

DIABLO CANYON POWER PLANT

NUMBER STP M-90  
REVISION 3  
PAGE 5 OF 18  
UNITS 1 AND 2

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

START DATA SECTION

R0098551  
R0000054 now!

PLANT OPERATING MODE 1 UNIT NO. 1+2 YES NO

6.0 PRECAUTIONS AND LIMITATIONS

- 6.1 Person making breakwater inspection must wear a lifejacket at all times when walking down the breakwater.
- 6.2 Another person will accompany the person walking down the breakwaters to act as a safety observer.
- 6.3 All Precautions and Limitations have been read and understood. [4] [ ]

7.0 PREREQUISITES

- 7.1. A set of up-to-date National Oceanic and Atmospheric Administration (NOAA) tide tables for the California coastal region must be available for test use. These tables will be kept in the DCPD Engineering Department Performance Engineering Group files.
- 7.2 For a given month (November through April) in which a visual inspection is being made, use the NOAA tide tables to determine:
  - 7.2.1 Any high tide for the month which is greater than the Mean Lower Low Water Level (MLLW) and occurs during daylight hours. MLLW is (-)2.6 feet MSL, or 2.6 feet below mean sea level for the plant site.
  - 7.2.2 The day of the month on which it occurs.
  - 7.2.3 The time of day at which the selected high tide occurs.

DCPD  
ISSUED FOR USE

BY: [Signature]  
 DATE: 4-16-92  
 TERMINATION DATE: 5-14-92

05271 4216

9206180095 920611  
 PDR ADDCK 05000275  
 R PDR

YES    NO

7.2.4 Wave forecasts will be obtained from DER personnel at the intake cove's Oceanographic Laboratory. This data can be used to determine whether the breakwaters may be walked down safely.

\*\*\*\*\*

CAUTION: Do not schedule a visual inspection of the breakwaters if DER wave forecasts predict high waves, or if a storm is in progress. Obtain DER input on advisability of a breakwater inspection, based on their wave predictions.

\*\*\*\*\*

7.3 If it is determined that the sea is too rough to allow a walkdown of the breakwaters on the day originally selected, select an alternate day meeting the specifications in Step 7.2 above.

7.3.1 As wave conditions permit on the day chosen in either Step 7.2 or Step 7.3, the Test Director will proceed to perform the breakwater visual inspection. However, if walkdown of the breakwaters proves to be impossible for a given month, steps will be taken to visually inspect them from a sufficient vantage point to check their condition by other means than a walkdown. Specifically, if a walkdown cannot be performed, then from the vantage point cited above, the breakwaters will both be verified to be above MLLW. Also, any degradation signs, as delineated in Steps 5.2.1 through 5.2.5 of this procedure, that are observed will be noted on the surveillance test procedure per the instructions of Step 5.2.6 and photographed. Any photographs taken will be included with the completed test for that month.

7.4 Photographic data may be obtained from the Environmental Engineering Unit of the DER Ecological Services Group which shows the condition of each breakwater for the annual breakwater inspection and survey.

052714217

DIABLO CANYON POWER PLANT

NUMBER STP M-90  
REVISION 3  
PAGE 7 OF 18  
UNITS 1 AND 2

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

YES NO N/A

- 7.5 Survey results must be obtained from the General Office Land Department after the annual breakwater inspection and survey are complete.
- 7.6 Any additional photographs required as a result of monthly inspections will be obtained from the DER Ecological Services Group or by the plant staff.
- 7.7 Security will be notified that a walkdown of the breakwaters is planned. Notification will be made by the Test Director prior to the walkdown.
- 7.8 The keys to the locks on the gates barring access to the breakwaters will be secured prior to the walkdown. The gate padlocks require a No. 2 key.

8.0 PROCEDURE

8.1 Monthly Surveillance

8.1.1 Verification of Breakwater Heights

- a. From a suitable vantage point, visually verify that the full lengths of both east and west breakwaters are above MLLW. Basically, this consists of determining that the tide level at the time of inspection is greater than MLLW and that the full length of each breakwater is above this level.

Is the full length of each breakwater above mean lower low water level (MLLW)?\*

[4] [ ]

\*If not, identify which concrete cap section(s) on the affected breakwater(s) do not meet the Acceptance Criteria by circling it/them on Figure 1 and/or Figure 2 of this test procedure. Make reference to the section or sections of concern in the "Remarks" section of this test procedure.

052714218

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

UNITS

YES    NO    N/A

- b. If the answer to Step 8.1.1.a. above is "no", have 500 feet or more of either breakwater been reduced to less than MLLW?

[ ]    [ ]    [X]

If this question is answered "yes", immediately notify the Shift Foreman, comply with the ACTION statement of Tech. Spec. 3.7.13, and submit an Action Request.

- c. If the answer to Step 8.1.1.b. above is "NO", approximately what length (in feet) of the affected breakwater(s) has been reduced to less than MLLW? (Assistance in determining this information may be obtained from the GC Civil Engineering Department.)

East Breakwater: \_\_\_\_\_ Ft.

West Breakwater: \_\_\_\_\_ Ft.

- d. Is the ACTION statement of Tech. Spec. 3.7.13 being complied with?

[ ]    [ ]    [X]

8.2 Walkdown of East Breakwater

8.2.1 Walk down the 17 concrete cap sections of the east breakwater and determine if:

- 1) any vertical or horizontal displacement of any cap section has occurred with respect to the other cap sections;
- 2) any cap section has cracked or lost material due to wave action and
- 3) any of the tri-bars which are in direct contact with any side of any cap section has cracked or lost material due to wave action.

If any such conditions are observed, circle the affected cap section or sections or the approximate location(s) of the cracked/wave damaged tri-bar(s) on Figure 1 of this test procedure. If no displacement/damage is observed for a given cap section, simply mark N/A in the "Comments" space

052714219

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

for that section. This instruction also applies for inspected tri-bars and the sea wall. Also, determine if the sea wall beyond the base of the breakwater (see Figure 1) has 1) cracked, 2) settled or 3) lost material due to wave action. If a walkdown cannot be performed for a given month, follow the pertinent instructions of Step 7.3.1 regarding breakwater visual inspection alternatives.

NOTE: Breakwater concrete cap sections are approximately 30 feet in length. If the lines of demarcation between the cap sections are not clearly visible, simply determine the condition of the cap in 30 foot lengths from its tip to its base.

05271 4220

<u>CAP SECTION NO.**</u>	<u>COMMENTS</u>	<u>N/A</u>
1	_____	14
	_____	
	_____	
2	_____	14
	_____	
	_____	
3	_____	14
	_____	
	_____	
4	_____	14
	_____	
	_____	

\*\*Refer to Figure 1 of this procedure for cap section numbering scheme.

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

UNITS 1 AND 2

CAP SECTION NO.\*\*

COMMENTS

5	_____	N/A ✓
	_____	
	_____	
6	_____	✓
	_____	
	_____	
7	_____	✓
	_____	
	_____	
8	_____	✓
	_____	
	_____	
9	_____	✓
	_____	
	_____	
10	_____	✓
	_____	
	_____	
11	_____	✓
	_____	
	_____	

\*\*Refer to Figure 1 of this procedure for cap section numbering scheme.

05271 4221

DIABLO CANYON POWER PLANT

NUMBER STP M-90  
REVISION 3  
PAGE 11 OF 18  
UNITS 1 AND 2

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

CAP SECTION NO.\*\*

COMMENTS

12

N/A  
[4]

13

[4]

14

[4]

15

[4]

16

[4]

17

[4]

SEA WALL

[4]

\*\*Refer to Figure 1 of this procedure for cap section numbering scheme.

05271 4222

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

8.3 Walkdown of West Breakwater

8.3.1 Walk down the 29 concrete cap sections of the west breakwater. Follow the guidelines of the instructions of Step 8.2.1 of this procedure concerning making notations on Step 8.3.1 "Comments" spaces and Figure 2 to document any observed cap section displacement/cracking/wave damage or tri-bar cracking/wave damage. If a walkdown cannot be performed for a given month, follow the pertinent instructions of Step 7.3.1 regarding breakwater visual inspection alternatives. Circle any affected cap section/sections or cracked/wave damaged tri-bar approximate locations on Figure 2 of this procedure.

CAP SECTION NO.\*\*\*

COMMENTS

<u>CAP SECTION NO.***</u>	<u>COMMENTS</u>	<u>N/A</u>
1		[X]
2		[X]
3		[X]
4		[X]
5		[X]

\*\*\*Refer to Figure 2 of this procedure for cap section numbering scheme.

