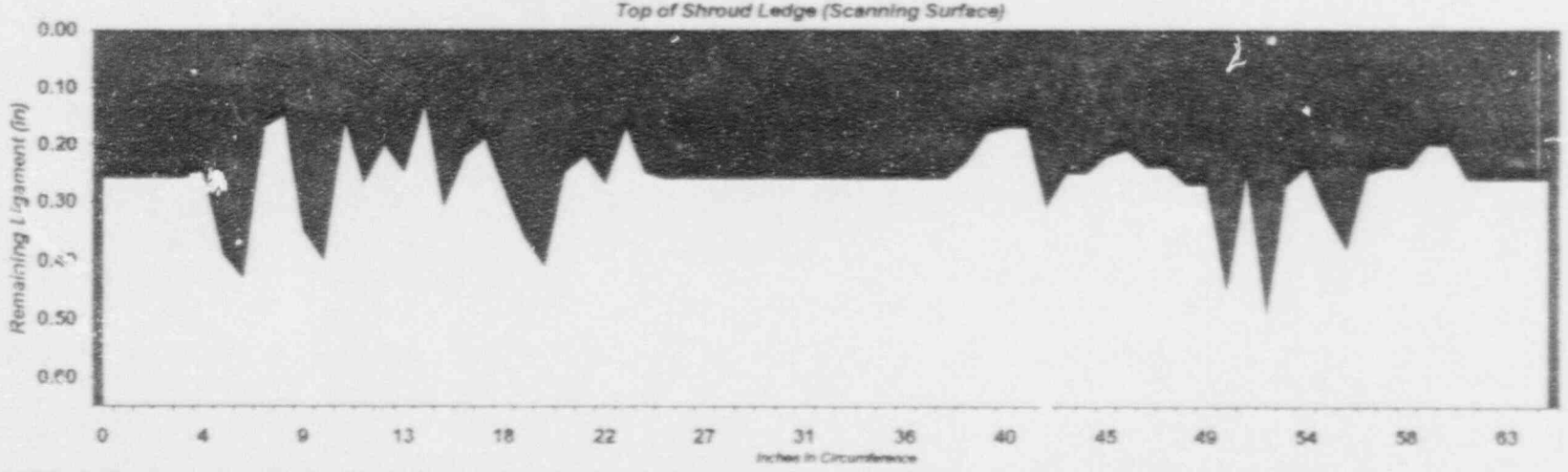
16-Oct-92

Cross-Sectional View



Roll-out View

Remaining Ligament Roll-out Map (Shroud Ledge Side)

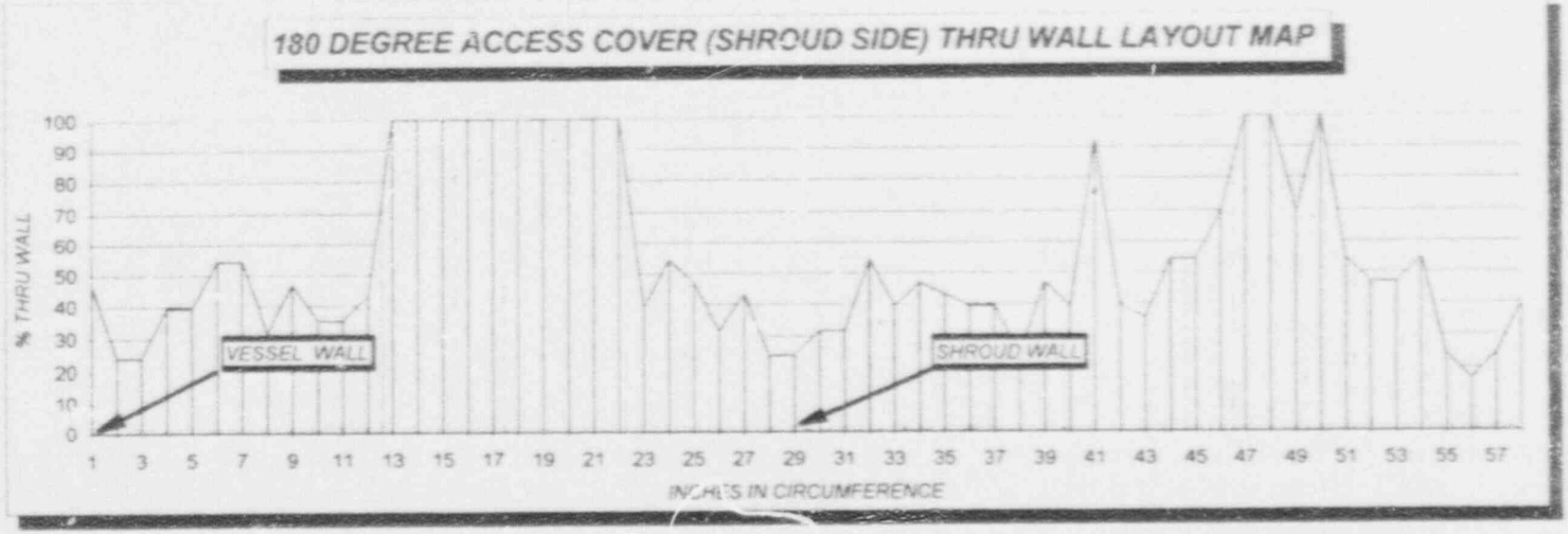


Chinshan - 180 Access Hole Cover Exam Results

Oct-90

Cross-Sectional View

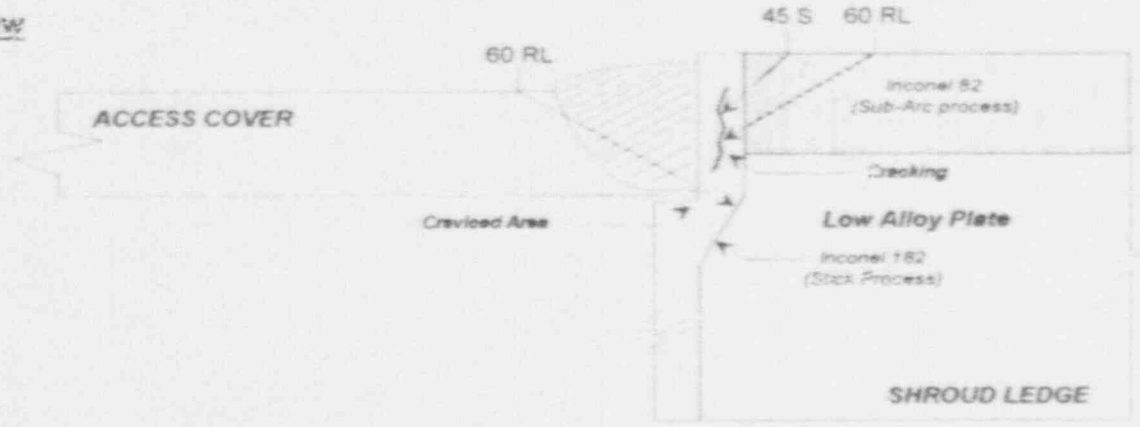
Roll-out View



Hatch - Unit 2 180 Access Hole Cover - Plant Comparison

26-Oct-92

Cross-Sectional View



Unique Design Configuration

- Clad Low Alloy
  - 9 inches thick
- 182 Butter Weld Prep
- Recessed Cover with ledge at prep
- Repairs documented during repair

UT and Visual results are not consistent with other "Thin Cover" data

- Cracking can not be confirmed from Cover side
- Creviced area not detected
  - Interface recorded with beam propagating thru crevice area
- Patterns of thru-wall are not consistent
- No areas of pop-thru detected by Visual examination
- First thin cover plant with only one cover cracked

HATCH 2

ACCESS HOLE COVER

EVALUATION

PRESENTATION TO THE NRC

ROCKVILLE, MD

S. RANGANATH

GE NUCLEAR ENERGY

OCTOBER 26-27, 1992

HATCH 2 ACCESS HOLE COVER (AHC) EVA ATION

OUTLINE

- o BACKGROUND
- o STRUCTURAL ANALYSIS
- o CRACK GROWTH EVALUATION
- o TECHNICAL BASIS FOR CONTINUED OPERATION
- o CONCLUSION

BACKGROUND

- CRACK INDICATION IN THE ACCESS HOLE COVER NOT A PRESSURE BOUNDARY CONCERN, BUT CAN BE EVALUATED WITH SIMILAR STRUCTURAL MARGIN CRITERIA.

- CIRCUMFERENTIAL CRACKING IN THE WELD NOT CONSIDERED A SAFETY ISSUE. REVIEWED WITH THE NRC IN THE PAST.

