

#### SHELL DEVELOPMENT COMPANY

A DIVISION OF SHELL OIL COMPANY

3737 BELLAIRE BOULEVARD HOUSTON, TEXAS 77025

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BELLAIRE RESEARCH CENTER

December 2, 1977

U. S. Geological Survey #77825 Conservation Division, MS 620 National Center 12201 Sunrise Valley Drive Reston, Virginia 22092 M/F: John Gregory

#### Gentlemen:

We are pleased to welcome the U. S. Geological Survey as a Participant in the 1977 Phase of the Ocean Current Measuring Program. The following reports describing the Program are enclosed:

- 1. Forristall, G. Z. (1973), Ocean Current Measuring Program: Corrections to Current Meter Data, Memorandum Report, May.
- 2. Forristall, G. Z. (1973), Ocean Current Measuring Program: Station Configurations, Memorandum Report, October.
- 3. Hamilton, R. C. (1973), Ocean Current Measuring Program: Report on Electronics System, Memorandum Report, May.

In addition, we have enclosed the Program Status Report for June and July, 1977. The status report for August through October, and the storm report for Hurricanes Anita and Babe are in preparation. We would like to remind you that by the terms of the OCMP Agreement, data and reports from the 1977 Phase are proprietary to the Participants until June 1, 1981.

Since the Program now has 7 Participants, the cost sharing formula in Paragraph (2) of the Attachment C of the OCMP Agreement comes into play, and the cost of your participation is \$7,500. An invoice for this amount will be sent to the USGS Branch of Financial Management.

We appreciate your support of this research program. If you have any questions, please contact Dr. George Z. Forristall at (713) 663-2404.

Very truly yours,

K. R. Dordan, Manager Production Operations

Research Department

Enclosures

1. 23-1

OCEAN CURRENT MEASURING PROGRAM
STATUS REPORT
JUNE AND JULY 1977

والمرأب والمرابع والمتراوز والمستانية والمستروع والمعار المستندي والمستروع والمتراوي والمستروع والمستروع والمستر

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#### OCEAN CURRENT MEASURING PROGRAM STATUS REPORT

#### I. INTRODUCTION

This is the twenty-seventh of the periodic reports mentioned in Attachment "B", paragraphs 1 and 2 of the OCMP agreement. It covers the status of the measuring stations from May 13, 1977, to August 16, 1977, and discusses system improvements and repairs made during that time span. The charts included in this report are not intended to be a data source as the scales are nominal and the automatic-calibration data cannot be read accurately off the compressed records. The charts are useful for determining which sections of data might be of interest. Those sections of data which are of interest can then be obtained in a more readily usable form.

#### II. GENERAL INFORMATION

Information pertinent to the interpretation of this status report is given in this section. Detailed information on the overall instrumentation system is contained in "OCMP: Station Configurations" by George Z. Forristall, and, "OCMP: Report on Electronic System" by R. C. Hamilton.

The two stations of OCMP are numbered as follows:

| Station Number | Location           |
|----------------|--------------------|
| 2              | Eugene Island 331A |
| 3              | South Pass 62C     |

The former station No. 1 is not operational for the 1977 season, but the station numbering has been left the same as in previous years to reduce confusion. The current meters at all stations are numbered from the top (nearest the surface) meter downward. The meters are aligned so that the x-channel measures true north-south current speed and the y-channel measures true east-west current speed. Currents setting toward the north and toward the east give positive outputs.

The current meter depths at stations 2 and 3 given in reports written before August 1975 are incorrect. The correct depths of all meters are given below in feet.

| Station | Meter    | Depth Below Top<br>of Wave Staff | Nominal Depth<br>Below MGL |  |
|---------|----------|----------------------------------|----------------------------|--|
| 2       | 1        | 55                               |                            |  |
|         | 2        | 90                               | 47                         |  |
|         | <b>3</b> | 145                              | 103                        |  |
|         | 4        | 220                              | 177                        |  |
| 3       | 1        | 65                               | 15                         |  |
|         | 2        | 124                              | 74                         |  |
|         | 3        | 202                              | 152                        |  |
|         | 4        | 302                              | 252                        |  |

However, from May 26 to July 11, the meters at station 3 were at nonstandard depths, as noted in the next section. Each station contains two seven-channel FM magnetic tape recorders. The recorder designated "Current" contains data from current meters 1, 2, and 3, plus time. The recorder designated "Weather" contains wind, wave, barometric pressure, and time data. Additionally, the "Weather" recorders contain data from current meter No. 4. Each data tape is given a number which appears on the Magnetic Tape Register and on the compressed time scale chart. When requesting data, the tape number, time and date of interest, data required, and details of the time and amplitude scales required should be included in the request.

At the beginning of each compressed time scale chart included with this report is a header which contains the "nominal" calibration for each channel. This same "nominal" calibration is listed on the Magnetic Tape Registers, and it will differ slightly from the actual calibration in most instances. The calibration values marked "Automatic-Calibration" on the compressed time scale charts are contained in the Automatic-Calibration sheets in Section VII of this report.

Channel seven of all recorders contain the time signal which consists of a negative pulse every minute and a positive pulse every hour. The clock also triggers the automatic-calibration circuit once every 24 hours. The automatic-calibration circuit is triggered manually at the start and end of the tapes to synchronize the station clock with absolute time.

#### III. SUMMARY OF STATION OPERATION

The OCMP stations had been turned off at the end of 1976. The current meters were returned to March-McBirney, Inc., where they were repaired as necessary, recalibrated, and covered with a new layer of No-Foul. In May of 1977, the refurbished current meters were installed at OCMP stations 2 and 3, and the stations were made operational again with few problems. All the instrumentation has functioned correctly except as noted below.

#### A. Station No. 2 (EI331A)

- 1. The station became operational again on May 13, 1977.
- 2. From May 13 to June 22, the calibration signal recorded from current meter 3X was intermittently too low. The reduced span probably also affected the signal from the current meter, although it is difficult to tell because of the weak currents at this depth.
- 3. Current meter 3Y has been growing increasing more noisy since its installation. The cause of the noise has not yet been determined, but any data from current meter 3 should be viewed with suspicion.
- 4. From May 19 to June 22, all channels on the weather recorder had severe high frequency noise problems. It may be possible to recover much of the data by filtering the noise. It now appears that the noise was caused by nearly frozen bearings on the recorder capstan.
- 5. The 0-ring drive belt on the current recorder was broken from May 29 until June 7 and again from August 1 to August 16.

#### B. Station No. 3 (SP62C)

- 1. The station became operational again on May 26, 1977.
- 2. Shortly after installation, the cable to the probe of current meter 1 failed. The current meter string was then raised so that current meter 2 was at the depth normally occupied by current meter 1. Until July 11, the current meters were thus at the following non standard depths:

| Meter | Depth below top<br>of wave staff | Nominal depth<br>below MGL |  |  |
|-------|----------------------------------|----------------------------|--|--|
| 1     | missing                          | 1.5                        |  |  |
| 2     | 65                               | 45                         |  |  |
| 3     | 143                              | 93                         |  |  |
| 4     | 243                              | 193                        |  |  |

- 3. Throughout this period, the wave staff suffered numerous level shifts. The proper calibration can in most instances be recovered through judicious use of the automatic calibration records.
- 4. Until June 21, the wind direction was recording at only about one-quarter of its proper span. The proper calibration could probably be recovered by using the north (0) to north (360) swings of direction.
- 5. From June 21 to June 28, channel 2, 6, and 7 of the current recorder were noisy from unknown causes.
- 6. From July 20 to August 16, the clock signal was occasionally missing from the weather tape.
- 7. From July 29 to August 7, the current tape was off the record heads.