05271 4223



DIABLO CANYON POWER PLANT

NUMBER STP M-90  
REVISION 3  
PAGE 13 OF 18  
UNITS 1 AND 2

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

CAP SECTION NO.\*\*\*

COMMENTS

<u>CAP SECTION NO.***</u>	<u>COMMENTS</u>	
6		N/A 14
7		14
8		14
9		14
10		14
11		14
12		14

05271 4224

\*\*\*Refer to Figure 2 of this procedure for cap section numbering scheme.

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

CAP SECTION NO.\*\*\*

COMMENTS

13

N/A  
[M]

14

[M]

15

[M]

16

[M]

17

[M]

18

[M]

19

[M]

\*\*\*Refer to Figure 2 of this procedure for cap section numbering scheme.

105271 4225

DIABLO CANYON POWER PLANT

NUMBER STP M-90  
REVISION 3  
PAGE 15 OF 18  
UNITS 1 AND 2

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

CAP SECTION NO.\*\*\*

COMMENTS

<u>CAP SECTION NO.***</u>	<u>COMMENTS</u>	
20		N/A 14
21		14
22		14
23		14
24		14
25		14
26		14

05271 4226

\*\*\*Refer to Figure 2 of this procedure for cap section numbering scheme.

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

CAP SECTION NO.\*\*\*

COMMENTS

27		N/A 14
28		14
29		14

Inspection/Walkdown performed by: ANASTASIO, JOYCE, YONAN, WRIGHT, FONG, COWARD

Date 4-16-92 Time 17:00

8.4 Photographic Data

8.4.1 Attach to this completed test photographs of any cap section(s) found to be displaced/cracked/wave damaged and/or tri-bar(s) found to be cracked/wave damaged during the breakwater walkdowns.

NOTE: This data may be secured with the help of DER on-site personnel, who operate photographic equipment daily on the plant site. Also, plant personnel may obtain such data by taking required photographs themselves.

\*\*\*Refer to Figure 2 of this procedure for cap section numbering scheme.

105271 4227

YES NO

8.5 Annual Survey Data

8.5.1 During the month in which the annual survey of the breakwaters is performed, walk down and visually inspect the breakwaters per the instructions of Sections 8.1 through 8.4 above. If a walkdown of the breakwaters is impossible, follow the instructions of Step 7.3.1. above. Secure copies of the results of the breakwater surveys from the General Office Civil Engineering Department and reproductions of photos taken of the breakwaters during the surveys. Attach this data to the completed procedure.

9.0 DATA REDUCTION AND REPORTING OF RESULTS

9.1 Verify Acceptance Criteria have been satisfied:

9.1.1 Does each Breakwater meet the Acceptance Criteria of this procedure?

[X] [ ]<sup>1</sup>

9.2 If the Acceptance Criteria are not met, initiate an ACTION REQUEST and immediately notify the Shift Foreman. AR# \_\_\_\_\_

9.3 REMARKS: Explain any NO or N/A entries in any of the data and list any discrepancies found:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<sup>1</sup>If either or both breakwaters do not meet the test Acceptance Criteria, submit an Action Request and comply with the ACTION statement of Tech. Spec. 3.7.13. If 500 feet or more of either or both of the breakwaters do not meet the Acceptance Criteria, immediately notify the Shift Foreman, comply with ACTION statement b. of Tech. Spec. 3.7.13 immediately, and then submit an Action Request and comply with ACTION statement a. of Tech. Spec. 3.7.13.

052714228

TITLE: SURVEILLANCE OF DIABLO CANYON BREAKWATERS

YES NO

9.4 If this test was a complete test and both Breakwaters met the Acceptance Criteria, then update the Master Surveillance Schedule per AP C-3S1.

9.4.1 Was the Master Schedule updated?

9.5 Performed by (PPE):

T. Cluskey Date April 29, 1992

9.6 Forward completed procedure to the Test Coordinator (TC).

9.7 (TC) Distribute procedure to PPE.

9.8 (PPE) Review procedure for completeness and acceptability.

9.9 REMARKS: Annual Survey Results Attached  
\_\_\_\_\_  
\_\_\_\_\_

9.10 Reviewed by (PPE): Alan Spencer Date 4/27/92

YES NO

~~9.11 A copy of this completed and reviewed test has been submitted to the Regulatory Compliance Dept.~~

9.12 (PPE) Submit completed procedure to the Test Coordinator for filing.

