

AD-A168 652

AUTEC CABLE ROUTE DIVE SURVEY SITE 7 ANDROS ISLAND

1/1

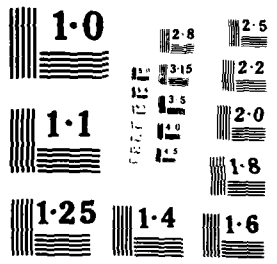
BAHAMAS (U) TRACOR/MARINE INC FORT LAUDERDALE FL
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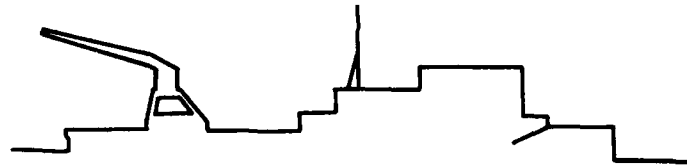


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AD-A168 652

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Ocean Engineering

CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON NAVY YARD
WASHINGTON, DC 20374

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Tracor Marine



FINAL REPORT
AUTEC CABLE ROUTE DIVE SURVEY
SITE 7

Submitted to:
NAVAL FACILITIES ENGINEERING
COMMAND

By
TRACOR MARINE, INC.

16 August 1983

DTIC
ELECTE
JUN 13 1986
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FINAL REPORT
AUTEC CABLE ROUTE DIVE SURVEY
SITE 7
ANDROS ISLAND, BAHAMAS

Submitted to:

NAVAL FACILITIES ENGINEERING COMMAND
BUILDING 200
WASHINGTON NAVY YARD
WASHINGTON, DC 20374

CONTRACT NUMBER
N00600-81-D-5270

TRACOR MARINE, INC.
JOB NUMBER 723511

16 August 1983

Approved

A handwritten signature in cursive script, appearing to read "Edward Clausner", written over a horizontal line.

Edward Clausner
Vice President



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- P. Depths and Bottom Descriptions
- C. Photographs
- D. Chart of Area
- E. Proposed Cable Route Chart



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A-1	24	WY

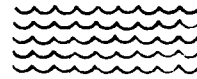


1.0 SUMMARY

Tracor Marine was tasked by Chesapeake Division Naval Engineering Command to perform a dive survey of an area off Site 7 AUTECH, Andros Island, Bahamas. This survey was requested by Naval Underwater Systems Command (NUSC) Newport, R.I. The purpose of this survey was to locate and plot a route for a new acoustic cable to be laid from Seaward to the Dolphin and from the Dolphin to the beach off High Point Cay. At present, a cable exists from the Dolphin to the beach (36 quad cable). The new cable will be at least 40' from the old cable to prevent cross talk between cables. During hurricane David, the old cable was pushed to the north. (See Proposed Cable Route Chart in the Appendix).

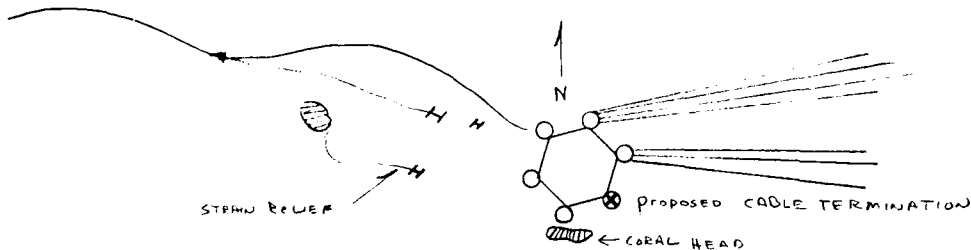
NUSC requested the following information be obtained during the dive survey, bottom types, depths, exact location of proposed cable route and obstructions, possibility of cable burial, and possibilities of termination at Dolphin.

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DOLPHIN AND GENERAL INFORMATION

The Site 7 Dolphin is located approximately 1 mile to the northeast of Radar Boresite Tower. It is a six leg tower with platform. The northeast leg of the Dolphin has four cables and the east leg has three cables going up the piling. The southeast leg is free of cables and obstructions. The southernmost leg is obstructed by a coral head, therefore, the southeast leg is recommended for termination.



- Dolphin & EXISTING CABLES -

Since Site 7 is located on High Point Cay, a small island directly off Andros, the shallow reef area is not typical. The shallow reef in the proposed cable area is more of a rise from 30 feet MLW to 10 feet MLW and back to 25 feet with scattered coral patches and heads. The rise is fairly gradual as noted on the Chart. During the dive survey, a cable route was found that bypassed the coral patches and heads (See Appendix

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE

AD-A168652

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION

Unclassified

1b. RESTRICTIVE MARKINGS

2a. SECURITY CLASSIFICATION AUTHORITY

3. DISTRIBUTION AVAILABILITY OF REP.
Approved for public release;
distribution is unlimited

2b. DECLASSIFICATION/DOWNGRADING SCHEDULE

4. PERFORMING ORGANIZATION REPORT NUMBER
FPO 8367

5. MONITORING ORGANIZATION REPORT #

6a. NAME OF PERFORM. ORG.
Ocean Engineering
& Construction
Project Office
CHESNAVFACENGCOM

6b. OFFICE SYM

7a. NAME OF MONITORING ORGANIZATION

6c. ADDRESS (City, State, and Zip Code)
BLDG. 212, Washington Navy Yard
Washington, D.C. 20374-2121

7b. ADDRESS (City, State, and Zip)

8a. NAME OF FUNDING ORG.

8b. OFFICE SYM

9. PROCUREMENT INSTRUMENT IDENTENT #
N00600-81-D-5270

8c. ADDRESS (City, State & Zip)

10. SOURCE OF FUNDING NUMBERS

PROGRAM	PROJECT	TASK	WORK	UNIT
ELEMENT #	#	#	#	ACCESS #

11. TITLE (Including Security Classification)

AUTEC Cable Route Dive Survey Site 7 Andros Island, Bahamas: Final Report

12. PERSONAL AUTHOR(S)

13a. TYPE OF REPORT

13b. TIME COVERED
FROM TO

14. DATE OF REP. (YYMMDD)
83-03-09

15. PAGES
33

16. SUPPLEMENTARY NOTATION

17. COSATI CODES

FIELD	GROUP	SUB-GROUP
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18. SUBJECT TERMS (Continue on reverse if nec.)

Atlantic Undersea Test & Evaluation Center,
Surveying, Oceanography, Diving, Cable
Installation, Retrieval & Repair

19. ABSTRACT (Continue on reverse if necessary & identify by block number)

Tracor Marine was tasked by Chesapeake Division Naval Facilities Engineering Command to perform a dive survey of an area off Site 7 AUTEC, Andros Island, Bahamas. This survey was requested by Naval Underwater Systems Command (NUSC) Newport, R.I. The purpose of this survey was to locate & plot a route (Con't)

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT
SAME AS RPT.

21. ABSTRACT SECURITY CLASSIFICATION

22a. NAME OF RESPONSIBLE INDIVIDUAL

Jacqueline B. Riley

22b. TELEPHONE

202-433-3881

22c. OFFICE SYMBOL

DD FORM 1473, 84MAR

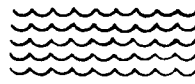
SECURITY CLASSIFICATION OF THIS PAGE

BLOCK 19 (Con't)

for a new acoustic cable to be laid from Seaward to the Dolphin and from the Dolphin to the beach off High Point Cay. At present, a cable exists from the Dolphin to the beach (36 quad cable). The new cable will be at least 40' from the old cable to prevent cross talk between cables. During hurricane David, the old cable was pushed to the north.

NUSC requested the following information be obtained during the dive survey, bottom types, depths, exact location of proposed cable route and obstructions, possibility of cable burial, and possibilities of termination at Dolphin.

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Proposed Cable Route Chart).

The bottom, almost from the Dolphin to the beach, is flat hard coral rock. The coral patches and coral heads are live coral with a maximum relief of 6 feet. These coral patches are north of the proposed cable route. Sand areas were few, with the sand only a few inches deep over hard coral rock.

The cable landing area is approximately 50 feet south of the old cable landing and the area is hard honeycombed coral, with a very sharp drop off to 4-5 feet at waters edge. From the cable landing area to the termination building is approximately 150 feet off a fairly steep rocky cliff.