#### IV, SYSTEM IMPROVEMENTS AND REPAIRS

The major accomplishments during thie reporting period was the installation of the refurbished current meters. Work performed during visits to the stations is described below.

A. Station No. 2 (EI331A)

- May 11-13, 1977. The refurbished current meters and cables were installed. A new Sola constant voltage transformer was installed to replace the one that had burned out in January. The record switch on the current recorder was cleaned, and the fuse in the battery charger replaced.
- 2. June 7, 1977. The broken 0-ring drive belt in the current recorder was replaced. During the repair, the Mylar drive belt in the recorder broke and also had to be replaced.
- 3. June 22, 1977. The noisy weather recorder was replaced. The input plug on the current recorder was cleaned to prevent signal loss.
- 4. July 19, 1977. An intermittent short which was preventing the standby battery from becoming fully charged was repaired.
- 5. August 16, 1977. Another broken 0-ring drive belt on the current recorder was replaced.
- B. Station No. 3 (SP62C)
  - 1. May 24-26, 1977. The refurbished current meters and cables were installed. As noted above, the cable to current meter 1 failed shortly after installation, so the current meter string was raised to put current meter 2 in the position normally occupied by current meter 1, and current meter 1 was removed. The failed control board in the Voltage Regulated Transformer/Rectifier (VRTR) was replaced. We attempted to repair the wind direction problem by rewiring the plug to the Aerovane, but were not successful.
  - 2. June 21, 1977. The wind direction problem was repaired by patching a worn spot in the cable to the Aerovane and replacing an op amp in the Aerovane power supply. The wave staff power supply was adjusted to correct the signal level from the transducer. A new clock battery was installed.
  - 3. July 11, 1977. Current meter 1 and its repaired cable were installed.
  - 4. July 20, 1977. An op amp in the wave staff power supply was replaced in an effort to correct the frequent level shifts from the transducer. The gearbox in the current recorder was

replaced since its bearings appeared to be failing.

5. August 16, 1977. No repairs were necessary.

#### V. CURRENT METER STATUS

At this time all current meters are working perfectly with the exception of current meter 3 at EI331A. The Y axis of that meter has been growing increasingly noisy since its installation. Electrical checks made on the probe and cable from the surface show none of the problems usually associated with such noise, and replacement shows the fault does not lie in the electronics chassis. Data from this meter should be used with extreme caution.

George Z. Forristall

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| STATION SPEZC        | (#3)  |                               |           |          |                 |        |
|----------------------|-------|-------------------------------|-----------|----------|-----------------|--------|
| DATE <u>5 126177</u> |       | April agreement destroy, some | 1236      | (]       | INITIAL AUTO-CA | LIBRAT |
|                      |       |                               |           |          |                 |        |
| WEATHER TAPE NO. 3   | 354W  |                               | •         |          |                 |        |
| WAVE HEIGHT          | LOW _ | 78,3                          | ft        | HIGH     | -12.5           | ft     |
| WIND SPEED           | LOW   | 0                             | mph       | HIGH     | 95.8            | mph    |
| WIND DIRECTION       | row _ | 360                           | deg.      | HIGH     | -6.5            | deg.   |
| BAROMETER            | LOW   | 26.0                          | in. Hg.   | HIGH     | 30.75           | in. H  |
| CURRENT 4X           | LOW   | 0                             | fps       | HIGH     | 10.0 (N)        | fps    |
| CURRENT 4Y           | LOW   | <b>0</b>                      | fps       | HIGH     | 100 (E)         | fps    |
| CURRENT TAPE NO. 3   | 54C   |                               |           |          |                 | 80 L V |
| CURRENT 3X           | LOW   | 0                             | fps       | HIGH     | 10.0 (N)        | fps    |
| CURRENT 3Y           | LOW   | 0                             | fps       | HIGH     | 10.0 (E)        | fps    |
| CURRENT 2X           | LOW   | 0                             | fps       | HIGH     | 10.0 (N)        | fps    |
| CURRENT 2Y           | row   | 0                             | fps       | HIGH     | 10.0 (E)        | fps    |
| CURRENT 1X           | LOW   | 0                             | fps       | HIGH     | NIA             | fps    |
| CURRENT 1Y           | LOW   | 0                             | fps       | HIGH     | _N/A            | fps    |
|                      |       |                               |           |          |                 |        |
| COMMENTS: CM #       | 1 wa  | s not 1                       | installed | <u>'</u> | CM # 2          |        |
| was raised           | to #  | 1's now                       | mal de    | oth.     |                 |        |
|                      |       |                               | 1         |          |                 |        |
|                      |       |                               |           |          |                 |        |
|                      |       |                               |           |          |                 |        |

