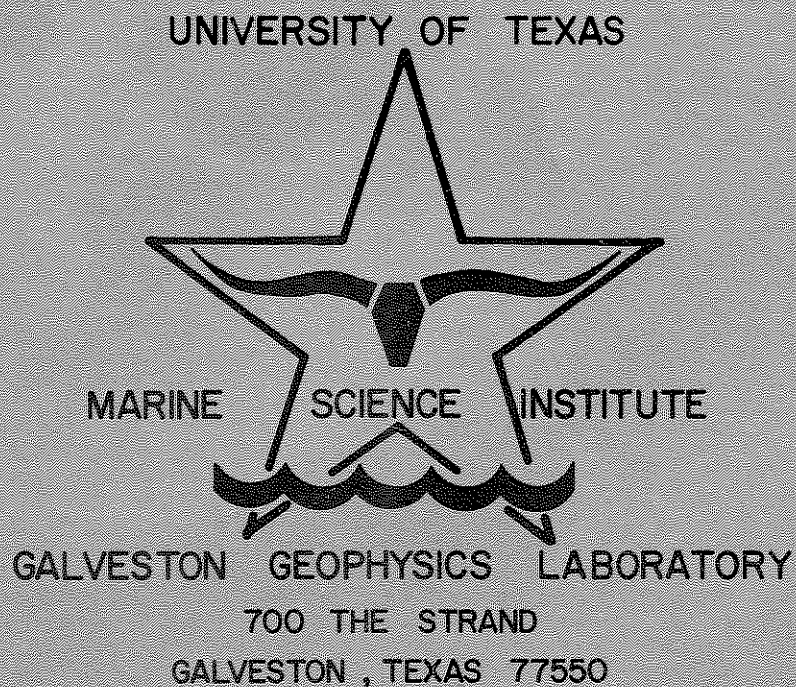


original



CRUISE LOG

R. V. FRED H. MOORE
CRUISE

Fm07-02

LABORATORY RESEARCH NOTE BOOK

Department of _____

Subject FMØ7-2

Name LA-TX SLOPES SURVEY -

Address 17 FEB 1981 -



NATIONAL

43-649

Made in U.S.A.

17 FEBRUARY 1981 -

2000 Z DEPART UTMSI-GGL - PIER 6 - G. MURSTON
TO BEGIN LA-TX SLOPE CRUISE - FMO7-2. THE
SCIENCE CREW CONSISTS OF FOLLOWING PERSONS -

E.W. BEHRNS - CHIEF SCIENTIST.
E. ROSENERANTZ - CO-CHIEF SCIENTIST.
K. GRIFFITHS - SENIOR TECH.
P. SMITH.
B. RADER
B. MAC ISSACS -
D. SALAMON
W. DAVIES - ET.
J. SMALAR ET.
M. BUTTERFIELD - GUN TECH.
G. PERREY - " [REDACTED] "
SHIP TECH.

Proceeding to beginning of first MCS line. Rm
man overboard and fire drill w/ all hands after
clearing hbm. entrance and shipping. Loran C and
small sat nav systems up and working, although
Loran C interface will not accept time update. 3.5 KHz.
on, adjusted and recording

18 FEB 1981.

0000 Z Rest time on horizonC printer (interfaced by shutting off and restarting).

0100 Z. Reduce speed to 8 knots to move ETA (and beginning of shearer deployment to 6 AM local time.

1230 Z Ship's posit 15 n E of start of line. Turn to S and increase speed to pick up MCS line to south.

1300 Z Stopped ship to determine sev and drift.

1345 Z Prep. deployment of shearer - tail sled rigged.

1430 Z (approx) Begin deploying shearer. Adding weights as needed, maneuvering sections. Ship on stern control.

maneuvering as necessary to keep steady head.

Approximate use of deployment - E of N. 3.5 KHz reeling throughout.