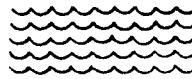
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Navigation/Plotting

Directly north of High Point Cay approximately 2 miles, lies a small previously unnamed cay. This cay was perfectly located with the correct angle needed for the DDMU 540 Trisponder system. The cay was appropriately named "Kembro Cay" and a magnavox MX1502 satellite surveyor was used to determine an exact survey point. The second point surveyed was on High Point Cay and the coordinates were determined by the MX 1502. These locations were marked as surveyed points for future use. The 540 trisponder system was used to determine x-y coordinates and latitude and longitude of the buoys.

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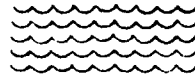
Dive Equipment and Material

Since the maximum depth surveyed was approximately 50 feet, Scuba was used.

Equipment List

1. 10 each Scuba Tanks
2. 2 12' zodiacs with motors
3. Site 7 16 foot Whaler
4. 50 concrete blocks (anchors)
5. 1200' $\frac{1}{4}$ " poly line
6. 100 each lobster floats
7. 6 cans day glow paint red and green.
8. U/W measuring tape
9. Nikonos IV A 35mm underwater camera 100 ASA with 28 mm widener attached and 400 ASA with available light.
10. Mako Scuba Compressor
11. Diver's personnel gear.

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2.0 PERSONNEL

- o Dennis V. Kembro - Project Manager/Dive Master
- o Len Gordon - Project Engineer/Diver
- o Richard Counter - Diver
- o Rocco Galletta - Diver
- o Stan Copeland - Electronic Technician/Surveyor
(Consultant)

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3.0 GENERAL LOG

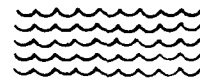
August 1, Monday

- 0700 - Arrive West Palm Beach
- 0930 - Arrive Autec
- 1000 - BOQ
- 1100 - Check on shipment of equipment to Site 7.
Delayed due to weather.
- 1400 - Meeting, John Rose, Clark Briggs
- 1700 - Secured for day

August 2, Tuesday

- 0700 - Helo all personnel to Site 7
- 0830 - Arrive Site 7
- 0900 - 1300 - Set up Equipment
- 1500 - Dive gear arrived Site 7 by 75 boat
- 1700 - Start dive survey
Diving on coral patches, marking obstructions
- 2000 - Arrive dock
- 2100 - Secure for day.

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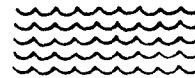
August 3, Wednesday

- 0600 - Start MOB equipment for dive
- 0700 - Depart dock
- 0800 - Survey Dolphin area and Seward
- 1100 - Lunch
- 1200 - 1800 - Survey rise area and near shore area
- 1300 - Set up sat. nav. on Kembro Cay.
- 1900 - Back at Dock
- 2000 - Secure for day.

August 4, Thursday

- 0600 - Set up dive equipment.
- 0700 - One diver depart for Conus
- 0800 - Check MX 1502 on Kembro Cay
- 0800 - 1100 - Start dropping buoys for proposed cable route.
- 1100 - 1200 - Lunch
- 1200 - 1400 - Fill tanks, etc.
- 1400 - 1600 - Photos of areas surveyed
- 1600 - 1900 - Swim proposed cable route and photos
- 1900 - 2000 - Breakdown and pack most dive equipment
- 2000 - Secure.

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August 5, Friday

- 0600 - Set up survey equipment
- 0700 - Trip to Kembro Cay set up DDMU 540 system.
- 0800 - Set up Site 7 boat with 540 master and equipment
- 0930 - Depart for survey area
- 1000 - 1500 - Take depth, chart buoy locations
- 1600 - Demob boats
- 1630 - 2 divers depart for Conus
- 1630 - 1900 - 1 diver demob and pack equipment
- 1900 - Secure

August 6, Saturday

- 0600 - 1000 - Demob and pack equipment
- 1000 - 1 diver depart for Site 1
- 1100 - Dive survey complete.

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APPENDICES:

- A. Coordinates for Proposed Cable Route
and Obstructions.
- B. Depths and Bottom Descriptions
- C. Photographs
- D. Chart of Area
- E. Proposed Cable Route Chart.

APPENDIX A



230 South Powerline Road, Suite #4
P.O. Box 1042
Deerfield Beach, Florida 33441
(305) 421-4622 • 421-4688

August 11, 1983

Tracor Marine, Incorporated
P.O. Box 13107
Port Everglades, Florida 33316

Attention: Mr. Dennis Kembro (Project Manager)

Dear Dennis,

Listed below are the control sites. The sites were established using a Magnavox MX 1502 Satellite Surveyor in NAD 27; then converted to UTM Zone 18, CM 75° W, using software within the MX 1502. Datum conversions used are as follows:

a=6378206.4
f=1/294.9786982
b/a=1-f=.9966099247
 Δx +17 Δy -157 Δz -176

CONTROL SITES

Site 7 Code 86

x 246514.56
y 2645323.72

Lat 23° 54' 02.88"
Long 77° 29' 23.04"

Geodetic Height = +31.49

Kembro Cay Code 88

x 246098.89
y 2647666.57

Lat 23° 55' 18.75"
Long 77° 29' 39.19"

Geodetic Height = +17.02

Sincerely,

SEA SYSTEMS CORPORATION


Stan Copeland

SDC:lab

APPENDIX A



230 South Powerline Road, Suite #4
 P.O. Box 1042
 Deerfield Beach, Florida 33441
 (305) 421-4622 • 421-4688

GEOIDETIC & CARTESIAN COORDINATES FOR
 PROPOSED CABLE ROUTE & OBSTRUCTIONS

G15 X=246,644.5800 Y=2,645,345.290 ZONE 18 LAT=23 54 03.65 LONG=77 29 18.46	G11 X=247,243.6600 Y=2,645,689.480 ZONE 18 LAT=23 54 15.18 LONG=77 28 57.51	G21 X=247,701.1100 Y=2,645,950.020 ZONE 18 LAT=23 54 23.90 LONG=77 28 41.50	R16 X=247,772.5900 Y=2,646,118.020 ZONE 18 LAT=23 54 29.40 LONG=77 28 39.08
G32 X=246,726.7100 Y=2,645,391.460 ZONE 18 LAT=23 54 05.20 LONG=77 29 15.59	G22 X=247,328.2300 Y=2,645,737.860 ZONE 18 LAT 23 54 16.80 LONG 77 28 54.55	G25 X=247,751.0200 Y=2,645,978.230 ZONE 18 LAT=23 54 24.85 LONG=77 28 39.76	R13 X=247,635.3900 Y=2,646,086.570 ZONE 18 LAT=23 54 28.30 LONG=77 28 43.91
G7 X=246,798.8200 Y=2,645,432.610 ZONE 18 LAT=23 54 06.58 LONG=77 29 13.06	G19 X=247,404.2900 Y=2,645,777.570 ZONE 18 LAT=23 54 18.13 LONG=77 28 51.88	G24 X=247,861.9800 Y=2,646,042.820 ZONE 18 LAT=23 54 27.01 LONG=77 28 35.88	R12 X=247,636.9300 Y=2,645,892.140 ZONE 18 LAT=23 54 21.99 LONG=77 28 43.73
G35 X=246,891.7800 Y=2,645,487.400 ZONE 18 LAT=23 54 08.41 LONG=77 29 09.81	G17 X=247,461.3500 Y=2,645,812.480 ZONE 18 LAT=23 54 19.30 LONG=77 28 49.89	G26 X=247,928.6700 Y=2,646,082.240 ZONE 18 LAT=23 54 28.33 LONG=77 28 33.54	R6 X=247,562.7900 Y=2,645,963.020 ZONE 18 LAT=23 54 24.25 LONG=77 28 46.40
G23 X=247,008.0600 Y=2,645,553.100 ZONE 18 LAT=23 54 10.61 LONG=77 29 05.75	G20 X=247,575.7800 Y=2,645,875.510 ZONE 18 LAT=23 54 21.41 LONG=77 28 45.89	G27 X=248,009.0700 Y=2,646,128.460 ZONE 18 LAT=23 54 29.88 LONG=77 28 30.73	R5 X=247,436.7700 Y=2,645,871.050 ZONE 18 LAT=23 54 21.19 LONG=77 28 50.79
G28 X=247,135.3000 Y=2,645,627.990 ZONE 18 LAT=23 54 13.12 LONG=77 29 01.30	G18 X=247,638.8000 Y=2,645,912.750 ZONE 18 LAT=23 54 22.66 LONG=77 28 43.68	Dolphin Point X=248,015.0100 Y=2,646,135.560 ZONE 18 LAT=23 54 30.11 LONG=77 28 30.53	R2 X=247,360.8600 Y=2,645,930.770 ZONE 18 LAT=23 54 23.08 LONG=77 28 53.51