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### AUTOMATIC CALIBRATION DATA-WEATHER AND CURRENT

| STATION SP62       | =(#3)      |              |          |      |  |         |
|--------------------|------------|--------------|----------|------|--|---------|
| DATE 612/177       |            | <del> </del> | 1255     | (1   | NITIAL AUTO-CA   | LIBRATI |
| WEATHER TAPE NO.   | 355W       |              |          |      |  |         |
| WAVE HEIGHT        | LOW        | 78.6         | _ ft     | HIGH | 3,2  | ft      |
| WIND SPEED         | LOW        | 0            | mph      | HIGH | 95.8   | mph     |
| WIND DIRECTION     | LOW        | 360          | deg.     | HIGH | -43  | deg.    |
| BAROMETER          | LOW        | 26.0         | in. Hg.  | HIGH | 30,73  | in. Hg  |
| CURRENT 4X         | TOM        | 0            | fps      | HIGH | 10.0 (N)   | fps     |
| CURRENT 4Y         | LOW        | 0            | fps      | HIGH | 10.0 (E)   | fps     |
| CURRENT TAPE NO. 3 | 55C_       |              |          |      |  |         |
| CURRENT 3X         | LOW        | Ö            | fps      | HIGH | 10.0 (N)   | fps     |
| CURRENT 3Y         | LOW        | 0            | fps      | HIGH | 100 (E)  | fps     |
| CURRENT 2X         | LOW        | o            | fps      | HIGH | 10.0 (N)   | fps     |
| CURRENT 2Y         | row        | 0            | fps      | HIGH | 10.0 (E)   | fps     |
| CURRENT 1X         | LOW        | 0            | fps      | HIGH | 10.0 W)  | fps     |
| CURRENT 1Y         | LOW        | 0            | fps      | HIGH | 100 (E)  | fps     |
|                    |            |              |          |      |  |         |
| COMMENTS: CM       | #/ ins7    | talled a     | nd sys   | tem  | lowered  | 10      |
| comments: CM =     | de oth.    |              | <u> </u> |      | The statement of the st |         |
|                    | <i>I</i> . |              |          |      |  |         |
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| STAT                                  | ION SP62C  | (#3)        |   |              |      |                |             |
|---------------------------------------|--|-------------|---|--------------|------|----------------|-------------|
|                                       | 7120177  |             |   | 0953         | (1   | NITIAL AUTO-CA | LIBRATIO    |
| WEAT                                  | HER TAPE NO.   | 356W        |   |              |      |                |             |
|                                       | WAVE HEIGHT  | LOW         | 78.6  | _ ft         | HIGH | 1.6            | ft          |
|                                       | WIND SPEED   | LOW         | 0   | mph          | HIGH | 95.9           | mph         |
|                                       | WIND DIRECTION   | LOW         | 360   | _ deg.       | HIGH | -3.6           | deg.        |
|                                       | BAROMETER  | LOW         | 26.0  | in. Hg.      | HIGH | 30,70          | in. Hg      |
|                                       | CURRENT 4X   | LOW         | 0   | fps          | HIGH | 100 (N)        | fps         |
|                                       | CURRENT 4Y   | FOM         | 0   | fps          | HIGH | 10.0 (E)       | fps         |
| CURR                                  | ent tape no<   | 356C        |   |              |      |                |             |
|                                       | CURRENT 3X   | LOW         | 0   | fps          | HIGH | 10.0 (N)       | fps         |
| . *                                   | CURRENT 3Y   | LOW         | 0   | fps          | HIGH | 10.0 (E)       | fps         |
|                                       | CURRENT 2X   | rom         | 0   | fps          | HIGH | 10.0 (N)       | fps         |
|                                       | CURRENT 2Y   | rom         | 0   | fps          | HIGH | 10.0 (E)       | fps         |
|                                       | CURRENT 1X   | row         | 0   | fps          | HIGH | 10.0 (N)       | fps         |
| 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | CURRENT 1Y   | row         | 0   | fps          | HIGH | 10.0 (E)       | fps         |
| COMM                                  | ents:  |             |   |              |      |                |             |
|                                       |  |             |   |              |      |                |             |
|                                       | and the second | *           | e carriera e manuscripto de la placa a especial de la colonidad de la colonidad de la colonidad de la colonidad |              |      |                |             |
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| STATI | ION ET 3      | 31 (#2) |      |         |                   |  |
|-------|---------------|---------|------|---------|-------------------|--|
| DATE  | 51/317        | Z       |      | 0923    | (INITIAL AUTO-CA  | LIBRAT]  |
| WEATE | HER TAPE NO.  | 258W    |      |         |                   |  |
|       | WAVE HEIGHT   | LOW     | 78.3 | ft      | HIGH              | ft   |
|       | WIND SPEED    | LOW     | 0    | mph     | HIGH 101.1        | mph  |
|       | WIND DIRECTIO | ON LOW  |      | deg.    | HIGH <u>303,/</u> | deg.   |
|       | BAROMETER     | LOW     | 26.0 | in. Hg. | HIGH <u>30.90</u> | in. H  |
|       | CURRENT 4X    | LOW     | 0    | fps     | HIGH 10.0 (D)     | fps  |
|       | CURRENT 4Y    | row     | 0    | fps     | HICH 10.0 (E)     | fps  |
| CURRE | ENT TAPE NO.  | 258C    |      |         |                   | e de la companya de l |
|       | CURRENT 3X    | LOW     | 0    | fps     | HIGH 100 (N)      | fps  |
|       | CURRENT 3Y    | LOW     | 0    | fps     | HIGH 10.0 (E)     | fps  |
|       | CURRENT 2X    | LOW     | 0    | fps     | HIGH 10.0 (N)     | fps  |
|       | CURRENT 2Y    | TOM     | 0    | fps     | HIGH 100 (E)      | fps  |
|       | CURRENT 1X    | LOW     | 0    | fps     | HIGH 10.0 (W)     | fps  |
|       | CURRENT 1Y    | LOW     | 0    | fps     | HICH 100 (E)      | fps  |
|       |               |         |      |         |                   |  |
| COMME | ENTS:         |         |      |         |                   |  |
|       |               |         |      |         |                   |  |
| ·     |               |         |      |         |                   | -  |
|       |               |         |      |         |                   |  |
|       |               |         |      |         |                   |  |

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| STATION ET 33/     | /     |      |         | •    |                |          |
|--------------------|-------|------|---------|------|----------------|----------|
| DATE 617 177       |       | **** | 1345    | (1   | NITIAL AUTO-CA | LIBRATIO |
| WEATHER TAPE NO. 2 | 59W   |      |         |      |                |          |
| WAVE HEIGHT        | rom _ | 77.9 | _ ft    | HIGH | 7.2            | ft       |
| WIND SPEED         | LOW   | 0    | mph     | HIGH | 101.1          | mph      |
| WIND DIRECTION     | LOW   | 0    | deg.    | HIGH | 304.4          | deg.     |
| BAROMETER          | LOW   | 26.0 | in. Hg. | HIGH | 30,92          | in. Hg.  |
| CURRENT 4X         | LOW   | 0    | fps     | HIGH | 10.0 (N)       | fps      |
| CURRENT 4Y         | LOW   | .0   | fps     | HIGH | 10.0 (E)       | fps      |
| CURRENT TAPE NO. 2 | 59C   |      |         |      |                |          |
| CURRENT 3X         | LOW   | 0    | fps     | HIGH | 10.0 (N)       | fps      |
| CURRENT 3Y         | LOW   | 0    | fps     | HIGH | 10.0 EI        | fps      |
| CURRENT 2X         | LOW   | 0    | fps     | HIGH | 10.0 (N)       | fps      |
| CURRENT 2Y         | rom   | 0    | fps     | HIGH | 10.0 (E)       | fps      |
| CURRENT 1X         | LOM   | 0    | fps     | HIGH | 10.0 (N)       | fps      |
| CURRENT 1Y         | row   | 0    | fps     | HIGH | 10.0 (E)       | fps      |
| COMMENTS:          |       |      |         |      |                | •        |
|                    |       |      |         |      |                |          |
|                    |       |      |         |      |                |          |