↑  
Test Coordinator - Please Do THIS  
0  
Thnx

052714229

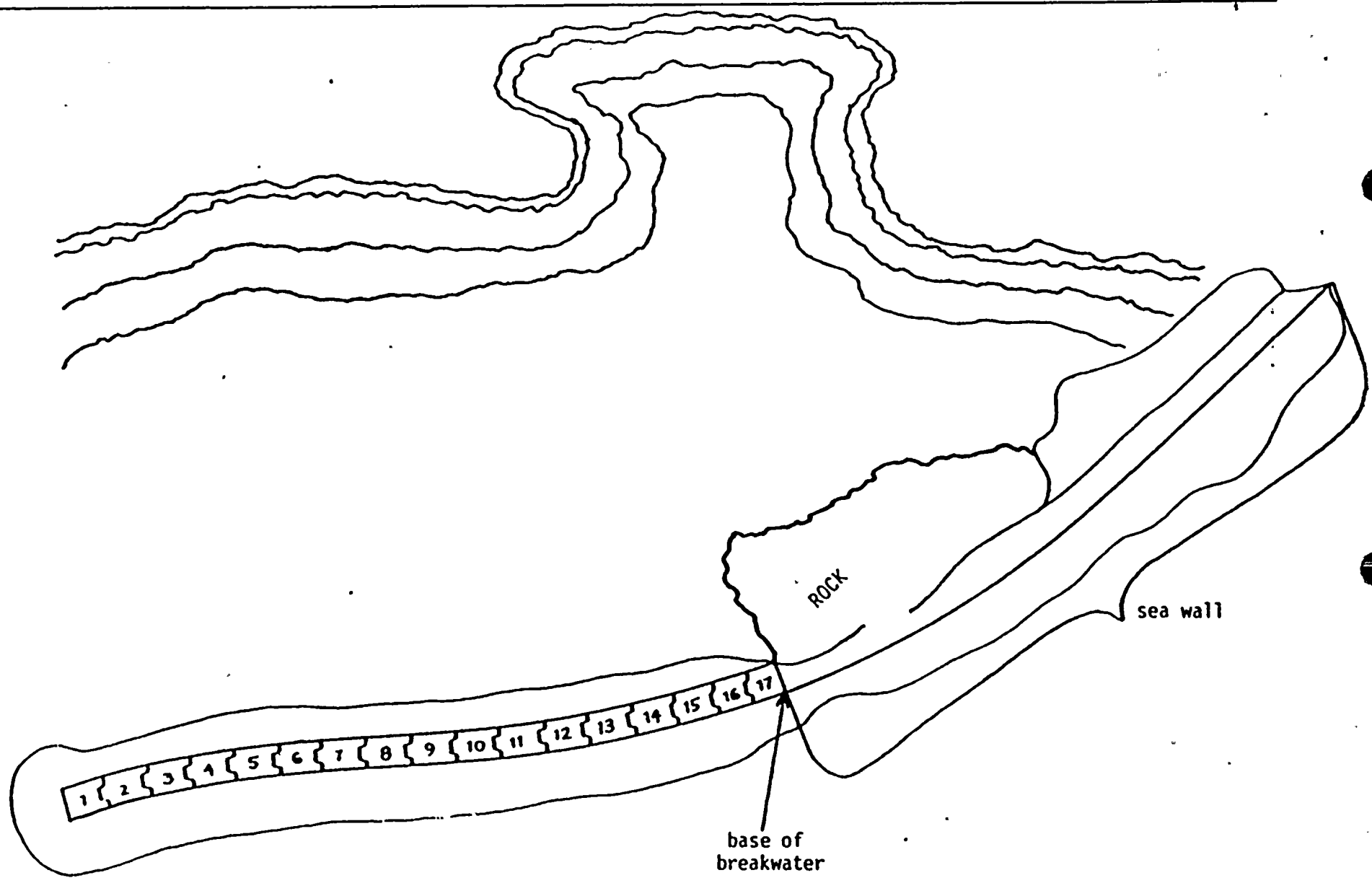
7/85

0 5 2 7 1 4 2 3 0

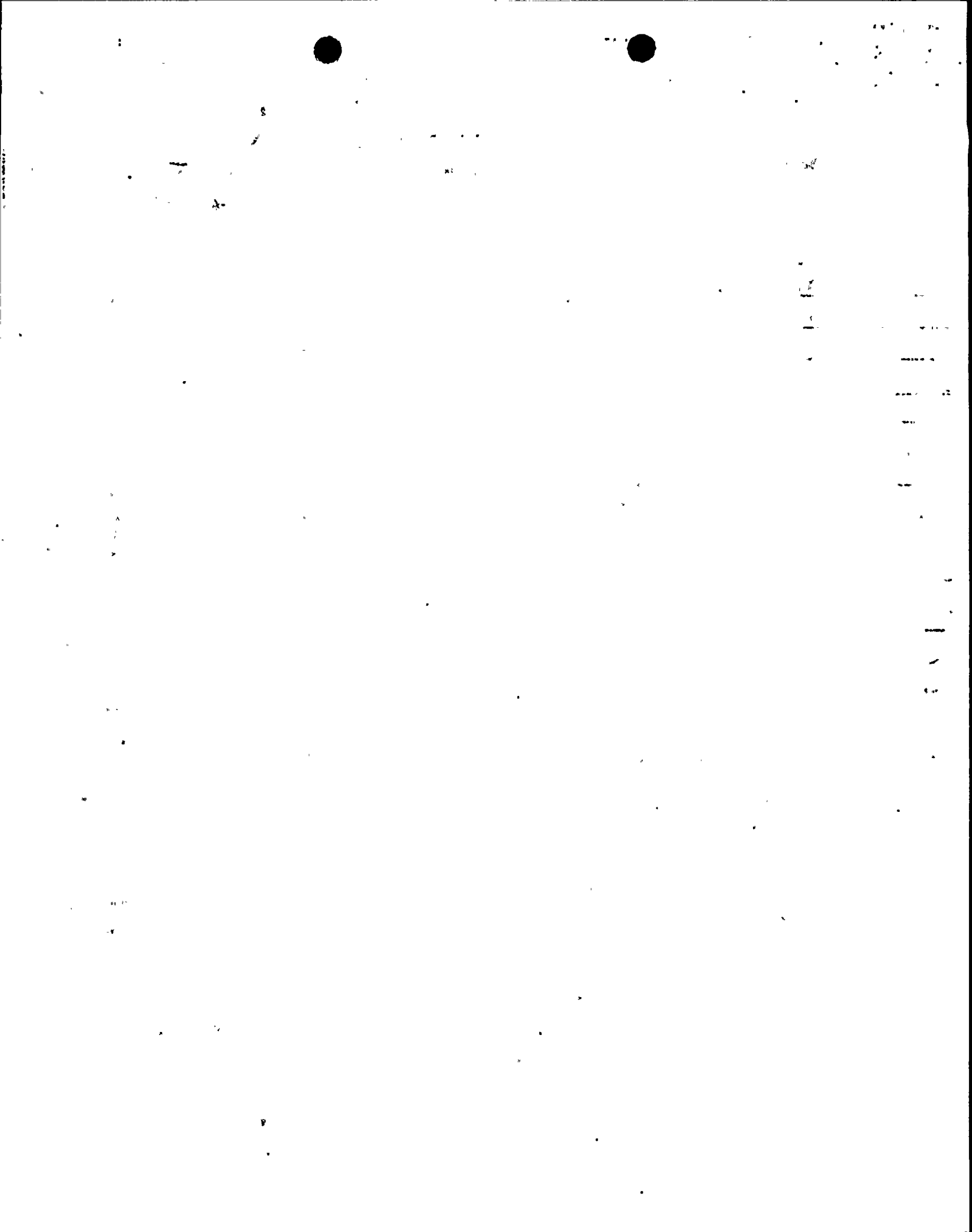
Page 1 of 1

PACIFIC GAS AND ELECTRIC COMPANY  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2  
ATTACHMENT 11.1

TITLE: EAST BREAKWATER (FIGURE 1) - STP M-90



X000596a.06 1911





Average Coordinates for each point

	N	E	EI	Comp Pt
W-6A	632990.03	1146932.03	19.79	11
	632990.03	1146932.07	19.77	12
	632990.06	1146931.98	19.77	27
	632990.05	1146931.98	19.80	28

AVG 632990.04 1146932.02 19.78

	N	E	EI	Comp Pt
E-1	633001.01	1147550.87	19.63	17
	633001.04	1147550.86	19.60	18

AVG 633001.03 1147550.87 19.62

	N	E	EI	Comp Pt
E-2	633099.25	1147400.32	19.45	15
	633099.19	1147400.34	19.42	16

AVG 633099.22 1147400.33 19.44

	N	E	EI	Comp Pt
E-3	633225.51	1147202.96	19.09	13
	633225.45	1147202.95	19.06	14

AVG 633225.48 1147202.96 19.08

05271423

17810

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

1000

Average Coordinates for each point Computer Pt

	N	E	EI	Pt
W-2A	633499.68	1146880.01	19.20	3
	633499.69	1146880.03	19.19	4
	633499.78	1146879.94	19.24	19
	633499.72	1146879.92	19.22	20
Avg	633499.72	1146879.98	19.21	

4  
2  
3  
2  
1  
7  
1  
5  
2  
0

	N	E	EI	Pt
W-3A	633423.49	1146891.02	18.75	5
	633423.50	1146891.05	18.75	6
	633423.59	1146890.94	18.75	21 *
	633423. <sup>57</sup> <del>60</del>	1146890. <sup>94</sup> <del>99</del>	18.75 <del>22.30</del>	22 29
Avg	633423.58	1146890.99	18.76	

	N	E	EI	Pt
W-4A	663261.34	1146884.16	19.72	7
	663261.34	1146884.17	19.70	8
	663261.42	1146884.05	19.74	25
	663261.40	1146884.04	19.75	26
Avg	663261.38	1146884.11	19.73	

	N	E	EI	Pt
W-5A	633112.16	1146888.72	19.60	9
	633112.19	1146888.75	19.58	10
	633112.23	1146888.61	19.60	23
	633112.23	1146888.61	19.57	27
Avg	633112.20	1146888.67	19.59	

10/10/50  
10/11/50  
10/12/50  
10/13/50  
10/14/50

10/15/50  
10/16/50  
10/17/50  
10/18/50  
10/19/50

10/20/50  
10/21/50  
10/22/50  
10/23/50  
10/24/50

10/25/50  
10/26/50  
10/27/50  
10/28/50  
10/29/50

10/30/50

10 2 5 7 1

To: pgdl@regcom,vrfl,tcjl,kssl@necsme@sfnpg,mgbl,tlgl@regcom  
Cc: Arun Sudhaker@NECSCE@SFNPG  
Bcc:  
From: JEA3@SysEng@DCPP  
Subject: BREAKWATER SURVEY RESULTS  
Date: Friday, April 17, 1992 15:25:37 PDT  
Attach:  
Certify: N  
Forwarded by:

---

The annual breakwater surevey requiried per technical specification 3/4.7.13 has been completed by Tech Services Engineering. As usual, no net displacement of the breakwater survey points was detected.

The following survey results can be referenced to drawing 349070.

point	northing	easting	elevation
E-1	633001.03	1147550.87	19.62
E-2	633099.22	1147400.33	19.44
E-3	633225.48	1147202.96	19.08
W-2A	633499.72	1146879.98	19.21
W-3A	633423.54	1146890.99	18.76
W-4A	633261.38	1146884.04	19.73
W-5A	633112.20	1146888.67	19.59
W-6A	632990.04	1146932.02	19.78

This information is to be included in the MAY operating report. Photographs will be provided to Reg Compliance.