APPENDIX A



COORDINATES FOR PROPOSED CABLE
ROUTE (G) & OBSTRUCTIONS (R)
PAGE 2 OF 2

R4	CABLE END
X=247,347.0300	X=246,602.4600
Y=2,645,837.600	Y=2,645,319.420
ZONE 18	ZONE 18
LAT=23 54 20.05	LAT=23 54 02.79
LONG=77 28 53.94	LONG=77 29 19.93

R1
X=247,298.2900
Y 2,645,880.550
ZONE 18
LAT=23 54 21.42
LONG=77 28 55.69

R3
X=247,276.6700
Y=2,645,828.100
ZONE 18
LAT=23 54 19.70
LONG=77 28 56.42

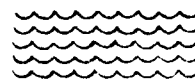
R10
X=247,981.3200
Y=2,646,121.120
ZONE 18
LAT=23 54 29.62
LONG=77 28 31.71

R9
X=247,973.0400
Y=2,646,129.780
ZONE 18
LAT=23 54 29.90
LONG=77 28 32.91

R14
X=247,953.6500
Y=2,646,133.140
ZONE 18
LAT=23 54 30.00
LONG=77 28 32.69

R8
X=247,878.27
Y=2,646,086.84
ZONE 18
LAT=23 54 28.46
LONG=77 28 35.36

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APPENDIX B

Buoy Depths and Bottom Description

G = Green buoys marking proposed cable route.

R = Red buoys marking obstructions.

NOTE: Depths taken at approximately mean low water \pm one foot,
5 August 1983. All depths taken with U/W tape measure.

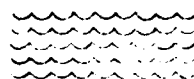
Tide Info: From 1983 Yachtsman's Guide to the Bahamas.

<u>Day/Date</u>	<u>AM HT</u>	<u>AM LT</u>	<u>PM HT</u>	<u>PM LT</u>
Fri. 5	4:04/2.9	10:01/0.7	4:42/3.7	11:06/0.8

<u>BUOY #</u>	<u>DEPTH</u>	<u>TIME</u>	<u>BOTTOM TYPE</u>
G-27	31'	10:46	Buoy located south edge of coral head 5' square, 3' high along the south side of Dolphin. Area directly south of buoy clear of coral heads for 50'
G-26	28'	10:48	Hard coral flat bottom.
G-24	26'	10:50	Hard coral flat bottom.
G-25	15'	10:54	Hard coral flat bottom. Start of gradual rise, hard coral flat bottom. Starting to be rough small live coral and plants.
G-21	12'	10:56	Flat hard coral, some plants. No sand.

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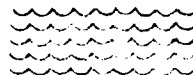
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<u>BUOY</u>	<u>DEPTH</u>	<u>TIME</u>	<u>BOTTOM TYPE</u>
G-18	10.6'	10:59	Top of rise, rocky, little live coral and plants. 1 foot relief off flat bottom.
G-20	18'	11:03	Sand over hard coral, little grass, dropping off after rise.
G-17	20'	11:06	Hard flat coral, 2" sand cover.
G-19	19'	11:10	Hard flat coral
G-22	17'	11:13	Hard flat coral, some grass, little sand.
G-11	15'	11:14	Hard flat coral, no sand.
G-28	14'	11:19	South west corner of coral patch. Flat and clear from buoy location south 50' plus, relief of coral patch 3 feet.
G-23	13'	11:22	Flat hard coral, no sand
G-35	12'	11:26	Flat hard coral, no sand
G-7	10'	11:29	Flat hard coral, no sand
G-32	8'	11:32	Flat hard coral, no sand
G-15	6'	11:34	Flat hard coral, some sand, scattered pot holes, 1 foot deep.
END	4-5'	11:39	At edge of coral beach, abrupt 4-5' drop off ragged coral beach.

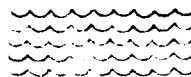
NOTE: Proposed landing for cable 50' south of old cable landing. Directing east of cable termination building, new cable will not have to cross old cable.

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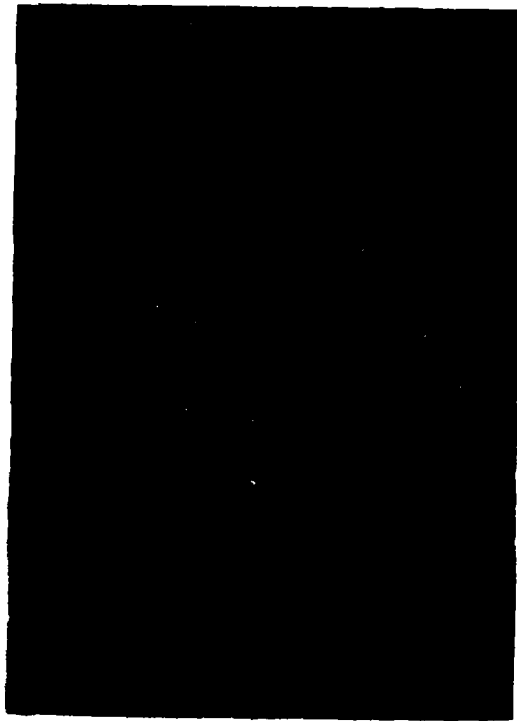
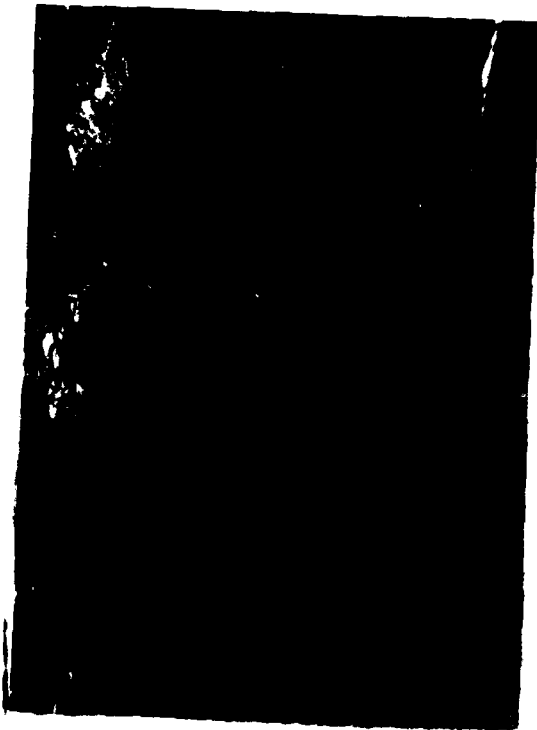
<u>BUOY #</u>	<u>DEPTH</u>	<u>TIME</u>	<u>BOTTOM TYPE/DESCRIPTION</u>
R-9	31'	11:53	North end of strain relief I-beam, I-beam 10" 12", 1.5 ft. off bottom, strain relief cable approximately 1½" shackled to hole top of I-beam (see photo). East of R-9 approximately 12', another I-beam protrudes off bottom 10'
R-10	31'	11:54	Buoy marks south strain relief I-beam.
R-14	30'	11:57	Marks strain relief attachment to existing cable.
R-8	26'	11:59	Coral head, approximately 7' square 4 ft. off bottom.
R-16	22'	12:03	Marks existing cable, hard flat bottom, beginning of rise.
R-13	12'	12:06	Marks existing cable, rocky bottom, top of rise.
R-12	12'	12:12	Marks south edge of rocky/coral on rise, 1 ft. relief small sand patch to the north, large sand area south.
R-6	16'	12:14	South west corner of large coral patch 50' square.

