

Appendixes

Appendix 1. OP_STAT (Operations Statistics)

India National Gas Hydrate Program Expedition NGHP-01

Summary of Operational Statistics

(28 April 2006 to 19 August 2006)

Expedition Summary

	<u>Days</u>	<u>Percent</u>
Total Days in Port	19.0	16.8%
Total Days In Transit	24.2	21.3%
Total Days on Site	<u>70.4</u>	<u>62.0%</u>
Total Days	113.5	100.0%

Breakdown of Operating Days On-Site

	<u>Days</u>	<u>Percent</u>
Drilling/Coring & Tripping	38.46	54.7%
Logging (LWD/MWD)	13.04	18.5%
Logging (Wireline)	12.46	11.0%
In Situ Temperature Tools (APC-3, APC-T, DVTP)	2.22	2.0%
Reentry Cone/Casing/Cementing	0.00	0.0%
Hole Trouble/Remedial Action	0.15	0.2%
Lost Time (WOW/Ice or Breakdown)	0.65	0.9%
Misc/Other (hole displacement, DP moves, etc.)	3.40	4.8%

Other Expedition Statistics

Total Distance Traveled (Nm):	5351.9
Average Transit Speed (knots):	9.5
Total Number of Sites:	21
Total Number of Holes:	39
Total No. of Cores Attempted:	494
Total Interval Cored (meters):	3618.4
Total Core Recovery (meters):	2847.01
Percent Core Recovery:	78.7%
Total Pressure Cores Attempted:	97
Cores Recovered Under Pressure:	49
Percent Cores Rec'd Under Press:	50.5%
Total Interval Drilled (meters):	5810.6
Total Penetration (meters):	9257.8
Max Penetration (meters):	718.0
Min Penetration (meters):	32.6

Dynamic Positioning (DP) Statistics

No. Moves Between Sites in DP Mode:	4
Nautical Miles Moved In DP Transit:	11.9
Total VIT Deployments	1
No. of Positioning Beacons Used:	2
No. of Beacon Deployments:	26
No. of Lost Beacons:	0
Total Number of Reentries:	0
Max Sea Floor Depth (m to DES):	2674.2
Min Sea Floor Depth (m to DES):	906.6

India National Gas Hydrate Program Expedition NGHP-01

Record of Time-On-Site

LEG NO.	SITE NO.	HOLE NO.	ACTIVITY	24-HR TIME	DATE	HOURS ON-HOLE	TOTAL HOURS ON-SITE	TOTAL DAYS ON-SITE	COMMENTS
Mumbai, India - Port Call (Mobilization Port - ODL Crew Change)									
1	KKGGH-01	NGHP-01-01A	Start Hole 01A	0645	6-May-06				
			End Hole/End Site	0345	10-May-06	93.00	93.00	3.9	Transit to Port
Chennai I Port Call									
2	KGGH03-A	NGHP-01-02A	Start Hole 02A	0745	20-May-06				
			End Hole	0300	21-May-06	19.25			DP offset
		NGHP-01-02B	Start Hole 02B	0300	21-May-06				
			End Hole	0315	22-May-06	24.25	43.50	1.8	Transit
	GDGH05-A	NGHP-01-03A	Start Hole 03A	0415	22-May-06				
			End Hole	1015	23-May-06	30.00			Transit
	KGGH01	NGHP-01-04A	Start Hole 04A	1130	23-May-06				
			End Hole	1500	24-May-06	27.50	27.50	1.1	Transit
	KGGH02-A	NGHP-01-05A	Start Hole 05A	1600	24-May-06				
			End Hole	1730	25-May-06	25.50			Transit
	KGGH04	NGHP-01-06A	Start Hole 06A	1845	25-May-06				
			End Hole	0500	27-May-06	34.25	34.25	1.4	Transit
	KGGH06-A	NGHP-01-07A	Start Hole 07A	1000	27-May-06				
			End Hole	1145	28-May-06	25.75			Transit
	MNGH01-1A	NGHP-01-08A	Start Hole 08A	1100	29-May-06				
			End Hole	2115	30-May-06	34.25	34.25	1.4	Transit
	MNGH01-2	NGHP-01-09A	Start Hole 09A	2300	30-May-06				
			End Hole	0715	1-Jun-06	32.25	32.25	1.3	Transit
	GD-3-1	NGHP-01-10A	Start Hole 10A	1830	2-Jun-06				
			End Hole	2115	3-Jun-06	26.75			Transit
	GDGH12-A	NGHP-01-11A	Start Hole 11A	2315	3-Jun-06				
			End Hole	1345	4-Jun-06	14.50	14.50	0.6	DP transit
	KGGH02-A	NGHP-01-05B	Start Hole 05B	1630	4-Jun-06				
			End Hole	1115	5-Jun-06	18.75			Transit to Port
Chennai II Port Call									
3A	KGGH02-A	NGHP-01-05C	Start Hole 05C	1430	10-Jun-06				
			End Hole	0500	12-Jun-06	38.50			DP offset
		NGHP-01-05D	Start Hole 05D	0500	12-Jun-06				
			End Hole	0230	14-Jun-06	45.50			DP offset
		NGHP-01-05E	Start Hole 05E	0230	14-Jun-06				
			End Hole/End Site	2000	15-Jun-06	41.50	169.75	7.1	Transit
	GD-3-1	NGHP-01-10B	Start Hole 10B	2230	15-Jun-06				
			End Hole	1145	18-Jun-06	61.25			DP offset
		NGHP-01-10C	Start Hole 10C	1145	18-Jun-06				
			End Hole	1315	18-Jun-06	1.50			DP offset
3A		NGHP-01-10D	Start Hole 10D	1315	18-Jun-06				
			End Hole	1830	21-Jun-06	77.25	166.75	6.9	DP transit
	1st New Site	NGHP-01-12A	Start Hole 12A	1830	21-Jun-06				
			End Hole/End Site	0030	23-Jun-06	30.00	30.00	1.3	Transit to Port
	2nd New Site	NGHP-01-13A	Start Hole 13A	0030	23-Jun-06				
		End Hole/End Site	0530	24-Jun-06	29.00	29.00	1.2	Transit to Port	
Chennai III Port Call (ODL Crew Change)									
3B	GDGH05-A	NGHP-01-03B	Start Hole 03B	1030	29-Jun-06				

