ALASKA CRUISE REPORT
HIGH RESOLUTION SINGLE CHANNEL SEISMIC SURVEY
CRUISE TO NORTHERN GULF OF ALASKA ON THE R/V ALPHA HELIX
28 JUNE 1995 TO 09 JULY 1995

Rice University cruise participants: David A. Mucciarone; PI John Milliman

The following is a technical summary for the first leg of the Alaska cruise aboard the R/V *Alpha Helix* beginning on 6/28 and ending on 7/9/95. The northern Gulf of Alaska single channel high resolution survey was a joint project between the Virginia Institute of Marine Science (VIMS) of William and Mary and Rice University. The cruise incorporated single channel and side scan sonar.

Seismic acquisition was digital using the Elics digital acquisition system, D2x. Seismic data collected in compressed Elics format and stored on 2.3 GB Exabyte tapes. Navigation was GPS acquired every 5 seconds (every shot) and input directly to the Elics system through the RS232 serial port. Energy sources were 1 SSI S-15 in^3 water gun and a 5 in^3 Bolt air gun in conjunction with a Benthos 10 hydrophone single channel 3 m streamer. Air pressure supplied by 20 scfm compressor. On the first leg of the cruise 47 seismic lines were collected. Ranging in area from Ressurection Bay to south of Yakutat Bay.

I did not participate on the second leg beginning on 7/9/95 ending on 7/18/95, however, the Elics D2x seismic acquisition system remained on board the R/V *Alpha Helix* to collect seismic using the Bolt 5 in^3 and Bolt 20 in^3 air gun as the energy source and Benthos streamer. During the second leg an additional 43 seismic lines were collected, mostly north of Yakutat Bay.

Seismic acquisition:

Parameters	S-15/B-5/B-20(ci)
Shooting Interval =	4000 - 5000 ms
Sampling Frequency =	3000 & 5000 Hz
Recording Length =	2048 ms
Energy =	1500 psi
High Pass Filter Digital =	200 Hz
Low Pass Filter Digital =	2000 Hz
Signal Amplification =	72 db
Source distance from ship =	18.3 m
Source depth =	0.6 m
Distance to 1st phone from ship =	27.4 m
Distance from source to cable =	4.6 m
Distance from source to 1st phone =	m (ms)

LEG 1 - Seismic File Statistics for single channel lines using S-15 and B-5 with 10 phone 3 m streamer:

Line name	Dist. nm	Shots	Time	Size MB	SI sec.	Rate kts	Coordinates	Source
AH95-01	3.93	742	0:44	1.18	4	4	60°05.61'N 149°22.76'W	S-15
							60°01.70'N 149°21.62'W	
AH95-01B	11.05	2450	2:39	3.91	4	4	60°01.56'N 149°21.57'W	S-15
							59°50.94'N 149°27.68'W	
AH95-02	5.85	3538	3:56	11.08	4	4	59°50.95'N 149°30.08'W	S-15
	1.88	@1301					59°56.27'N 149°25.16'W	
	8.04	@1989					59°58.03'N 149°22.33'W	
							60°05.88'N 149°25.94'W	
AH95-03	3.06	1858	2:03	5.81	4	4	60°05.71'N 149°25.74'W	S-15
	2.54	@750					60°03.57'N 149°20.97'W	
	2.34	@1298					60°02.01'N 149°24.98'W	

