Vancouver Island Earthquake
By Tom Irvine

A magnitude 6.7 earthquake occurred 116 miles SSW of Point Hardy, British Columbia, Canada, on November 2.

The focal point was near the three-way intersection of the Explorer, Juan de Fuca, and Pacific Plates. This point is located on the "Pacific Ring of Fire."

The focal point was far enough from Vancouver Island that no injuries or property damage occurred.

I captured the seismic waveform on my horizontal Lehman seismometer in Mesa, Arizona. The time history is shown in Figure 1.

The seismometer is oriented so that its sensitive axis is pointed toward the Northwest (and alternately the Southest). This was a optimum position for recording the Vancouver Island quake.

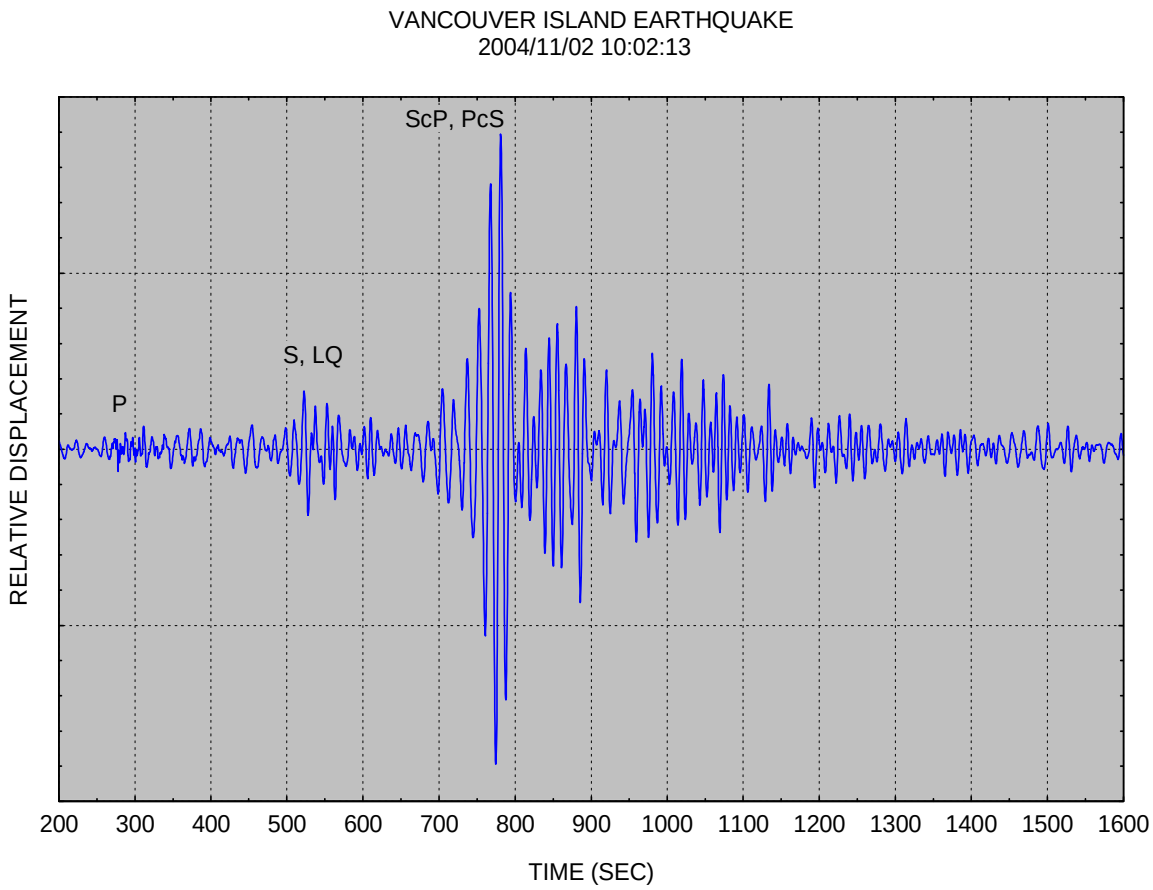
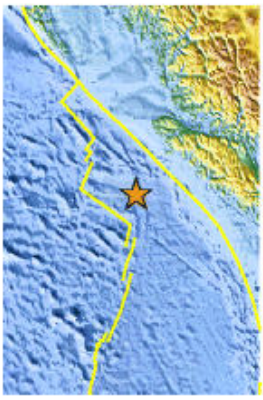