1500 DEPTH XDUCE #4 - ~~OUTBOARD~~ ^{INBOARD} IS CABLED INTO OLD TRACE #1 (LEFT OVER FROM MOBIL 49 TR WIRING) PIN 7 SHORT MALE PLUG

DEPTH XDUCE #3 CHECKS OK.

DEPTH YDUCE 2 & 1 CHECK OUT, + NAMED -

5 DIS ANTENNA.

2210. STREAMER OUT, CENTERED. JUMPER HOOKED OUT. IN PROCESS OF C/C TO 20 - 245° - 240° CURVES OF DRILL PLATFORMS.

2220 ON CSE 240 - PROCEED THROUGH A SERIES OF SPEDS TO TEST STREAMER BEHAVIOR.

18 FEB 81 CONT -

PM 07-2

STREAMER CONFIG.

SUC.



100M LINE

DEAD = #1

= 39.5M

LIVE = #2

31.5M

} 70M.

 ⋮
 #48


INBOARD DEAD.

STRETCH -

LEADER -

2220 - LIGHT OFF MAIN COMPRESSOR - BEGIN RIGGING
 GUNS - COMMENCE CHECKOUT OF DFS SYSTEM.

2320 - COMMENCE PUTTING GUNS IN WATER -

0345 - GUNS IN WATER - COMMENCE TURNING FIRING
 SEQUENCE.

19 Feb 1981

0000 - Continue to tune guns, experiment with minimum repetition rate.

0200 - Main compressor down - had water pump - in process of repairing.

0210 - Magnetometer fish in water - instrument ok, calibrating.

0240 - 3.5 KHz fish in water - sounding from fish.

0340 - Guns, magnetometer, 3.5 all steady - on Northward course to pick up the beginning of line.

8-9002 TAPE DRIVE 'A' DOWN -

ALL PARITY ERRORS - SWAP CABLE HARNESS w/ SPARE DRIVE

0600 - Near beginning of 1st line - CS-38.

0630 - Began recording on line CS-38 @ 0635 -

Tapes will not read - all parity errors - Tapes 072001 and Tape 072002 consequently scrubbed. Continuing problems with guns - hose lines deteriorating.

19 FEB 1981

FM07-2

0735 - Break off line to repair tape drives. Turn ~~left~~ ^{right} 180°.

1005 - Begin turn right 180° to pick up beginning of line - Air feed problems to guns continue.

1115 Z - Turned onto line. Three guns firing. Slowing to shooting speed -.

1600 Z - Continue on line. Systems not fully settled down. Three guns firing - but erratically.

Problems related both to maintaining air pressure and to internal problems in firing circuits. Tape drives OK. but several instances of lost shots due to data faults - (nonrecord tapes.). Navigation by LORAN C good - steady fixes. Sd drift increasing at approximately 1500 Z - compensating by steering to left. Potential problems with coolant system for the main compressor.

2100 Four guns brought on line - operation remains somewhat erratic. Tape & DFS operating smoothly - w/ usual beginning operator errors. 3.5 KHz, Mag., various monitors, LORAN C all normal.

20 FEBRUARY - 1981 -

~0320 inboard depth gage starts showing deeper until it pegged over at 100. Then started coming back.

| 0324 | 3 | 4 | 5 |
|---------------|---------------|---------------|---------------|
| 55 | 65 | 65 | 55 |
| 54 | 64 | 62 | 47 |
| 54 | 63 | 59 | 43 |
| 54 | 60 | 58 | 47 |
| 54 | 59 | 57 | 43 |
| 53 | 58 | 58 | 43 |
| 53 | 60 | 58 | 49 |
| 52 | 59 | 59 | 45 |
| 51 | 62 | 60 | 47 |
| 51 | 67 | 56 | 43 |
| 53.4 (1.0) | 60.7 (0.7) | 59.2 (0.6) | 46.2 (0.8) |

Shots 3608, 3609, 3610

#4 gun down.