Line name	Dist. nm	Shots	Time	Size MB	SI sec.	Rate kts	Coordinates	Source
							60°01.05'N 149°20.75'W	
AH95-06	4.45	992	1:06	3.11	4	4	59°52.25'N 149°24.90'W	S-15
							59°55.39'N 149°31.22'W	
AH95-07	5.91	1243	1:22	3.89	4	4	59°55.35'N 149°31.50'W	S-15
							59°49.50'N 149°30.20'W	
AH95-8A	11.30	2686	3:00	8.41	4	4	59°38.77'N 148°21.81'W	S-15
							59°47.62'N 148°07.77'W	
AH95-09	30.03	4998	5:33	25.89	4	4	60°29.07'N 147°16.28'W	S-15
							60°50.38'N 146°58.61'W	
AH95-10	20.14	4779	5:24	24.75	4	4	60°51.19'N 146°58.99'W	S-15
							60°32.10'N 146°46.16'W	
AH95-11	10.81	2458	2:43	12.73	4	4	60°32.12'N 146°45.65'W	S-15
							60°26.46'N 146°27.24'W	
AH95-12	4.09	1244	1:23	6.44	4	4	60°36.49'N 146°27.22'W	S-15
							60°32.66'N 146°23.11'W	
AH95-13	10.03	2267	2:42	11.85	4	4	60°24.15'N 146°59.94'W	S-15
							60°27.18'N 146°40.26'W	
AH95-14	9.23	1757	1:54	9.30	4	4	60°27.26'N 146°40.16'W	S-15
							60°36.16'N 146°45.05'W	
AH95-15	8.77	1920	2:08	9.93	4	4	60°36.44'N 146°45.41'W	S-15
							60°34.60'N 147°02.56'W	
AH95-16	9.35	1872	2:06	9.70	4	4	60°41.24'N 147°07.68'W	S-15
							60°43.04'N 146°49.32'W	
AH95-17	9.77	1655	1:50	8.57	4	4	60°47.74'N 146°57.97'W	S-15
							60°47.30'N 147°17.52'W	
AH95-18	7.47	1505	1:40	7.88	4	4	60°47.39'N 147°17.63'W	S-15
							60°50.80'N 147°04.34'W	
AH95-19	8.95	1865	2:05	9.66	4	4	60°47.56'N 146°58.35'W	S-15
							60°38.80'N 146°54.60'W	
AH95-19B	4.79	1008	3:30	3.70	4	4	60°38.80'N 146°54.36'W	S-15
							60°34.13'N 146°52.22'W	
AH95-19C	2.12	373	0:31	1.95	4	4	60°33.80'N 146°52.15'W	S-15
							60°31.72'N 146°51.34'W	
AH95-19D	18.54	3430	4:45	17.77	4	4	60°32.36'N 146°51.57'W	S-15
							60°14.18'N 146°44.33'W	
AH95-20A	9.08	1384	2:03	7.17	4	4	60°14.08'N 146°44.15'W	S-15
							60°08.25'N 146°30.22'W	
AH95-21	10.14	1586	2:12	8.23	4	4	60°19.96'N 146°35.82'W	S-15
							60°15.54'N 146°54.07'W	
AH95-21A	16.94	2653	3:39	13.75	4	4	60°15.40'N 146°54.26'W	S-15
							60°02.88'N 147°17.09'W	
AH95-22	17.22	3165	4:24	16.39	4	4	60°11.50'N 146°41.51'W	S-15
							60°18.04'N 146°09.64'W	
AH95-23	52.35	8455	11:14	43.81	4	4	60°18.06'N 146°09.48'W	S-15
							60°02.98'N 144°29.27'W	
AH95-25	33.47	5623	7:47	29.13	4	4	60°02.91'N 144°29.19'W	S-15
							59°40.01'N 145°18.02'W	
AH95-26	16.97	3127	4:20	16.20	4	4	59°39.86'N 145°17.98'W	S-15
							59°39.99'N 144°44.05'W	
AH95-26B	30.82	5136	7:08	26.61	4	4	59°39.69'N 144°43.60'W	S-15
							59°31.97'N 143°43.92'W	
AH95-26C	3.83	636	0:39	3.29	4	4	59°31.95'N 143°43.89'W	S-15
							59°30.91'N 143°36.50'W	

