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Cruise Reports

R/V POWELL P-2-85, February - March 11, 1985

R/V POWELL P-3-85, March 14-28, 1985

R/V POWELL P-4-85, April 1-8, 1985

Seismic Reflection Cruises

Kathryn M. Scanlon

Vessel: R/V POWELL owned and operated by USGS Office of Energy and Marine Geology, Branch of Pacific Marine Geology, Menlo Park, CA
Captain: John E. Winningham

Purpose: Our purpose was to collect high-resolution single-channel seismic-reflection data near Puerto Rico and the U.S. Virgin Islands. This endeavor, however, was secondary to the collection of gravity data by the USGS/Menlo Park personnel for the Defense Mapping Agency (DMA). This report deals with the seismic-reflection aspects of the cruises.

Science Personnel:

85004 Powell P-2-85: February 28 - March 11, 1985
Roosevelt Roads, P.R. to Roosevelt Roads, P.R.

Byron Ruppel	Menlo Park	Gravity
Dick Tagg	Menlo Park	Gravity
Dave Hogg	Menlo Park	Electrical Tech.
John Erickson	Menlo Park	Mechanical Tech.
Terry Edgar	Reston	Seismics
Juan Trias	San Juan	Seismics

85005 Powell P-3-85: March 14-28, 1985
Roosevelt Roads, P.R. to Roosevelt Roads, P.R.

Jack Swenson	Menlo Park	Gravity
Roy Fields	Menlo Park	Electrical Tech.
Hal Williams	Menlo Park	Mechanical Tech.
Kathy Scanlon	Woods Hole	Seismics
Nelson Spinell	San Juan	Seismics

85007 Powell P-4-85: April 1-8, 1985
Roosevelt Roads, P.R. to Fort Lauderdale, FL

Byron Ruppel	Menlo Park	Gravity
Larry Kooker	Menlo Park	Electrical Tech.
Jeff Stampfer	Menlo Park	Mechanical Tech.
Gail Kineke	Woods Hole	Seismics
Jeb Palmer	Woods Hole	Seismics

Navigation:

Navigation was accomplished using a Magnavox Integrated Navigation System. This system integrates information from GPS satellites, transit satellites, bottom-track sonar, LORAN, Mini-Ranger stations, gyro compass, and speed log. We relied most heavily on the GPS satellites when available (about 50% of the day). During the hours with no GPS, we used the other systems. The navigation data were recorded on magnetic tapes, which are stored in Menlo Park.

Scientific Equipment:

We used one or two 40 in³ airguns with a 200-foot single-channel hydrophone streamer towed astern of the ship (fig. 1) in most areas. In areas where the water depth was less than about 200 m, we used an EG&G Uniboom sled (towed astern and below the water surface) with an 8-foot single-channel hydrophone streamer towed from a boom on the port side (fig. 1).

The data were filtered then recorded on two EPC and one Raytheon flatbed recorders. They were not recorded on magnetic tape.

Data:

The three legs totalled 32 days at sea. Approximately 4,600 nautical miles of seismic data were collected (fig. 2).