Joe Anastasio



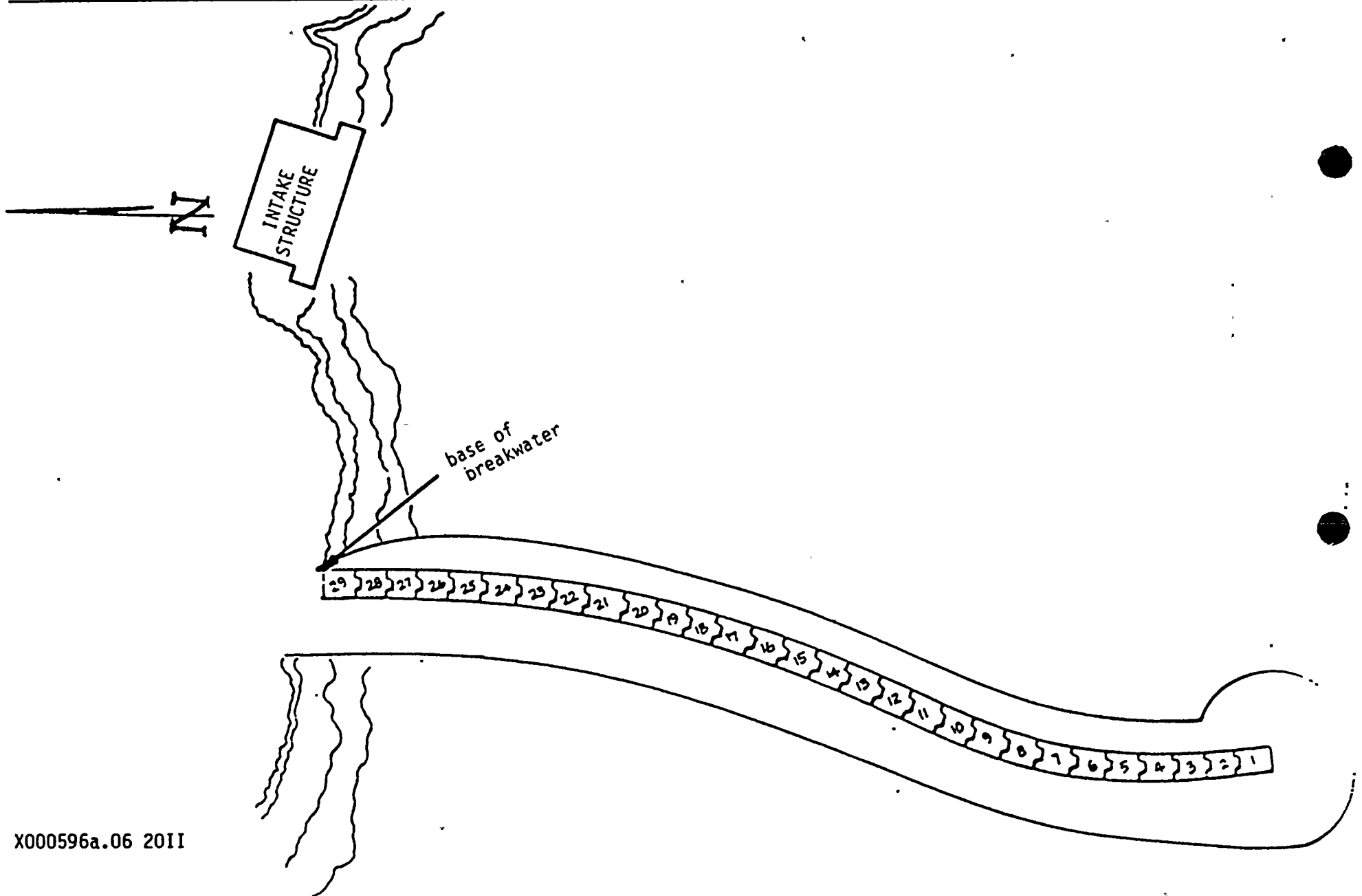
7/85

0 5 2 7 1 4 2 3 4

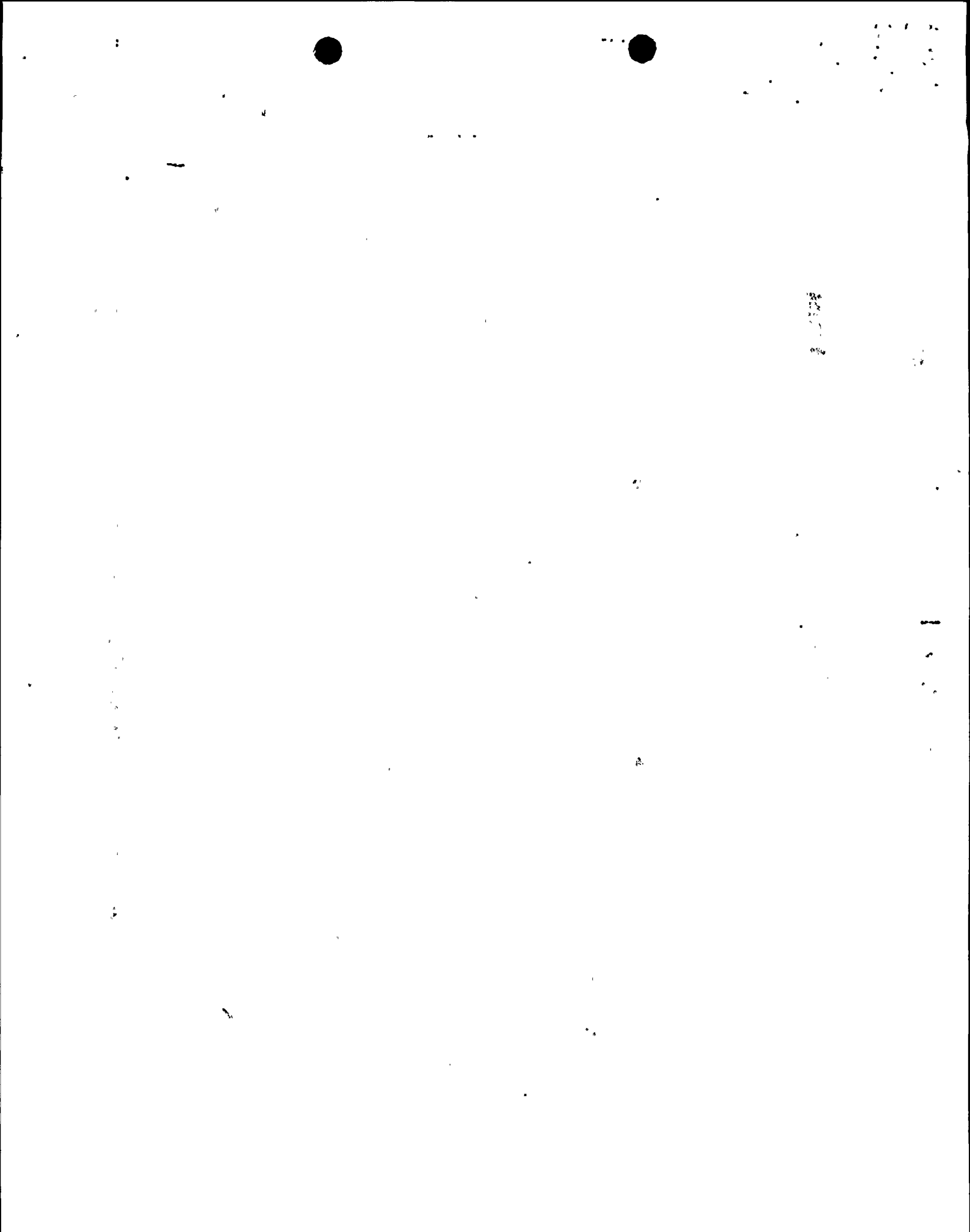
Page .. 1

PACIFIC GAS AND ELECTRIC COMPANY  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2  
ATTACHMENT 11.2

TITLE: WEST BREAKWATER (FIGURE 2) - STP M-90



X000596a.06 2011





DCPP BREAKWATER SURVEY RESULTS

DATE	E - 1 COORDINATE		
	N	E	ELEV
05/01/84	633001.02	1147550.91	19.63
03/01/85	633001.03	1147550.93	19.63
DIFF:	.01	.02	.00
04/08/86	633001.02	1147550.91	19.63
DIFF	-.01	-.02	.00
03/30/87	633001.01	1147550.92	19.63
DIFF	-.01	.01	.00
04/25/88	633001.01	1147550.90	19.63
DIFF	.00	-.02	.00
05/17/89	633001.00	1147550.91	19.64
DIFF	-.01	.01	.01
05/30/90	633001.00	1457550.89	19.65
DIFF	.00	-.02	.01
6/3/91	1.00	50.90	19.61

DATE	E - 2 COORDINATE		
	N	E	ELEV
05/01/84	633099.23	1147400.37	19.43
03/01/85	633099.24	1147400.39	19.43
DIFF:	.01	.02	.00
04/08/86	633099.23	1147400.38	19.43
DIFF	-.01	-.01	.00
03/30/87	633099.22	1147400.38	19.44
DIFF	-.01	.00	.01
04/25/88	633099.22	1147400.38	19.43
DIFF	.00	.00	-.01
05/17/89	633099.21	1147400.37	19.44
DIFF	-.01	-.01	.01
05/30/90	633099.20	1147400.36	19.46
Diff	-.01	-.01	.02
	99.21	00.35	19.42

DATE	E - 3 COORDINATE		
	N	E	ELEV
05/01/84	633225.47	1147203.01	19.10
03/01/85	633225.47	1147203.04	19.09
DIFF:	.00	.03	-.01
04/08/86	633225.48	1147203.02	19.09
DIFF	.01	-.02	.00
03/30/87	633225.45	1147203.00	19.09
DIFF	-.03	-.02	.00
04/25/88	633225.46	1147203.00	19.09
DIFF	.01	.00	.00
05/17/89	633225.46	1147202.98	19.09
DIFF	.00	-.02	.00
05/30/90	633225.44	1147202.97	19.08
DIFF	-.02	-.01	-.01
6/3/91	25.31	02.17	19.05