Line name	Dist. nm	Shots	Time	Size MB	SI sec.	Rate kts	Coordinates	Source
AH95-27C	23.09	4190	5:49	21.71	4	4	59°30.99'N 143°36.33'W	S-15
							59°32.95'N 142°50.30'W	
AH95-27D	27.79	5136	7:28	27.79	4	4	59°32.90'N 142°49.95'W	S-15
							59°14.62'N 142°00.18'W	
AH95-27E	16.78	5136	4:30	16.78	4	4	59°14.62'N 142°00.18'W	S-15
							59°03.28'N 141°32.58'W	
AH95-27F	24.17	5136	6:29	24.17	4	4	59°03.26'N 141°32.52'W	S-15
							58°48.14'N 140°52.98'W	
AH95-27G	13.17	5136	3:39	13.62	4	4	58°48.12'N 140°52.90'W	S-15
							58°40.02'N 140°32.12'W	
AH95-27H	24.83	5136	6:19	23.62	4	4	58°40.00'N 140°32.11'W	S-15
							58°30.28'N 139°46.30'W	
AH95-28	15.82	5136	3:55	14.65	4	4	58°30.00'N 139°44.94'W	S-15
							58°38.86'N 139°18.72'W	
AH95-28B	1.02	5136	0:15	0.95	4	4	58°38.87'N 139°18.60'W	S-15
							58°39.47'N 139°16.93'W	
AH95-28C	10.22	5136	2:30	9.35	4	4	58°39.35'N 139°16.90'W	S-15
							58°45.07'N 138°59.95'W	
AH95-28D	11.69	5136	2:54	10.80	4	4	58°45.07'N 138°59.95'W	S-15
							58°55.32'N 138°48.70'W	
AH95-28E	11.71	5136	3:17	11.22	4	4	58°55.81'N 138°48.18'W	S-15
							59°06.08'N 138°36.90'W	
AH95-29	1.73	1765	2:29	26.61	4	4	59°05.91'N 138°36.83'W	S-15
	7.59	@342					59°04.52'N 138°38.90'W	
							59°08.20'N 138°52.18'W	
AH95-29B	7.25	1402	1:57	26.61	4	4	59°00.70'N 138°26.32'W	S-15
							59°04.52'N 138°38.66'W	
AH95-30	1.75	322	0:27	26.61	4	4	59°08.24'N 138°52.26'W	S-15
							59°06.67'N 138°53.50'W	
AH95-31	15.17	2598	3:37	26.61	4	4	59°06.65'N 138°53.48'W	S-15
							58°58.92'N 138°27.37'W	
AH95-32	1.74	293	0:25	26.61	4	4	58°58.96'N 138°27.30'W	S-15
							59°00.63'N 138°26.32'W	
AH95-33	13.04	2139	1:57	26.61	4	4	59°30.80'N 139°57.46'W	B-5
							59°37.35'N 140°20.03'W	

S-15 in^3 water gun statistics:

S-15 Total Shots Recorded = 118,860
S-15 Total Miles Recorded = 638.52 nm
S-15 Total Hours Recorded = 155.47 hrs
S-15 Total Data Recorded = 580.85 mb

Rebuild S-15 after 101,283 shots due to main piston o-ring failure.
Main piston shaft o-ring and bearing replaced after 46,253 shots.

B-5 in^3 air gun statistics:

B-5 Total Shots Recorded = 2,139
B-5 Total Miles Recorded = 13.04 nm
B-5 Total Hours Recorded = 1.95 hrs
B-5 Total Data Recorded = 26.61 mb

LEG 2 - Seismic File Statistics for single channel lines using B-5 and B-20 with 10 phone 3 m streamer:

Line name	Dist. nm	Shots	Time	Size MB	SI sec.	Rate kts	Coordinates	Source
AH95-34	5.89	1155	1:36	5.98	5	4	59°44.68'N 139°58.32'W	B-5
							59°46.70'N 139°47.26'W	
AH95-35	4.11	640	0:53	3.31	5	4	59°46.82'N 139°47.10'W	B-5
							59°50.00'N 139°41.89'W	
AH95-36	4.14	819	2:03	4.24	5	4	59°50.05'N 139°41.62'W	B-5
							59°46.56'N 139°46.07'W	
AH95-36A	5.13	985	1:22	5.10	5	4	59°46.51'N 139°46.16'W	B-5
							59°43.50'N 139°54.47'W	
AH95-37	2.46	446	0:38	2.31	5	4	59°43.53'N 139°54.59'W	B-5
							59°45.80'N 139°56.51'W	
AH95-38	12.76	2209	3:04	11.44	5	4	59°30.98'N 139°57.52'W	B-5
							59°36.47'N 140°20.95'W	
AH95-39	16.98	2984	4:09	15.46	5	4	59°46.60'N 142°50.60'W	B-5
							60°03.58'N 142°50.68'W	
AH95-40	16.19	2798	3:53	14.50	5	4	59°55.79'N 143°06.85'W	B-5
							59°58.39'N 142°34.88'W	
AH95-41	5.59	1050	1:27	5.44	5	4	59°55.56'N 141°34.27'W	B-5
							59°58.86'N 141°25.24'W	
AH95-41A	4.54	809	1:07	4.19	5	4	59°58.91'N 141°25.22'W	B-5
							60°02.06'N 141°18.68'W	
AH95-42	1.19	185	0:15	0.96	5	4	60°02.24'N 141°18.53'W	B-5
							60°01.91'N 141°20.81'W	
AH95-43	1.39	284	0:24	1.47	5	4	60°01.86'N 141°20.80'W	B-5
							60°01.16'N 141°18.39'W	
AH95-44	6.39	1388	1:55	7.19	5	4	60°01.19'N 141°18.40'W	B-5
							60°06.52'N 141°25.45'W	
AH95-45	0.79	139	0:12	1.00	5	4	60°06.60'N 141°25.59'W	B-5
							60°06.02'N 141°26.63'W	
AH95-46	1.68	424	0:36	2.20	5	4	60°05.95'N 141°26.57'W	B-5
							60°05.92'N 141°23.22'W	
AH95-47	4.66	1252	1:44	6.48	5	4	60°05.98'N 141°23.23'W	B-5
							60°08.76'N 141°30.70'W	
AH95-48	0.91	247	0:21	1.28	5	4	60°08.88'N 141°31.01'W	B-5
							60°08.05'N 141°30.25'W	
AH95-49	6.81	1358	1:53	7.04	5	4	59°57.50'N 141°31.90'W	B-5
							60°01.29'N 141°20.59'W	
AH95-50	2.49	847	1:10	4.39	5	4	60°01.31'N 141°20.55'W	B-5
							60°03.51'N 141°22.87'W	
AH95-51	1.71	378	0:33	1.96	5	4	60°03.58'N 141°22.89'W	B-5
							60°04.41'N 141°20.03'W	
AH95-52	1.88	500	0:42	2.59	5	4	60°04.51'N 141°19.93'W	B-5
							60°04.45'N 141°23.68'W	
AH95-53	2.72	980	1:22	5.08	5	4	60°04.47'N 141°23.81'W	B-5
							60°06.73'N 141°26.84'W	
AH95-53A	1.98	512	0:43	2.65	5	4	60°06.60'N 141°26.54'W	B-20
							60°08.15'N 141°28.29'W	
AH95-54	1.00	193	0:16	1.00	5	4	60°08.11'N 141°28.47'W	B-20
							60°08.11'N 141°30.48'W	
AH95-55	0.81	162	0:13	0.84	5	4	60°08.23'N 141°30.56'W	B-20
							60°08.89'N 141°31.50'W	

Line name	Dist. nm	Shots	Time	Size MB	SI sec.	Rate kts	Coordinates	Source
AH95-56	6.52	1596	2:13	8.27	5	4	59°36.33'N 144°34.72'W	B-5
							59°29.82'N 144°33.87'W	
AH95-57	22.76	3156	4:25	16.35	5	4	59°29.80'N 144°33.67'W	B-5
							59°49.92'N 144°54.93'W	
AH95-58	9.47	1431	2:00	7.41	5	4	59°49.88'N 144°55.31'W	B-5
							59°43.43'N 145°09.18'W	
AH95-59	4.25	705	0:58	3.65	5	4	59°43.38'N 145°09.23'W	B-5
							59°39.13'N 145°09.27'W	
AH95-60	12.02	2004	2:47	10.38	5	4	59°39.10'N 145°09.10'W	B-5
							59°44.73'N 144°47.85'W	
AH95-61	5.14	797	1:06	4.13	5	4	60°02.42'N 145°12.87'W	B-5
							60°07.27'N 145°09.48'W	
AH95-62	14.28	2213	3:04	11.47	5	4	60°07.36'N 145°09.49'W	B-5
							60°01.73'N 145°35.73'W	
AH95-63	10.05	1550	2:10	8.03	5	4	60°01.90'N 145°35.74'W	B-5
							60°11.19'N 145°28.05'W	
AH95-64	11.62	1628	2:15	8.44	5	4	60°11.30'N 145°28.16'W	B-5
							60°06.45'N 145°49.28'W	
AH95-65	3.34	496	0:42	2.57	5	4	60°06.50'N 145°49.46'W	B-5
							60°09.66'N 145°47.32'W	
AH95-65A	5.69	814	1:07	4.22	5	4	60°10.30'N 145°47.02'W	B-5
							60°15.66'N 145°43.23'W	
AH95-66	12.52	1717	2:23	8.90	5	4	60°15.67'N 145°43.45'W	B-5
							60°09.85'N 146°05.62'W	
AH95-67	6.34	1010	1:25	5.23	5	4	60°09.92'N 146°05.70'W	B-5
							60°16.25'N 146°06.57'W	
AH95-68	13.40	2111	2:54	10.94	5	4	59°56.55'N 147°16.09'W	B-5
							59°49.14'N 146°53.75'W	
AH95-69	10.83	1914	2:39	9.92	5	4	59°49.18'N 146°53.92'W	B-5
							59°43.48'N 147°12.34'W	
AH95-70	14.29	2046	2:51	10.60	5	4	59°43.36'N 147°17.51'W	B-5
							59°34.74'N 146°54.71'W	
AH95-71	14.80	2035	2:50	10.54	5	4	59°34.83'N 146°54.83'W	B-5
							59°23.04'N 147°12.73'W	
AH95-72	32.84	4665	6:28	24.17	5	4	59°13.24'N 147°30.11'W	B-5
							59°45.25'N 147°44.80'W	