2 guns pre firing

#4 GUN down

#4 GUN DOWN

0326

0328

0330

0332

0336

0338

0342

0345

0356

0505Z End of line CS-38. DFS shut down for compressor repair work. Begin slow turn onto line CS-37.

7776 → 7777 → 0001 record count change went smoothly

near trace DTS

| 20 Feb | 1600 | 23 | 25 | 59 |
|--------|------|----|----|----|
| | 1615 | 21 | 23 | 60 |
| | 1630 | 38 | 35 | 60 |

starboard turn from line 37 to line 36

1550Z Begin turn to line CS-36

1625Z on course Begin line CS-36. Bathymetry down.

1710Z Bathymetry working

~2300-2400 turn to port to change from lines 36 to 35,
no change in streamer depths: 5 4 3 2 1
42 35 60 54 47

2350Z END TURN ONTO LINE CS-35

21 Feb '81 (Z) Crossing ORCA Basin at beginning of CS 35

On EPC 3.5 records: eliminate center key mark when using
A delayed by B by having a gate after the print cycle.
(Use A delayed by B to adjust range by $\frac{1}{2}$ scale.)

TAPE# 072050, shots 2680-2780 within ORCA Basin have the
clear, doublet signature that may be used to design a filter
or convolution tool or some such geophysical magic.

22 FEB 1981

0000 - ALL SYSTEMS OPERATING NORMALLY - 4 GUNS
IN WATER AND FIRING.

Calm with rain in early morning - winds
increasing and shifting to NNW during day - sea
state 5-6 midday - subsiding thermometer. 3.5 KHz
record deteriorates with increasing seas. All systems
operational. Guns very stable - firing all four -

23 Feb 1981.

0000

HL SYSTEMS OPERATING NORMALLY

0212Z

ALL SYSTEMS SHUT DOWN FOR GENERATOR
OIL CHANGE

0232Z

ALL SYSTEMS BACK ON

0340Z

Begin recording again - line CS-34N

0352Z

Ship steering out of order. Ken working on it.

0400Z

Steering working again

1710Z

DFS Died between 1655-1700Z, be advised
to keep an eye on it at all times.

Also suggest that all tapes be demag'd
in the future to deter loss of shots
due to parity errors.

24 FEB 1981.

0000 - AS BEFORE -

2230 - GUN #3 NOT FIRING - PULLED FOR
REPAIRS -

25 FEBRUARY 1961 -

0000 - AS BEFORE - ALL SYSTEMS OFF. GUN

#3 OFF FOR REPAIRS -

0228 - #3 GUN BACK ON LINE

0410 - #3 GUN DOWN

~~0440~~
0440

0600 #3 GUN REPLACED ALL 4 GUNS ON LINE

0739 Compressor down

0743 Compressor fixed

0905 180° turn to right - designate new line as 28B to parallel line 28. This is done to allow a re-run of line 27 to be called 27B.

1602 Begin Turn

1642 Begin CS-26 end of turn

26 FEB 1981

0000 1500 HOURS.

1000 - GUNS SLIGHTLY ERRATIC - AIRBORNE PRESSURE
PARTIALLY SOLVES - BUT NOT COMPLETELY -

1200 - GUNS STEADY.

2000 APPROX - USE TML SLED / BODY -

2200 RESUME GUNS -

2220 NOTE THAT INBOARD END OF STREAMER AT 100'
OR DEEPER - SINKING DUE TO SLOW SPEED.
AT 4.3 KNOTS, INBOARD END STABILIZES AT 80 TO
90' -

27 FEB 81

0000 - ALL GUNS FIRING INBOARD DUTY
STEADY AT 88-92 FT

0355 - # 4 GUN DOWN

0537 - ALL GUNS BACK ON LINE

0604 - LOST COMPRESSOR

0607 - 3 GUNS ON LINE

0630 - 4 GUNS ON LINE

0800 - TURN ONTO LINE C-21 - EXPERIENCING
PROBLEM MAINTAINING STREAMER AT PROPER DEPTH. -
SINKS. MAINTAIN INBOARD END OF STREAMER AT
< 100 FT BY PERIODICALLY INCREASING SPD TO 6 KTS.