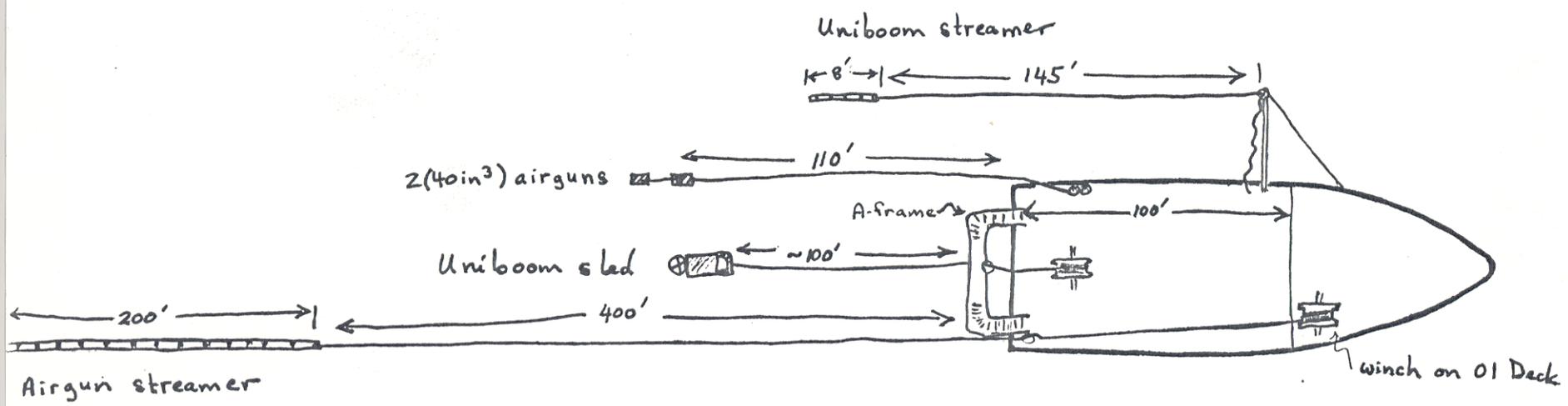


Figure 1. Configuration of towed equipment.

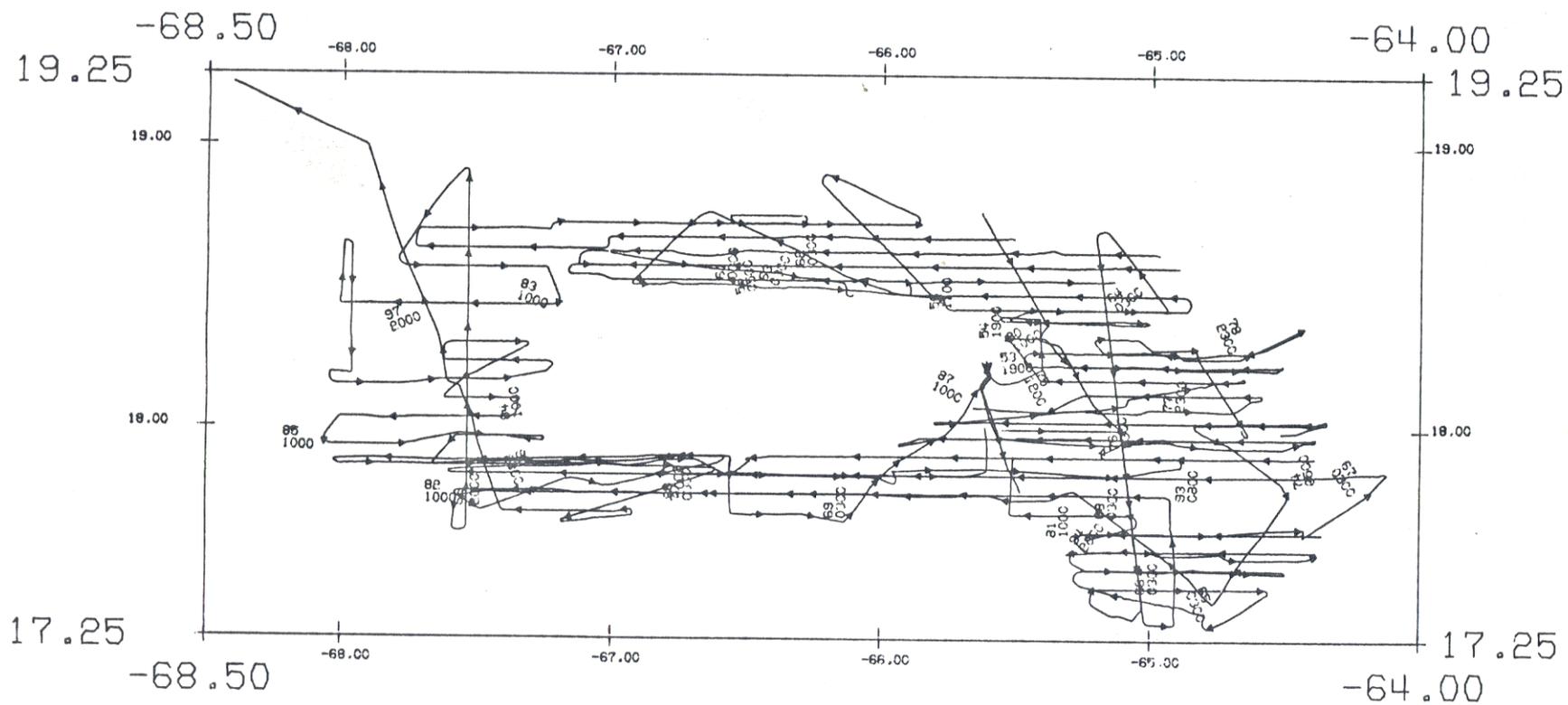
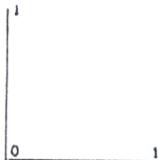