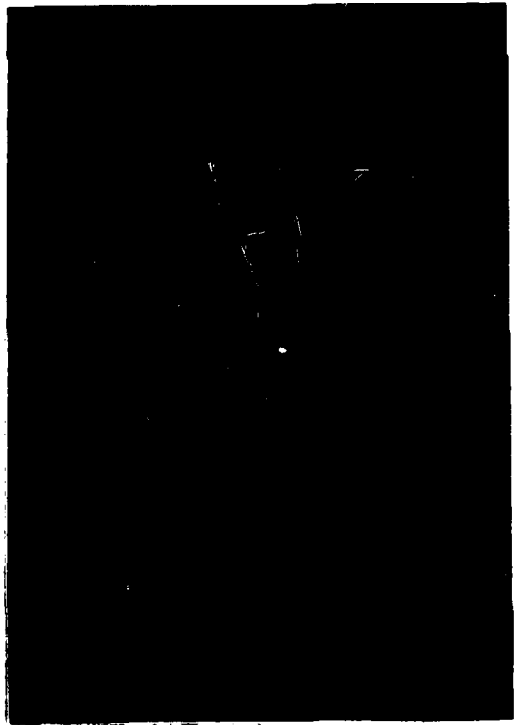
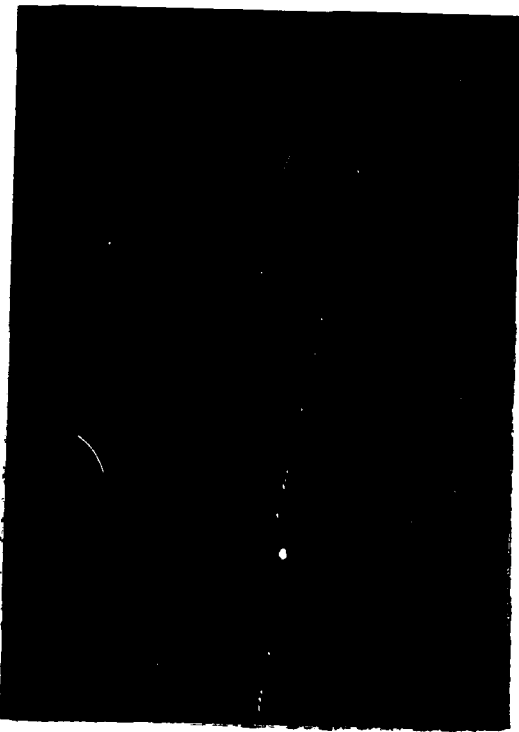
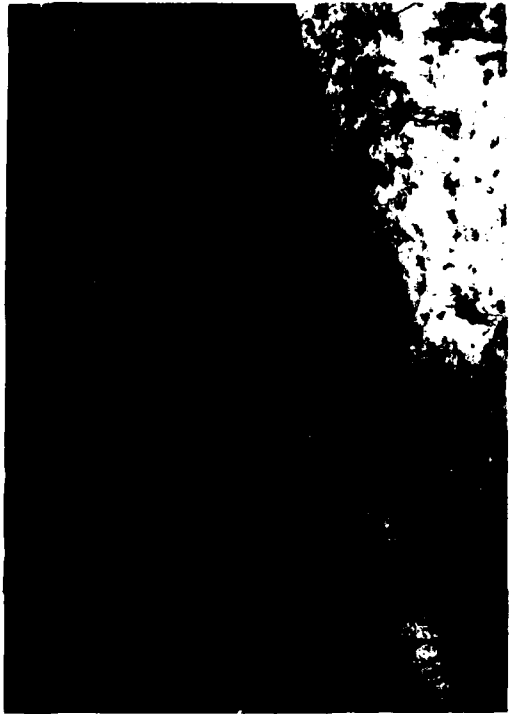
Tracor Marine

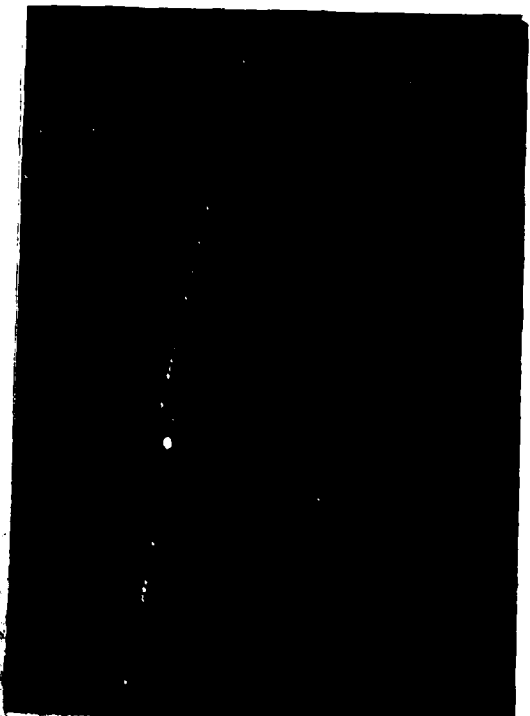
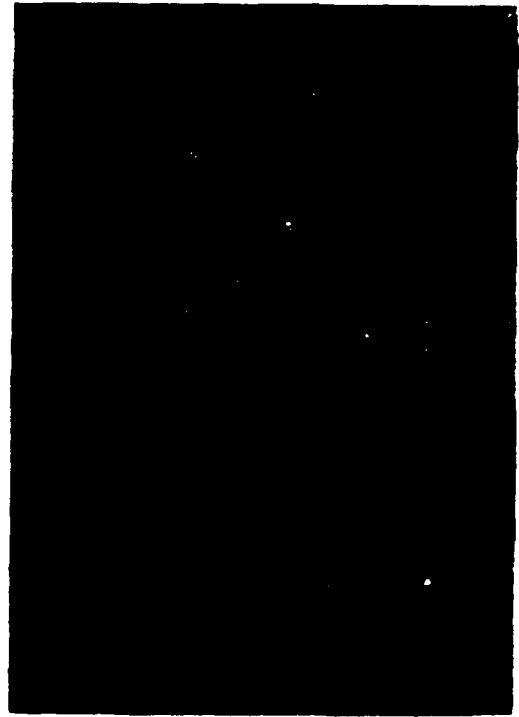
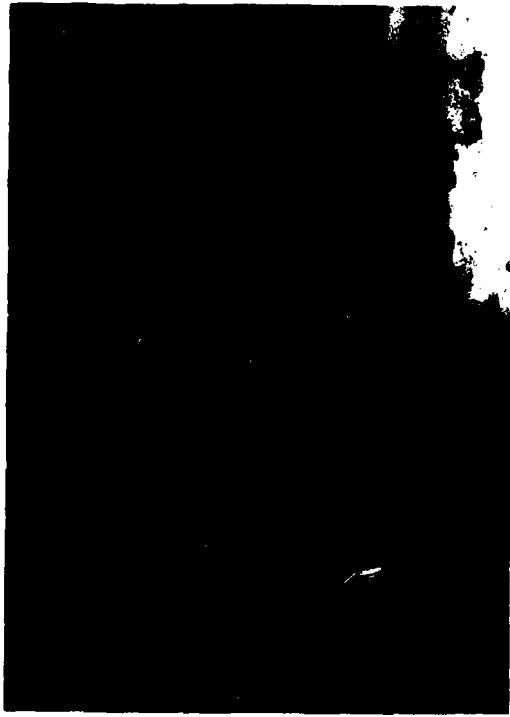