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| STATION ET.      | 33/ (42        | <u>=)_</u> |                                       |         |      |  |           |
|------------------|----------------|------------|---------------------------------------|---------|------|--|-----------|
| DATE <u>6/22</u> | 2177           |            |                                       | //25_   | (II  | NITIAL AUTO-CAI  | LIBRATION |
| WEATHER TAPE N   | 10. <i>260</i> | W          |                                       |         |      |  |           |
| WAVE HEIG        | HT 1           | LOW        | 18.2                                  | ft      | HICH | _8,8_  | ft        |
| WIND SPEE        | <b></b> D      | LOW        | 0                                     | mph     | HIGH | 101.1  | mph       |
| WIND DIRE        | CTION          | LOW        | 0                                     | deg.    | HIGH | 303./  | deg.      |
| BAROMETER        |                | LOW        | 26.0                                  | in. Hg. | HIGH | 30.88  | in. Hg.   |
| CURRENT 4        | X I            | LOW        | 0                                     | fps     | HIGH | 10.0 (N)   | fps       |
| CURRENT 4        | Y              | LOW        | 0                                     | fps     | HICH | 10.0 (E)   | fps       |
| CURRENT TAPE N   | 10. <i>260</i> | <u></u>    |                                       |         |      |  |           |
| CURRENT 3        | 3 <b>X</b>     | LOW        | 0                                     | fps     | HIGH | 100 (W)  | fps       |
| CURRENT 3        | BY :           | LOW        | 0                                     | fps     | HIGH | 10.0 (E)   | fps       |
| CURRENT 2        | 2 <b>X</b> i   | LOW        | 0                                     | fps     | HIGH | 10.0 (N)   | fps       |
| CURRENT 2        | <b>Y</b> .     | LOW        | 0                                     | fps     | HIGH | 10.0 (E)   | fps       |
| CURRENT 1        | . <b>X</b>     | LOW        | 0                                     | fps     | HIGH | 10.0 (W)   | fps       |
| CURRENT 1        | <b>.Y</b>      | LOW        | 0                                     | fps     | HIGH | 10.0 E)  | fps       |
|                  |                |            |                                       |         |      |  |           |
| COMMENTS:        |                | :          |                                       |         |      |  |           |
|                  |                |            |                                       |         |      |  |           |
|                  |                |            |                                       |         | _    | and the second s |           |
|                  |                |            | · · · · · · · · · · · · · · · · · · · |         |      |  |           |

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# AUTOMATIC CALIBRATION DATA-WEATHER AND CURRENT

|            |                       | (#= \ |      |         |          |                |           |
|------------|-----------------------|-------|------|---------|----------|----------------|-----------|
| STAT       | TION ET 33/           | (-2)  |      |         |          |                | ( 0.7)    |
| DATE       | 7119177               |       |      | 1215    | (I       | NITIAL AUTO-CA | LIBRATION |
| * *** & FE | WED MADE NO.          | 2/11/ |      |         |          |                |           |
| WEAT       | THER TAPE NO. Z       |       |      |         | **** 617 |                | ft        |
|            | WAVE HEIGHT           | LOW   | 78.2 | - ft    | HIGH     | _7.8           | I.C.      |
|            | WIND SPEED            | LOW   | 0    | mph     | HIGH     | 101.1          | mph       |
|            | WIND DIRECTION        | row   | 0    | deg.    | HIGH     | 303,/          | deg.      |
|            | BAROMETER             | row   | 26.0 | in. Hg. | HIGH     | 30.87          | in. Hg.   |
|            | CURRENT 4X            | LOW   | 0    | fps     | HIGH     | 10.0 (N)       | fps       |
|            | CURRENT 4Y            | LOW   | 0    | fps     | HIGH     | 10.0 (E)       | fps       |
| CURI       | RENT TAPE NO. <u></u> | 26/C  |      |         |          |                |           |
|            | CURRENT 3X            | LOW   | 0    | fps     | HIGH     | 100 (W)        | fps       |
|            | CURRENT 3Y            | LOW   | 0    | fps     | HIGH     | 10.0 (E)       | fps       |
|            | CURRENT 2X            | LOW   | 0    | fps     | HIGH     | 10.0 (N)       | fps       |
|            | CURRENT 2Y            | FOM   | 0    | fps     | HIGH     | 10.0 (E)       | fps       |
|            | CURRENT 1X            | LOW   | 0    | fps     | HIGH     | 10.0 (N)       | fps       |
|            | CURRENT 1Y            | rom   | 0    | fps     | HIGH     | 100 (E)        | fps       |
|            |                       |       |      |         |          |                |           |
| COM        | ments:                |       |      |         |          |                |           |
| COLL       |                       |       |      |         |          |                |           |
|            |                       |       |      |         |          |                |           |
|            |                       |       |      |         |          |                |           |
|            |                       |       |      |         |          |                |           |

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| STATION SF   | 620            | TAPE ON          | 5126177          | 1236            |
|--------------|----------------|------------------|------------------|-----------------|
| TAPE NO      | 354 W          | TAPE OFF         | 612/177          | 0845            |
| CHANNEL      | SENSOR         | NOMI             | NAL FM TAPE ALIO | NMENT*          |
|              |                | -40 percent      | Center           | +40 percent     |
| 1            | Wave Height    | ft               |                  | 0 ft            |
| 2            | Wind Speed     | 0 mph            | 100 mph          | 200 mph         |
| 3            | Wind Direction | 360 deg.         | 180 deg.         | 0 deg.          |
| 4            | Barometer      | 26.0 in. Hg      | 28.5 in. Hg      | . 31.0 in. Hg.  |
| 5            | Current 4X     | 10(5)fps         | 0 fps            | 10(N)fps        |
| 6            | Current 4Y     | <u>/0(w)</u> fps | 0 fps            | 10(6)fps        |
| 7            | Time Signal    | minutes          |                  | hours           |
| GENERAL COM  | MENTS: Tape wo | es complé        | te and a         | uite good       |
| except       | for decreas    | ed spen          | n on ilin        | d direction     |
| WAVE HEIGHT  | Complete 1     | econd wil        | the four to      | shifts:         |
| 2 1600 as    | nd 2330 6/3    | and r            | 0100 and         | 0936 5/28.      |
| WIND SPEED:  | Complete 1     | ecord.           |                  |                 |
| WIND DIRECT  | ION: Complete  | record u         | ith ~ 1/4.       | spen. Direction |
| 15 que       | stionalk.      |                  |                  |                 |
| BAROMETRIC E | PRESSURE: Com  | fete rec         | ord.             |                 |
| CURRENT METI | ER 4X: Comp    | lete reu         | nd.              |                 |
| CURRENT METE | ER 44: Comple  | to recon         | d.               |                 |
| TIME SIGNAL: | : Complete     | clack a          | end Auto-        | -CAL.           |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION  | SP 62C          | TAPE ON             | 5 PG177        |               |
|----------|-----------------|---------------------|----------------|---------------|
| TAPE NO. | 354C            | TAPE OFF            | 612/177        | 0895          |
| CHANNEL  | SENSOR          | NOMI                | NAL FM TAPE AL | GNMENT*       |
|          |                 | -40 percent         | Center         | +40 percent   |
| 1        | Current 3X      | <i>10.0 (5)</i> fps | 0 fps          | 10.0 (N) fps  |
| 2        | Current 3Y      | 10.0 (w) fps        | 0 fps          | 10.0 (E) fps  |
| 3        | Current 2X      | 10.0 (5) fps        | 0 fps          | 10.0 (N) fps  |
| 4        | Current 2Y      | 10.0 (W) fps        | 0 fps          | 10.0 (E) fps  |
| 5        | Current 1X      | 10.0 (S) fps        | 0 fps          | 10.0 (N) fps  |
| 6        | Current 1Y      | 10.0 (W) fps        | 0 fps          | 10.0 (E) fps  |
| 7        | Time Signal     | minutes             | 0              | hours         |
|          | COMMENTS: Comp  | . A//               | with good      | dete. No.     |
|          | METER 3X: Comp  | vormal CM/          | depth.         |               |
| CURRENT  | METER 3Y: Compl | lete jeund          | Noise 5        | pikes on data |
| for y    | Lirst four e    | lons.               |                |               |
| CURRENT  | METER 2X: Om    | plete seco          | rd             |               |
|          |                 |                     |                |               |
| CURRENT  | METER 24: Comp  | elete reco          | d              |               |
| CURRENT  | METER 1X: No    | T INSTALL           | SD.            |               |
| CURRENT  | METER 1Y: NOT   | INSTALLE            |                |               |
|          |                 |                     |                |               |
| TIME SI  | GNAL: No pro    | blems Com           | plete ela      | k and AUTO    |
| CAL      | BRATION.        |                     |                |               |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# Shell Development Company Houston, Texas