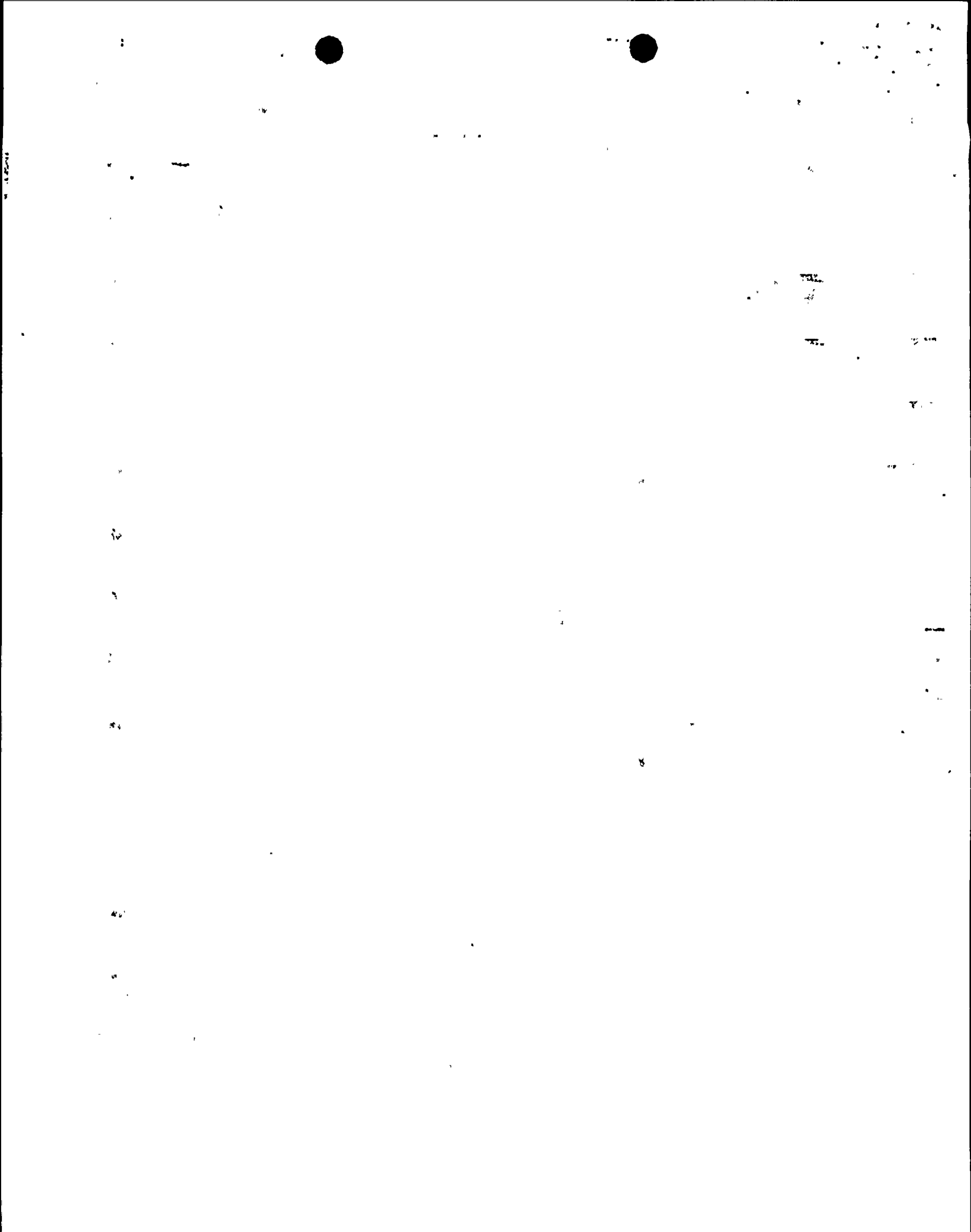
DATE	W - 2A COORDINATE		
	N	E	ELEV
05/01/84	633499.74	1146880.05	19.29
03/01/85	633499.74	1146880.05	19.27
DIFF:	.00	.00	-.02
04/08/86	633499.73	1146880.03	19.26
DIFF	-.01	-.02	-.01
03/30/87	633499.73	1146880.01	19.25
DIFF	.00	-.02	-.01
04/25/88	633499.71	1146880.01	19.21
DIFF	-.02	.00	-.04
05/17/89	633499.70	1146880.03	19.22
DIFF	-.01	.02	.01
05/30/90	633499.71	1146880.04	19.24
Diff	.01	.01	.02
	99.74	71.15	19.20

DATE	W - 3A COORDINATE		
	N	E	ELEV
05/01/84	633423.53	1146891.05	18.85
03/01/85	633423.54	1146891.06	18.83
DIFF:	.01	.01	-.02
04/08/86	633423.53	1146891.05	18.80
DIFF	-.01	-.01	-.03
03/30/87	633423.54	1146891.02	18.79
DIFF	.01	-.03	-.01
04/25/88	633423.51	1146891.02	18.76
DIFF	-.03	.00	-.03
05/17/89	633423.50	1146891.03	18.82
DIFF	-.01	.01	.06
05/30/90	633423.50	1146891.06	18.77
DIFF	.00	.03	-.05
6/3/91	423.55	890.76	18.76

DATE	W - 4A COORDINATE		
	N	E	ELEV
05/01/84	633261.39	1146884.16	19.75
03/01/85	633261.39	1146884.17	19.74
DIFF:	.00	.01	-.01
04/08/86	633261.38	1146884.16	19.73
DIFF	-.01	-.01	-.01
03/30/87	633261.39	1146884.13	19.73
DIFF	.01	-.03	.00
04/25/88	633261.36	1146884.14	19.70
DIFF	-.03	.01	-.03
05/17/89	633261.35	1146884.17	19.72
DIFF	-.01	.03	.02
05/30/90	633261.35	1146884.15	19.73
Diff	.00	-.02	.01
	61.39	84.09	19.71

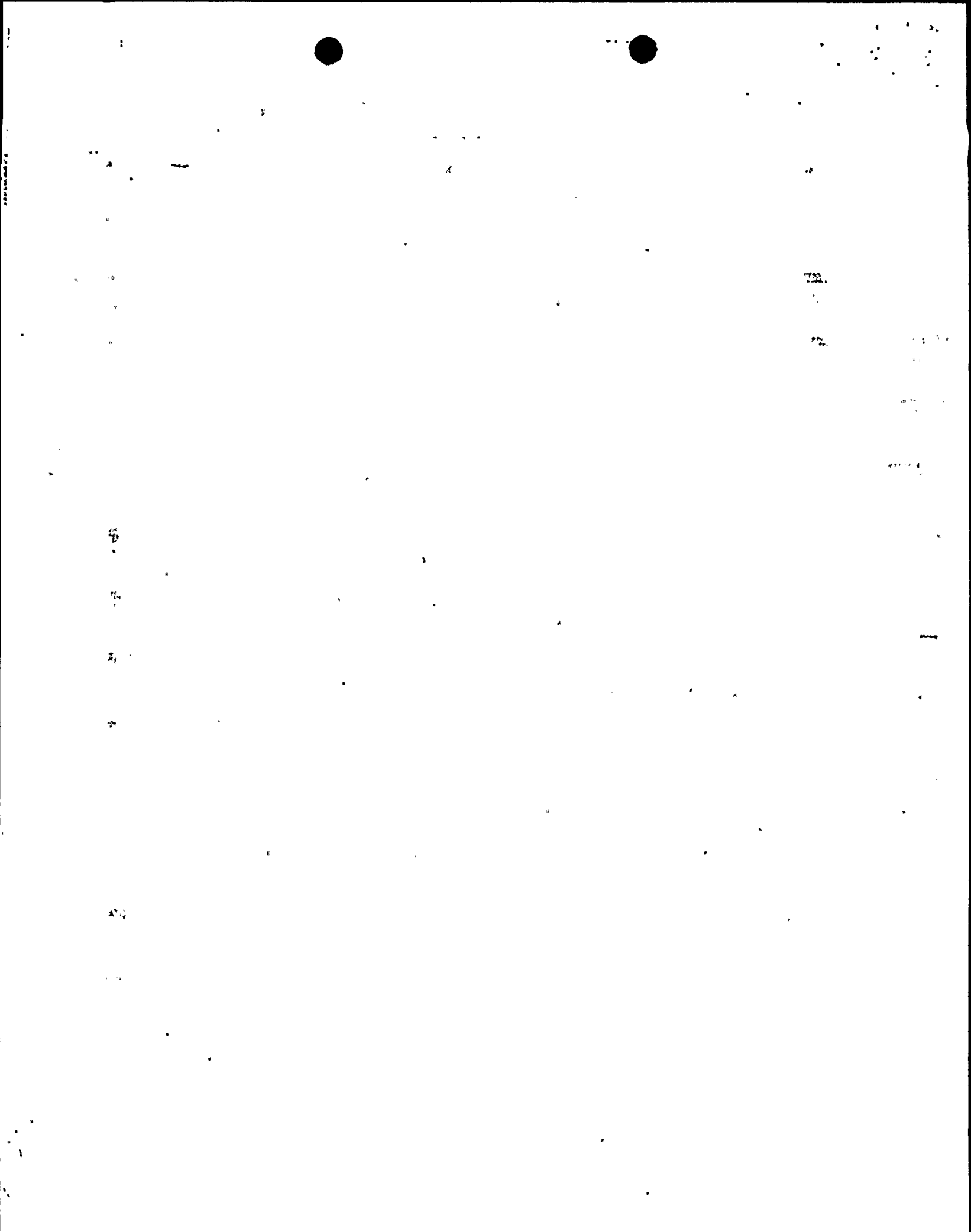
DATE	W - 5A COORDINATE		
	N	E	ELEV
05/01/84	633112.22	1146888.74	19.65
03/01/85	633112.22	1146888.76	19.63
DIFF:	.00	.02	-.02
04/08/86	633112.20	1146888.74	19.60
DIFF	-.02	-.02	-.03
03/30/87	633112.21	1146888.70	19.59
DIFF	.01	-.04	.01
04/25/88	633112.19	1146888.70	19.56
DIFF	-.02	.00	-.03
05/17/89	633112.19	1146888.75	19.59
DIFF	.00	.05	.03
05/30/90	633112.16	1146888.70	19.58
DIFF	-.03	-.05	-.01
6/3/91	12.22	88.65	19.56