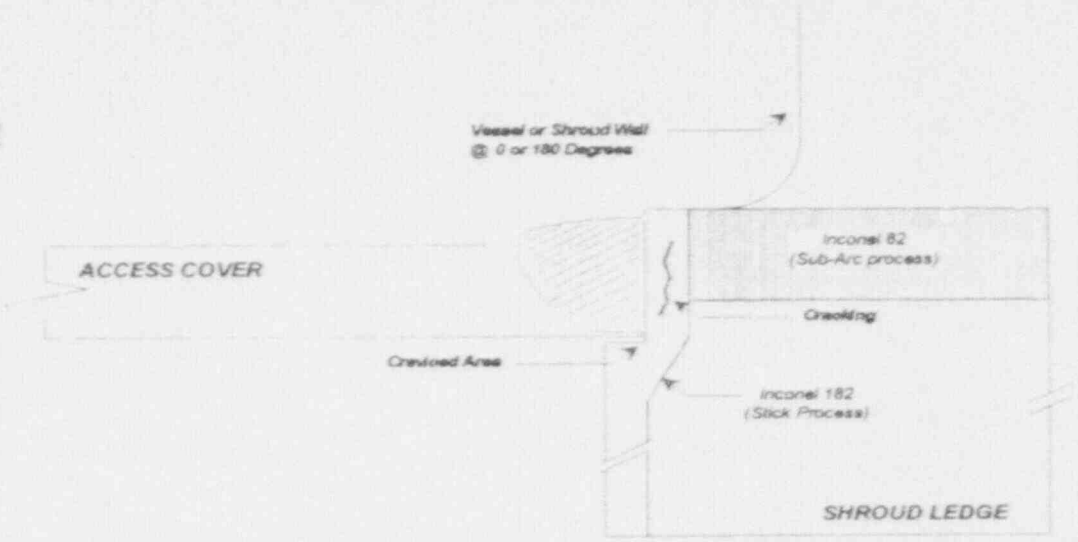
- AHC SEPARATION CAN BE READILY DETECTED BY SIL 462 SYSTEM RECOMMENDATIONS.

- CRACK INDICATIONS ARE CIRCUMFERENTIAL, ENTIRELY IN THE LEDGE. NO RADIAL CRACKING OBSERVED. AVERAGE LIGAMENT THICKNESS APPROXIMATELY 0.26 INCH WITH THE CRACK OFFSET AT LEAST 1/8 INCH FROM THE WELD INTERFACE.

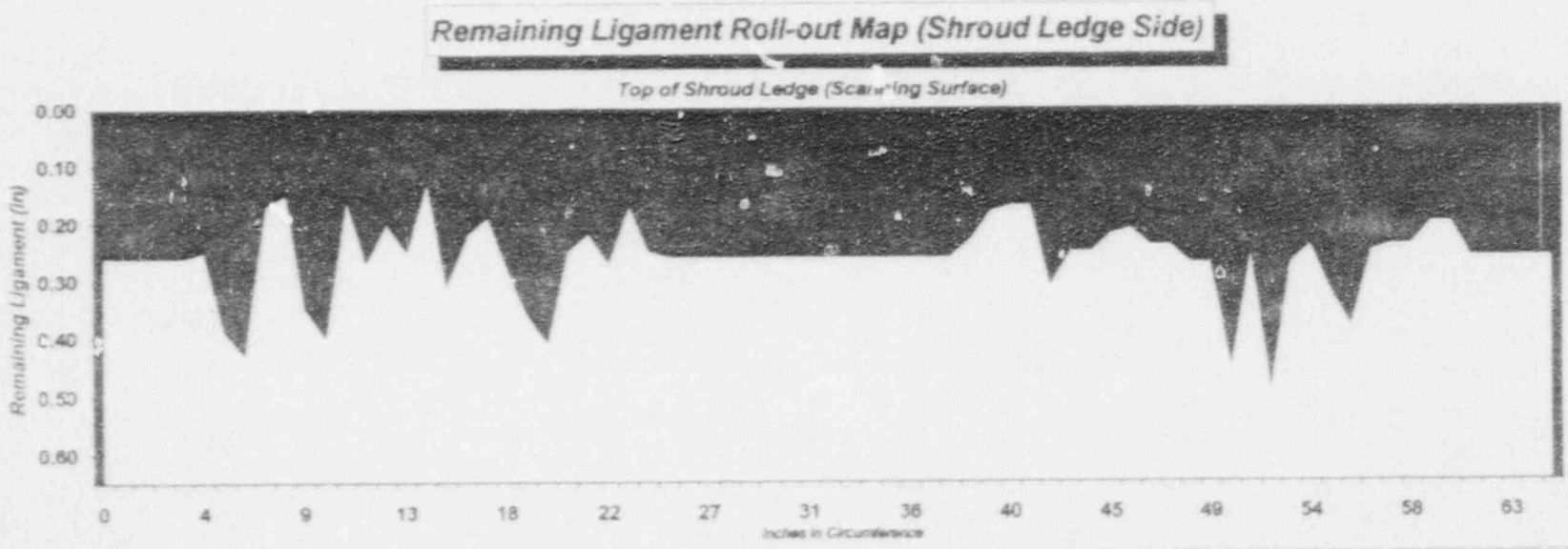
Hatch - Unit 2 180 Access Hole Cover Exam Results

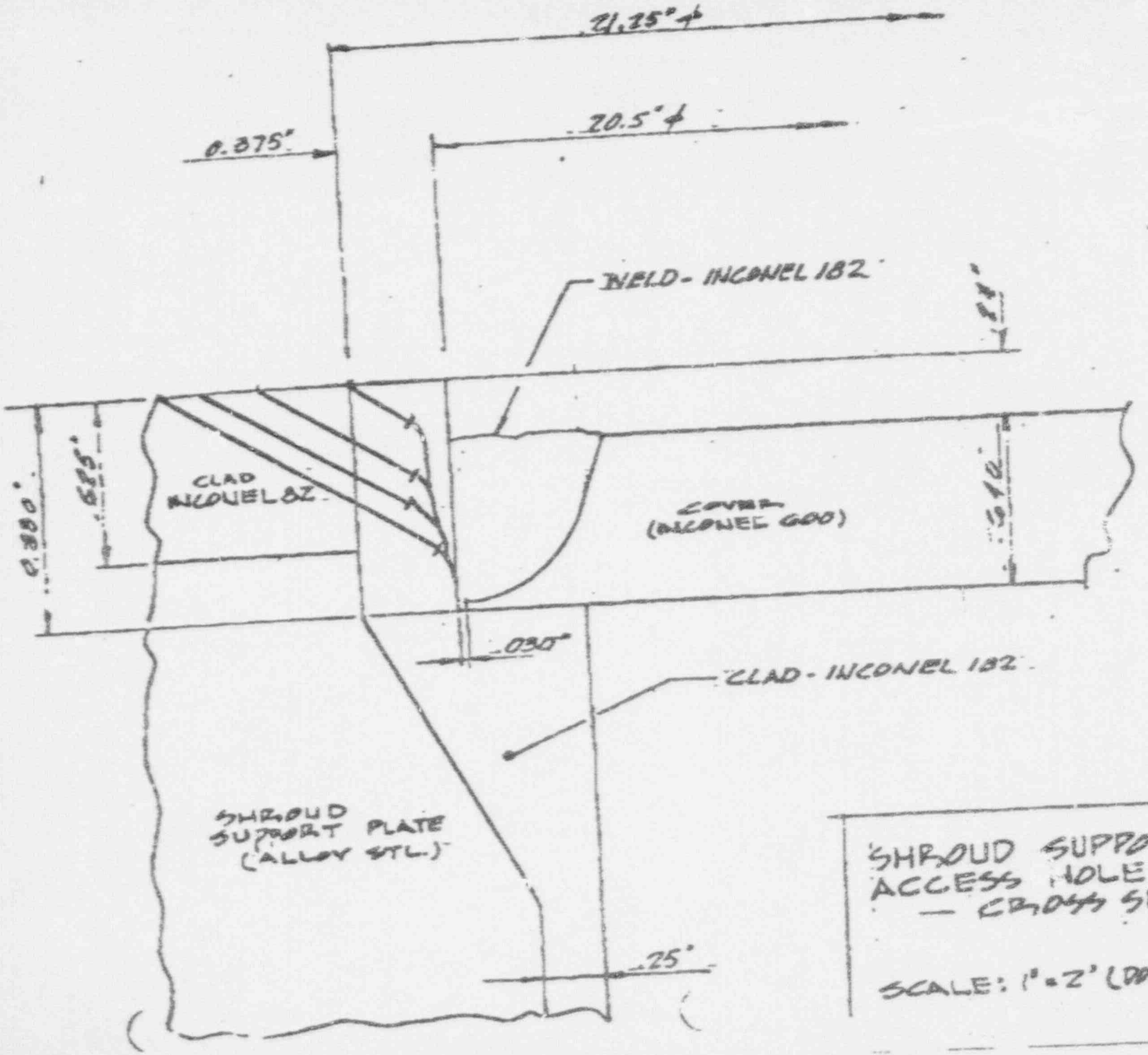
16-Oct-92

Cross-Sectional View



Roll-out View





SHROUD SUPPORT PLATE ACCESS HOLE COVER — CROSS SECTION —

SCALE: 1" = 2" (DOUBLE ACTUAL SIZ

STRUCTURAL ANALYSIS

- ANALYSIS PERFORMED FOR DIFFERENTIAL PRESSURE UNDER BOTH NORMAL OPERATION (26.5 PSI) AND FAULTED (47.7 PSI) CONDITIONS.