| STATION 5/ | 062C (#3                   | ) TAPE ON    | 621177          | 1255             |
|------------|----------------------------|--------------|-----------------|------------------|
| TAPE NO.   | 355W                       | TAPE OFF     | 7120177         | 0814             |
| CHANNEL    | SENSOR                     | NOMIN        | AL FM TAPE ALIG | NMENT*           |
|            |                            | -40 percent  | Center          | +40 percent      |
| 1          | Wave Height                | 80 ft        |                 | 0 ft             |
| 2          | Wind Speed                 | 0 mph        | 100 mph         | 200 mph          |
| <b>3</b>   | Wind Direction             | 360 deg.     | 180 deg.        | 0 deg.           |
| 4          | Barometer                  | 26.0 in. Hg. | 28.5 in. Hg.    | 31.0 in. Hg.     |
| 5          | Current 4X                 | 20 (5)fps    | 0 fps           | ZO(N) fps        |
| 6          | Current 4Y                 | 20(w)fps     | 0 fps           | 20(E) fps        |
| 7          | Time Signal                | minutes      |                 | hours            |
| shifts.    | MMENTS: Complex Clock lest | to tope.     | Wove has        | 4                |
| WAVE HEIGH |                            | record .     | evel shifts     | at: 1/30 6/30    |
| WIND SPEED | 221507/2, 2/000            | 79,2/2007/9  | , 2000 1/9, 201 | 10, 48307/10, 21 |
| MIND SLEED | · comprese                 | record,      |                 |                  |
| WIND DIREC | TION: Com skote            | record.      |                 |                  |
|            |                            |              |                 |                  |
| BAROMETRIC | PRESSURE: Comp             | kte recor    | <u></u>         |                  |
|            |                            | 11           | o and           | 0 -H - D - B     |
| CURRENT ME |                            | re cond      | Meter           | tepth changed    |
| CURRENT ME | · _ //                     | & record     | Meter de        | the changed      |
| - 6n - 7   | 2/11                       |              |                 |                  |
| TIME SIGNA | L: Complete c              | look exce    | at for we       | 100 to -17006    |
| and ho     | m 2 1900 7/11 to           | -16.30 This  | e. Complete     | - AUTO-CAL.      |
|            |                            | •            |                 |                  |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION                    | SP62C (                    | TAPE ON       | 6121177          | 1125        |
|----------------------------|----------------------------|---------------|------------------|-------------|
| TAPE NO.                   | 355C                       | TAPE OFF      | 7 120177         | 0814        |
| CHANNEL                    | SENSOR                     | NOMI          | NAL FM TAPE ALIO | SNMENT*     |
|                            |                            | -40 percent   | Center           | +40 percent |
| 1                          | Current 3X                 | 20 (S)_fps    | 0 · fps          |             |
| 2                          | Current 3Y                 |               | 0 fps            |             |
| 3                          | Current 2X                 | _20 (S) fps   | 0 fps            | 20 (N)fps   |
| 4                          | Current 2Y                 |               | 0 fps            |             |
| <b>5</b>                   | Current 1X                 |               | 0 fps            |             |
| 6                          | Current 1Y                 | 20 (W) fps    | 0 fps            | fps         |
| 7                          | Time Signal                | minutes       | 0                | hours       |
| GENERAL CO                 | OMMENTS:                   | plate tape.   | Channels         | 26+70       |
| Lister milli<br>CURRENT MI | Tent noisy of tent 3x: Com | plete record. | #/ installed     | 7/11.       |
| current me                 | ETER 34: Com               | 101           | Dete con         | tain inter- |
| CURRENT ME                 | ETER 2X: Com               | plett record  | w, 11 9,00,      |             |
| CURRENT ME                 | TER 2Y: Com                | alete record  | /                |             |
| CURRENT ME                 | TER 1X:                    | plete recon   | d                |             |
| CURRENT ME                 | TER 1Y: Comp               | stete record. | Date con         | toei some   |
| inter mite                 | tent noise                 | and dragon    | Is centil        | 6/28        |
| TIME SIGNA                 | L: Complet                 | E clock o     | nd Auro-         | ase,        |
| <del></del>                | <u> </u>                   |               |                  |             |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# Shell Development Company Houston, Texas

| STATION 5/  | P62C (#3         | ) TAPE ON         | 7120177                               | 0953                        |
|-------------|------------------|-------------------|---------------------------------------|-----------------------------|
| TAPE NO.    | 356W             | TAPE OFF          | 8116 177                              | 1257                        |
| CHANNEL     | SENSOR           | NOMINA            | AL FM TAPE ALIG                       | NMENT*                      |
|             |                  | -40 percent       | Center                                | +40 percent                 |
| 1           | Wave Height      | CROST<br>80 ft    | ft                                    | TROOGH<br>0 ft              |
| 2           | Wind Speed       | 0 mph             | 100 mph                               | 200 mph                     |
| 3           | Wind Direction   | 360 deg.          | 180 deg.                              | 0 deg.                      |
| 4           | Barometer        | 26.0 in. Hg.      | 28.5 in. Hg.                          | 31.0 in. Hg.                |
| 5           | Current 4X       | <i>10 (5)</i> fps | 0 fps                                 | 10(N) fps                   |
| 6           | Current 4Y       | 10 (w)fps         | 0 fps                                 | 10(E)fps                    |
| 7           | Time Signal      | minutes           |                                       | hours                       |
| GENERAL CON | MMENTS: Complete | tege, Sligi       | ht poise o                            | n all changels              |
| WAVE HEIGHT | 1: Com dete re   | and Three         | level shift                           | 127300 2/21                 |
| ~ 2300 E    | 3/1, and - 0600  |                   | reca sign.                            |                             |
| WIND SPEED  |                  |                   |                                       |                             |
| WIND DIRECT | TION: Complete   | record.           |                                       |                             |
|             |                  |                   |                                       |                             |
| BAROMETRIC  | PRESSURE: Comp   | oleta recono      | <i>l</i> .                            |                             |
| CURRENT MET | TER 4X: Complete | to record         |                                       |                             |
|             |                  |                   |                                       |                             |
| CURRENT MET | TER 44: Complet  | te record.        |                                       |                             |
|             |                  |                   | , , , , , , , , , , , , , , , , , , , |                             |
| TIME SIGNAL | : Complete c     | ock except        | from ~1000                            | to 2/630 7/20<br>АUTO- CAL. |
| and from    | 12/380 8/1 to    | 2/630 B/Z.        | 1 ( em plete                          | AUTO-CAL.                   |
|             |                  |                   |                                       |                             |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION  | SP 62C         | TAPE ON        | 12017          | 0953           |
|----------|----------------|----------------|----------------|----------------|
| TAPE NO  | · _356C        | TAPE OFF       | 31/6177 _      | 1257           |
| CHANNEL  | SENSOR         | NOMINAI        | . FM TAPE ALIG | IMENT*         |
|          |                | -40 percent    | Center         | +40 percent    |
| 1        | Current 3X     | fps            | 0 ·fps         | 20 (N) fps     |
| 2        | Current 3Y     |                | 0 fps          |                |
| 3        | Current 2X     |                | 0 fps          |                |
| 4        | Current 2Y     | 20 (W)_fps     | 0 fps          |                |
| 5        | Current 1X     |                | 0 fps          |                |
| 6        | Current 1Y     |                | 0 fps          |                |
| 7        | Time Signal    | minutes        | 0              | hours          |
| GENERAL  | comments: Tage | was complete   | but wa         | s partially    |
| CORRENT  | METER 3X. Comp | 11/2           | when off       | heads.         |
| CUDDENT  | METER 2V.      | 14             | 1) //          |                |
| CORRENT  | METER 3Y: Comp | lete except i  | open off       | Beads.         |
| CURRENT  | METER 2X: Comp | lote except    | when of        | her do         |
|          |                |                |                |                |
| CURRENT  | METER 2Y: Comp | lete except    | when of        | keds.          |
|          |                |                |                |                |
| CURRENT  | METER 1X:      | stete except i | when off       | heads          |
| CURRENT  | METER 1Y: Comp | lete except.   | when of        | heels.         |
|          |                |                |                | ft. St. Lie Ly |
| TIME SIG | NAL: Complete  | clock and      | Auto-C         | TAL.           |
| ·        |                |                |                |                |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