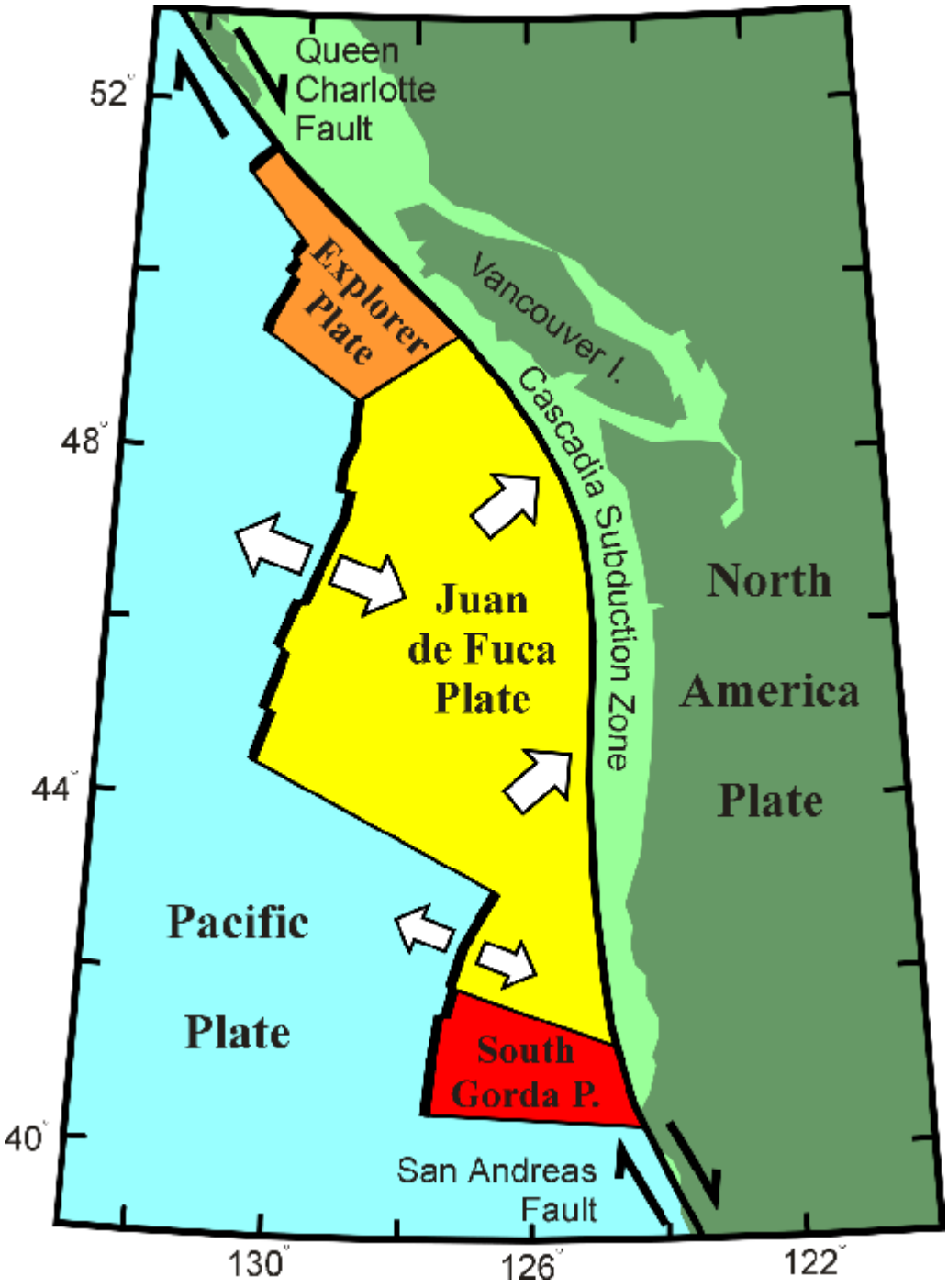
Figure 1.