- FINITE ELEMENT EVALUATIONS PERFORMED FOR TWO CRACK INDICATION CONFIGURATIONS:

  + CRACK AT THE INTERFACE BETWEEN THE WELD AND THE LEDGE CLAD WITH 1/8 INCH LIGAMENT. CIRCUMFERENTIAL CRACK GROWING NORMAL TO THE AHC SURFACE

  + CRACK ENTIRELY IN THE LEDGE, WITH THE TIP FLUSH WITH THE TOP SURFACE OF THE COVER BUT OFFSET TOWARDS THE LEDGE 1/8 INCH FROM THE WELD INTERFACE

- RESULTS OF THE ANALYSIS SHOW THAT PRESSURE MARGINS OF 3 FOR NORMAL OPERATION AND 1.5 FOR FAULTED CONDITIONS ARE MAINTAINED (CONSIDERING LIMIT LOAD) FOR THE ASSUMED CRACK CONFIGURATION AT THE END OF THE NEXT CYCLE.

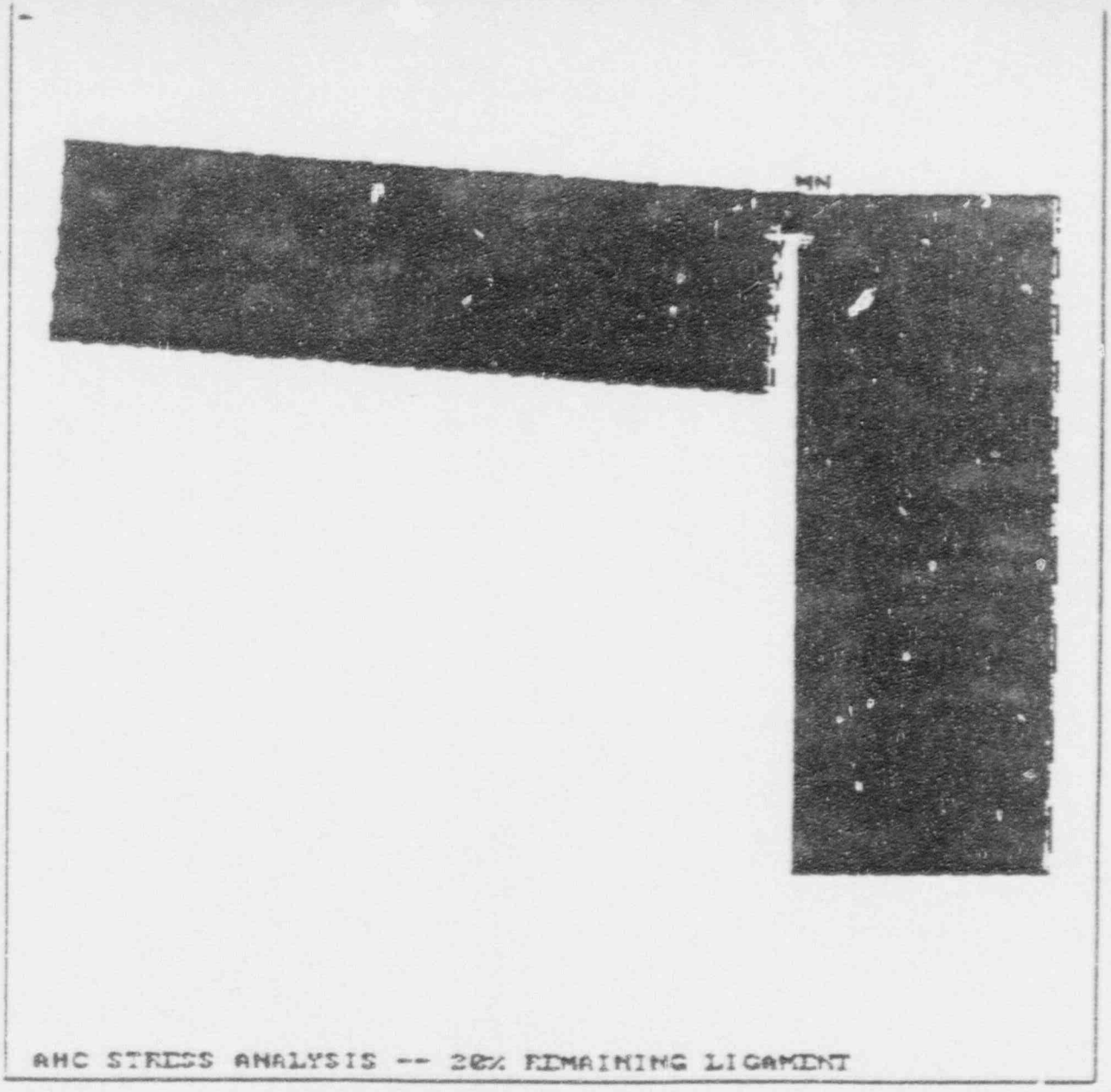


Figure 2-3b Radial Stress Distribution for 20% Remaining Ligament Case

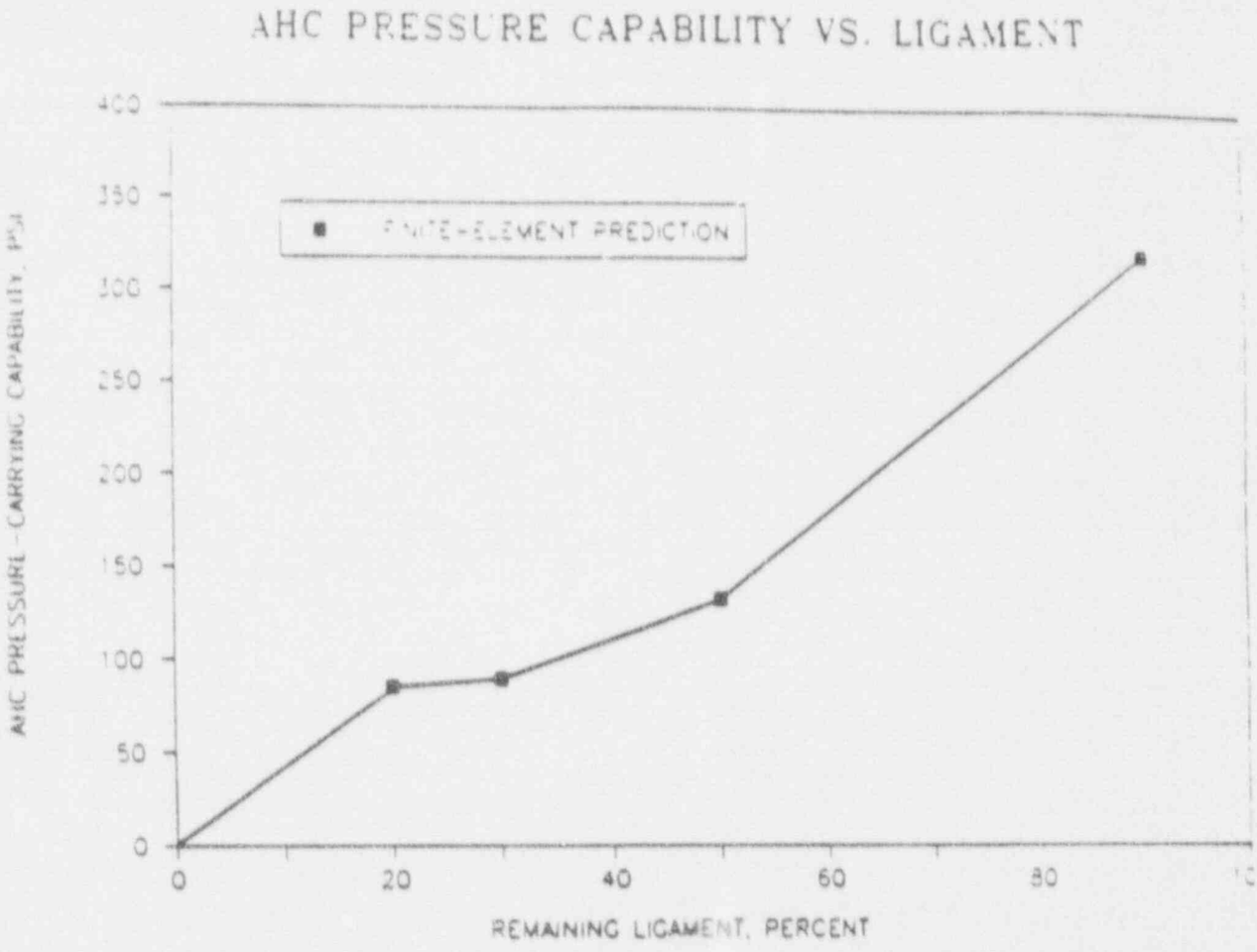
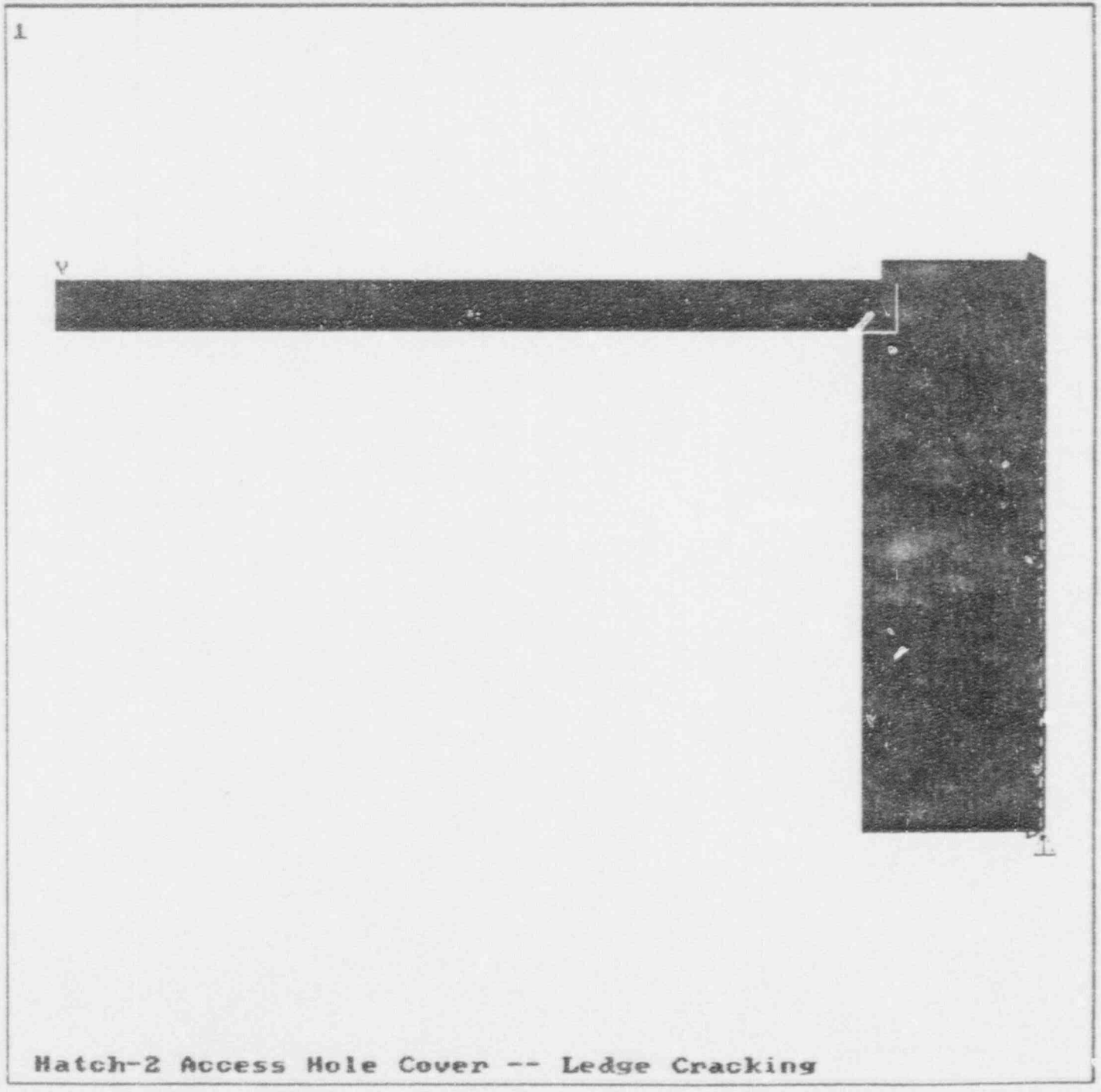
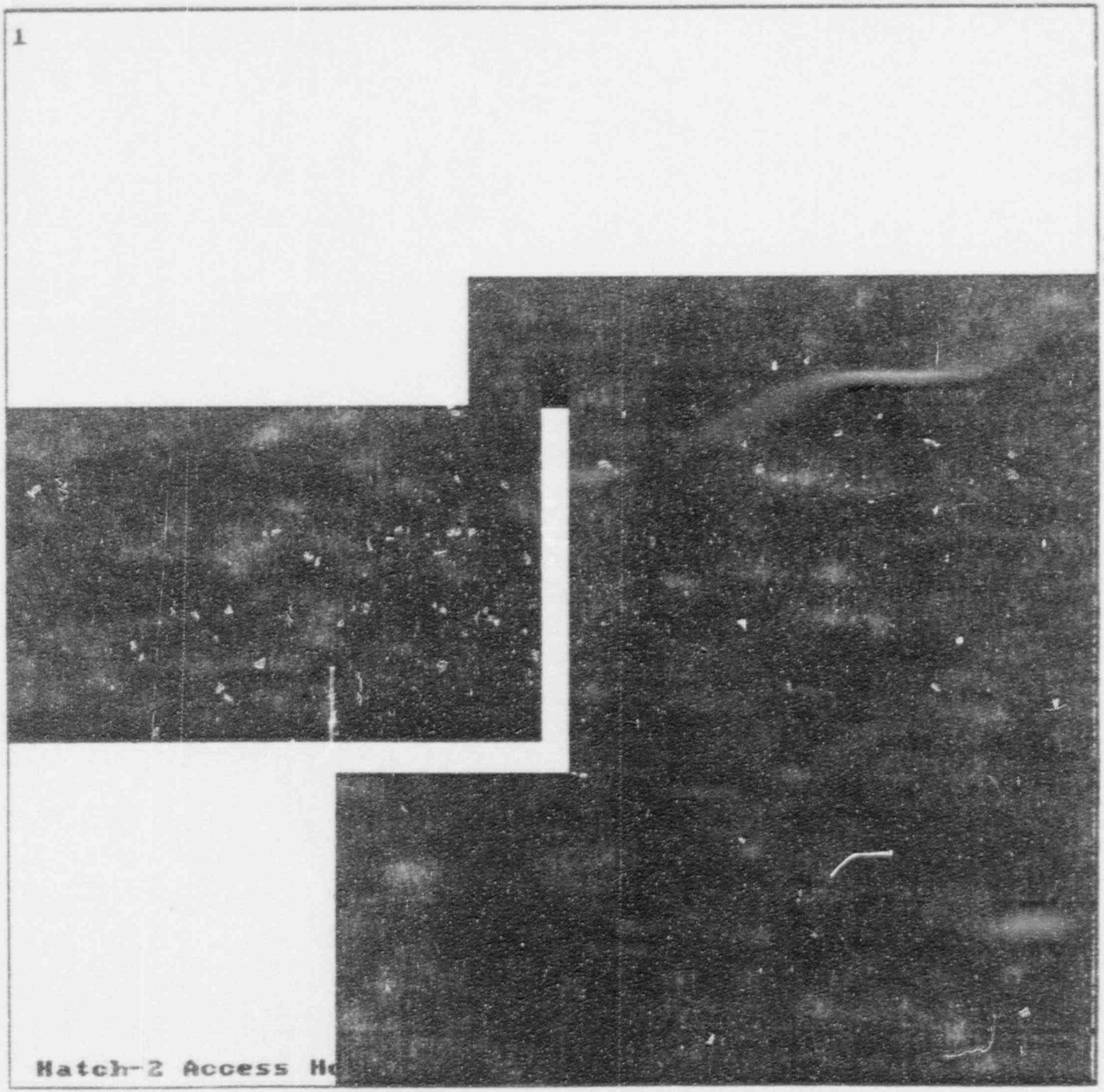