India National Gas Hydrate Program Expedition NGHP-01

Record of Time-On-Site

LEG NO.	SITE NO.	HOLE NO.	ACTIVITY	24-HR TIME	DATE	HOURS ON-HOLE	TOTAL HOURS ON-SITE	TOTAL DAYS ON-SITE	COMMENTS
			End Hole	2230	1-Jul-06	60.00			DP offset
		NGHP-01-03C	Start Hole 03C	2230	1-Jul-06				
			End Hole/End Site	2045	4-Jul-06	70.25	160.25	6.7	Transit
	KGGH06-A	NGHP-01-07B	Start Hole 07B	0145	5-Jul-06				
			End Hole	0445	7-Jul-06	51.00			DP offset
		NGHP-01-07C	Start Hole 07C	0445	7-Jul-06				
			End Hole	2000	7-Jul-06	15.25			DP offset
		NGHP-01-07D	Start Hole 07D	2000	7-Jul-06				
			End Hole	0600	10-Jul-06	58.00	150.00	6.3	Transit
	GDGH14-A	NGHP-01-14A	Start Hole 14A	1100	10-Jul-06				
			End Hole	2045	12-Jul-06	57.75	57.75	2.4	DP Transit
	GDGH11	NGHP-01-15A	Start Hole 15A	2200	12-Jul-06				
			End Hole	0000	15-Jul-06	50.00	50.00	2.1	Transit
	Stepout Site	NGHP-01-16A	Start Hole 16A	0430	15-Jul-06				
			End Hole	1600	17-Jul-06	59.50	59.50	2.5	Transit
On-site rendezvous for science staffing change (3ea) helicopters on 17 August 06									
4	1st ANGH01	NGHP-01-17A	Start Hole 17A	1500	20-Jul-06				
			End Hole	2015	26-Jul-06	149.25			DP offset
		NGHP-01-17B	Start Hole 17B	2015	26-Jul-06				
			End Hole/End Site	2030	29-Jul-06	72.25	221.50	9.2	Transit
	MNGH-Reliance 5	NGHP-01-18A	Start Hole 18A	1230	2-Aug-06				
			End Hole/End Site	0200	4-Aug-06	37.50	37.50	1.6	Transit
	MNGH-Gap Site	NGHP-01-19A	Start Hole 19A	1445	4-Aug-06				
			End Hole/End Site	1430	7-Aug-06	71.75			DP Offset
		NGHP-01-19B	Start Hole 19B	1430	7-Aug-06				
			End Hole/End Site	0400	9-Aug-06	37.50	109.25	4.6	Transit
	KGGH05	NGHP-01-20A	Start Hole 20A	1500	10-Aug-06				
			End Hole/End Site	0045	12-Aug-06	33.75			DP Offset
		NGHP-01-20B	Start Hole 20B	0045	12-Aug-06				
			End Hole/End Site	1630	12-Aug-06	15.75	49.50	2.1	DP Transit
	New FR1	NGHP-01-21A	Start Hole 21A	1730	12-Aug-06				
			End Hole/End Site	1530	13-Aug-06	22.00			DP Offset
		NGHP-01-21B	Start Hole 21B	1530	13-Aug-06				
			End Hole/End Site	0030	15-Aug-06	33.00			DP Offset
		NGHP-01-21C	Start Hole 21B	0030	15-Aug-06				
			End Hole/End Site	2130	15-Aug-06	21.00	76.00	3.2	Transit to Port
Chennai, India - Port Call (Demobilization Port)									
STAND-BY TIME @ Pilot Station:							42.00	1.8	
NGHP-01 EXPEDITION TOTALS (HOURS ON-SITE):							1688.0		
NGHP-01 EXPEDITION TOTALS (DAYS ON-SITE):							70.3		

Note: Note: All times rounded off to nearest 15 minutes.