The time scale is adjusted so that the earthquake occurs at time zero. The P-wave reached Mesa, Arizona 276 seconds later.

This trace has the best signal-to-noise ratio of all the quakes that I have recorded so far.



Magnitude	**6.5**
Date-Time	**Tuesday, November 2, 2004 at 10:02:13 (UTC)** = Coordinated Universal Time **Tuesday, November 2, 2004 at 2:02:13 AM** = local time at epicenter Time of Earthquake in other Time Zones
Location	49.261°N, 128.874°W
Depth	10 km (6.2 miles) set by location program
Region	**VANCOUVER ISLAND, CANADA REGION**
Distances	186 km (116 miles) SSW (212°) from **Port Hardy, BC, Canada** 275 km (171 miles) WSW (254°) from **Campbell River, British Columbia, Canada** 327 km (203 miles) WNW (289°) from **Neah Bay, WA** 410 km (255 miles) WNW (284°) from **Saanich, British Columbia, Canada** 417 km (259 miles) W (272°) from **Vancouver, British Columbia, Canada**
Location Uncertainty	horizontal +/- 5.1 km (3.2 miles); depth fixed by location program
Parameters	Nst=165, Nph=165, Dmin=403.6 km, Rmss=1.16 sec, Gp=140°, M-type=teleseismic moment magnitude (Mw), Version=7
Source	USGS NEIC (WDCS-D)


Queen
Charlotte
Fault
52°
Explorer
Plate
Vancouver I.
Cascadia Subduction Zone
48°
Juan
de Fuca
Plate
North
America
Plate
44°
Pacific
Plate
South
Gorda P.
40°
San Andreas
Fault
130°
126°
122°

DATE-(UTC)-TIME LAT LON DEPTH MAG Q COMMENTS
2004/11/02 10:02:13 49.26N 128.87W 10.0 6.5 US:
VANCOUVER ISLAND, CANADA
Expected 20s period surface wave amplitude
[2.14E+02 µm] [6.73E+01 µm/s]
Expected 1s period body wave amplitude
[2.45E+00 µm] [1.54E+01 µm/s]

delta (deg)	azimuth (degrees clockwise from north) eq-to-station	station-to-eq
20.29	135.1	326.5

#	code	travel time(s)	arrival time dy	hr	mn	sec
1	P	275.84	0	10	6	48
2	Pn	277.83	0	10	6	50
3	pP	278.68	0	10	6	51
4	sP	280.07	0	10	6	53
5	pPn	280.55	0	10	6	53
6	P	280.72	0	10	6	53
7	sPn	281.97	0	10	6	54
8	pP	283.74	0	10	6	56
9	sP	285.09	0	10	6	58
10	PnPn	292.56	0	10	7	5
11	S	504.30	0	10	10	37
12	S	506.86	0	10	10	39
13	Sn	507.28	0	10	10	40
14	S	507.87	0	10	10	40
15	sS	509.04	0	10	10	42
16	sS	511.23	0	10	10	44
17	sSn	511.36	0	10	10	44
18	S	511.79	0	10	10	44
19	sS	512.03	0	10	10	45
20	pS	515.21	0	10	10	48
21	sS	516.93	0	10	10	49
22	SnSn	523.34	0	10	10	56
23	PcP	528.85	0	10	11	1
24	ScP	745.29	0	10	14	38
25	PcS	746.55	0	10	14	39
26	ScS	968.19	0	10	18	21
27	PKiKP	997.46	0	10	18	50
28	pPKiKP	1000.91	0	10	18	53
29	sPKiKP	1002.16	0	10	18	55
30	SKiKP	1208.61	0	10	22	21
31	PKKPdf	1906.55	0	10	33	59
32	SKKPdf	2117.68	0	10	37	30

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33  PKKSdf    2118.94   0 10 37 31
34  SKKSdf    2330.04   0 10 41  3
35  P'P'df    2416.40   0 10 42 29
36  P'P'ab    2565.59   0 10 44 58
37  S'S'df    3265.07   0 10 56 38
38  LQ         514.98   0 10 10 47
39  LR         571.56   0 10 11 44
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