B-5 in^3 air gun statistics:

B-5 Total Shots Recorded = 53,765
B-5 Total Hours Recorded = 75.6 hrs
B-5 Total Miles Recorded = 320.57 nm
B-5 Total Data Recorded = 278.83 mb

B-20 in^3 air gun statistics:

B-20 Total Shots Recorded = 867
B-20 Total Hours Recorded = 1.20 hrs
B-20 Total Miles Recorded = 3.79 nm
B-20 Total Data Recorded = 4.49 mb

LEG 1 CRUISE OUTLINE: 24 June to 09 July 1995

24 June 1995	1) Depart IAH at 1240 on United Airlines Flt. 729 to DEN (Denver) arrive 1340. Depart DEN at 1430 on UA Flt. 249 through Seattle (SEA) arrive Anchorage (ANC) at 1922. 2) Stayed at Holiday Inn downtown in Anchorage. 3) Picked up UA air cargo shipment and brought to Holiday Inn.
25 June 1995	1) Meet with John Milliman (PI at VIMS) at 0500. 2) Transport equipment from hotel to train station - load small equipment containers on train. Train departed at 0630 and arrived Seward at 1115 - transport people and gear to Seward Marine Science facility. 3) Rent truck in Anchorage to transport large equipment containers to Seward. Depart Anchorage via truck at 0800 and arrive Seward at 1040. Off loaded equipment in the Seward Marine Science facility. 4) Check into Seward Marine facility dorms at 1240.
26 June 1995	1) Load equipment on ship - R/V *Alpha Helix*. 2) Assemble S-15 water gun hose bundle and tow array. 3) Set up Compressor and test with Earl Young (WHOI).
27 June 1995	1) Assemble Elics digital acquisition system D2x. Test system with Litton gun controller and S-15. 2) Purchase BNC cable and connectors and make a signal and trigger line from computer room to seismic shack on fan-tail. 3) Help Earl unload WHOI seismic shack and stow equipment. 4) Assemble S-15 water gun to tow array. 5) Connected navigation - output string for Elics (4800,N,8,1), string output (Lat., Long ----- DD°MM.MMM'N DD°MM.MMM'W)
28 June 1995	1) Check out of Seward Marine Science facility dorms and board ship, R/V Alpha Helix at 0800. 2) Ship orientation meetings and safety drills. 3) Crank up equipment, over board gear at 1040 to test gear. 4) Begin collecting seismic data at 1146 L (1946 GMT) with line AH95-01 in Resurrection Bay. 5) Elics in Master mode, Sampling frequency = 3000 Hz, Bandwidth = 0 to 2000 Hz, Recording length = 2048, Shooting interval = 4 seconds, ADL gain = 12. Recording delay = 0 ms. Exception of line AH95-01 recording length = 1024. 5) Collected lines AH95-01, 01B, 02, 03, and 06. 6) End day with start of line AH95-07.
29 June 1995	1) Collecting S-15 water gun data. Began using EG&G Side Scan Sonar at 0025 - Model 270TD tow fish, Model 260TH plotter/recorder, and Model 370 tape unit. 2) Ended line AH95-07 at 0055 and pull all seismic gear at 0056 and head to Prince William Sound (PWS) at 0115. 3) Deployed seismic gear at 0630 and began AH95-8A in PWS. 4) Complete lines AH95-07 through AH95-09. 5) Lines AH95-01 through AH95-8A collect with Sampling frequency = 3000 Hz. 6) Beginning with AH95-09 using Sampling frequency = 5000 Hz. 7) Ended day with continuing line AH95-10.
30 June 1995	1) Continue shooting line AH95-10 in PWS. 2) Pull gear at 0550 for coring, ending with line AH95-12.