DATE	W - 6A COORDINATE		
	N	E	ELEV
05/01/84	632990.07	1146932.06	19.81
03/01/85	632990.08	1146932.08	19.80
DIFF:	.01	.02	-.01
04/08/86	632990.05	1146932.09	19.79
DIFF	-.03	.01	-.01
03/30/87	632990.08	1146932.05	19.79
DIFF	.03	-.04	.00
04/25/88	632990.05	1146932.05	19.77
DIFF	-.03	.00	-.02
05/17/89	632990.04	1146932.11	19.81
DIFF	-.01	.06	.04
05/30/90	632990.02	1146932.08	19.81
Diff	-.02	-.03	.00
	90.07	32.02	19.78



# Breakwater Survey Data

	Theod. Loc.	Target Loc.	H <sub>Inst</sub>	H <sub>Target</sub>	Horiz. Angle	Vert. Angle	SLOPE Dist	Horiz. Dist	Vert. Dist	Red B <sub>g</sub> (Initial)	Notes (Write small)
	D <sub>rew</sub>	A	4.75	4.16'	179/59/11 SetD	269/10 114	1506.05	1505.89	-21.72	JEA	<del>PT 19</del>
	D <sub>rew</sub>	W-2A	4.75	5.035	344/45 47	267/29 158	1258.27	1257.08	-54.87	JEA	PT 19.
	D	W-2A	4.75	5.035	344/45 37	92/30 106	1258.28	1257.08	-54.91	JEA PEY	PT 20
	D <sub>rew</sub>	W-3A	4.75	5.028	341/24 134	267/25 131	1233.30	1232.06	-55.37	JEA	PT 21
	D	W-3A	4.75	5.02	341/29 136	92/34 24	1233.30	1232.06	-55.35	JEA PEY	PT 22
3	D <sub>rew</sub>	W-5A	4.75	4.84	326/51 107	267/26 128	1225.88	1224.66	-54.70	JEA	PT 23 (check) <sub>01</sub>
4	D	W-5A	4.75	4.84	326/51 107	92/33 137	1225.88	1224.66	-54.72	JEA PEY	PT 24
1	D <sub>rew</sub>	W-6A	4.75	4.96	320/50 107	267/24 107	1201.04	1199.81	-54.41	JEA	PT 25
2	D	W-6A	4.75	4.96	320/50 106	92/35 147	1201.04	1199.81	-54.38	JEA PEY	PT 26
5	D <sub>rew</sub>	W-4A	4.75	5.12	333/50 129	267/27 133	1225.20	1224.00	-54.28	JEA	wind PT 27
0	D	W-4A	4.75	5.12	333/50 126	92/32 124	1225.21	1224.01	-54.28	JEA	PT 26 ↓



Breakwater Survey Data

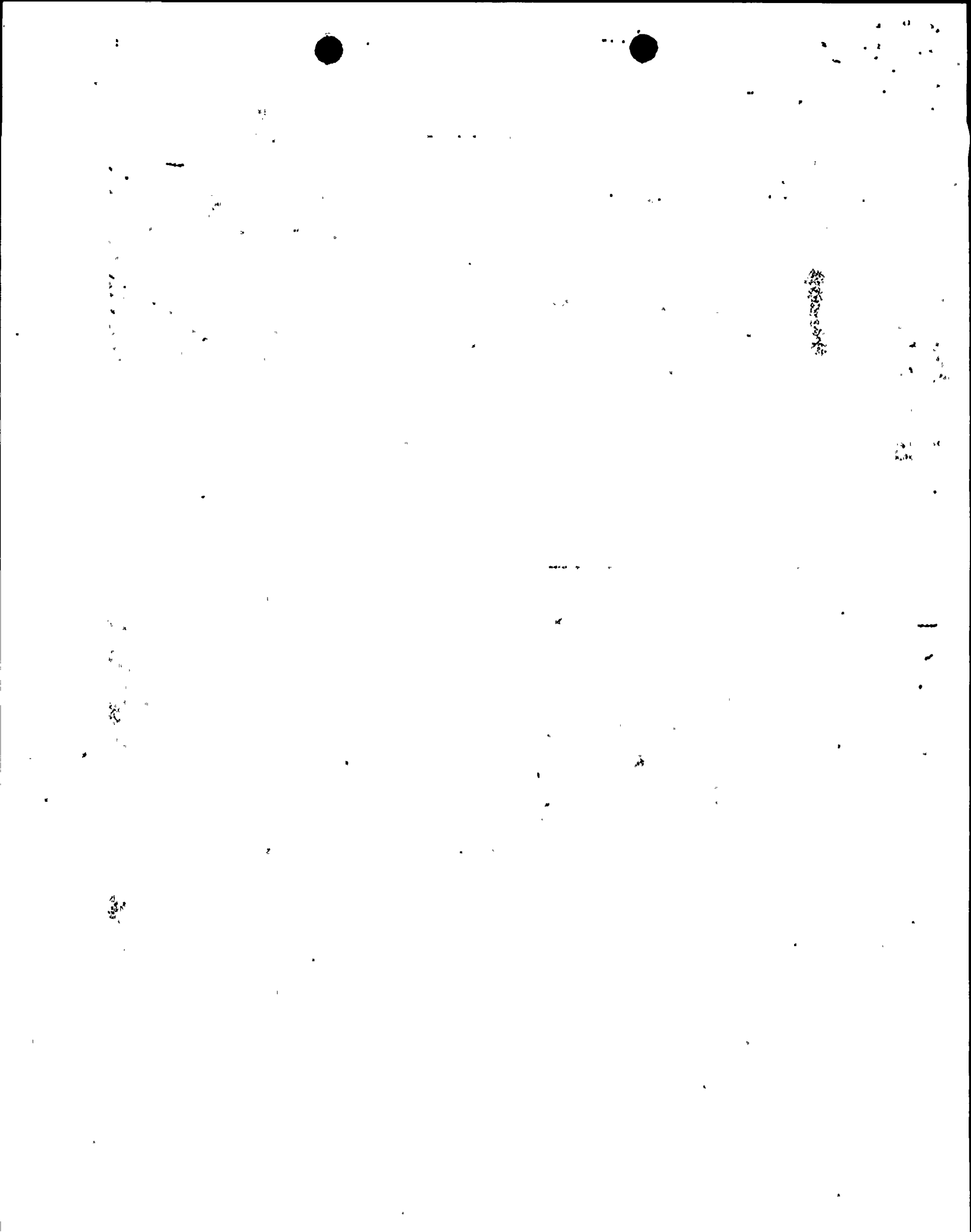
Theod. Loc.	Target Loc.	H <sub>Inst</sub>	H <sub>Target</sub>	Horiz Angle	Vert Angle	Slope Dist	Horiz Dist	Vert Dist	Red Bg (Initial)	Notes (Write small)
Point A BASE	Point A		4.16							
Point D	Point A	4.75	4.75	0	90/44 145	1506.04	1505.88	-21.75	JEA	Starting out
Point D	Point A	4.75	4.16	0	90/44 52	1506.04	1505.88	-21.86 -21.74	JEA	
Point D Reverse	Point A	4.75	4.16	179/57 42	269/10 112	1506.04	1505.89	-21.77	JEA	NWS
Point D	E-3	4.75	4.99	332/05 34	93/29 102	906.36	904.69	-55.06	JEA	PT 13
Point D Reverse	Point A	4.75	4.16	179/54 54	269/10 10/08	1506.05	1505.89	-21.80	JEA	
Point D Point Rev	E-3	4.75	4.99	152/05 35 120	266/30 30/52	906.37	904.69	-55.09	JEA	14
Point D	A	4.75	4.16	0	90/49 147	—	1505.88	-21.76	JEA	
Point D	E-2	4.75	5.18	321/54 305	94/20 14005	721.29	719.23	-54.51	JEA	PT 15
Point D	A	4.75	4.16							
Point D	E-2	4.75	5.18	321/54 18	94/20 14	721.28	719.21	-54.53	JEA MDW	PT 16
D Reverse	A	4.75	4.16	179/54 46 +0	269/10 145	1506.04	1505.89	-21.81	JEA	
D Rev	E-1	4.75	5.13	310/01 49	264/50 16	604.31	601.86	-54.38	JEA	PT 17
D	E-1	4.75	5.13	310/01 59	95/09 58	604.32	601.86	-54.41	JEA	PT 18