1135 - END C-21 - SHUT DOWN DPS. TURN INTO
WIND, INCREASE SPEED TO 6 KTS. STEERING TO
POINT TO RECOVER STREAMER FOR INSPECTION
AND REPAIR.

1225 SHUTTING DOWN COMPRESSOR, AIR GUNS

1245 GUNS ABOARD, SECURED

1247 MAGNETOMETER SHUT DOWN

1254 START BRINGING IN MAGNETOMETER

1303 MAGNETOMETER SECURED

27 FEB. 81. continued

1400 BEGIN STREAMER RECOVERY REPAIR

1830 END STREAMER RECOVERY REPAIR - DEPLOYED.

1905 4 guns up - MAY NEED to pull gun #2.

Heading back on course.

1915 - Increase speed to 6 kts.

1935 - gun #2 pulled.

2000 - rep. rate inc. to 23 sec.

NOTE

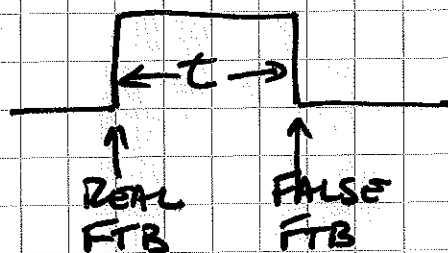
2255

NO FTB ON DFS AT RISING EDGE OF GUN TIME BREAK. TAPE DRIVE 'A' IS SLIGHTLY SLOWER IN GETTING STARTED THAN 'B' SO WOULD NOT ACCEPT RISING EDGE BUT TRIGGERED ON FALLING EDGE.

THIS AFFECTED RECORDS ABOUT 30 MINS PRIOR TO THIS AND SOME DATA ABOUT 2100 Z

ADJUSTED GUN MASTER DELAY UP 100 MS. - ALL GUNS NOW DELAYED 100 MS FROM START COMMAND

MEASURED WITH OLD SETTINGS:



| GUN REL FIRE TIME (MS) | T (MS) |
|---------------------------|----------|
| 24 | 556 |
| 25 | 555 |
| 26 | 554 |
| 27 | 553 |

28 FEB 1981

0000Z AS BEFORE - ALL SYSTEMS OPERATIVE - 4 QUAK-
ETC.

0100Z - * NEW RECORD FOR CONSECUTIVE 4 IDENTICAL
DELAY TIMES ON SHOTS. 6 TIMES. THIS
BREAKS OLD OBSERVED RECORD, SET 27 FEB 1981,
OF 3 CONSECUTIVE "FOUR-OF-A-KIND" SHOTS.

0405.43 SONOBUOY DEPLOYED

LOST @ 0534 WHEN TURNING

0715Z * New Record - 8 consecutive "Jackpots" !!!

1800Z

~~WAVE~~ - SHUT DOWN LABORATORY AT END OF LINE OF
CS 18A. PREPARING FOR TRANSFER OF CHIEF SCIENTIST
TO HELICOPTER, AND, CONCURRENTLY, SHUTTING OFF LABORATORY
ELECTRIC GENERATOR. ALL EQUIPMENT OFF OR ON
STANDBY - GUNS PLACED ON STANDBY = BLEEDING

1905Z

~~WAVE~~ - HELICOPTER 1/2 HR AWAY - W. BARNES - DEPARTS SHIP -

1930Z - W.B. POWER RESUMED TO 50 KVA GENERATOR - ALL
SYSTEMS BRACK UP - CHECKS RESET.

2045Z GUNS BROUGHT ON FIRING CIRCUIT TO LET RUN TO
STEADY OUT.