India National Gas Hydrate Program Expedition NGHP-01

Site Summary Data

PROSPECTUS DESIGNATION	LEG	SITE/HOLE NO.	LATITUDE (deg/min)			LONGITUDE (deg/min)			SEA FLOOR (mbrf)	NO. OF CORES	METERS CORED	METERS RECOVERED	PERCENT RECOVERED	METERS DRILLED	TOTAL METERS PENETRATION
KKGH-01	1	NGHP-01-01A	15°	18.366'	N	070°	54.192'	E	2674.2	37	285.0	279.26	98.0%	5.0	290.0
NGHP-01-01 TOTALS										37	285.0	279.26	98.0%	5.0	290.0
KGGH03-A	2	NGHP-01-02A	15°	52.1190'	N	081°	49.3583'	E	1069.0	0	0.0	0.00	0.0%	50.3	50.3
	2	NGHP-01-02B	15°	52.1217'	N	081°	49.3583'	E	1069.0	0	0.0	0.00	0.0%	250.0	250.0
NGHP-01-02 TOTALS										0	0.0	0.00	0.0%	300.3	300.3
GDGH05-A	2	NGHP-01-03A	15°	53.8919'	N	081°	53.9678'	E	1092.0	0	0.0	0.00	0.0%	300.0	300.0
	3B	NGHP-01-03B	15°	53.8881'	N	081°	53.9638'	E	1085.1	39	300.0	255.33	85.1%	0.0	300.0
	3B	NGHP-01-03C	15°	53.8957'	N	081°	53.9718'	E	1086.0	10	35.5	34.93	98.4%	264.5	300.0
NGHP-01-03 TOTALS										49	335.5	290.26	86.5%	564.5	900.0
KGGH01	2	NGHP-01-04A	15°	57.3794'	N	081°	59.4650'	E	1092.0	0	0.0	0.00	0.0%	300.0	300.0
NGHP-01-04 TOTALS										0	0.0	0.00	0.0%	300.0	300.0
KGGH02-A	2	NGHP-01-05A	16°	01.7221'	N	082°	02.6773'	E	963.0	0	0.0	0.00	0.0%	200.0	200.0
	2	NGHP-01-05B	16°	01.7264'	N	082°	02.6773'	E	952.0	0	0.0	0.00	0.0%	200.0	200.0
	3A	NGHP-01-05C	16°	01.7172'	N	082°	02.6733'	E	957.2	24	200.0	142.83	71.4%	0.00	200.0
	3A	NGHP-01-05D	16°	01.7248'	N	082°	02.6813'	E	955.1	12	43.9	39.75	90.5%	157.1	201.0
	3A	NGHP-01-05E	16°	01.7248'	N	082°	02.6733'	E	955.1	0	0.0	0.00	0.0%	200.0	200.0
NGHP-01-05 TOTALS										36	243.9	182.58	74.9%	757.1	1001.0
KGGH04	2	NGHP-01-06A	16°	00.0928'	N	082°	08.2767'	E	1171.0	0	0.0	0.00	0.0%	350.0	350.0
NGHP-01-06 TOTALS										0	0.0	0.00	0.0%	350.0	350.0
KGGH06-A	2	NGHP-01-07A	16°	31.2785'	N	082°	40.8572'	E	1297.0	0	0.0	0.00	0.0%	260.0	260.0
	3B	NGHP-01-07B	16°	31.2747'	N	082°	40.8612'	E	1295.8	31	211.6	180.28	85.2%	0.0	211.6
	3B	NGHP-01-07C	16°	31.2823'	N	082°	40.8532'	E	1295.8	0	0.0	0.00	0.0%	191.2	191.2
	3B	NGHP-01-07D	16°	31.2823'	N	082°	40.8612'	E	1295.8	4	28.8	32.65	113.4%	231.2	260.0
NGHP-01-07 TOTALS										35	240.4	212.93	88.6%	682.4	922.8
MNGH01-1A	2	NGHP-01-08A	18°	57.4271'	N	085°	43.3793'	E	1700.0	0	0.0	0.00	0.0%	350.0	350.0
NGHP-01-08 TOTALS										0	0.0	0.00	0.0%	350.0	350.0
MNGH01-2	2	NGHP-01-09A	18°	46.0908'	N	085°	37.5022'	E	1946.0	0	0.0	0.00	0.0%	330.0	330.0
NGHP-01-09 TOTALS										0	0.0	0.00	0.0%	330.0	330.0
GD-3-1	2	NGHP-01-10A	15°	51.8609'	N	081°	50.0749'	E	1049.0	0	0.0	0.00	0.0%	205.5	205.5