3) Back up lines AH95-01 through E9417-12 on Exabyte tape on INDEX#1 (107.2 MB data).
4) Strip navigation data and back up navigation data on diskette and on Exabyte tape on INDEX#1.
5) Deploy seismic gear at 1245 and begin line AH95-13 in PWS.
6) Pull gear again for coring at 1930, finished lines AH95-13 through AH95-15.

01 July 1995

1) Deployed seismic gear at 0048 and began shooting line AH95-16 at 0100 in PWS.
2) Pulled seismic gear at 0730. Problem with compressor pop-off valve and blow down block. Begin repairs on compressor at 1400.
3) Completed lines AH95-16 through AH95-18.

02 July 1995

1) Completed compressor repairs at 0120. Deployed seismic gear at 0203 and began line AH95-19. Continued having compressor problems related to pop-off valve during lines AH95-19B and AH95-19C, stopping periodically to make repairs and adjustments.
2) S-15 water gun also beginning to miss fire, bad during lines AH95-19B and AH95-19C. Changed Shooting interval to 5000 ms to help compressor work more efficiently.
3) Pulled gear at 0840 to make compressor repairs - located another leak on compressor, changed fittings and main air line to blow down block.
4) Deployed seismic gear at 0950 to begin line AH95-19D, and collected line AH95-20A. Pulled gear at 1650 to make repairs on S-15 water gun and for coring and hydrocasts.
5) Break down S-15 to locate source of leak - replaced worn out piston shaft bearing and o-ring, greased other seals in gun and re-assembled. S-15 ready at 1755. Bearing lasted approximately 47,000 shots.
6) Back up lines AH95-13 through E9417-20A on Exabyte tape on INDEX#2 (98.3 MB data).
7) Strip navigation data and back up navigation data on diskette and on Exabyte tape on INDEX#2.
8) Collected lines AH95-13 through AH95-20A.

03 July 1995

1) Deployed seismic gear at 0020 to begin line AH95-21 at 0029.
2) Pulled gear at 0622 ending line AH95-21A, finished with PWS, head to another location.
3) Deployed seismic gear at 0830 to begin line AH95-22 outside of PWS southeast of Montaque Is. and Hinchinbrook Is. heading east towards Kayak Is.
4) Finished line AH95-22 and began line AH95-23.

04 July 1995

1) Continuing line AH95-23.
2) Pulled gear at 1300 to make a hydrocast at the end of line AH95-26.
3) Re-deployed seismic gear at 1320 to begin line AH95-26B at 1324.
4) Deleted lines backed up to tape from the hard drive to make more space.
5) Work on VIMS side scan sonar unit. Problems with continuity in cable - repairs made, cable re-sealed, and tested.
6) Finished line AH95-26B and 26C. Ended day shooting line AH95-27C.

05 July 1995

1) Continue shooting line AH95-27C. Compressor and S-15 working well, no down time.
2) Worked up stats on gun and seismic lines.
3) Shot lines AH95-27C, 27D, 27E, and 27F. Ended day shooting line AH95-27G.
4) Worked on VIMS side scan sonar deck cable, located a problem in connector.

06 July 1995

1) Continue shooting line AH95-27G.
2) Pulled gear at 0758 at end of line AH95-27H to make repairs to S-15 water gun.
3) Rebuild, clean, and grease S-15 water gun - main piston o-ring failure after approximately 102,000 shots. Made compressor pop-off valve repairs.
4) Back up lines AH95-21 through E9417-27H on Exabyte tape on INDEX#3 (287.7 MB data).
5) Strip navigation data and back up navigation data on diskette and on Exabyte tape on INDEX#3.
6) Deployed seismic equipment at 1035 and began line AH95-28.
7) Pulled gear at 1430 for coring and hydrocasts.
8) Deployed seismic gear at 1850 to begin AH95-28B at 1852.
9) Finished lines AH95-28B and 28C. Ended day shooting line AH95-28D.