Figure 5-1 Pressure Capability as a Function of Remaining Ligament



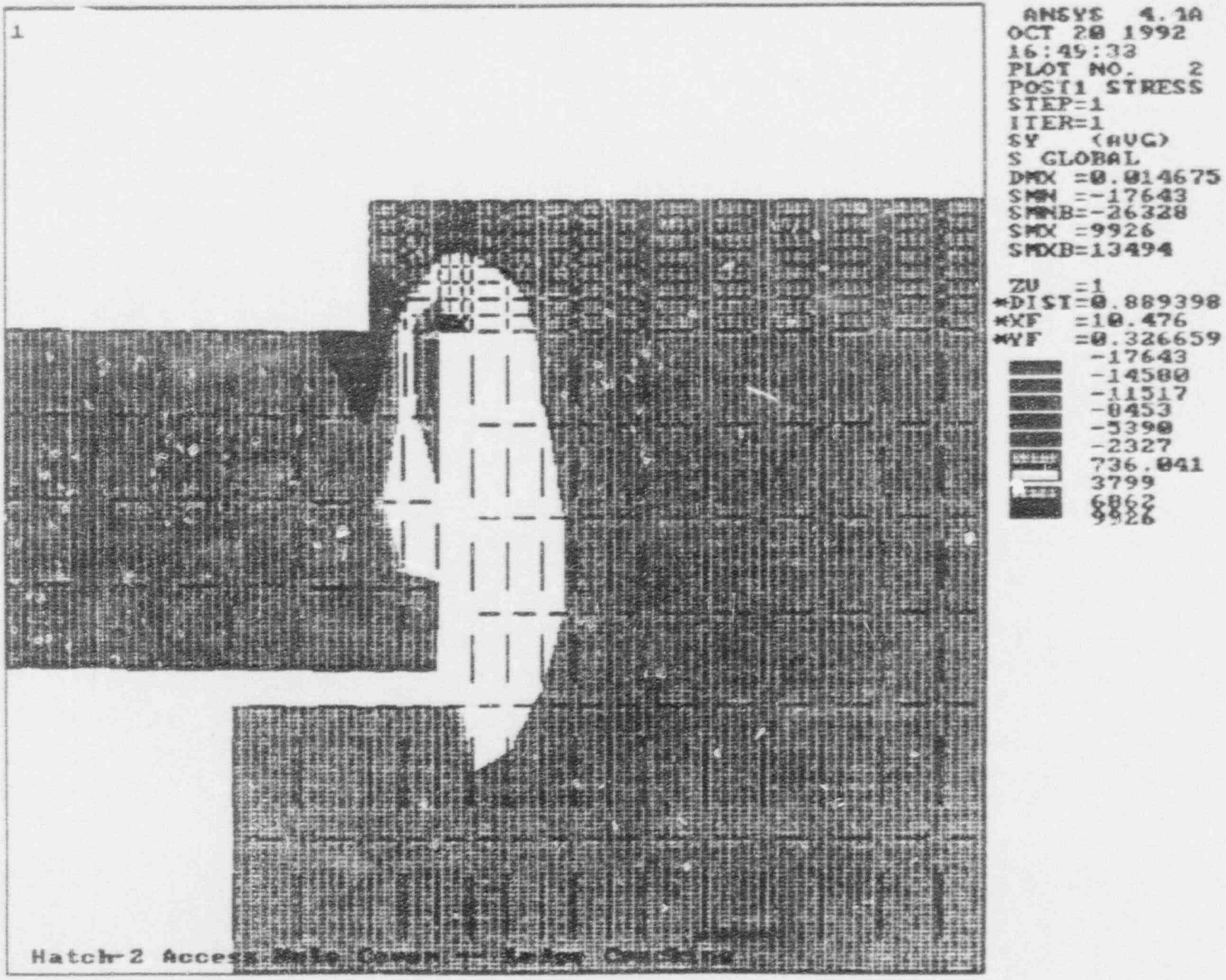
ANSYS 4.4A
OCT 23 1992
12:25:12
PLOT NO. 2
PREP7 ELEMENTS
TYPE NUM
TDIS
PRES
CP

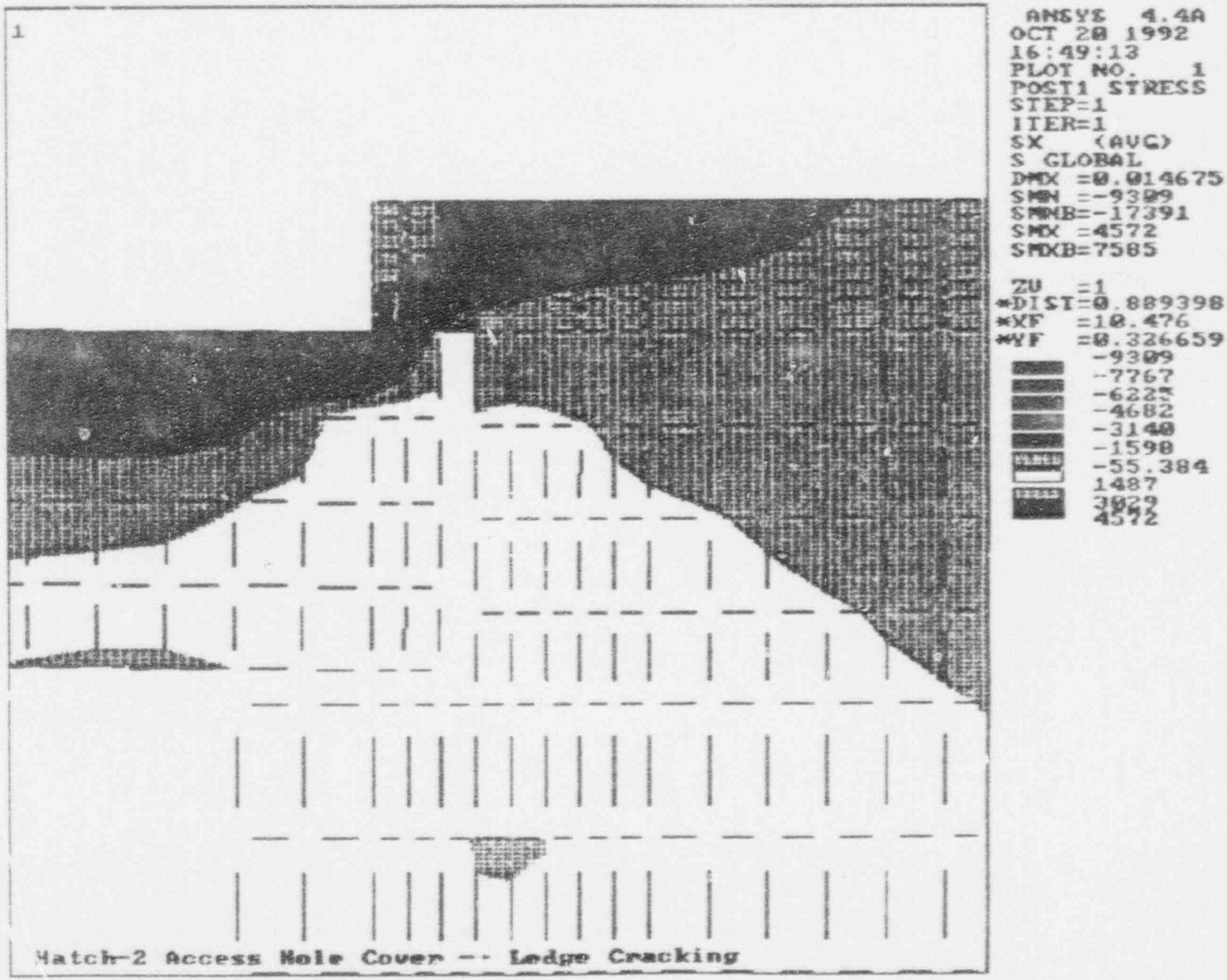
ZU =1
DIST=6.737
XF =6.125
YF =-2.692

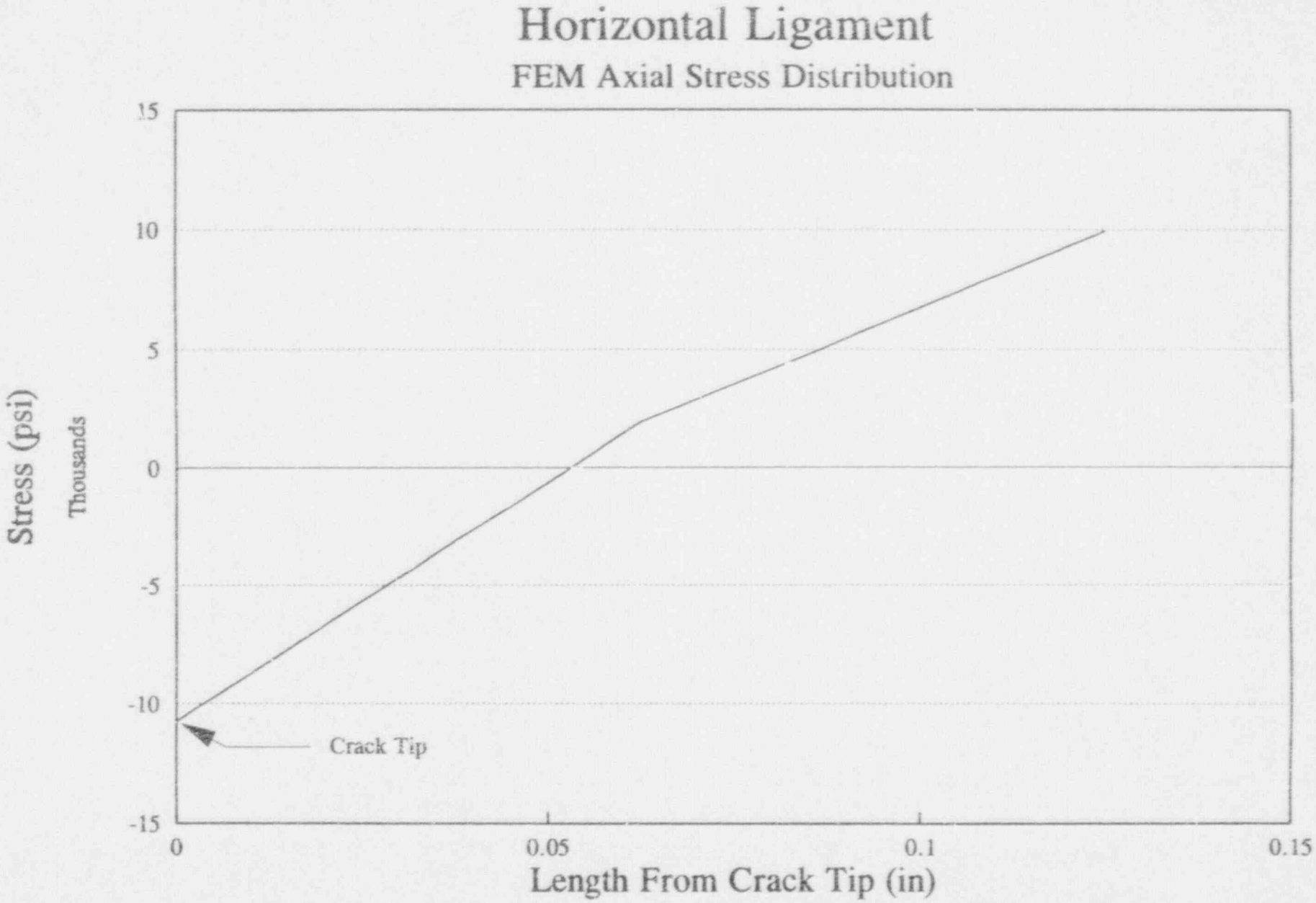


ANSYS 4.4A
OCT 23 1992
12:25:33
PLOT NO. 3
PREP7 ELEMENTS
TYPE NUM
TIS
PRES
CP

ZU =1
*DIST=1.01
*XF =10.4
*YF =0.351902

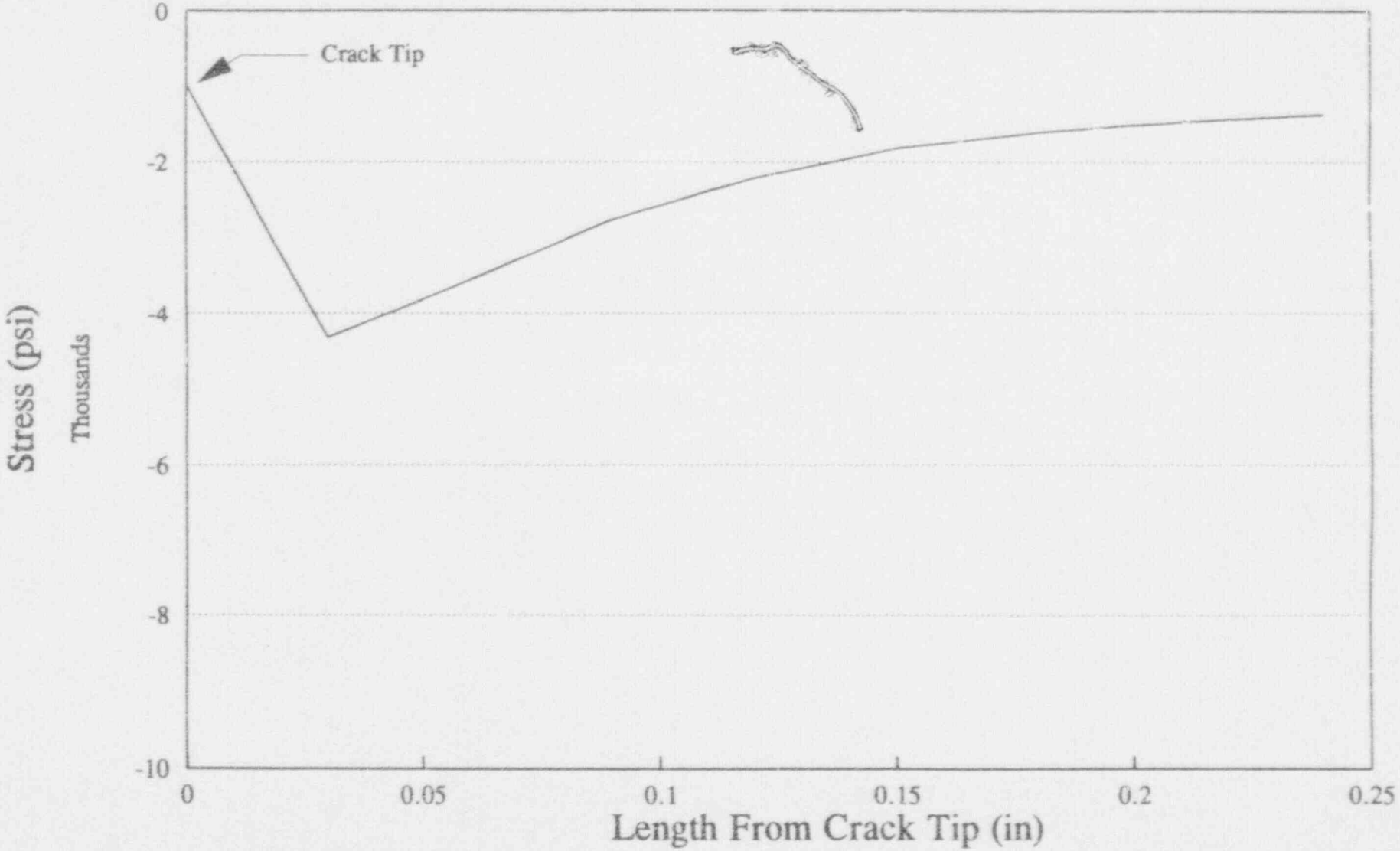

1
ANSYS 4.1A
OCT 28 1992
16:45:33
PLOT NO. 2
POST1 STRESS
STEP=1
ITER=1
SY (AVG)
S GLOBAL
DMX =0.014675
SMN =-17643
SMNB=-26328
SMX =9926
SMXB=13494
ZV =1
*DIST=0.889398
*XF =10.476
*YF =0.326659
-17643
-14580
-11517
-8453
-5390
-2327
736.041
3799
6862
9926
Hatch-2 Access


1
ANSYS 4.4A
OCT 28 1992
16:49:13
PLOT NO. 1
POST1 STRESS
STEP=1
ITER=1
SX (AVG)
S GLOBAL
DMX =0.014675
SMN =-9309
SMNB=-17391
SMX =4572
SMXB=7585
ZV =1