## Shell Development Company Houston, Texas

| STATION   | EI 331 (#2          | ) TAPE ON         | 51/3177 -       | 0923                      |
|-----------|---------------------|-------------------|-----------------|---------------------------|
| TAPE NO.  | 258 W               | TAPE OFF          | 617 177 -       | 1216                      |
| CHANNEL   | SENSOR              | NOMIN             | AL FM TAPE ALIC | nment*                    |
| 1         | Wave Height         | -40 percent       | Center  40 ft   | +40 percent  TROUGH  0 ft |
| 2         | Wind Speed          | 0 mph             | 100 mph         | 200 mph                   |
| 3         | Wind Direction      |                   | 202.5 deg.      | 405 deg.                  |
| 4         | Barometer           | 26.0 in. Hg.      | 28.5 in. Hg     | 31.0 in. Hg.              |
| 5         | Current 4X          | 20 (S) fps        | 0 fps           | 20 (N)fps                 |
| 6         | Current 4Y          | <u>20 (w)</u> fps | 0 fps           | <i>20(€</i> )fps          |
| 7         | Time Signal         | minutes           |                 | hours                     |
| GENERAL C | COMMENTS: Com plete |                   | 11              | pise ell cherno           |
|           |                     | 00 5/19 no        | ose all chan    | nots to and of            |
| WAVE HEIO | GHT: Com plete      | re-cerc.          |                 |                           |
| WIND SPE  | ED: Complete        | record.           | , ,             |                           |
| WIND DIR  | ECTION: Comple      | to record         | ?               |                           |
| BAROMETR  | IC PRESSURE:        | plete rea         | ad.             |                           |
| CURRENT   | METER 4X: Com       | alete re-co       | nd.             |                           |
| CURRENT   | METER 4Y: Com       | plete rece        | nd.             |                           |
| TIME SIG  | NAL: Complete       | clock             | and Ave         | 0-CAL.                    |
|           | <i>y</i>            | ·                 |                 |                           |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION   | ET 331         | (#2) TAPE ON _              | 5113177                                | 0923 :   |
|-----------|----------------|-----------------------------|--|--|
| TAPE NO.  | 258C           | <del></del> · . <del></del> | 5129177                                | The state of the s |
| CHANNET   | SENSOR         | * S<br>NIMON                | <i>TOPPED DUE TO</i><br>AL FM TAPE ALI | O <i>BRCKTEN) DR LUG BELT</i><br>GNMENT*   |
| CHANNEL   | SENSOR         | -40 percent                 | Center                                 | +40 percent  |
| 1         | Current 3X     | 20 (5) fps                  | 0 fps                                  | 20 (N) fps   |
| 2         | Current 3Y     | 20 (w) fps                  | 0 fps                                  | 20 (E) fps   |
| 3         | Current 2X     | 20(5) fps                   | 0 fps                                  | 20 (N) fps   |
| 4         | Current 2Y     | 20 (w) fps                  | 0 fps                                  | 20 (E) fps   |
| 5         | Current 1X     | 20 (5) fps                  | 0 fps                                  | 20 (N) fps   |
| 6         | Current 1Y     | 20 (W) fps                  | 0 fps                                  | 20 (E) fps   |
| 7         | Time Signal    | minutes                     | 0                                      | hours  |
| GENERAL ( | COMMENTS: Tape | stopped due                 | to broken o                            | oring drive bet  |
| CM3X      | signal parti   | ally received.              | Slight noi                             | se all channels.   |
|           | A A //         | olete record.               | Signel on                              | ly persions  |
|           | red at time    |                             |  |  |
| CURRENT   | METER 3Y: Com  | Wese received               |  |  |
| CURRENT   | METER 2X:      | plate record.               |  |  |
|           |                |                             |  |  |
| CURRENT   | METER 2Y: Com  | dete record.                |  |  |
| CURRENT   | METER 1X: Com  | plete record                |  |  |
| CURRENT   | METER 1Y:      | plete record.               |  |  |
| TIME SIG  | GNAL: Complete | to clock an                 | A AUTO-                                | AL   |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# Shell Development Company Houston, Texas