India National Gas Hydrate Program Expedition NGHP-01

Site Summary Data

PROSPECTUS DESIGNATION	LEG	SITE/HOLE NO.	LATITUDE (deg/min)	LONGITUDE (deg/min)	SEA FLOOR (mbrf)	NO. OF CORES	METERS CORED	METERS RECOVERED	PERCENT RECOVERED	METERS DRILLED	TOTAL METERS PENETRATION	
	3A	NGHP-01-10B	15° 51.8571'	N 081°	50.0789'	E 1049.4	31	204.9	55.53	27.1%	0.0	204.9
	3A	NGHP-01-10C	15° 51.8647'	N 081°	50.0709'	E 1050.4*	1	9.5	8.82	92.8%	23.1*	32.6
	3A	NGHP-01-10D	15° 51.8647'	N 081°	50.0709'	E 1050.4	29	203.8	127.43	62.5%	0.0	32.6
NGHP-01-10 TOTALS							61	418.2	191.78	45.9%	228.6	475.6
* Due to full recovery on 1st core the mudline @ Hole 10C was indeterminate. Based on the Hole 10D mudline the assumed interval cored is from ~23.1 mbs												
GDGH12-A	2	NGHP-01-11A	15° 59.4601'	N 081°	59.5290'	E 1018.0	0	0.0	0.00	0.0%	200.0	200.0
NGHP-01-11 TOTALS							0	0.0	0.00	0.0%	200.0	200.0
1st New Site	3A	NGHP-01-12A	15° 51.6335'	N 081°	50.2274'	E 1045.8	13	62.1	50.23	80.9%	88.8	150.9
NGHP-01-12 TOTALS							13	62.1	50.23	80.9%	88.8	150.9
2nd New Site	3A	NGHP-01-13A	15° 51.7017'	N 081°	50.1816'	E 1044.0	0	0.0	0.00	0.0%	200.0	200.0
NGHP-01-13 TOTALS							0	0.0	0.00	0.0%	200.0	200.0
GDGH14-A	3B	NGHP-01-14A	16° 03.5577'	N 082°	05.6218'	E 906.6	23	180.0	152.76	84.9%	0.0	180.0
NGHP-01-14 TOTALS							23	180.0	152.76	84.9%	0.0	180.0
GDGH11	3B	NGHP-01-15A	16° 05.6983'	N 082°	09.7467'	E 937.9	25	200.0	170.61	85.3%	0.0	200.0
NGHP-01-15 TOTALS							25	200.0	170.61	85.3%	0.0	200.0
Stepout Site	3B	NGHP-01-16A	16° 35.5986'	N 082°	41.0070'	E 1264.5	28	217.0	166.86	76.9%	0.0	217.0
NGHP-01-16 TOTALS							28	217.0	166.86	76.9%	0.0	217.0
ANGH01	4	NGHP-01-17A	10° 45.1912'	N 093°	06.7365'	E 1356.0	83	691.6	563.55	81.5%	0.0	691.6
	4	NGHP-01-17B	10° 45.1804'	N 093°	06.7365'	E 1356.0	0	0.0	0.00	0.0%	718.0	718.0
NGHP-01-17 TOTALS							83	691.6	563.55	81.5%	718.00	1409.60
MNGH-REL 5	4	NGHP-01-18A	19° 09.1452'	N 085°	46.3758'	E 1386.1	20	186.0	181.61	97.6%	4.0	190.0
NGHP-01-18 TOTALS							20	186.0	181.61	97.6%	4.0	190.0
MNGH-Gap S	4	NGHP-01-19A	18° 58.6568'	N 085°	39.5202'	E 1434.2	38	296.0	271.28	91.6%	9.0	305.0
	4	NGHP-01-19B	18° 58.6532'	N 085°	39.5160'	E 1433.2	3	26.3	25.68	97.6%	253.7	280.0
NGHP-01-19 TOTALS							41	322.3	296.96	92.1%	262.7	585.0
KGGH05	4	NGHP-01-20A	15° 48.5671'	N 081°	50.5760'	E 1157.9	20	148.8	69.21	46.5%	0.0	148.8
	4	NGHP-01-20B	15° 48.5709'	N 081°	50.5720'	E 1157.9	4	38.5	3.67	9.5%	148.8	187.3
NGHP-01-20 TOTALS							24	187.3	72.88	38.9%	148.8	336.1

India National Gas Hydrate Program Expedition NGHP-01

Site Summary Data

PROSPECTUS DESIGNATION	LEG	SITE/HOLE NO.	LATITUDE (deg/min)			LONGITUDE (deg/min)			SEA FLOOR (mbrf)	NO. OF CORES	METERS CORED	METERS RECOVERED	PERCENT RECOVERED	METERS DRILLED	TOTAL METERS PENETRATION
New FR1	4	NGHP-01-21A	15°	51.8531'	N	081°	50.0827'	E	1049.0	13	43.1	30.36	70.4%	48.4	91.5
	4	NGHP-01-21B	15°	51.8024'	N	081°	50.1333'	E	1050.0	2	2.0	0.50	25.0%	198.0	200.0
	4	NGHP-01-21C	15°	51.8492'	N	081°	50.0866'	E	1049.0	4	4.0	3.88	97.0%	74.0	78.0
NGHP-01-21 TOTALS										19	49.1	34.74	70.8%	320.4	369.5
NGHP-01 EXPEDITION TOTALS:										494	3618.4	2847.01	78.7%	5810.6	9257.8

India National Gas Hydrate Program Expedition NGHP-01

Standard & Pressure Coring Summary

Hole No.	Advanced Piston Corer (APC)				Extended Core Barrel (XCB)				Pressure Coring (PCS/FPC/HRC)					
	No. of Cores	Mtrs Cored	Mtrs Recovery	Percent Recovery	No. of Cores	Mtrs Cored	Mtrs Recovery	Percent Recovery	Total Cores	Cores W/Press	% W/Press	Mtrs Cored	Mtrs Recovery	Percent Recovery
KKGH-01														
NGHP-01-01A	17	148.8	145.58	97.8%	14	130.2	131.76	101.2%	6	2	33.3%	6.0	1.92	32.0%
Sub Total	17	148.8	145.58	97.8%	14	130.2	131.76	101.2%	6	2	33.3%	6.0	1.92	32.0%
KGGH03-A														
NGHP-01-02A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-02B	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
GDGH05-A														
NGHP-01-03A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-03B	7	62.4	65.16	104.4%	27	232.6	186.54	80.2%	5	2	40.0%	5.0	3.63	72.6%
NGHP-01-03C	3	28.5	29.79	104.5%	0	0.0	0.00	0.0%	7	1	14.3%	7.0	5.14	73.4%
Sub Total	10	90.9	94.95	104.5%	27	232.6	186.54	80.2%	12	3	25.0%	12.0	8.77	73.1%
KGGH01														
NGHP-01-04A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
KGGH02-A														
NGHP-01-05A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-05B	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-05C	9	78.3	80.44	102.7%	13	119.7	61.18	51.1%	2	2	100.0%	2.0	1.21	60.5%
NGHP-01-05D	4	35.9	35.20	98.1%	0	0.0	0.00	0.0%	8	5	62.5%	8.0	4.55	56.9%
NGHP-01-05E	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	13	114.2	115.64	101.3%	13	119.7	61.18	51.1%	10	7	70.0%	10.0	5.76	57.6%
KGGH04														
NGHP-01-06A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
KGGH06-A														
NGHP-01-07A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-07B	9	78.7	80.71	102.6%	15	125.9	93.37	74.2%	7	4	57.1%	7.0	6.20	88.6%