*DIST=0.889398
*XF =10.476
*YF =0.326659
-9309
-7767
-6225
-4682
-3140
-1598
-55.384
1487
3029
4572
Match-2 Access Hole Cover -- Ledge Cracking


Horizontal Ligament
FEM Axial Stress Distribution
Stress (psi)
Thousands
15
10
5
0
-5
-10
-15
Crack Tip
0
0.05
0.1
0.15
Length From Crack Tip (in)

Vertical Ligament

FEM Radial Stress Distribution



CRACK GROWTH EVALUATION

- IGSCC CRACK GROWTH RATE IS A STRONG FUNCTION OF WATER CHEMISTRY - CONDUCTIVITY AND ECP.

- HATCH 2 WATER CHEMISTRY HAS BEEN EXCELLENT DURING THE LAST FUEL CYCLE

  + WEEKLY AVERAGE WATER CONDUCTIVITY HAS BEEN LESS THAN 0.2 MICROSIEMEN/CM FOR OVER 95 PERCENT OF THE TIME

  + PLANT HAS BEEN OPERATING UNDER HYDROGEN WATER CHEMISTRY WITH 0.6 PPM FEEDWATER HYDROGEN INJECTION

- BASED ON LOWER PLENUM ECP MEASUREMENTS DONE AT FITZPATRICK (SIMILAR TO HATCH 2), ECP BELOW THE AHC AT 0.6 PPM FEEDWATER HYDROGEN INJECTION LEVEL IS -100 MV.