Figure 2. Ship's track.

P185CB P285CB P385CB P485AT MERC. 1:2085488.63M



85004

SEISMIC LINES - POWELL CRUISE - LEG 2

<u>LINE</u>	<u>SOD</u>	<u>EOD</u>	<u>COMMENTS</u>
22	60 (0140)	60 (0745)	- data ends 0745, but track line on map continues.
19	60 (1337)	61 (0615)	- data starts 1337, but track line on map starts 1915.
2	61 (0615)	61 (1217)	
1	61 (1217)	61 (1737)	
18	61 (1737)	62 (1330)	
48	62 (1330)	62 (2110)	
722	62 (2110)	62 (2251)	
4748A	62 (2251)	63 (0517)	
47	63 (0517)	63 (0840)	
722C	63 (0840)	63 (1807)	
24	63 (1807)	64 (0124)	
54A	64 (0237)	64 (1607)	- first of two runs of line 54; runs north to south
41	64 (1712)	65 (0036)	
40-TRANS	65 (0040)	65 (1703)	- transit to line 40; part of track on map missing
40	65 (1703)	65 (2251)	
39-TRANS	65 (2251)	66 (0931)	- transit to line 39.
39	66 (0943)	66 (1617)	
38A	66 (1617)	67 (0517)	- first run of 38 (aborted); runs west to east.
15A	67 (0517)	68 (0602)	- first of two runs of line 15; doubles back twice
36-EAST	68 (0602)	68 (1842)	
14A	68 (1945)	68 (2145)	- first of three runs of line 14.
15-WEST	69 (0500)	69 (1850)	- west extension of line 15; headed west.
14B	69 (1850)	70 (0445)	- second of three runs of line 14; headed east.
15B	70 (0445)	70 (1315)	- last of two runs of line 15.

General Comments: SOD and EOD refer to starts and ends of data (as taken from photo copies of original records). Numbers are Julian calendar days, and numbers in parentheses are times. The track lines on the computer-generated track map sometimes differed from the data (i.e. data ends at a certain time, but the track line on the map ends at a different time). In these cases, the differences have been mentioned in the COMMENTS section of the table(s). Also, some lines were re-run, or aborted then returned to, etc. For ease in labelling, these lines have been labelled in sections (i.e. line 15 was run as several discontinuous lines, all at or near the same latitude; therefore, the first run has been labelled line 15A, the second run line 15B, and so on). These cases have also been noted in the COMMENTS section of the table(s). NOTE: Some lines are simply named with a letter following them (i.e. line 722C); this is just the way they were named on board the ship, and to maintain some consistency with the cruise logs, I have kept these names. Unless specified in the COMMENTS section, these suffixes do not indicate that there have been several runs of the same line, as is the case in line 15.