India National Gas Hydrate Program Expedition NGHP-01

Standard & Pressure Coring Summary

Hole No.	Advanced Piston Corer (APC)				Extended Core Barrel (XCB)				Pressure Coring (PCS/FPC/HRC)					
	No. of Cores	Mtrs Cored	Mtrs Recovery	Percent Recovery	No. of Cores	Mtrs Cored	Mtrs Recovery	Percent Recovery	Total Cores	Cores W/Press	% W/Press	Mtrs Cored	Mtrs Recovery	Percent Recovery
NGHP-01-07C	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-07D	0	0.0	0.00	0.0%	4	28.8	32.65	113.4%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	9	78.7	80.71	102.6%	19	154.7	126.02	81.5%	7	4	57.1%	7.0	6.20	88.6%
MNGH01-1A														
NGHP-01-08A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
MNGH01-2														
NGHP-01-09A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
GDG-3-1														
NGHP-01-10A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-10B	2	12.6	12.97	102.9%	21	184.3	37.04	20.1%	8	4	50.0%	8.0	5.52	69.0%
NGHP-01-10C	1	9.5	8.82	92.8%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
NGHP-01-10D	4	32.6	32.85	100.8%	18	164.2	88.62	54.0%	7	3	42.9%	7.0	5.96	85.1%
Sub Total	7	54.7	54.64	99.9%	39	348.5	125.66	36.1%	15	7	46.7%	15.0	11.48	76.5%
GDGH12-A														
NGHP-01-11A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
1st New Site														
NGHP-01-12A	3	24.7	26.28	106.4%	4	31.4	20.60	65.6%	6	2	33.3%	6.0	3.35	55.8%
Sub Total	3	24.7	26.28	106.4%	4	31.4	20.60	65.6%	6	2	33.3%	6.0	3.35	55.8%
2nd New Site														
NGHP-01-13A	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
GDGH14-A														
NGHP-01-14A	8	71.0	72.96	102.8%	11	105.0	76.89	73.2%	4	1	25.0%	4.0	2.91	72.8%
Sub Total	8	71.0	72.96	0.0%	11	105.0	76.89	73.2%	4	1	25.0%	4.0	2.91	0.0%
GDGH11														
NGHP-01-15A	8	76.1	74.22	97.5%	13	119.9	93.71	78.2%	4	3	75.0%	4.0	2.68	67.0%

India National Gas Hydrate Program Expedition NGHP-01

Standard & Pressure Coring Summary

Hole No.	Advanced Piston Corer (APC)				Extended Core Barrel (XCB)				Pressure Coring (PCS/FPC/HRC)					
	No. of Cores	Mtrs Cored	Mtrs Recovery	Percent Recovery	No. of Cores	Mtrs Cored	Mtrs Recovery	Percent Recovery	Total Cores	Cores W/Press	% W/Press	Mtrs Cored	Mtrs Recovery	Percent Recovery
Sub Total	8	76.1	74.22	0.0%	13	119.9	93.71	78.2%	4	3	75.0%	4.0	2.68	0.0%
Stepout Site														
NGHP-01-16A	8	65.8	69.84	106.1%	16	147.2	94.06	63.9%	4	2	50.0%	4.0	2.96	74.0%
Sub Total	8	65.8	69.84	0.0%	16	147.2	94.06	63.9%	4	2	50.0%	4.0	2.96	0.0%
ANGH01														
NGHP-01-17A	13	118.5	122.66	103.5%	60	563.6	434.41	77.1%	10	6	60.0%	9.5	6.48	68.2%
Sub Total	13	118.5	122.66	103.5%	60	563.6	434.41	77.1%	10	6	60.0%	9.5	6.48	0.0%
MNGH - REL 5														
NGHP-01-18A	12	111.9	113.54	101.5%	8	74.1	68.07	91.9%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	12	111.9	113.54	0.0%	8	74.1	68.07	0.0%	0	0	0.0%	0.0	0.00	0.0%
MNGH - GapS														
NGHP-01-19A	11	94.3	97.09	103.0%	21	195.7	168.47	86.1%	6	3	50.0%	6.0	5.72	95.3%
NGHP-01-19B	3	26.3	25.68	97.6%	0	0.0	0.00	0.0%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	14	120.6	122.77	101.8%	21	195.7	168.47	86.1%	6	3	50.0%	6.0	5.72	95.3%
KGGH05														
NGHP-01-20A	3	22.9	22.95	100.2%	16	124.9	45.69	36.6%	1	0	0.0%	1.0	0.57	57.0%
NGHP-01-20B	0	0.0	0.00	0.0%	4	38.5	3.67	9.5%	0	0	0.0%	0.0	0.00	0.0%
Sub Total	3	22.9	22.95	100.2%	20	163.4	49.36	30.2%	1	0	0.0%	1.0	0.57	57.0%
New Site FR1														
NGHP-01-21A	0	0.0	0.00	0.0%	7	37.1	25.06	67.5%	6	4	66.7%	6.0	5.30	88.3%
NGHP-01-21B	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	2	1	50.0%	2.0	0.50	25.0%
NGHP-01-21C	0	0.0	0.00	0.0%	0	0.0	0.00	0.0%	4	4	100.0%	4.0	3.88	97.0%
Sub Total	0	0.0	0.00	0.0%	7	37.1	25.06	67.5%	12	9	75.0%	12.0	9.68	80.7%
Grand Total	125	1098.8	1116.74	101.6%	272	2423.1	1661.79	68.6%	97	49	50.5%	96.5	68.48	71.0%