- CRACK GROWTH RATE AT -100 MV ECP IS PREDICTED TO BE 16 TIMES LOWER THAN THAT UNDER NORMAL WATER CHEMISTRY (+100 MV) GIVING A RATE OF 1.2 MICROINCH / HOUR. THIS GIVES AN INCREMENT OF 15 MILS IN THE NEXT 12000 HOURS.

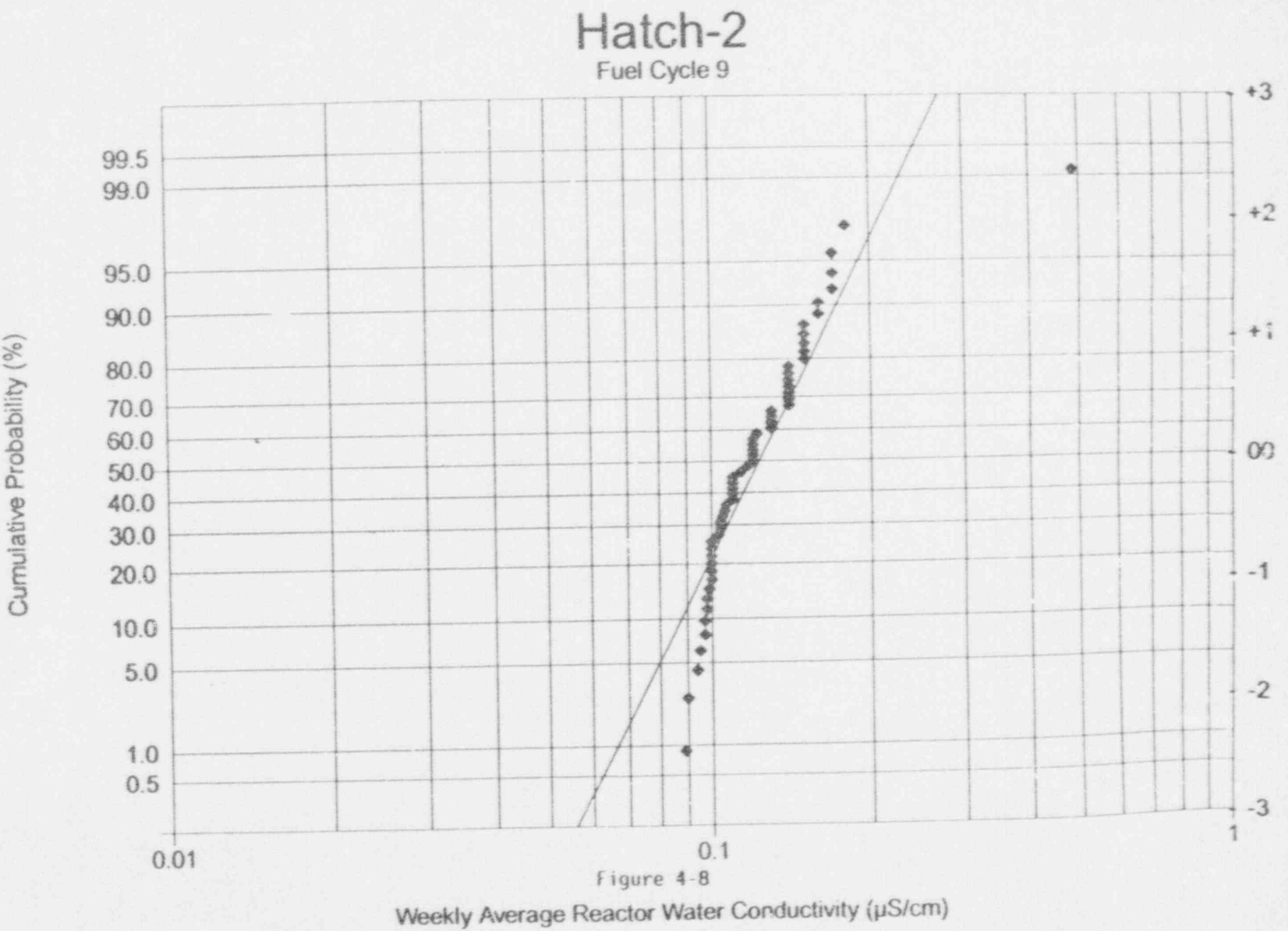

Hatch-2
Fuel Cycle 9
Cumulative Probability (%)
99.5
99.0
95.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
5.0
1.0
0.5
0.01
0.1
1
+3
+2
+1
0
-1
-2
-3
Weekly Average Reactor Water Conductivity (µS/cm)

Figure 4-8

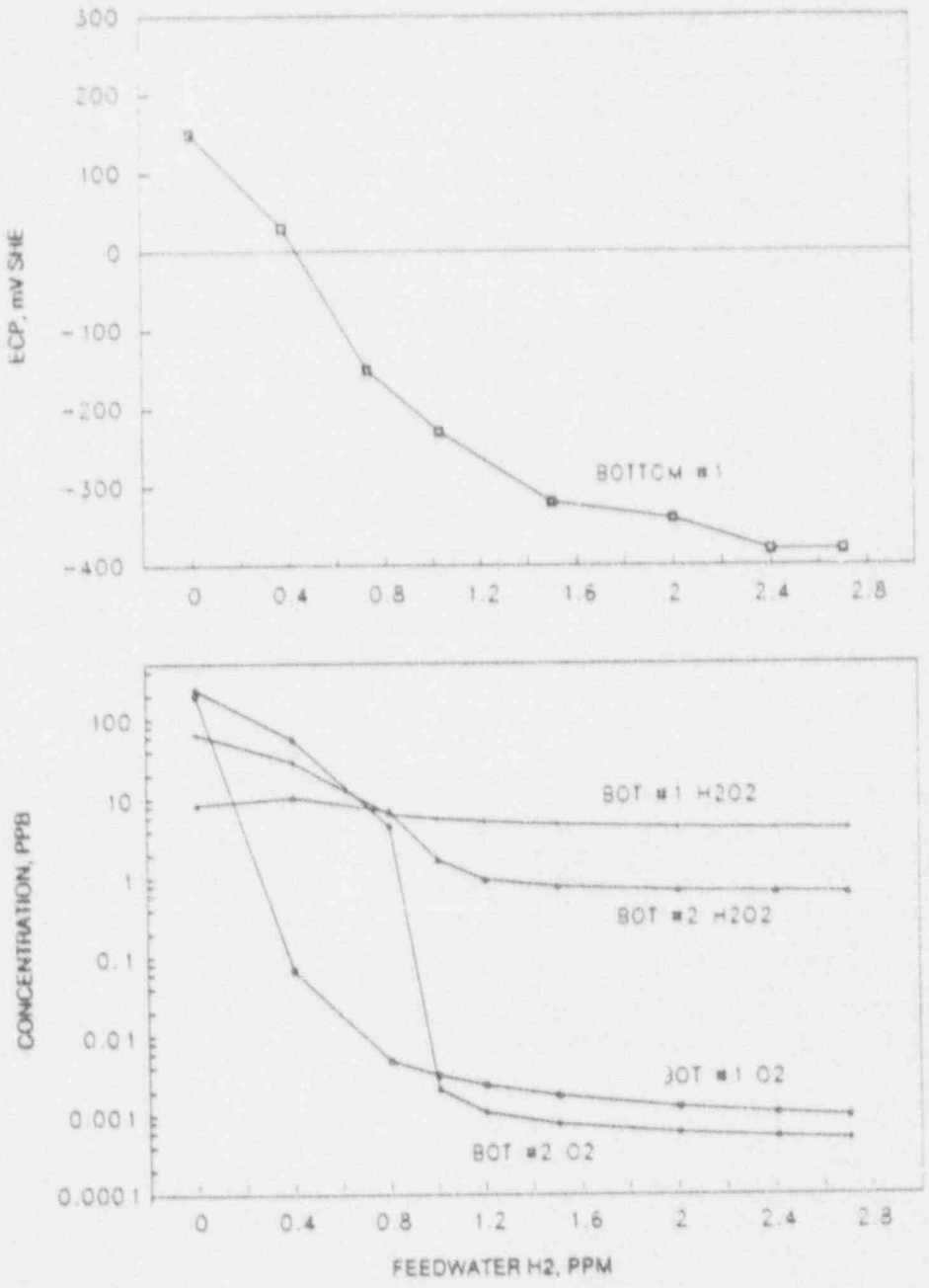
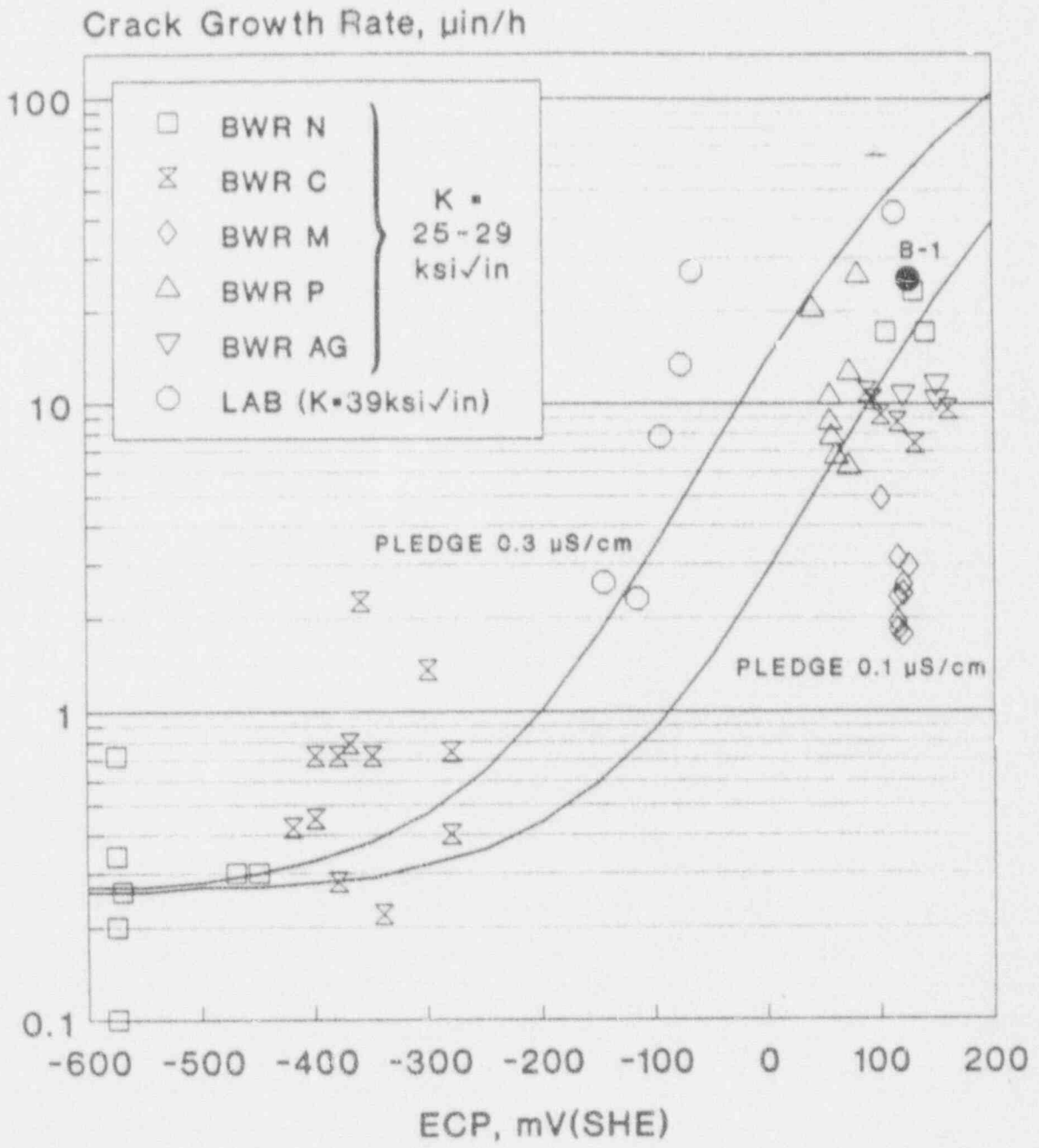