Breakwater Survey Data

Theod. Loc.	Target Loc.	H <sub>Inst</sub>	H <sub>Target</sub>	Horiz. Angle	Vert. Angle	Slope Dist	Horiz. Dist	Vert. Dist	Red Bg (Initial)	Notes (Write small)
A	D	533/16" 4.43	4.47	0	69/11/35	1506.04	1505.89	-21.26	JEA	START
TRIAL # 3 ① A	W-2A	4.43	5.00	48-26 -11	94-19 -39	442.88	441.62	-33.42	JEA TCJ	
② A	W-2A	4.43	5.00	48-26 -02	265-40 -20	442.88	441.61	-33.72	JEA	....
① A	W-3A	↓	5.00	49-16 -48	93-43 -55	519.38	518.27	-33.80	JEA TCJ	
② A	W-3A	↓	5.00	49-16 -38	206-16 -05	519.37	518.27	-33.80	TCJ JEA	
① A	W-4A		4.76	52-57 -27	92-48 -23	676.88	676.06	-33.13	JEA TCJ	vibration due to wind
② A	W-4A	↓	4.76	307-02 -37	287-11 6 -32	676.88	676.06	-33.16	TCJ JEA	
① A	W-5A		4.76	54-20 -14	92-18 -40	824.90	824.23	-33.25	JEA TCJ	
② A	W-5A		4.76	54-20 -07	92-17 41-15	824.87	824.20	-33.27	TCJ JEA	
① A	W-6A		4.68	52-46 -49	91-59 45	952.13	951.56	-33.14	TCJ JEA	
② A	W-6A	↘	4.68	52-45 -35	208-00 -15	952.13	951.56	-33.14	JEA TCJ	Wind Problems Not used
③ A	W-6A	↘	4.68	52-46 -41	91-59 -49	952.14	951.56	-33.15	JEA TCJ	