India National Gas Hydrate Program (NGHP) Expedition NGHP-01

Beacon Summary

LEG	SITE	DATASONICS (Model No.)	FREQ (kHz)	POWER (dB)	SERIAL NO.	SITE (Hours)	SITE (Days)	HOLE A SEA FLOOR DEPTH (mbrf)	TIME DEPLOYED	DATE DEPLOYED	TIME RECOVERED	DATE RECOVERED	R
1	NGHP-01-01	354M	15.0	208	2199	88.3	3.7	2674.2	0725	6-May-06	2345	9-May-06	
2	NGHP-01-02	354M	15.0	208	2199	14.8	0.6	1069.0	0818	21-May-06	2308	21-May-06	
	NGHP-01-03	354M	14.0	208	2200	24.5	1.0	1092.0	0450	22-May-06	0521	23-May-06	
	NGHP-01-04	354M	14.0	208	2200	24.2	1.0	1092.0	1159	23-May-06	1212	24-May-06	
	NGHP-01-05	354M	15.0	208	2199	21.8	0.9	963.0	1633	24-May-06	1420	25-May-06	
	NGHP-01-06	354M	14.0	208	2200	31.2	1.3	1171.0	1856	25-May-06	0205	27-May-06	
	NGHP-01-07	354M	15.0	208	2199	21.8	0.9	1297.0	1025	27-May-06	0813	28-May-06	
	NGHP-01-08	354M	14.0	208	2200	30.2	1.3	1700.0	1136	29-May-06	1745	30-May-06	
	NGHP-01-09	354M	15.0	208	2199	26.7	1.1	1946.0	0025	31-May-06	0307	1-Jun-06	
	NGHP-01-10	354M	14.0	208	2200	23.2	1.0	1049.0	1906	2-Jun-06	1816	3-Jun-06	
	NGHP-01-11	354M	15.0	208	2199	13.6	0.6	1018.0	0001	4-Jun-06	1335	4-Jun-06	
	NGHP-01-05	354M	14.0	208	2200	13.0	0.5	963.0	1748	4-Jun-06	0646	5-Jun-06	
3A	NGHP-01-05	354M	14.0	208	2200	122.9	5.1	956.0	1508	10-Jun-06	1803	15-Jun-06	
	NGHP-01-10	354M	15.0	208	2199	140.8	5.9	1049.3	2320	15-Jun-06	2010	21-Jun-06	
	NGHP-01-12	354M	14.0	208	2200	53.6	2.2	1045.8	2055	21-Jun-06	0232	24-Jun-06	
	NGHP-01-13							1044.0					
3B	NGHP-01-03	354M	14.0	208	2200	128.7	5.4	1085.0	1122	29-Jun-06	2001	4-Jul-06	
	NGHP-01-07	354M	14.0	208	2200	122.8	5.1	1295.8	0230	5-Jul-06	0515	10-Jul-06	1/2 rep
	NGHP-01-07	354M	15.0	208	2199	119.3	5.0	1295.8	0512	5-Jul-06	0430	10-Jul-06	2nd be
	NGHP-01-14	354M	14.0	208	2200	57.0	2.4	906.6	1140	10-Jul-06	2042	12-Jul-06	
	NGHP-01-15	354M	14.0	208	2200	49.2	2.0	937.9	2211	12-Jul-06	2322	14-Jul-06	
	NGHP-01-16	354M	14.0	208	2200	82.2	3.4	1264.5	0511	14-Jul-06	1522	17-Jul-06	
4	NGHP-01-17	354M	14.0	208	2200	217.5	9.1	1356.0	1600	20-Jul-06	1733	29-Jul-06	
	NGHP-01-18	354M	14.0	208	2200	161.4	6.7	1386.1	1314	2-Aug-06	0636	9-Aug-06	not init due
	NGHP-01-19	354M	15.0	208	2199	107.6	4.5	1433.2	1539	4-Aug-06	0316	9-Aug-06	
	NGHP-01-20	354M	14.0	208	2200	47.7	2.0	1157.9	1522	10-Aug-06	1504	12-Aug-06	
	NGHP-01-21	354M	14.0	208	2200	72.1	3.0	1049.0	1740	12-Aug-06	1744	15-Aug-06	re-occu