07 July 1995

1) Continue shooting line AH95-28D.
2) Pulled gear at 0055 at end of line AH95-28D for coring and hydrocasts.
3) Re-deployed seismic gear at 0355 to begin line AH95-28E.
4) Pulled gear at 1620 at end of line AH95-29B. Prior to pulling gear shot lines AH95-29, 30, 31, and 32.
5) Set up WHOI 5 in^3 Bolt air gun with Earl Young to replace S-15 water gun. Attached gun to float.
6) Deployed Bolt 5 in^3air gun with same 10 hydrophone 3 m long Benthos streamer used with S-15 water gun. Began line AH95-33 at 2324.

08 July 1995

1) Continue shooting line AH95-33 using Bolt 5 in^3air gun.
2) Break down and pack up S-15 water gun, tow array, jumper, and hose bundle for shipment to Houston minus hose bundle. Stow equipment staying on ship.
3) Side scan sonar deployed and working well after cable repairs.
4) Back up lines AH95-28 through E9417-33 on Exabyte tape on INDEX#4 (93.0 MB data).
5) Strip navigation data and back up navigation data on diskette and on Exabyte tape on INDEX#4.
6) Back up navigation data on Exabyte tape (AH95-01 to AH95-33) on INDEX#5 (5.0 MB).
7) Arrive in Yakutat and set anchor at 0900. Depart R/V Alpha Helix at 0930.
8) Arrive at Yakutat Airport at 1030. Depart at 1130 on Alaska Airlines Flt. 61 to ANC.
9) Arrive in ANC at 1330. Stayed in Holiday Inn downtown.

09 July 1995

1) Check out of hotel at 0545 and head to Anchorage Airport.
2) Depart ANC at 0700 on UA Flt. 1894 to Chicago (ORD) arrive 1553.
3) Depart ORD at 1844 on UA Flt. 1431 to IAH arrive 2110.
4) Arrive Home at 2305.

LEG 2 CRUISE OUTLINE: 09 July to 18 July 1995

09 July 1995

1) Shot lines AH95-34, AH95-35, AH95-36, AH95-36A, AH95-37, and began shooting line AH95-38 using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer.

10 July 1995

1) Finish shooting line AH95-38 and began shooting line AH95-39. Lines shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer.

11 July 1995

1) Finish shooting line AH95-39. Shot lines AH95-40, AH95-41, and began line AH95-41A. Lines shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer. Moved Bolt 5 in^3air gun from beam to midship on the fantail.

12 July 1995	1) Finish shooting line AH95-41A. Shot lines AH95-42, AH95-43, AH95-44, AH95-45, AH95-46, AH95-47, AH95-48, and began line AH95-49. Lines shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer.
13 July 1995	1) Finish shooting line AH95-49. Shot lines AH95-50, AH95-51, AH95-52, and AH95-53. Lines through AH95-53 shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer. 2) Changed over to the Bolt 20 in^3air gun and same Benthos 3m 10 phone streamer for lines AH95-53A, AH95-54, AH95-55. 3) Switched back to the Bolt 5 in^3air gun and same Benthos 3m 10 phone streamer. Shot lines AH95-56, AH95-57, and began line AH95-58.
14 July 1995	1) Finish shooting line AH95-58. Shot lines AH95-59, AH95-60, AH95-61, AH95-62, and begin shooting line AH95-63. Lines shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer.
15 July 1995	1) Finish shooting line AH95-63. Line shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer.
16 July 1995	1) Shot lines AH95-64, AH95-65, AH95-65A, AH95-66, AH95-67, AH95-68, and began line AH95-69. Lines shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer. Problems with B-5 in^3air gun.
17 July 1995	1) Finish shooting line AH95-69. Shot lines AH95-70, AH95-71, and began line AH95-72. Lines shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer.
18 July 1995	1) Finish shooting line AH95-72. Line shot using Bolt 5 in^3air gun and Benthos 3m 10 phone streamer. 2) Pack up Rice University digital seismic equipment and ship air cargo to Houston, TX and arrived at IAH on 20 July 1995.