2130 - TURNING TO CS-17 - BEGIN TAPES -

2150 - ON LINE CS-17 -

28 FEB 1981 - 1 MARCH -

2236 - GYRO PROBLEMS - SHIP'S RUDDER DAMAGED
HARD LEFT - GREATER THAN 90° OFF COURSE
BEFORE CORRECTING w/ ENGINES. REPEATER
IS OUT.

2240 - STREAMER, GUNS CHECK OUT O.K. - RECOVER
TRACK - STEERING MAGNETIC - REPAIRING GYRO
REPEATERS, WHICH NOT REPEATING -

2301 - SKIPPER AND SUPERINTENDENT AGREE THAT
REACTANT TO STORM AT SLOWER SPEEDS IS
4.3 KNOTS PROVIDES STEERING STABILITY. DECIDE
TO REDUCE PWD TO 12 FOR LINE CS-17 -
INCREASE SPEED TO 6 KTS - INCREASE REP RATE TO
235.

1 MARCH 1981

0925-0945Z

LORAN C SUGGESTS WE ARE
GOING BACKWARDS ?!

1100Z

ON TAPE DRIVE A NOT RECORDING
'D' WAVE

1145Z DISCOVERED MASTER DELAY REMOVED FROM GUN
CONTROL SYS, CAUSING DRIVE A NOT TO PICK UP
'D' WAVE - CORRECTED. DISCOVERED GYRO CAMERA
TURNED OFF - TURNED ON INDICATED THAT OUTBOARD
12 TRACES NOT VARIABLY RECORDING AFTER WRITE IS
POSSIBLY NOT WRITING.

1300 Z - DECIDE TO SHOOT NEW LINE CS-16B
ON AZIMUTH 197° TO CARRY US TO BEGINNING
OF LINE CS-16 - WILL RESHOOT LINE CS-16 -
AS LINE CS-16A. ORIGINAL LINE 16 WILL BE
DESIGNATED CS-16C -

1330 BEGIN CS-16B - ALL SYSTEMS OPERATING NORMALLY -

2 MARCH 1981

0000 - ALL SYSTEMS UP - OPERATING NORMALLY -

0230 - Begin line CS-15

0400 -

1000 - BEGIN LINE CS-14

1220 BEGIN LINE CS-13.

2330 - SHUT LAB DOWN IN PREPARATION FOR
50 KW GENERATOR SERVICING. - OOPS! -
MISTAKE - NO SERVICING FOR 50KW -
SERVICING FOR MAIN COMPRESSOR -
GENS DOWN - LAB POWERED UP -

3 MARCH 1981

0000 - SYSTEMS UP, RUNNING

0001 - START RECORDING

0005 BEGIN CS-12.

0200 - ALL SYSTEMS ON & OPERATING
NORMALLY (I THINK)

0245 BEGIN CS-11

1402-1405 COMPRESSOR DOWN DURING TURN

1408Z BEGIN CS-10

4 MARCH 1961

From ≈ 0045 #3 GUN IS GIVING
ERRATIC FIRE SIGNALS $\frac{1}{2}$ IN SOME
CASES WILL STOP ALL REL. FIRE TIME
COUNTERS

0227 - GUN BOX IN GUN SHACK BLOWN - IN
PHOTOS OF REPAIRING. TAPE DRIVES
STOPPED.

0251 - BRING TAPES ON LINE

0256 - GUNS FIRING NORMALLY -

0500 - PROCEEDING DEAD SLOW TO PASS SHIP
ON COURSE

0520 - BEGIN TO REGAIN REGULAR SCHEDULE

1120 - GUN #4 ERRATIC - THEN FIRING LATE - PULLED -
SHOOTING WITH 3 GUNS -

1636 - All guns firing normally.

5 MARCH 1981.

0000 - All systems up & functioning

0350 - VOLTAGE REGULATOR ON 50 KW GENERATOR
GETTING PROGRESSIVELY WORSE. CLOSE WATCH
SHOULD BE KEPT ON PANEL VOLTAGE METER
AND ENGINEER + GT CALLED AT VOLTAGE'S
APPROACHING 105 + 130.