Figure C-8. Measured ECP and Calculated Oxygen and Peroxide at Botton Electrode Positions

Effect of ECP on Crack Growth Rate
Alloy 182 CAV vs. PLEDGE



EPR = 15C/cm2, K = 25 ksi√in

TECHNICAL BASIS FOR CONTINUED OPERATION

- EVEN AFTER ACCOUNTING CRACK GROWTH AND INCLUDING THE STRUCTURAL MARGIN OF 3.0, THE REQUIRED LIGAMENT IS 0.14 INCH. THE AVAILABLE AVERAGE LIGAMENT OF 0.26 INCH IS WELL IN EXCESS OF THE REQUIRED VALUE.

- EVEN IF THROUGH THICKNESS CRACKING OCCURS OVER 50 PERCENT OF THE WELD CIRCUMFERENCE, SEPARATION OF THE COVER WILL NOT OCCUR. EVEN IF THE COVER IS SEPARATED, THE CHANGE IN CORE BYPASS FLOW WILL BE READILY DETECTED AND THE PLANT CAN BE BROUGHT TO NORMAL SHUT DOWN. THE IMPLEMENTATION OF SIL 462 RECOMMENDATIONS WILL ASSURE THIS.

- HATCH 2 HAS BEEN OPERATING UNDER HYDROGEN WATER CHEMISTRY WITH EXCELLENT WATER CONDUCTIVITY. THIS PROVIDES ASSURANCE THAT THE CRACK GROWTH DURING THE NEXT CYCLE WILL NOT BE SIGNIFICANT.

- THERE IS NO RADIAL CRACKING. CIRCUMFERENTIAL CRACKING HAS BEEN REVIEWED WITH THE NRC AND IS NOT A SAFETY ISSUE. VISUAL EXAMINATION CONFIRMS THAT THERE IS NO THROUGH THICKNESS CRACKING.

CONCLUSION

BASED ON THE STRUCTURAL MARGIN ASSESSMENT,
THE ADDED ASSURANCE OF HYDROGEN WATER CHEMISTRY,
THE ABSENCE OF RADIAL CRACKING AND THE
IMPLEMENTATION OF SIL 462 RECOMMENDATIONS,
CONTINUED OPERATION FOR ONE MORE CYCLE IS JUSTIFIED.

PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

SAFETY ASSESSMENT

I. THE FAILURE OF AN ACCESS HOLE COVER DURING PLANT OPERATION WOULD BE READILY DETECTED.

II. A FAILURE DURING OPERATION WOULD NOT INDUCE A LOCA.

A FAILURE DURING OPERATION IS NOT EXPECTED TO CAUSE EXTENSIVE INTERNAL DAMAGE TO THE REACTOR VESSEL INTERNALS OR RECIRC SYSTEM.

III. A POSTULATED RECIRC SUCTION LINE BREAK WITH A CONCURRENT ACCESS HOLE COVER FAILURE AND SIMULTANEOUS FAILURE OF ONE CORE SPRAY PUMP DOES DOES NOT RESULT IN THE INABILITY TO MAINTAIN ADEQUATE CORE COOLING.

PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

PRA IMPLICATIONS

INITIATING EVENT FREQUENCY LARGE BREAK LOCA	2.6 E-4/YR.
CHANCE OF AHC SEPARATION OCCURRING WITHIN 24 HR. OF A LB LOCA*	1.9 E-3/YR.
PROBABILITY OF CONCURRENT AHC FAILURE & LBLOCA	**4.9 E-7/YR.**

FAILURE/MAINTENANCE OF LOW PRESSURE ECCS PUMPS MUST ALSO OCCUR FOR CORE DAMAGE.

PROBABILITY OF EITHER CS PUMP UNAVAILABLE	3.0 E-2

* FAILURE RATE OF THE AHC IS CONSERVATIVELY BASED ON ONE FAILURE OVER THE NEXT 18 MONTHS OF OPERATION.

ASSUMES AHC SEPARATION INDEPENDENT OF THE LOCA.

ASSUME 24 HOUR "MISSION TIME" FOR LOCA.

PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

SAFETY ASSESSMENT

I. ESTIMATED BYPASS LEAKAGE ASSUMING FULL AHC SEPARATION:

COLLAPSED LEVEL: TOP OF JET PUMPS
LEAKAGE: 17,000 GPM

II. PLANT HATCH LOW PRESSURE ECCS CAPABILITY:

LOOP "A" LPCI	17,000 GPM
LOOP "B" LPCI	17,000 GPM
LOOP "A" CS	4,250 GPM
LOOP "B" CS	4,250 GPM
TOTAL	42,500 GPM

III. AHC LEAKAGE WITH COMPLETE SEPARATION IS APPROXIMATELY EQUAL TO ONE LOOP OF LPCI AT 2/3 CORE HEIGHT STATIC HEAD.

IV. ADDITIONAL FAILURES OF ECCS PUMPS REQUIRED FOR SIGNIFICANT CORE DAMAGE FOLLOWING LOCA.

V. "GENERIC" GE STUDIES SHOW ADEQUATE CORE COOLING FOR LOCA WITH AHC SEPARATION.

PLANT HATCH UNIT TWO
SHROUD SUPPORT PLATE ACCESS HOLE COVER CRACKING

CONCLUSIONS

* CIRCUMFERENTIAL ACCESS HOLE CRACKING IS NOT A SAFETY CONCERN.

* OPERATION OF HATCH UNIT 2 FOR CYCLE 11 IS JUSTIFIED.

* UNIT 2 AHCs WILL BE REPAIRED IN THE SPRING 1994 REFUELING OUTAGE.