NO GOOD







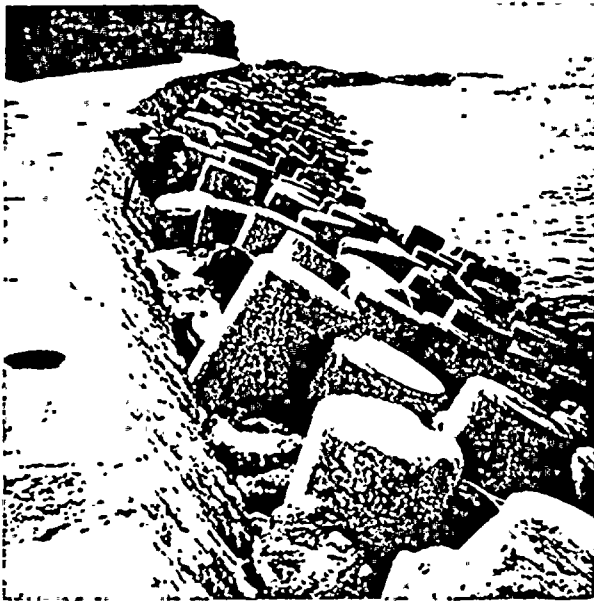
East Breakwater

4/16/92



East Breakwater Seaward Side  
Looking North

4/16/92



East Breakwater Seaward Side  
Looking South

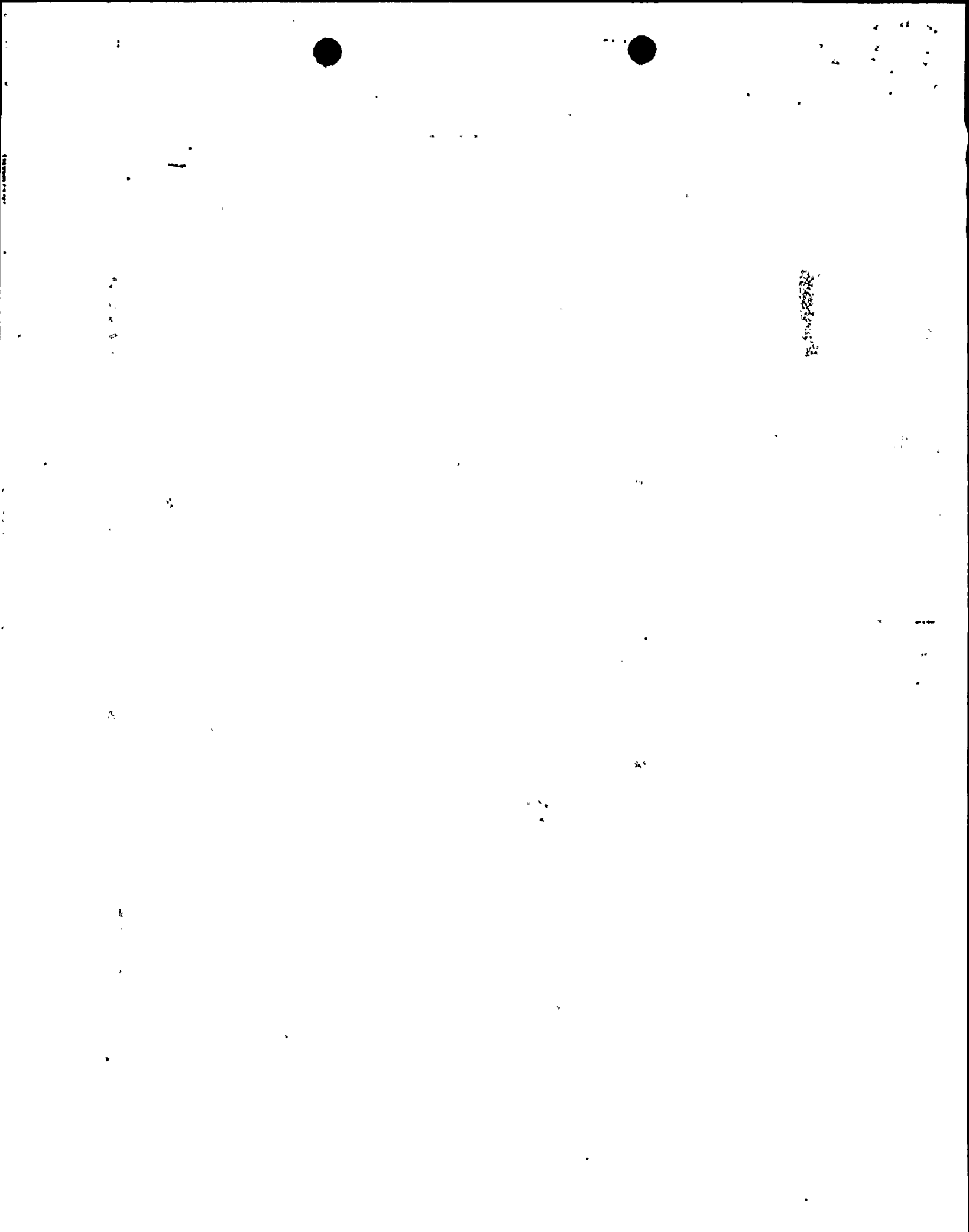
4/16/92

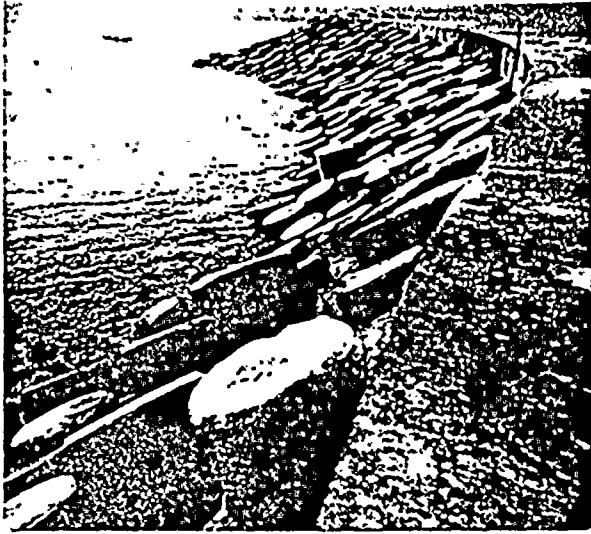


East Breakwater Shore side  
Looking South

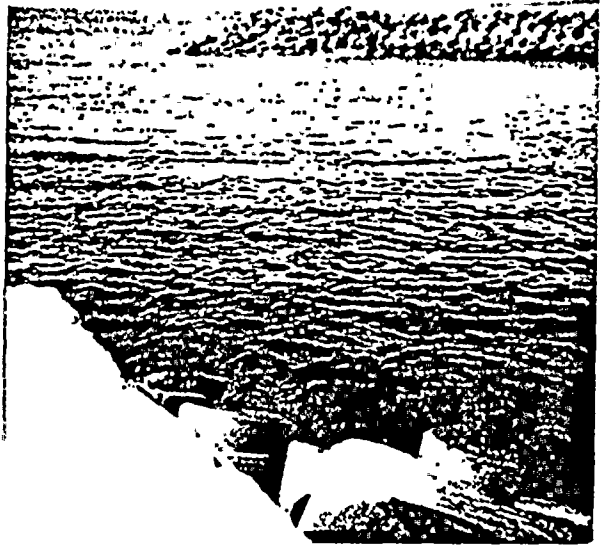
4/16/92

05271 4239

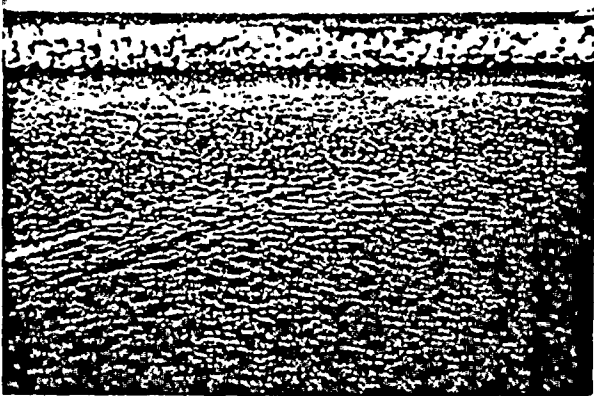




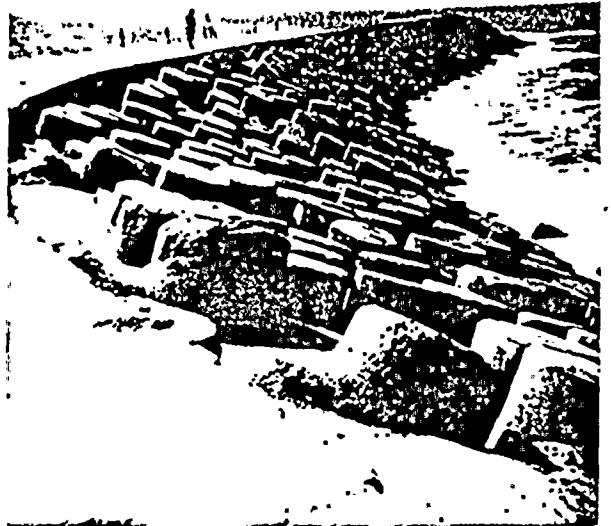
West Breakwater Shore Side  
4/16/92



West Breakwater, End  
4/16/92

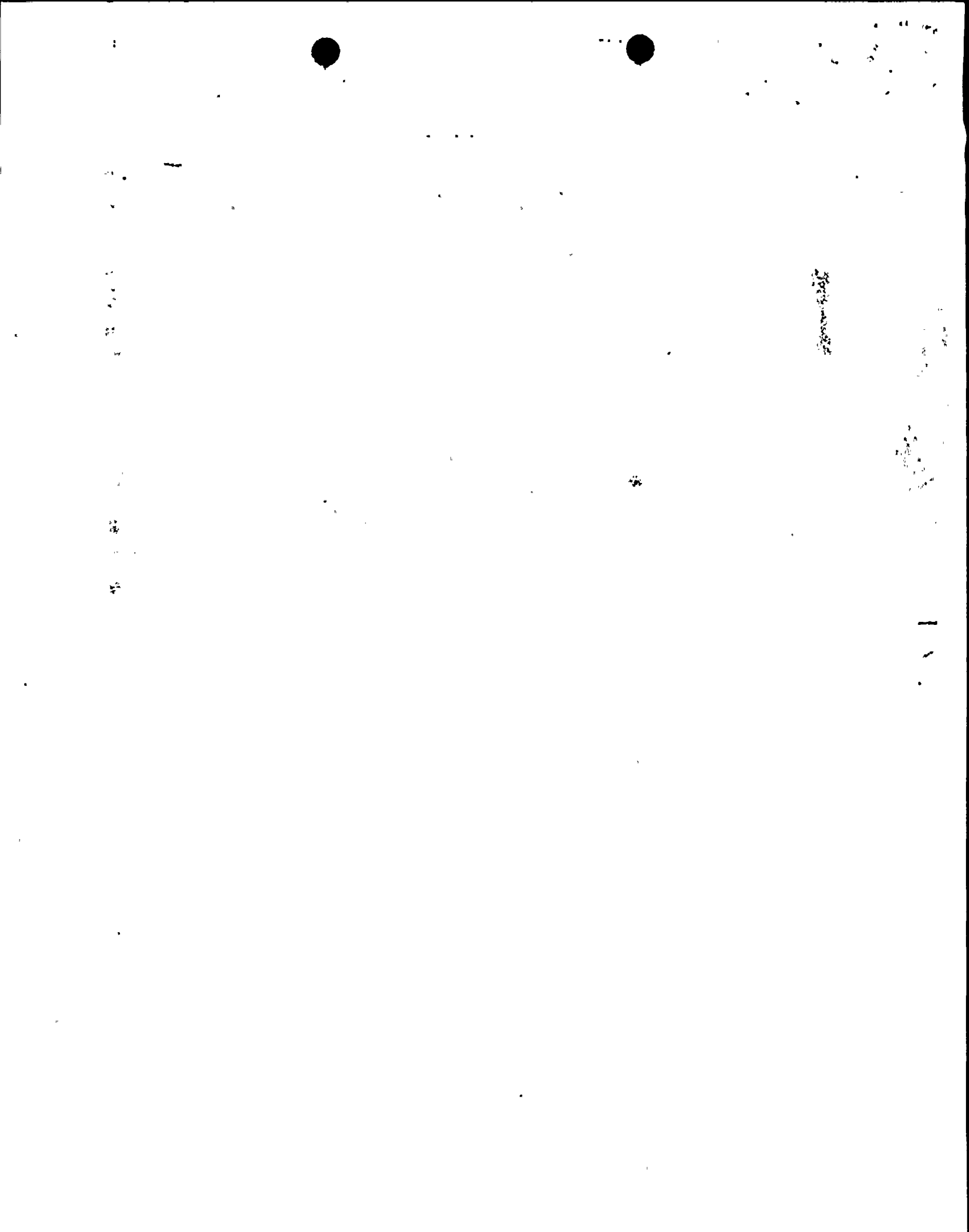


West Breakwater, view from shore  
4/16/92



West Breakwater Sea-ward side  
4/16/92

05271 4240





1241

West Brankwater view from shore  
4/16/92



West Brankwater, Shore side,  
looking to shore 4/16/92

05271