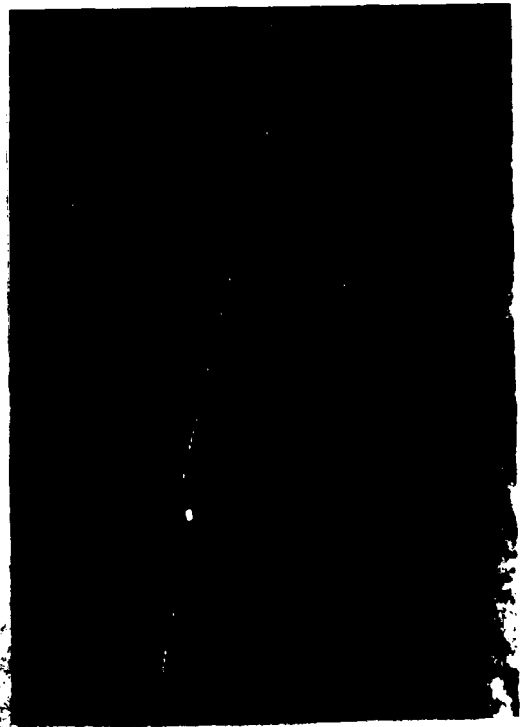
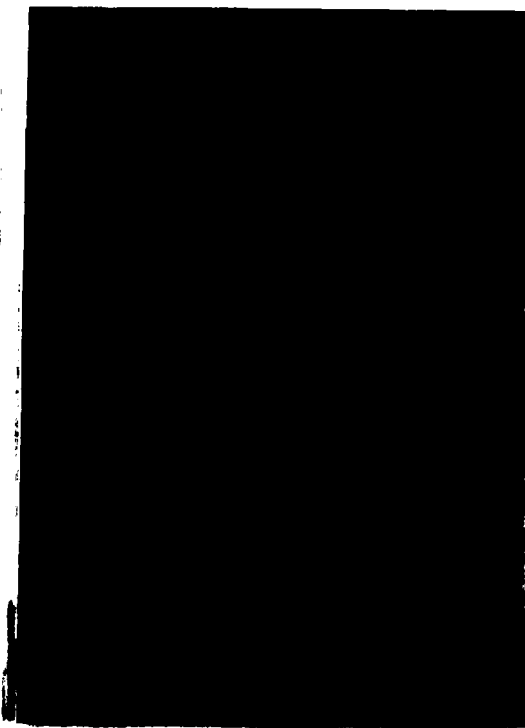
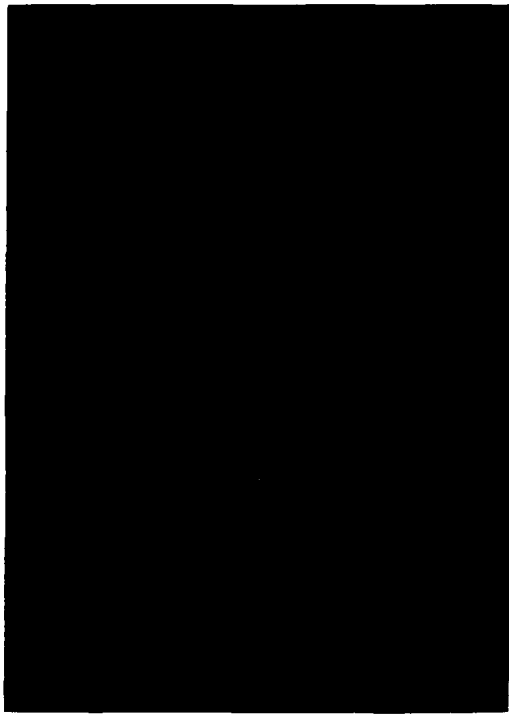
<u>BUOY #</u>	<u>DEPTH</u>	<u>TIME</u>	<u>BOTTOM TYPE/DESCRIPTION</u>
R-5	17'	12:18	Southern edge of large coral patch 6' relief - goes to buoy R-2.
R-2	17'	12:20	Northern edge of same R-5 patch.
R-4	15'	12:22	Southern edge of large coral patch. Same patch R-1
R-1	15'	12:26	Northern edge of R-4 patch.
R-3	16'	12:30	West end of coral patch area - clear to the west from this point.

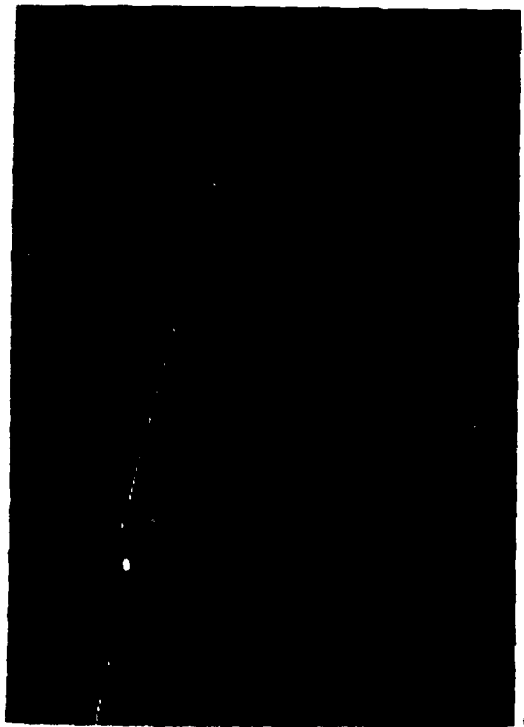
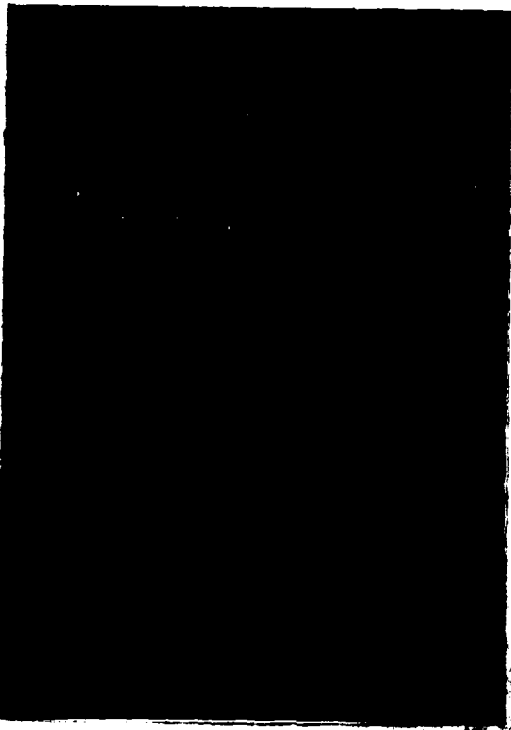
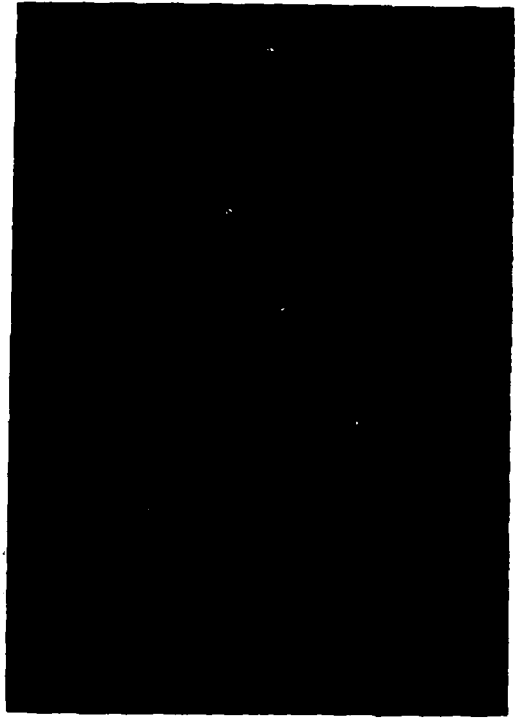
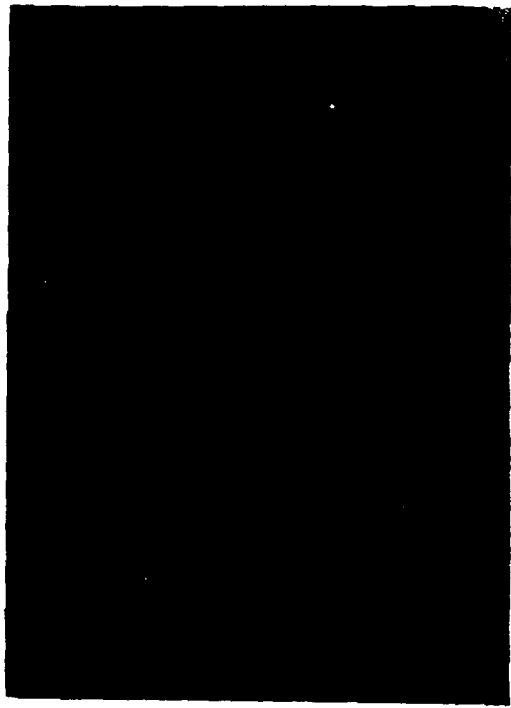


