

Scott

CRUISE REPORT
R/V POLARIS
(August 3 -- October 17, 1967)

I. PURPOSE

- A. To make a seismic profile reconnaissance of San Francisco Bay in order to determine the thickness and structure of subbottom geologic units.
- B. To determine the depth to bedrock which underlies the Bay.

II. CRUISE SCHEDULE

Ship scheduling was on a day to day basis imposed by the operational vagaries of certain experimental seismic equipment. The first portion of the cruise was largely spent in tuning and testing equipment.

The daily forays were interrupted for two weeks in September, so that the vessel might undergo her annual haul-out inspection and, that certain maintenance be performed.

III. ITINERARY

<u>Date</u>	<u>Activity</u>
Aug. 3	Test airbacked boomer, hydrophones, and other seismic equipment off Redwood Creek.
Aug. 15	Test seismic equipment in South San Francisco Bay
Aug. 16	Seismic test in Redwood Creek.
Aug. 17	Seismic test off Hunters Point to tune equipment. Run aborted due to engine trouble.
Aug. 18	Run to Hunters Point to check engine trouble and make seismic tests.

<u>Date</u>	<u>Activity</u>
Aug. 21	Partially correct engine overheating trouble by SCUBA diving to clean keel cooler of growth. Make test run to check out temperature readings.
Aug. 22	Conduct trial run to trouble shoot overheating with Union diesel representative aboard and make further seismic tests off Hunters Point.
Aug. 23	Conduct seismic equipment test off Redwood Creek.
Aug. 24	Depart Redwood City, run to North San Francisco Bay to make seismic profile tracks. Begin tracking off San Pedro Point as per C&GS Chart 5532. Complete Tracks 1 through 7. Return to Bureau of Mines' dock for the night.
Aug. 25	Depart Bureau of Mines enroute Oakland Bay Bridge for seismic tracking. Complete Tracks 8 through 15 as per C&GS Chart 5532. Return to Bureau of Mines and secure ship for the weekend.
Aug. 28	Depart Bureau of Mines to conduct seismic tests around Angel Island and over previous Tracks 8 and 9. Anchor off Sausalito for the night.
Aug. 29	Depart Sausalito anchorage to conduct sparker tests while awaiting repair to airbacked boomer plate. Return to Redwood City.
Aug. 30	Depart Port of Redwood City enroute Hunters Point to continue sparker test. Return to Redwood City upon completion.

<u>Date</u>	<u>Activity</u>
Aug. 31	Depart Port of Redwood City tracking from Redwood Creek channeling the North Bay as per C&GS Chart 5531 and 5532, completing Tracks 16 through 33. Tie to Bureau of Mines' dock for the night
Sept. 1	Depart Bureau of Mines. Rerun Tracks 22, 23, 24, and 25 for equipment check. Start tracking near the Golden Gate as per C&GS Chart 5532. Complete Tracks 33 through 54. Return to Redwood City.
Sept. 7	Depart Port of Redwood City. Run to Anderson and Christofani's shipyard for bottom inspection and maintenance.
Sept. 22	Return to Port of Redwood City.
Sept. 26	Depart Port of Redwood City, making seismic test run to Shag Rocks near Alacataz, record Track 55, Chart 5532. Return to Redwood City.
Sept. 27	Depart Port of Redwood City. Run to Buoy 1 off Hunters Point where seismic testing was conducted, record Track 56, Chart 5532. Return to Redwood City.
Sept. 28	Depart Port of Redwood City. Run to Oakland Bay Bridge. Start seismic tracking as per Chart 5532. Complete Tracks 57 through 72. Return to Redwood City.
Oct. 2	Depart Port of Redwood City. Conduct seismic tests in Redwood Creek. Then proceed to Bureau of Mines' dock to pick up personnel and thence to Richmond Bridge.

<u>Date</u>	<u>Activity</u>
Oct. 12	Depart Port of Redwood City enroute San Bruno Shoal Channel to continue seismic tracking. Begin tracking as per C&GS Chart 5532 and 5531. Run Tracks 189 through 201. Return to Port of Redwood City.
Oct. 13	Depart Port of Redwood City enroute San Bruno Shoals to start seismic tracking. Begin tracking as per C&GS Chart 5531. Run Tracks 202 through 214. Return to Redwood City.
Oct. 16	Depart Port of Redwood City enroute San Mateo Bridge to start seismic tracking. Begin tracking as per C&GS Chart 5531. Run Tracks 215 through 228. Return to Port of Redwood City.
Oct. 17	Depart Port of Redwood City enroute Beacon 10, north of Redwood Creek to start seismic tracking. Begin tracking as per C&GS Chart 5531. Run Tracks 229 through 243. Complete tracking and return to Port of Redwood City.

IV. DESCRIPTION OF OPERATIONS

Continuous seismic profiles were obtained over a distance of 404 nautical miles in the Bay. Tracks 1 through 72 represent the period of tuning and experimental adjustments, wherein a variety of power settings for the sound source were used in conjunction with different frequency filter settings, firing rates and other variables. Tracks 73 through 243 used an airbacked boomer operating at 400 joules alternating with 2 sparkers operating at 3,000 joules. For this

simultaneous operation of the two systems, two wet-paper records and one tape recorder stored the records picked up by one hydrophone.

Position fixes and navigational control were obtained primarily with the DECCA, model TM 629 radar.

V. PERSONNEL

- D. McCulloch Chief Scientist
- P. Carlson Geologist
- J. Joslin Master
- E. Magalhaes Engineer
- B. Valley Mate
- C. Holmes Cook
- W. Lowry Electronic Technician

Submitted by:

Jerry C. Joslin

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SAN FRANCISCO BAY
R/V POLARIS

Nautical miles continuous seismic profiles

<u>Date</u>	<u>Track No.</u>	<u>Miles (Nautical)</u>
08-24-67	1-8	~ 20
08-25-67	5-15	
08-31-67	16-32	30
09-01-67	33-54	25
09-26-67	55	~ 20
09-27-67	56	
09-28-67	57-72	15
10-02-67	73-80	19
10-03-67	81-116	39
10-04-67	117-138	47
10-05-67	139-168	48
10-06-67	169-178	13
10-11-67	179-188a	28
10-12-67	189-201	30
10-13-67	202-214	28
10-16-67	215-228	21
10-17-67	229-243	<u>21</u>
		404 n. mi.