Received 11/4/10.
Coded 11/5/8.

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RPT

Cruise Report

1. Ship: R/V Ellen B. Scripps (7/14-7/17); USCG CAPE WASH (7/26); USCG CAPE HEDGE (9/14)

2. Cruise number:-

3. Parent project: 9450-01834 (for office of marine geology participation)

4. Funding opening:-

5. Funding amount:-

6. Contract number:-

7. Contract start and end:-

8. Area of operations: Santa Barbara Channel and Santa Maria Basin, CA

9. Dates:

   July 14-17, 1982 - Port Hueneme, CA to Santa Barbara, CA.

   July 26, 1982 - Morro Bay, CA to Morro Bay, CA. (Cape Wash)

   September 14, 1982 - Morro Bay, CA to Morro Bay, CA. (Cape Hedge)

10. Chief Scientists:

    Santa Barbara Channel - Barry Keller (UCSB)

    Santa Maria Basin - Anne Trehu and Bruce Ambuter (USGS)

11. Scientific party:
    Santa Barbara - Barry Keller (UCSB), Bill Prothero (UCSB), several UCSB students, Anne Trehu (USGS), Bruce Ambuter (USGS).

    Santa Maria Basin - Ray Davis (USGS)

12. Purpose of cruise:

From July 14 to July 17, the OBIP group (Bruce Ambuter, Ray Davis and Anne Trehu) participated in a seismic refraction experiment in the Santa Barbara Channel with Barry Keller and Bill Prothero of the Un. of California at Santa Barbara. The experiment was conducted from the R/V Ellen B. Scripps. Explosive shots (TOVEX) of up to 240 lbs. were used as sources. Two U.S.G.S. ocean bottom seismometers were deployed, one of which recorded

data. The shots were also recorded by permanent and temporary land stations. A paper with preliminary results from this experiment will be presented at the Fall, 1982 AGU meeting.

We had originally planned to conduct a seismic refraction experiment across the Santa Maria Basin on July 18-20, immediately after the Santa Barbara Channel experiment. The objectives of this experiment were to calibrate the permanent land based seismic array for locating offshore earthquakes and to extend a refraction line which was shot across central California by Walter Mooney of the Office of Earthquake Research. Although we left Santa Barbara with permits covering both experiments, a last minute uproar by the Morro Bay, Ca., fishermen led to the California Fish and game officials to suspend the permit on Friday afternoon, July 17. Because of ship scheduling constraints, this action effectively cancelled the experiment.

On July 26, six OBIP were deployed in an event detecting mode on the seismically active Santa Lucia Bank at the southwest margin of the Santa Maria Basin in order to moniter the seismicity. All six instruments were successfully recovered on September 14. Four of the instruments recorded data and we are in the process of transcribing this data into a computer-compatible format. For this experiment, both deployment and recovery were conducted, at no expense to the U.S.G.S., from U.S. Coast Guard cutters CAPE WASH and CAPE HEDGE stationed in Morro Bay, Ca.

13. Navigation techniques: LORAN C

14. Scientific equipment exployed:

Santa Barabara Channel: 2 USGS Ocean Bottom Instrument Packages (seismometers); 34 explosive charges.

Santa Maria Basin: 6 USGS OBIPs.

15. a. 6 days

b.-

c. Santa Barbara Channel - 37 stations
Santa Maria Basin - 6 stations

d.-

e. Santa Barbara Channel - see Table 1 and Figure 1.

Santa Maria Basin - see Table 2 and Figure 2.

16.-

TABLE 1.