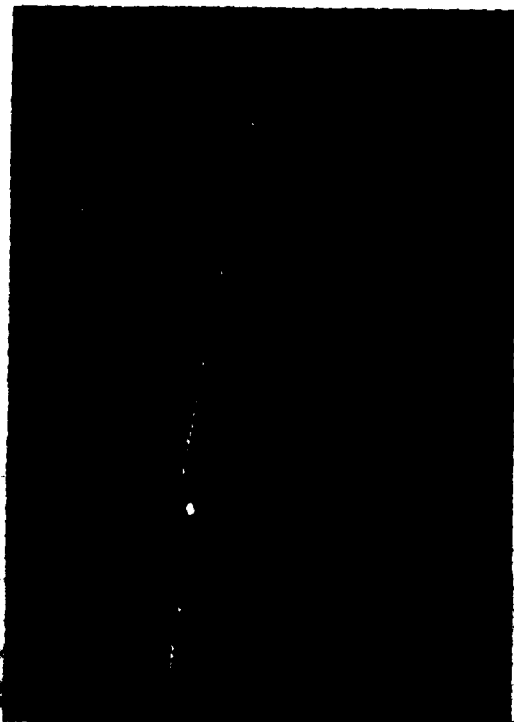
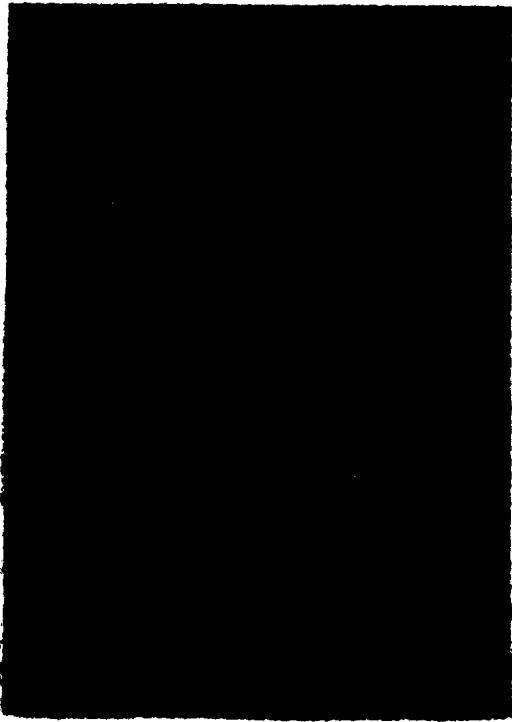
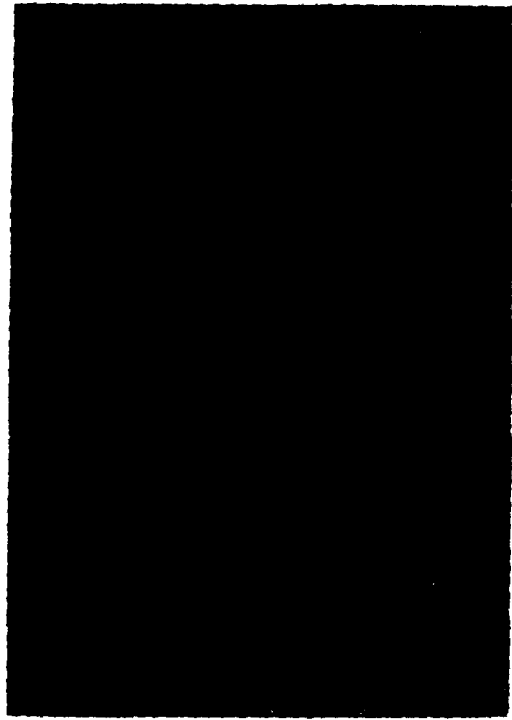


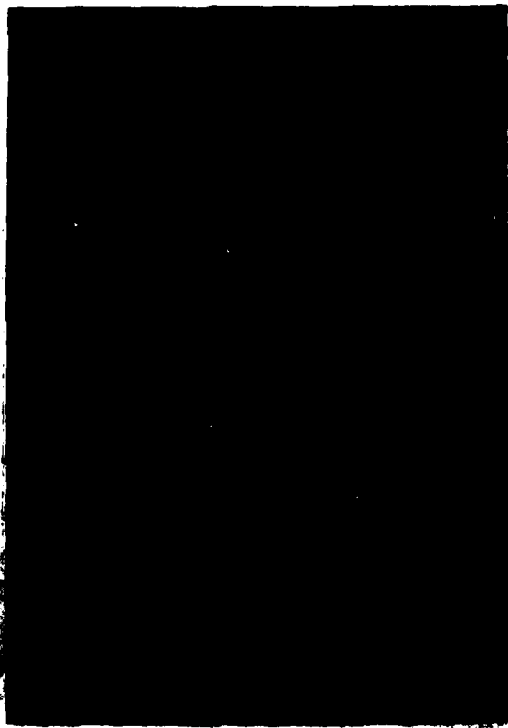
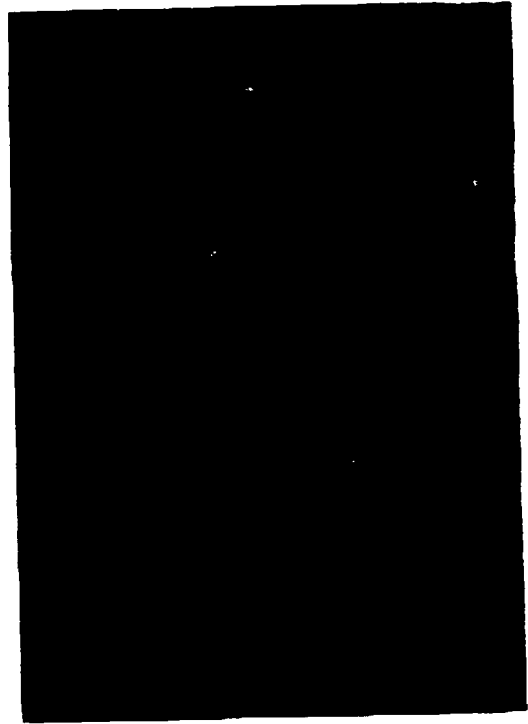
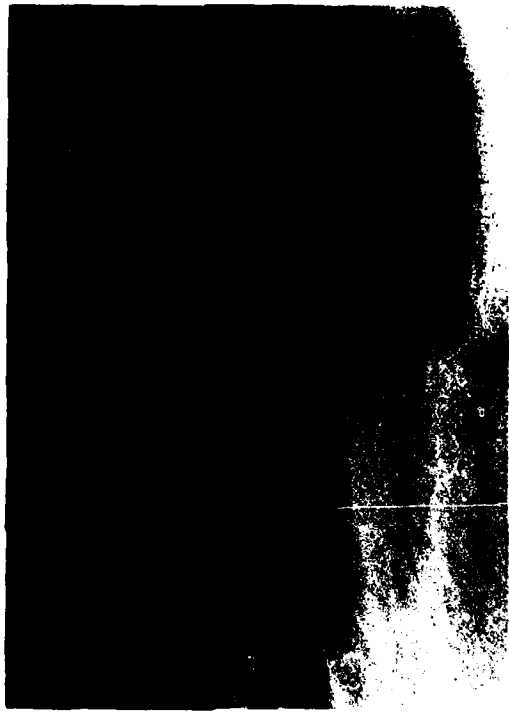


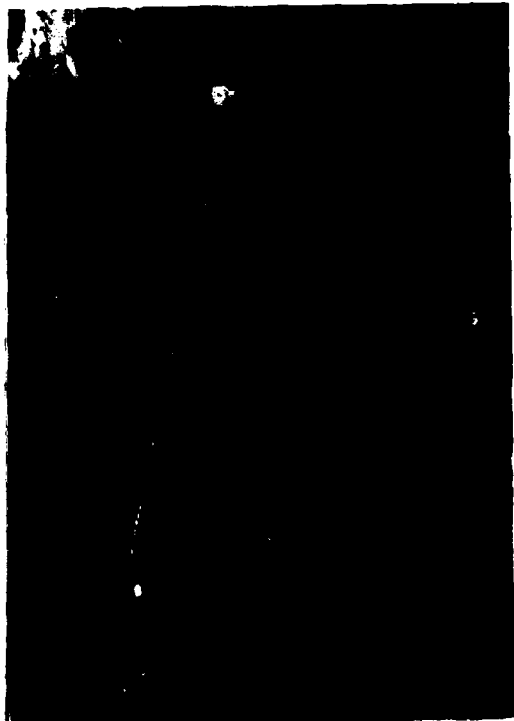
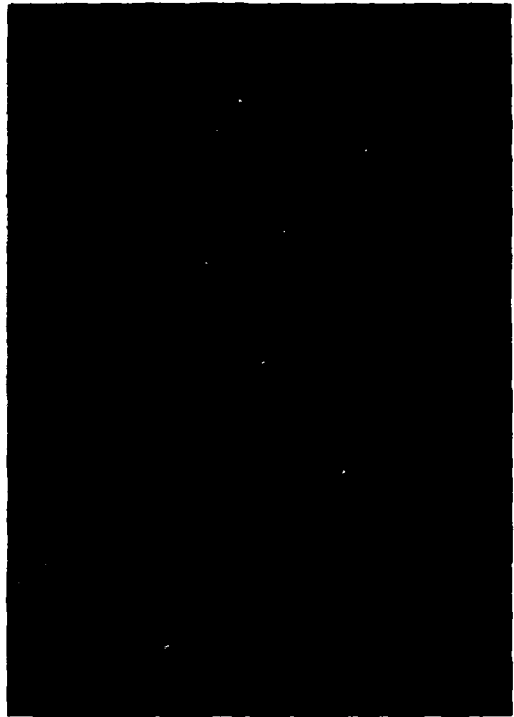
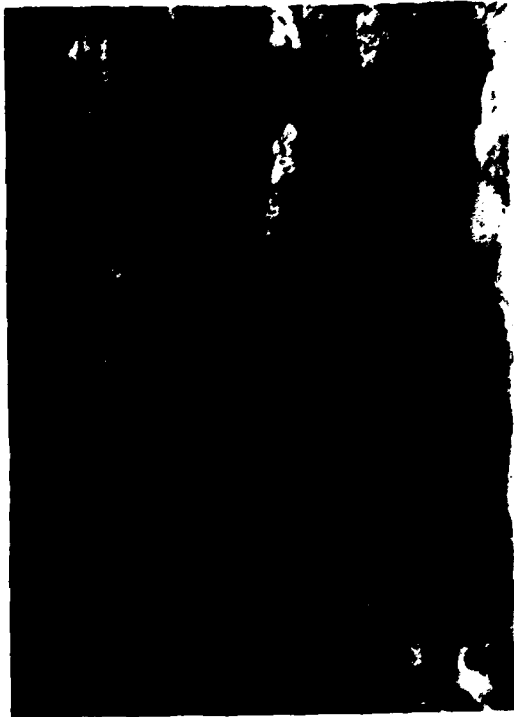