85005

SEISMIC LINES - POWELL CRUISE - LEG 3

<u>LINE</u>	<u>SOD</u>	<u>EOD</u>	<u>COMMENTS</u>
35A	74 (0612)	74 (1747)	- first of two runs of line 35; runs east to west.
35A-TRANS	74 (1817)	75 (0517)	- transit to line 32; parts missing on track map.
32	75 (0517)	75 (1102)	
<u>32A-TRANS</u>	75 (1102)	75 (1420)	- lines 32A-TRANS (transit to line 33) and 33 are combined onto 1 data roll since line 33 is so short; line 33 is missing from the track map; they are labelled as line 32A-TRANS on the track map.
<u>33</u>	75 (1420)	75 (1555)	
33A-TRANS	75 (1640)	76 (0507)	- transit to line 34; parts missing on track map; some gaps in data as well.
34	76 (0507)	76 (1614)	
34A-TRANS	76 (1614)	77 (0423)	- transit to line 30.
30	77 (0423)	77 (1105)	- more line on track map than there is data.
52	77 (1144)	77 (1317)	- large holes in data.
26	77 (1352)	77 (1553)	
26A-TRANS	77 (1553)	78 (0413)	- transit to line 29.
29	78 (0413)	78 (1320)	
<u>28</u>	78 (1320)	78 (1734)	- lines 28, 28A-TRANS, 28B, and 28-WEST are combined onto 1 data roll since some are very short; also, lines 28A-TRANS, 28B and 28-WEST are all transit lines to line 27. All 4 lines have been labelled together as line 28 on the track map.
<u>28A-TRANS</u>	78 (1734)	79 (0203)	
<u>28B</u>	79 (0203)	79 (0515)	
<u>28-WEST</u>	79 (0515)	79 (1021)	
<u>27</u>	79 (1021)	79 (1224)	- lines 27 and 27A-TRANS are combined onto 1 data roll; they are labelled together as line 27 on the track map, and line 27A-TRANS is a transit line to line 55.
<u>27A-TRANS</u>	79 (1224)	79 (1425)	
55	79 (1425)	79 (1742)	
53	80 (0445)	80 (1433)	- some gaps in data.
<u>54B</u>	80 (1433)	81 (0023)	- lines 54B (last of two runs of line 54) and 54A-TRANS (transit to line 16) are combined onto 1 data roll and are labelled together as line 54B on the track map.
<u>54A-TRANS</u>	81 (0023)	81 (0544)	
16	81 (0544)	82 (0545)	
45	82 (0657)	82 (2102)	
45A-TRANS	82 (2102)	83 (0320)	- transit to line 3.
<u>3</u>	83 (0326)	83 (0839)	- lines 3 and 3A-TRANS are combined onto 1 data roll and are labelled together as line 3 on the track map; line 3A-TRANS is a transit line to line 4.
<u>3A-TRANS</u>	83 (0839)	83 (1021)	

General Comments (in addition to those found on Page 1): When line numbers are underlined, it indicates that the underlined lines have been combined onto 1 roll of data, and usually are labelled together as 1 line on the track map. Be sure to read the COMMENTS section of the table(s).

SEISMIC LINES - POWELL CRUISE - LEG 3 (continued)