| STATION_   | ET 33/A          | TAPE ON           | 617 177   | 1345           |
|------------|------------------|-------------------|---|----------------|
| TAPE NO.   | 259W             | TAPE OFF          | 6122177   | 0906           |
| CHANNEL    | SENSOR           | NOMI              | NAL FM TAPE ALI   | CNMENT*        |
|            |                  | -40 percent       | Center  | +40 percent    |
| 1          | Wave Height      | _ <i>80</i> _ft   | ft  | 72006H<br>0 ft |
| 2          | Wind Speed       | 0 mph             | 100 mph   | 200 mph        |
| 3          | Wind Direction   | _Odeg.            | 202.5 deg.  | 405 deg.       |
| 4          | Barometer        | 26.0 in. Hg       | . 28.5 in. Hg   | . 31.0 in. Hg. |
| 5          | Current 4X       | <i>10(5)</i> fps  | 0 fps   | 10(N)fps       |
| 6          | Current 4Y       | <i>10 (w)</i> fps | 0 fps   | 10(E)fps       |
| 7          | Time Signal      | minutes           | e de esta en <sub>est</sub> a esc.<br>La capación de e <mark>g</mark> alect | hours          |
| GENERAL CO | MMENTS: Complete | tape.             | All chenne  | k are very     |
| WAVE MEIGH | _ / / //-        | reight            | with noise  | 2.             |
| WIND SPEED | :_ Complete      | record            | with noise  |                |
| WIND DIREC | TION: Complete   | record            | with no   | vise.          |
| BAROMETRIC | PRESSURE: Comp   | lete recor        | d with n  | aše -          |
| CURRENT ME | TER 4X: Comple   | eté recor         | I with  | neise.         |
| CURRENT ME | TER 44: Comple   | te record         | with ,  | noise.         |
| TIME SIGNA | L: Complete      | clack.            | and Auto  | -CH.           |
|            |                  |                   |   |                |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION       | ET 331        | TAPE ON                                      | 617 177         | 1345                                    |
|---------------|---------------|--|-----------------|---|
| TAPE NO.      | 259C          | TAPE OFF                                     | 6122177         | 0906                                    |
| CHANNEL       | SENSOR        | NOM  | NAL FM TAPE ALI | GNMENT*                                 |
|               |               | -40 percent                                  | Center          | +40 percent                             |
| 1             | Current 3X    | 10.0 (5) fps                                 | 0 ·fps          | 10.0 (N) fps                            |
| 2             | Current 3Y    | 10.0 (W) fps                                 | 0 fps           | 10.0 (E) fps                            |
| 3             | Current 2X    | 10.0 (S) fps                                 | 0 fps           | 10.0 (N) fps                            |
| 4             | Current 2Y    | 10.0 (W) fps                                 | 0 fps           | 10.0 (E) fps                            |
| 5             | Current 1X    | 10.0 (5) fps                                 | 0 fps           | 10.0 (W) fps                            |
| 6             | Current 1Y    | 10.0 (W) fps                                 | 0 fps           | 10.0 (E) fps                            |
| 7             | Time Signal   | minutes                                      | 0               | hours                                   |
| GENERAL C     | OMMENTS: Comp | dete tepe.                                   | CM3Y W          | vas noisy.                              |
| · .           |               |  |                 |   |
| CURRENT M     | ETER 3X: Cem  | plete rece                                   | rd.             |   |
| CHIPDENT M    | ETER 3Y: Comp | late record.                                 | 72 £ 000        | a prisus conf                           |
| men i         |               | 7  | LANCE EUR       | Jan |
| CURRENT M     |               | n plete rec                                  | ord.            |   |
|               |               |  |                 |   |
| CURRENT M     | ETER 2Y       | mplete rec                                   | nd.             |   |
|               |               | <u>//                                   </u> |                 |   |
| CURRENT M     | ETER 1X:      | nplete rece                                  | nd.             |   |
| OUDDENIE A    | ormen 1v.     | plate recor                                  | 1               |   |
| CURRENT M     | EIER III.     | pieje rezor                                  | <i>(1)</i>      |   |
| TIME SIGN     | IAL: Complex  | to dock                                      | end AUTO        | -CAL.                                   |
| . <del></del> | - Compress    |  |                 |   |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# Shell Development Company Houston, Texas

| STATION                                   | FI 33/ (#2      | TAPE ON      | 122177          | 1125         |  |  |
|---|-----------------|--------------|-----------------|--------------|--|--|
| TAPE NO.                                  | 260 W           | TAPE OFF     | 71/9177         | 1136         |  |  |
| CHANNEL                                   | SENSOR          | NOMIN        | AL FM TAPE ALIC | nment*       |  |  |
|   |                 | -40 percent  | Center          | +40 percent  |  |  |
| 1   | Wave Height     | 80 ft        | ft              | 0 ft         |  |  |
| 2   | Wind Speed      | 0 mph        | 100 mph         | 200 mph      |  |  |
| 3   | Wind Direction  | Odeg.        | 2025 deg.       | 405 deg.     |  |  |
| 4   | Barometer       | 26.0 in. Hg. | 28.5 in. Hg.    | 31.0 in. Hg. |  |  |
| 5   | Current 4X      | 20(5)fps     | 0 fps           | 20(N) fps    |  |  |
| 6   | Current 4Y      | 20(W)fps     | 0 fps           | ZOC€ fps     |  |  |
| 7   | Time Signal     | minutes      |                 | hours        |  |  |
| GENERAL C                                 | OMMENTS: Comple | te tope      | Date a          | e quite      |  |  |
| good                                      |                 |              |                 |              |  |  |
| WAVE HEIG                                 | HT: Complete    | record.      |                 |              |  |  |
|   |                 |              |                 |              |  |  |
| WIND SPEE                                 | D: Complète     | record.      |                 |              |  |  |
|   |                 |              |                 |              |  |  |
| WIND DIRE                                 | CTION: Comple   | to recerd    | Data as         | e poisy      |  |  |
| when                                      | wind is         | outherly.    |                 |              |  |  |
| BAROMETRIC PRESSURE: Com olete record     |                 |              |                 |              |  |  |
|   |                 |              |                 |              |  |  |
| CURRENT METER 4X: Complete record         |                 |              |                 |              |  |  |
|   |                 |              |                 |              |  |  |
| CURRENT METER 44: Complete record.        |                 |              |                 |              |  |  |
|   |                 |              |                 |              |  |  |
| TIME SIGNAL: Complete clock and Auto-CAL. |                 |              |                 |              |  |  |
| IIIII DION                                | - marie         |              |                 |              |  |  |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION    | EI.331              | #2) TAPE ON @                   | 122 177        | 1125        |
|------------|---------------------|---------------------------------|----------------|-------------|
| TAPE NO.   | 260C                | TAPE OFF                        | 7 119 177      | 1/36        |
| CHANNEL    | SENSOR              | NOMINA                          | L FM TAPE ALIG | NMENT*      |
|            |                     | -40 percent                     | Center         | +40 percent |
| 1          | Current 3X          | <u>20 (S)</u> fps               | 0 ·fps         |             |
| 2          | Current 3Y          |                                 | 0 fps          |             |
| 3          | Current 2X          |                                 | 0 fps          |             |
| 4          | Current 2Y          |                                 | 0 fps          |             |
| 5          | Current 1X          |                                 | 0 fps          |             |
| 6          | Current 1Y          |                                 | 0 fps          |             |
| 7          | Time Signal         | minutes                         | 0              | hours       |
|            | OMMENTS: Com        | plete tope.                     | CM34.          | egocars to  |
| CURRENT M  | eter 3x:            | ptte recol                      |                |             |
|            | ETER 34: Con        |                                 | Dato a         | re noisy    |
| CURRENT M  | //                  | meter fæilure<br>ngktet record. |                |             |
| CURRENT M  | ETER 2Y: Com        | ight record.                    |                |             |
| CURRENT M  | ETER 1X:            | noteto record                   | <i>1</i> .     |             |
| CURRENT M  | ETER 14: <i>Com</i> | glete record.                   |                |             |
| TIME SIGNA | AL: Compl           | leté chil a                     | nd Auto-       | CAL.        |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# Shell Development Company Houston, Texas