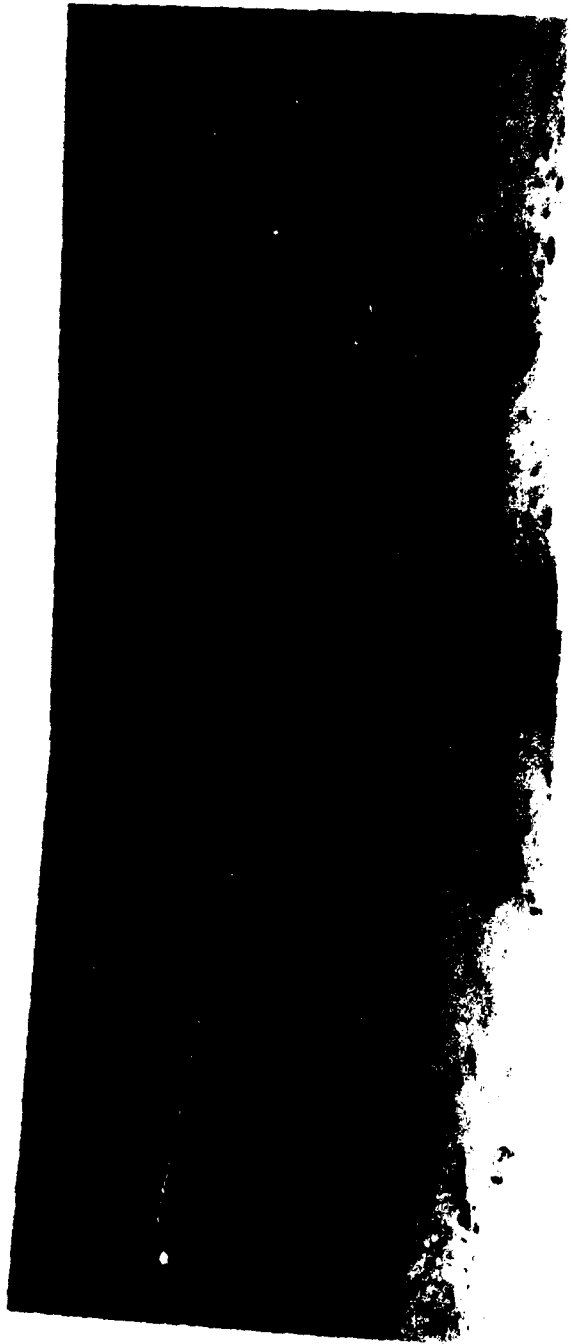
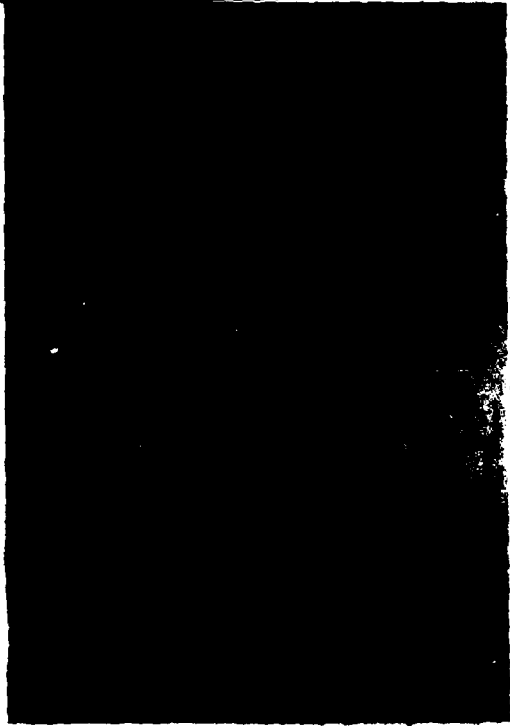
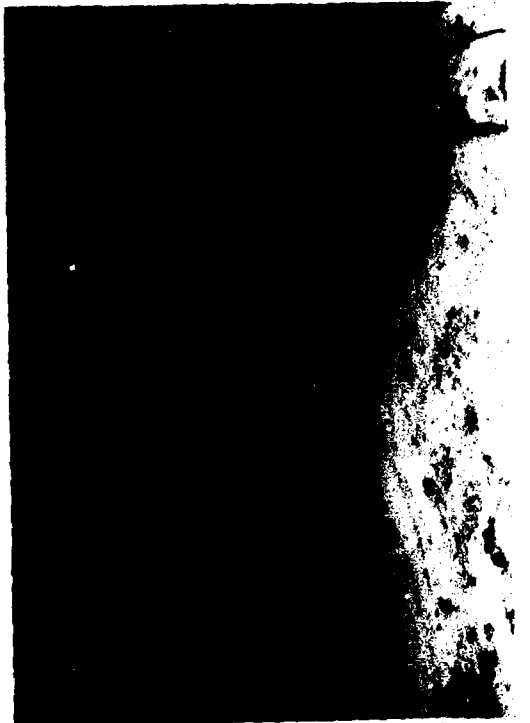


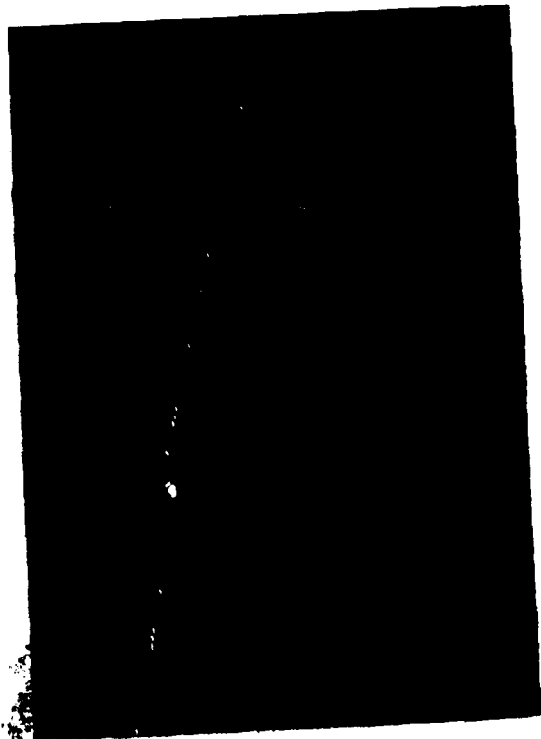
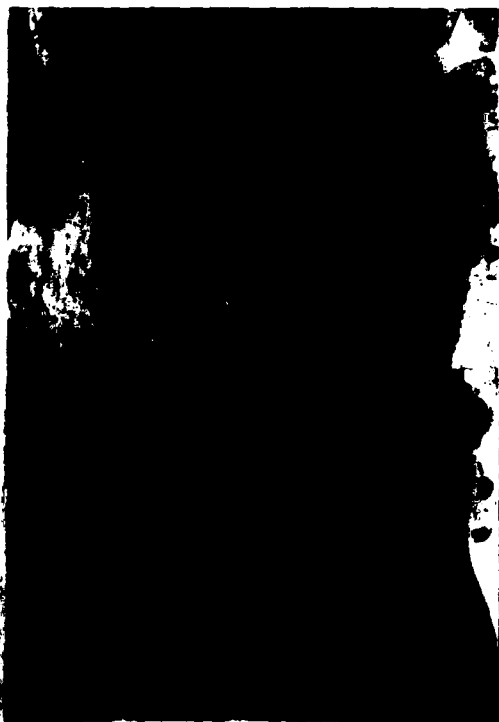
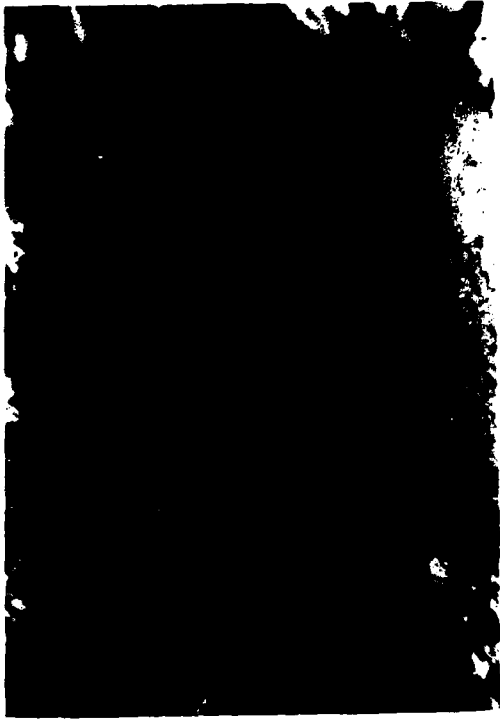