<u>LINE</u>	<u>SOD</u>	<u>EOD</u>	<u>COMMENTS</u>
4	83 (1021)	83 (1820)	
4A-TRANS	83 (1820)	83 (2040)	- transit to line 42.
42	83 (2040)	84 (0155)	- lines 42 and 42A-TRANS are combined on
<u>42A-TRANS</u>	84 (0155)	84 (0315)	1 data roll and are labelled together as line 42 on the track map; line 42A-TRANS is a transit line to line 8.
8	84 (0315)	84 (0550)	- lines 8 and 8A-TRANS are combined on 1
<u>8A-TRANS</u>	84 (0550)	84 (0721)	data roll and are labelled together as line 8 on the track map; line 8A-TRANS is a transit line to line 7.
7	84 (0721)	84 (1129)	
6	84 (1129)	84 (1547)	
5	84 (1547)	84 (1926)	- lines 5 and 5A-TRANS are combined on 1
<u>5A-TRANS</u>	84 (1926)	84 (2328)	data roll and are labelled together as line 5 on the track map; line 5A-TRANS is a transit line to line 9.
9	84 (2328)	85 (0206)	- lines 9 and 9A-TRANS are combined on 1 data
<u>9A-TRANS</u>	85 (0206)	85 (0309)	roll and are labelled together as line 9 on the track map; line 9A-TRANS is a transit line to line 10/11.
10/11	85 (0309)	85 (0856)	- lines 10/11 and 10A are combined on 1 data roll
<u>10A</u>	85 (0856)	85 (1030)	and are labelled together as line 10/11 on the track map.
12/13	85 (1030)	85 (1824)	- lines 12/13, 13A and 13A/B-TRANS are combined
<u>13A</u>	85 (1836)	85 (2148)	on 1 data roll and are labelled together as line 12/13 on the track map; line 13A is a re-run of the last portion of line 12/13; line 13A/B-TRANS is a transit line to line 14C.
<u>13A/B-TRANS</u>	85 (2148)	85 (2330)	
14C	85 (2330)	86 (1227)	- lines 14C, 14A-TRANS and 14B-TRANS are combined
<u>14A-TRANS</u>	86 (1227)	86 (1436)	on 1 data roll and are labelled together as line 14C on the track map; line 14C is the last of three runs of line 14; lines 14A-TRANS and 14B-TRANS are transit lines to line 50.
<u>14B-TRANS</u>	86 (1436)	86 (2130)	
50	86 (2130)	87 (1015)	

General Comments (in addition to those found on Pages 1 and 2): This page marks the end of Leg 3.

85007

SEISMIC LINES - POWELL CRUISE - LEG 4

<u>LINE</u>	<u>SOD</u>	<u>EOD</u>	<u>COMMENTS</u>
51	91 (1630)	????	- no data, though there is a line on the track map.
<u>38B</u>	92 (0400)	92 (1105)	- lines 38B and 38A-TRANS are combined onto 1 data roll and are labelled together as line 38 on the track map; line 38B is the last of two runs of line 38; line 38A-TRANS is a transit line to line 37.
<u>38A-TRANS</u>	92 (1105)	92 (1300)	
<u>37</u>	92 (1300)	92 (1635)	- lines 37 and 37A-TRANS are combined onto 1 data roll and are labelled together as line 37 on the track map; line 37A-TRANS is a transit line to line 36.
<u>37A-TRANS</u>	92 (1635)	92 (1827)	
<u>36-EAST</u>	93 (0348)	93 (1043)	- lines 36-EAST and 36A-TRANS are combined onto 1 data roll and are labelled together as line 36-EAST on the track map; line 36A-TRANS is a transit line to line 35B.
<u>36A-TRANS</u>	93 (1043)	93 (1246)	
35B	93 (1246)	93 (1700)	- last of two runs of line 35.
34-EAST	94 (0327)	94 (0707)	- lines 550-TRANS and 55A-TRANS are combined onto 1 data roll and are labelled together as line 55A-TRANS on the track map; both lines are transit lines to line 56.
<u>550-TRANS</u>	94 (0707)	94 (1038)	
<u>55A-TRANS</u>	94 (1038)	94 (1120)	
56	94 (1120)	94 (1510)	
758	94 (1510)	94 (2114)	
16W	94 (2114)	95 (1557)	
16WB	95 (1611)	96 (0359)	
14W	96 (0359)	96 (1545)	
14WA	96 (1545)	97 (0339)	
49	97 (0339)	97 (0800)	- lines 49 and 49A-TRANS are combined onto 1 data roll and are labelled together as line 49 on the track map; line 49A-TRANS is a transit line to line 17.
<u>49A-TRANS</u>	97 (0800)	97 (1107)	
17	97 (1107)	97 (1430)	
TOTO 1	97 (1430)	98 (0012)	- TOTO stands for "tongue of the ocean."
TOTO 2	98 (0012)	98 (0325)	- TOTO stands for "tongue of the ocean."

EXTRA DATA:

69 (1850)	70 (0500)	- transit to 15-WEST; aborted line 14 - turned east.
70 (1355)	?????	- data on way to Roosevelt Roads at end of Leg 2.

General Comments: See COMMENTS in table(s), and refer to comments at bottom of Pages 1-3.