TOTAL BEACON TIME (HOURS/DAYS)

1816.0

75.7

India National Gas Hydrate Program Expedition NGHP-01

Pressure Coring Summary

Site/Hole No.	PCS						FPC						HRC					
	Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure		Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure		Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure	
					Bar	PSI					Bar	PSI					Bar	PSI
KKGH-01	6P	1.0	0.91	91.0%	135	1990												
NGHP-01-01A	12P	1.0	0.00	0.0%	152	2230												
	20P	1.0	1.01	101.0%	254	3730												
	26P	1.0	0.00	0.0%	137	2010												
	31P	1.0	0.00	0.0%	0	0												
	37P	1.0	0.00	0.0%	0	0												
SubTotal	6	6.0	1.92	32.0%	N/A	N/A												
GDGH05-A	13P	1.0	0.95	95.0%	69	1014	23Y	1.0	0.88	88.0%	105	1544	28E	1.0	0.00	0.0%	0	
NGHP-01-03B	22P	1.0	0.80	80.0%	0	0												
	27P	1.0	1.00	100.0%	0	0												
NGHP-01-03C	4P	1.0	0.97	97.0%	0	0	5Y	1.0	0.87	87.0%	0	0	6E	1.0	0.56	56.0%	0	
	7P	1.0	0.95	95.0%	120	1764	8Y	1.0	0.00	0.0%	0	0						
	10P	1.0	0.94	94.0%	0	0	9Y	1.0	0.85	85.0%	0	0						
SubTotal	6	6.0	5.61	93.5%	N/A	N/A	4	4.0	2.60	65.0%	N/A	N/A	2	2.0	0.56	28.0%	N/A	1
KGGH02-A	10P	1.0	0.36	36.0%	29	426												
NGHP-01-05C	12P	1.0	0.85	85.0%	48	706												
NGHP-01-05D	5P	1.0	0.00	0.0%	0	0	7Y	1.0	0.88	88.0%	109	1600	8E	1.0	0.24	24.0%	0	
	6P	1.0	1.00	100.0%	41	603	11Y	1.0	0.88	88.0%	100	1470	10E	1.0	0.55	55.0%	100	1
	9P	1.0	0.00	0.0%	0	0												
	12P	1.0	1.00	100.0%	7	103												
SubTotal	6	6.0	3.21	53.5%	N/A	N/A	2	2.0	1.76	88.0%	N/A	N/A	2	2.0	0.79	39.5%	N/A	1
KGGH06-A	11P	1.0	0.89	89.0%	91	1338	12Y	1.0	0.90	90.0%	0	0	22E	1.0	0.79	79.0%	30	4
NGHP-01-07B	21P	1.0	1.20	120.0%	100	1470	16Y	1.0	0.80	80.0%	0	0						
	28P	1.0	0.92	92.0%	75	1103	29Y	1.0	0.70	70.0%	0	0						
SubTotal	3	3.0	3.01	100.3%	N/A	N/A	3	3.0	2.40	80.0%	N/A	N/A	1	1.0	0.79	79.0%	N/A	1
GD-3-1	5P	1.0	0.00	0.0%	7	100	8Y	1.0	0.90	90.0%	100	1470	11E	1.0	0.17	17.0%	0	
NGHP-01-10B	15P	1.0	1.13	113.0%	16	240	18Y	1.0	0.90	90.0%	118	1735	27E	1.0	0.42	42.0%	0	
	28P	1.0	1.67	167.0%	6	82	21Y	1.0	0.33	33.0%	0	0						
NGHP-01-10D	6P	1.0	0.29	29.0%	0	0	9Y	1.0	0.51	51.0%	0	0	12E	1.0	1.09	109.0%	95	1
	15P	1.0	0.92	92.0%	0	0	19Y	1.0	0.88	88.0%	0	0	22E	1.0	1.05	105.0%	110	1
	25P	1.0	1.22	122.0%	87	1279												