SHOT	SHOT TIME ON BOTTOM Z	LAT	LON	WATER DEPTH meters	REMARKS
	16 JULY 82				
1	0044 42.98	34° 16.3	119° 40.4	187	SANTA BARBARA CHANNEL
2	0100 02.02	34 15.9	119 40.2	185	
3	0156 11.25	34 14.6	119 44.6	183	
4	0233 14.53	34 14.9	119 49.2	366	
5	0251 18.96	34 13.6	119 49.3	384	
6	0313 17.11	34 12.3	119 49.1	401	
7	1300 48.09	33 36.6	119 34.9	1803	SOUTH of SANTA CRUZ ISLAND
8	1320 13.47	33 37.8	119 35.1	1829	
9	1340 13.35	33 39.2	119 35.4	1844	
10	1400 15.77	33 40.5	119 35.2	1860	
11	1420 15.29	33 41.8	119 34.7	1875	
12	1440 15.02	33 43.4	119 34.6	1873	
13	1500 17.27	33 44.1	119 34.8	1873	
14	1520 14.51	33 46.0	119 34.4	1866	
15	1540 14.57	33 47.9	119 34.0	1836	
16	1600 12.42	33 49.2	119 34.6	1692	
17	1620 14.58	33 49.9	119 35.6	1463	
18	1640 10.27	33 51.0	119 35.7	1436	
19	1700 14.44	33 51.8	119 35.9	1299	
20	1720 14.44	33 53.0	119 35.8	1189	
21	1740 16.26	33 53.2	119 35.8	1152	WEAK-LESS THAN WHOLE CHARGE
22	1800~28?	33 54.1	119 35.6	1061	SHOT BREAK MISSED
23	1820 11.13	33 55.0	119 35.1	1057	
24	1840 11.81	33 55.9	119 34.5	863	
25	2000 12.65	34 4.1	119 27.7	82	ANACAPA PASSAGE
26	2020 9.83	34 4.3	119 26.8	110	
27	2040 14.19	34 4.1	119 25.3	119	
28	2100 14.24	34 4.3	119 23.9	179	
29	2240 11.71	34 9.8	119 39.1	302	SANTA BARBARA CHANNEL
30	2300 14.49	34 10.7	119 39.3	278	
31	2320 14.97	34 12.1	119 39.2	234	
32	2340 13.05	34 13.6	119 39.8	134	
	17 JULY 82				
33	0000 13.66	34 13.1	119 41.3	234	
34	0020 15.41	34 12.8	119 43.6	216	

NOTE: SHOTS ARE NUMBERED CHRONOLOGICALLY AS PERFORMED.

TABLE 2. OBIP deployment sites in the SANTA MARIA BASIN.

OBIP id	latitude	longitude	data recovery
1-A	34° 44.60′N	121° 28.00′W	11 days, 8 hours
2-A	34° 39.30′N	121° 18.89′W	10 days, 10 hours
8-A	34° 40.11′N	121° 28.08′W	4 days, 8 hours
1-C	34° 50.80′N	121° 19.47′W	no data
5-C	34° 45.72′N	121° 13.19′W	48 days
6-C	34° 44.60′N	121° 22.00′W	no data