0515 #1 GUN DOWN

0747 4 guns back up!

6 MARCH 1981

0000 - All systems UP & FUNCTIONING, with
EXCEPTION OF GYRO CAMERA -

0200 - ALL SYSTEMS FUNCTIONING

0525 - Begin turn

1200 - BEGINNING PROBLEMS w/ GUN #4.

1923 - Sonobuoy in water #2 CHAN 4

1948 - 2nd Sonobuoy in water #3 CHAN 8

2335 - COMPLETE FINAL TURN ONTO LAST SHOOTING LINE.

7 MARCH 1981.

0000 - ALL SYSTEMS UP & FUNCTIONING.

0900 - WIND AND SEAS BEGIN TO BUILD OUT OF SE,
SHIP IN EXTREME CRAB TO MAINTAIN TRACK LINE,

1118 - FINISH SHOOTING -

1344 STREAMER ONBOARD - DOPPLER SONAR UP.

1346 KFER FROM FISH TO HULL 3.5 KNUCK

1400 - COMPLETED ALL RECOVERY'S - ENROUTE FOR

GAUFEON -

*!

7 MAR 1981

DEAR BILL,

WE KNOW YOU MISSED BEING ON THE LATTER PART OF THE CRUISE. WHILE WE CERTAINLY CANNOT MAKE UP ALL OF THAT LOSS, THE ENCLOSED WILL, HOPEFULLY, GIVE YOU A SMALL IDEA OF THE WHOLE.

THE INSTRUCTIONS FOR THE KIT ARE SIMPLE :

1. SHARPEN THE PENCIL
2. STARTING AT THE STAR (*) CONNECT THE DOTS WITH A CONTINUOUS LINE.

THE RESULTING DRAWING WILL BE A TRACKLINE PLOT OF THE WHOLE OF FMOT-2. COMPLETED CORRECTLY, IT SHOULD GIVE YOU AN IDEA OF WHERE YOU HAVE BEEN AND HAVEN'T BEEN BUT WISH YOU HAD, AND SO GIVE YOU, WE HOPE, SOME SMALL FEELING FOR THE CONTINUITY OF WHAT HAS BEEN A MOST SUCCESSFUL CRUISE.

FMOT-2 SCIENCE AND CREW
(INCLUDING TEKTRONIX)

Eric Rosenbaum

Tim Mitchell

James R. Kirkland

John P. Delany

James E. Johnson

George Leach

Franklin Jones

Walter T. Jones

Peter A. Smith

Don K. S. Jr.