| TAPE NO. 26/W TAPE OFF 81/6177 0913  CHANNEL SENSOR NOMINAL FM TAPE ALIGNMENT*  -40 percent -40 percen | STATION    | ET 33/ (#                 | TAPE ON      | 7119177         | 1215               |
|--|------------|---------------------------|--------------|-----------------|--------------------|
| 1 Wave Height 2 ft 40 ft 0 ft  2 Wind Speed 0 mph 100 mph 200 mph  3 Wind Direction Q deg. 2025 deg. 405 deg.  4 Barometer 26.0 in. Hg. 28.5 in. Hg. 31.0 in. Hg.  5 Current 4X 100(5) fps 0 fps 100(6) fps  6 Current 4Y 100(W) fps 0 fps 100(6) fps  7 Time Signal minutes hours  GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Complete record.  WIND DIRECTION: Complete record.  CURRENT METER 4X: Complete record.  | TAPE NO.   | 26/W                      | TAPE OFF     | 816177          | 0913               |
| 1 Wave Height 20 ft 40 ft 0 ft 2 Wind Speed 0 mph 100 mph 200 mph 3 Wind Direction 0 deg. 2025 deg. 405 deg. 4 Barometer 26.0 in. Hg. 28.5 in. Hg. 31.0 in. Hg. 5 Current 4X 100(5) fps 0 fps 100(1) fps 6 Current 4Y 100(1) fps 0 fps 100(2) fps 7 Time Signal minutes hours GENERAL COMMENTS: Complete record. WAVE HEIGHT: Complete record. WIND SPEED: om plete record. WIND SPEED: complete record. CURRENT METER 4X: Complete record.  | CHANNEL    | SENSOR                    | NOMIN        | NAL FM TAPE ALI | GNMENT*            |
| Wind Speed 0 mph 100 mph 200 mph  Wind Direction Q deg. 2025 deg. 405 deg.  Barometer 26.0 in. Hg. 28.5 in. Hg. 31.0 in. Hg.  Current 4X 100(5) fps 0 fps 100(0) fps  Current 4Y 100(0) fps 0 fps 100(0) fps  Time Signal minutes hours  GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Implete record.  WIND SPEED: Complete record.  CURRENT METER 4X: Complete record.  |            |                           |              | Center          | +40 percent        |
| WIND SPEED:  | 1          | Wave Height               |              |                 | 0 ft               |
| 4 Barometer 26.0 in. Hg. 28.5 in. Hg. 31.0 in. Hg. 5 Current 4X /OO(5) fps 0 fps /OO(6) fps 6 Current 4Y /OO(W) fps 0 fps /OO(6) fps 7 Time Signal minutes hours  GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Complete record.  WIND DIRECTION: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4X: Complete record.  | 2          | Wind Speed                | 0 mph        | 100 mph         | 200 mph            |
| 5 Current 4X 100(5)fps 0 fps 100(6)fps 6 Current 4Y 10.0 (w)fps 0 fps 100(6)fps 7 Time Signal minutes hours  GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Implete record.  WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4Y: Complete record.   | 3          | Wind Direction            |              | 202.5 deg.      | 405 deg.           |
| 6 Current 4Y /O.O.(W)fps 0 fps /OOCO)fps 7 Time Signal minutes hours  GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Complete record.  WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4X: Complete record.   | 4          | Barometer                 | 26.0 in. Hg. | 28.5 in. Hg     | . 31.0 in. Hg.     |
| 7 Time Signal minutes hours  GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Complete record.  WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4Y: Complete record.  | . <b>5</b> | Current 4X                | 100(5)fps    | 0 fps           | 10.0(W)fps         |
| GENERAL COMMENTS: Complete record.  WAVE HEIGHT: Complete record.  WIND SPEED: Complete record.  WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4Y: Complete record.   | 6          | Current 4Y                | /0.0 (w)fps  | 0 fps           | / <u>00(5)</u> fps |
| WAVE HEIGHT: Complete record.  WIND SPEED: Complete record.  WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4Y: Complete record.   | 7          | Time Signal               | minutes      |                 | hours              |
| WIND SPEED:  | GENERAL (  | comments: <u>Complete</u> | te record    | ?               |                    |
| WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4Y: Complete record.  | WAVE HEI   | GHT: Complete re          | cord.        |                 |                    |
| WIND DIRECTION: Complete record.  BAROMETRIC PRESSURE: Complete record.  CURRENT METER 4X: Complete record.  CURRENT METER 4Y: Complete record.  | LITAID CDE | En. / /                   | 0            |                 |                    |
| BAROMETRIC PRESSURE: Com plete record.  CURRENT METER 4X: Com plete record.  CURRENT METER 4Y: Com plete record.   | MIND SEE   | on plete                  | record       |                 |                    |
| CURRENT METER 4X: Com plete record.  CURRENT METER 4Y: Complete record.  | WIND DIR   | ection: Complete          | to record.   |                 |                    |
| CURRENT METER 44: Complete record.   | BAROMETRI  | IC PRESSURE: Com          | plete rece   | nd.             |                    |
|  | CURRENT 1  | METER 4X: Comp            | lete reco    | d.              |                    |
| FIME SIGNAL: Complete Clock and Auro-CAL.  | CURRENT N  | METER 44: Complete        | to record    |                 |                    |
| ·  | TIME SIGN  | NAL: Complete             | Clock a      | I Auro-         | CAL.               |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.

# SHELL DEVELOPMENT COMPANY Houston, Texas

| STATION   | EI 33/         | (#2) TAPE ON      | 71/9177          | 1215        |          |
|-----------|----------------|-------------------|------------------|-------------|----------|
| TAPE NO.  | 26/C           | TAPE OFF          | 81/6177          | 0913        |          |
|           |                |                   | STOPPED ~ 1010   | 8/1/77)     |          |
| CHANNEL   | SENSOR         |                   | NAL FM TAPE AL   |             |          |
|           |                | -40 percent       | Center           | +40 percent |          |
| 1         | Current 3X     | <u>20 (S)</u> fps | 0 .fps           |             | S        |
| 2         | Current 3Y     |                   | 0 fps            |             | 3        |
| 3         | Current 2X     | _20 (S) fps       | 0 fps            |             | 3        |
| 4         | Current 2Y     |                   | 0 fps            |             | 3        |
| 5         | Current 1X     |                   | 0 fps            |             | 5        |
| 6         | Current 1Y     |                   | 0 fps            |             | 3        |
| 7         | Time Signal    | minutes           | 0                | hours       |          |
| GENERAL   | COMMENTS: Com  | lete tape u       | ntil a ma        | eli il      |          |
| drive     |                | Deta are a        | 11 -1-111        | •           | <u> </u> |
|           | METER 3X: Comp |                   | 31 31 19 11 19 - | noise.      |          |
| CURRENT   | <i>(</i>       | 10 0              |                  |             |          |
| CURRENT   | METER 3Y:      | plete record      | , but date       | e are suspe | es l     |
| CURRENT 1 | METER 2X:      | stete reco        | d.               |             |          |
|           |                |                   |                  | · ·         |          |
| CURRENT 1 | METER 2Y:      | plate record      | l.               |             |          |
|           |                |                   |                  |             |          |
| CURRENT 1 | METER 1X: Con  | plete reco        | d.               |             |          |
| CURRENT   | ETER 1Y:       | n plete reco      | end .            |             |          |
|           |                | 0                 |                  |             |          |
| TIME SIG  | IAL: Com as    | lete clock        | and Auro         | -CAL        |          |
|           |                |                   |                  |             |          |

<sup>\*</sup> Field tapes recorded at 0.03 ips IRIG FM low density.