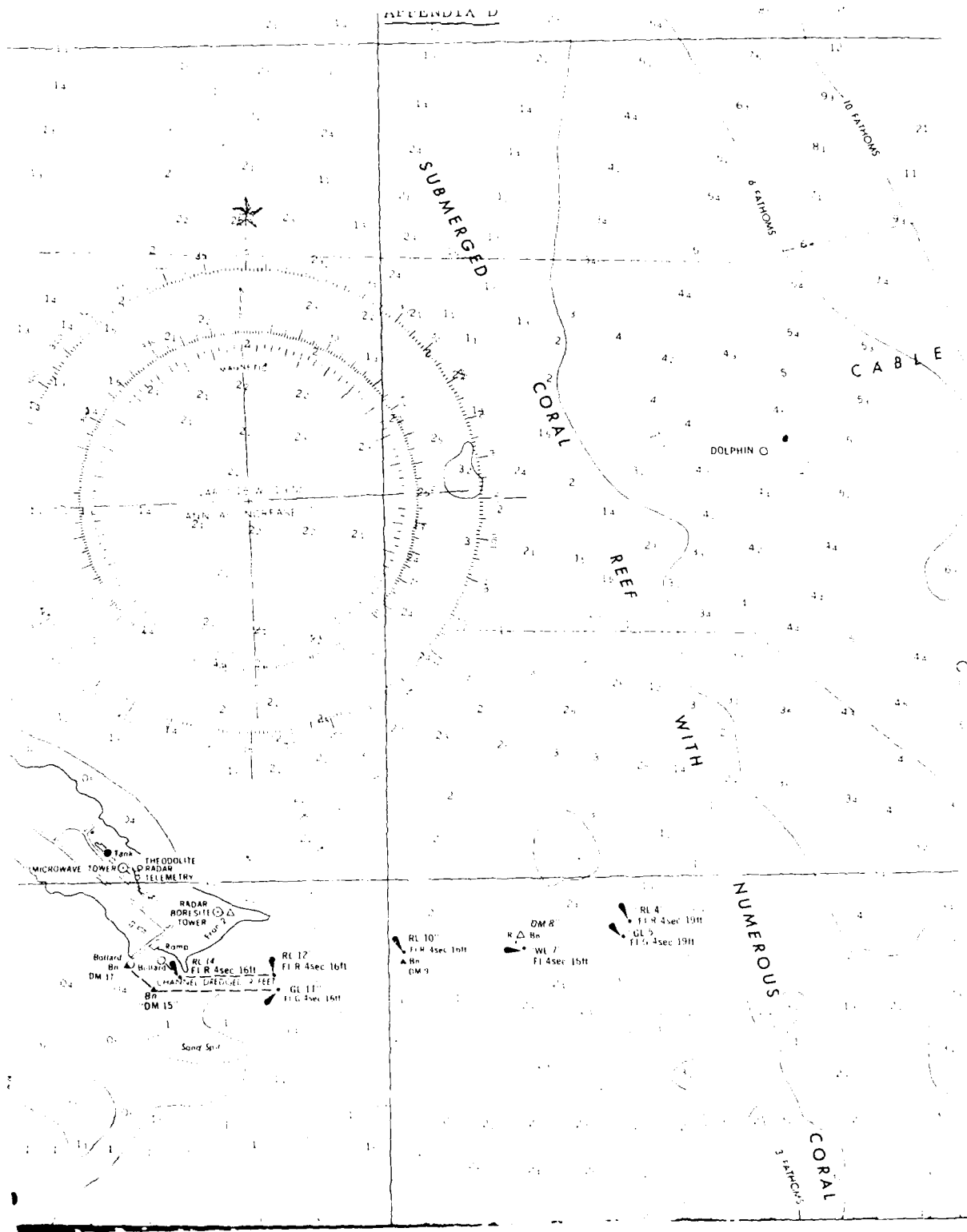








APPENDIX D



2645000

2465

REF = LAT 23 54 18.13 LONG 77 29 36.92

2645500x

246500x

X REF: 246130

SCALE: 2400

Y REF: 2645000

SHEX: 60.0

PEN AXIS: 1200

CHART AXIS: 2200

DATE: 11-29

* 3-15 23 54 03 61/77
* END 23 54 02 19/77

* 3-32 23 54 05 21/77

TEC COPY

x

EXISTING 36 QUAD (HB-3 - MOVED N. E. TO R-1)

x R-1 D-15
x R-4 D-15

x R-3 D-16
x G-22 23 54 10.61/77 28

x G-19 23 54 10.61/77 28

x G-11 23 54 15.18/77 26

x G-28 23 54 13.12/77 29

2

x G-23 23 54 10.61/77 28

x

x G-35 23 54 08.41/77 28

x

DAVID

R-9 D-31
R-10 D-31
R-14
D-30

R-8 D-26

R-16 D-22

R-13 D-12

R-8 D-16

3

x 00: P1 23 54 30.10.72
y 6-27 23 54 29.80.71 28

y 6-26 23 54 26.50.70 28

x 6-24 23 54 27.00.70 28

x 6-25 23 54 24.85.77 28

x 6-21 23 54 23.90.77 28

x 6-18 23 54 22.65.77 28
x R-12 D-12

x 6-20 23 54 21.41.77 28

x R-5 D-17
x 6-17 23 54 19.20.77 28

x

2846500Y

x

4

* DOL PT 23 54 30.1.77
* G-27 25 54 29.63.77

R-9 D-31

R-14
D-30

R-10 D-31

* G-26 25 54 28.55.77

*

* R-8 D-26

* R-3 D-16

* 6-22 23 54 10.60/77 28 54.55 D-17

* 6-1 23 54 15.18/77 28 57.51 D-15

* 6-28 23 54 12.12/77 29 01.20 D-14

2

* 6-23 23 54 10.61/77 29 05.75 D-12

*

* 6-35 23 54 08.41/77 29 09.81 D-12

* 7 23 54 06.00/77 29 11.00 D-16

247500x

2545000x

* 6-24 23 54 24.65/77 28 39.76 0-15

R-16 D-22

* 6-25 23 54 24.65/77 28 39.76 0-15

* R-13 D-12

* 6-21 23 54 25.90/77 28 41 50 0-12

M

* 6-18 23 54 22.65/77 28 43.68 0-16.5
* R-12 D-12

* R-6 D-16

* 6-20 23 54 21.41/77 28 45.89 0-18

X

* R-5 D-17
* 6-17 23 54 19.30/77 28 49.89 0-20

* R-2 D-17

* 6-19 23 54 18.19/77 28 51.88 0-19

* R-4 D-15

* R-1 D-15

* R-3 D-16
* 6-22 23 54 16.80/77 28 54.55 0-17

X

2645900
248000

L

646500Y

240500X

2646000Y

X

4

X DOL PT 23 54 30.11/77 28 30.11
X G-27 23 54 29.83/77 26 30.79 D-31

R-9 D-31
R-10 D-31

R-14
D-30

X
7 6-26 23 54 26.33/77 26 35.54 D-26

X R-8 D-26

240500X

8

END

DATE
FILMED

7-86

DTI