Gen. Giffert

Bija Rade

Raul Delaney

Annex Doyle

Michael Brattain

John A. Faria

1000 m water depth



$$70m / 2 \text{ m/sec} = 35 \text{ sec} @ 4k$$

$$2000 \text{ m} @ 4k = 5004 \approx 20.8 \text{ days} = 51,429 \text{ shots}$$

$$\approx 53,000 \text{ shots (70m)}$$

$$\text{Time} = \frac{\text{shot spacing (m)}}{\text{speed (kts)} \times 508}$$

$$\text{Speed (k)} = \frac{\text{Shot spacing (m)}}{\text{time} \times 508}$$

70 m

Time Speed

Sh. sp = 70m

| | | | | | |
|----|-----------|-----|--------|------|----|
| 20 | 6.9 | 3.5 | 39.4 | 20.7 | 23 |
| 21 | 6.6 | 3.6 | 38.3 | 20.1 | 22 |
| 22 | 6.3 | 3.7 | 37.2 | 19.6 | 22 |
| 23 | 6.0 | 3.8 | 36.3 | 19.1 | 21 |
| 24 | 5.84 (70) | 3.9 | 35.3 | 18.6 | 21 |
| 25 | 5.5 | 4.0 | 34.4 | 18.1 | 20 |
| 26 | 5.3 | 4.1 | 33.6 | 17.7 | 20 |
| 27 | 5.1 | 4.2 | 32.8 | 17.3 | 19 |
| 28 | 4.9 | 4.3 | 32.0 | 16.9 | 19 |
| 29 | 4.74 | 4.4 | 31.3 | 16.5 | 19 |
| 30 | 4.6 | 4.5 | 30.6 | 16.1 | 18 |
| 31 | 4.4 | 4.6 | 30.0 | 15.8 | 18 |
| 32 | 4.3 | 4.7 | 29.3 | 15.4 | 17 |
| 33 | 4.2 | 4.8 | 28.7 | 15.1 | 17 |
| 34 | 4.05 | 4.9 | 28.1 | 14.8 | 17 |
| 35 | 3.9 | 5.0 | 27.6 | 14.5 | 17 |
| | | 5.1 | 27.0 | 14.2 | 16 |
| | | 5.2 | 26.5 | 13.9 | 16 |
| | | 5.3 | 26.000 | 13.7 | 16 |
| | | 5.4 | 25.5 | 13.4 | 16 |
| | | 5.5 | 25.1 | 13.2 | 15 |
| | | 5.6 | 24.6 | 12.9 | 15 |
| | | 5.7 | 24.2 | 12.7 | 15 |
| | | 5.8 | 23.8 | 12.5 | 15 |
| | | 5.9 | 23.4 | 12.3 | 14 |
| | | 6.0 | 23.0 | 12.1 | 14 |

| Speed | Time | SS (70m) |
|-------|------|----------|
| 2.0 | 68.9 | 5.5 |
| 2.5 | 56.1 | 6.0 |
| 3.0 | 46.9 | 6.5 |
| 3.5 | 39.4 | |
| 4.0 | 34.4 | |
| 4.5 | 30.6 | |
| 5.0 | 27.6 | |

140 m

| | | |
|---|-----|-----|
| 2 | 138 | 110 |
| 3 | 92 | 79 |
| 4 | 69 | 61 |
| 5 | 55 | |

35m

| | |
|-----|------|
| 2 | 34.4 |
| 2.5 | 27.6 |
| 3 | 23 |
| 3.5 | 19.7 |
| 4 | 17.2 |
| 4.5 | 15.3 |
| 5 | 13.8 |
| 6 | 11.5 |

2000 m

| | |
|-----|------|
| 0.5 | 650 |
| 1 | 1133 |
| 1.5 | 1457 |
| 2 | 1700 |
| 2.5 | 1889 |
| 3 | 2040 |
| 4 | 2267 |
| 5 | 2529 |
| 6 | 2550 |

$\Sigma \text{ dist} = 1817 \text{ mi}$

Σd

| hr | d | Σd |
|-----|-------|------------|
| 4.3 | 422 | 17.6 |
| 4.4 | 413 | 17.2 |
| 4.5 | 403.7 | 16.8 |
| 4.6 | 395 | 16.5 |
| 4.7 | 387 | 16.1 |
| 4.8 | 378 | 15.8 |
| 4.9 | 371 | 15.4 |
| 5.0 | 363 | 15.1 |
| 5.1 | 356 | 14.8 |
| 5.2 | 349 | 14.6 |
| 5.3 | 343 | 14.3 |
| 5.4 | 336 | 14.0 |
| 5.5 | 330 | 13.8 |
| 5.6 | 324 | 13.5 |
| 5.7 | 319 | 13.3 |
| 5.8 | 313 | 13.1 |
| 5.9 | 308 | 12.8 |
| 6.0 | 303 | 12.6 |

30.00 FM07-2 NAVIGATION/OP
SCALE- 2 IN/DEG OF LONG

FROM 18 FEB 1981
TO 3 MAR 1981

29.00

28.00

27.00

-96.00

-95.00

-94.00

-93.00

-92.00

-91.00

-90.00