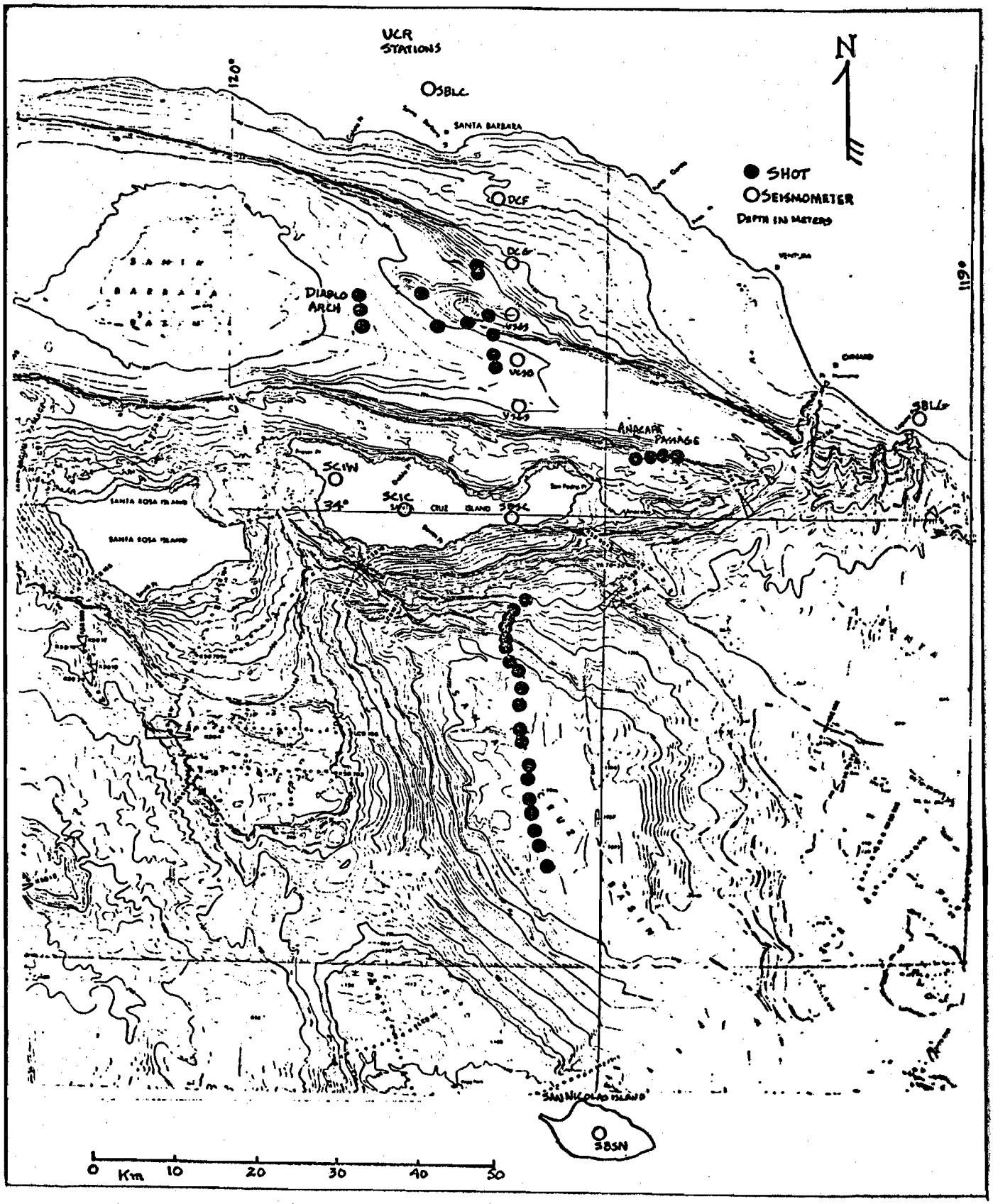

FIGURE 1. LOCATION OF 1982 UCSB
LAND-SEA SEISMIC REFRACTION EXPERIMENT

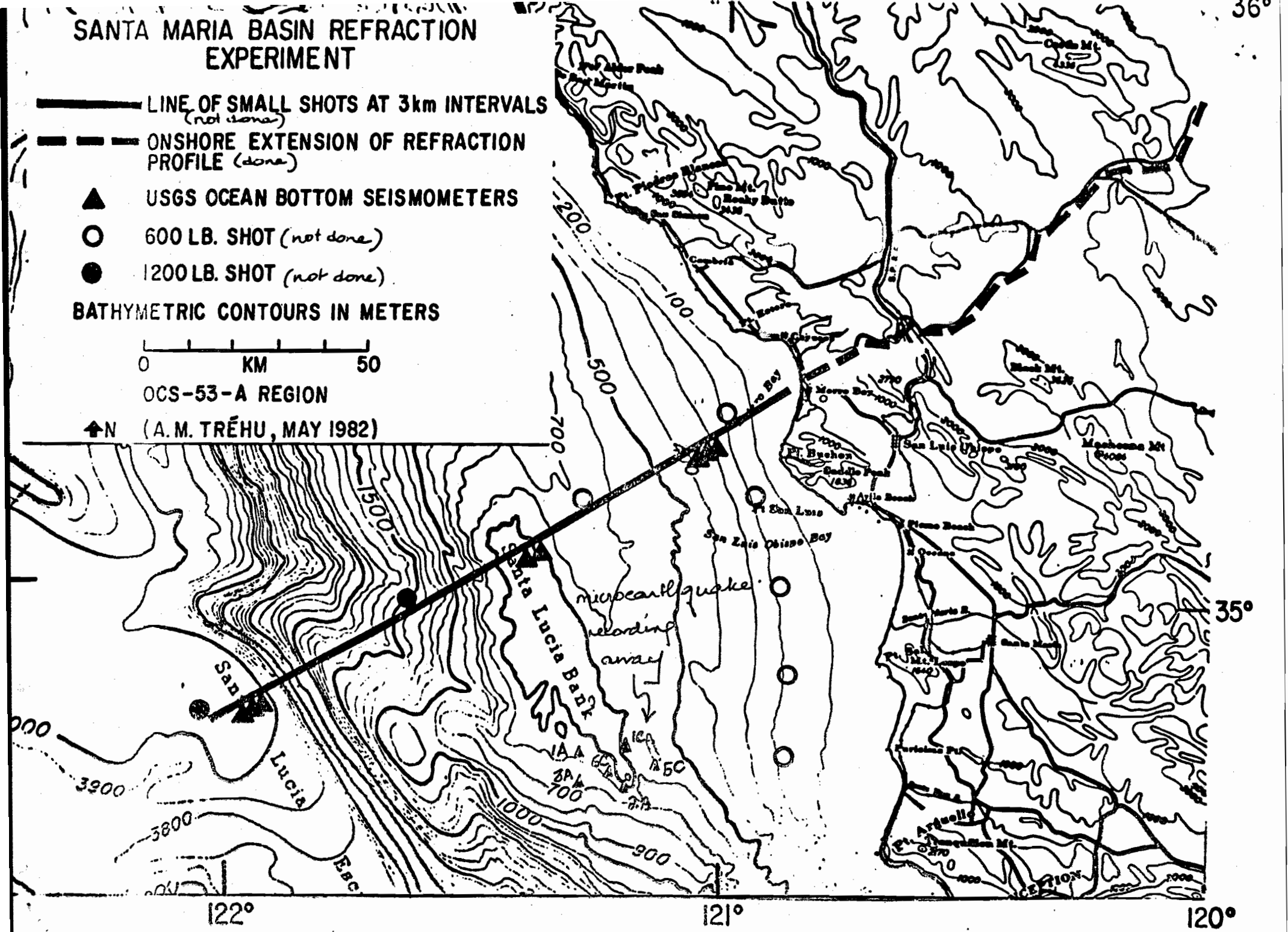
SANTA MARIA BASIN REFRACTION EXPERIMENT
LINE OF SMALL SHOTS AT 3km INTERVALS (not done)
ONSHORE EXTENSION OF REFRACTION PROFILE (done)
USGS OCEAN BOTTOM SEISMOMETERS
600 LB. SHOT (not done)
1200 LB. SHOT (not done)
BATHYMETRIC CONTOURS IN METERS
0 KM 50
OCS-53-A REGION
N (A.M. TRÉHU, MAY 1982)
36°
35°
122°
121°
120°
Santa Lucia Bank
San Luis Obispo Bay
San Luis Obispo
Morro Bay
Pt. San Luis
Pt. Buchon
Saddle Peak
Avila Beach
Pismo Beach
Oceano
Santa Maria R.
Santa Maria
Pt. Sal
Mt. Lospe
Purisima Pt.
Pt. Arguello
Tranquillon Mt.
Black Mt.
Machesna Mt
Cambria
Rocky Butte
Pine Mt.
Pt. Piedras Blancas
Cuyucos
Santa Lucia
Eac
microearthquake recording away
1A
3A
1C
5C
200
100
500
700
1500
1000
900
3900
3800

figure 2