India National Gas Hydrate Program Expedition NGHP-01

Pressure Coring Summary

Site/Hole No.	PCS						FPC						HRC					
	Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure		Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure		Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure	
					Bar	PSI					Bar	PSI					Bar	PSI
Sub Total	6	6.0	5.23	87.2%	N/A	N/A	5	5.0	3.52	70.4%	N/A	N/A	4	4.0	2.73	68.3%	N/A	†
2nd New Site	7P	1.0	0.00	0.0%	53	779	5Y	1.0	0.81	81.0%	0	0	6E	1.0	1.08	108.0%	95	1
NGHP-01-12A	11P	1.0	0.58	58.0%	0	0	9Y	1.0	0.88	88.0%	131	1926	10E	1.0	0.00	0.0%	0	
Sub Total	2	2.0	0.58	29.0%	N/A	N/A	2	2.0	1.69	84.5%	N/A	N/A	2	2.0	1.08	54.0%	N/A	†
GDGH14-A	9P	1.0	0.79	79.0%	0	0	10Y	1.0	0.87	87.0%	0	0	15E	1.0	0.34	34.0%	85	1
NGHP-01-14A	14P	1.0	0.91	91.0%	0	0												
Sub Total	2	2.0	1.70	85.0%	N/A	N/A	1	1.0	0.87	87.0%	N/A	N/A	1	1.0	0.34	34.0%	N/A	†
GDGH11	10P	1.0	0.05	5.0%	70	1029	11Y	1.0	0.84	84.0%	97	1426						
NGHP-01-15A	15P	1.0	0.88	88.0%	0	0	16Y	1.0	0.91	91.0%	100	1470						
Sub Total	2	2.0	0.93	46.5%	N/A	N/A	2	2.0	1.75	87.5%	N/A	N/A	0	0.0	0.00	0.0%	N/A	†
3rd New Site	13P	1.0	0.92	92.0%	58	853	14Y	1.0	0.68	68.0%	0	0	22E	1.0	0.43	43.0%	120	1
NGHP-01-16A	21P	1.0	0.93	93.0%	0	0												
Sub Total	2	2.0	1.85	92.5%	N/A	N/A	1	1.0	0.68	68.0%	N/A	N/A	1	1.0	0.43	43.0%	N/A	†
ANGH01	37P	1.0	0.93	93.0%	54	794	20Y	1.0	0.90	90.0%	0	0	49E	1.0	0.87	87.0%	125	1
NGHP-01-17A	48P	1.0	0.89	89.0%	105	1544	38Y	1.0	0.87	87.0%	167	2455	71E	1.0	0.00	0.0%	148	2
	59P	1.0	0.60	60.0%	0	0	60Y	1.0	0.87	87.0%	0	0	81E	1.0	0.42	42.0%	160	2
	70P	0.5	0.13	26.0%	32	470												
Sub Total	4	3.5	2.55	72.9%	N/A	N/A	3	3.0	2.64	88.0%	N/A	N/A	3	3.0	1.29	43.0%	N/A	†
MNGH - GapS	15P	1.0	0.98	98.0%	95	1397	16Y	1.0	0.96	96.0%	0	0	17E	1.0	0.96	96.0%	130	1
NGHP-01-19A	25P	1.0	0.85	85.0%	0	0	26Y	1.0	0.87	87.0%	0	0	27E	1.0	1.10	110.0%	130	1
Sub Total	2	2.0	1.83	91.5%	N/A	N/A	2	2.0	1.83	91.5%	N/A	N/A	2	2.0	2.06	103.0%	N/A	†
KGGH05	P	1.0	0.57	57.0%	0	0												
NGHP-01-20A																		
Sub Total	1	1.0	0.57	57.0%	N/A	N/A	0	0.0	0.00	0.0%	N/A	N/A	0	0.0	0.00	0.0%	N/A	†
New FR1							2Y	1.0	0.84	84.0%	110	1617	3E	1.0	1.08	108.0%	105	1
NGHP-01-21A							6Y	1.0	0.94	94.0%	0	0	7E	1.0	1.09	109.0%	103	1
							10Y	1.0	0.88	88.0%	0	0	11E	1.0	0.47	47.0%	100	1
NGHP-01-21B							2Y	1.0	0.00	0.0%	0	0	1E	1.0	0.50	50.0%	102	1
NGHP-01-21C							1Y	1.0	0.85	85.0%	120	1764	2E	1.0	1.10	110.0%	105	1

India National Gas Hydrate Program Expedition NGHP-01

Pressure Coring Summary

Site/Hole No.	PCS						FPC						HRC					
	Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure		Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure		Core No.	Mtrs Cored	Mtrs Rec	% Rec	Pressure	
					Bar	PSI					Bar	PSI					Bar	PSI
							3Y	1.0	0.85	85.0%	112	1646	4E	1.0	1.08	108.0%	105	1512
Sub Total							6	6.0	4.36	72.7%	N/A	N/A	6	6.0	5.32	88.7%	N/A	770
TOTALS	42	41.5	28.99	69.9%	N/A	N/A	31	31.0	24.10	77.7%	N/A	N/A	24	24.0	15.39	64.1%	N/A	1512
SUCCESS BY SYSTEM	PCS CORES		PRESS & CORE		%		FPC CORES		PRESS & CORE		%		HRC CORES		PRESS & CORE		%	
	42		20		47.6		31		12		38.7		24		17		71	

India National Gas Hydrate Program Expedition NGHP-01

Pressure Coring Log

Site No.	Hole No.	Core No.	Core System & Sequence	Sea Floor Depth (mbrf)	Depth @ Top (mbsf)	Depth @ Bottom (mbsf)	Meters Advanced	Meters of Core Recov.	% Recov.	Deck Pressure (PSI)	Methane Tool Run (Good/Bad)	Gas Rec (Liters)
KKGH-01	01A	06P	PCS-1	2674.2	42.3	43.3	1.0	0.91	91.0%	1990	Good	0.0
		12P	PCS-2	2674.2	91.8	92.8	1.0	0.00	0.0%	2230	Good	0.3
		20P	PCS-3	2674.2	152.8	153.8	1.0	1.01	101.0%	3730	Good	0.0
		26P	PCS-4	2674.2	203.0	204.0	1.0	0.00	0.0%	2010	Good	0.6
		31P	PCS-5	2674.2	243.6	244.6	1.0	0.00	0.0%	0	Good	0.0
		37P	PCS-6	2674.2	289.0	290.0	1.0	0.00	0.0%	0	Good	0.0
GDGH05-A	03B	13P	PCS-7	1085.1	104.9	105.9	1.0	0.95	95.0%	1014	Good	1.2
		22P	PCS-8	1085.1	174.9	175.9	1.0	0.80	80.0%	0	Good	0.0
		23Y	FPC-1	1085.1	175.9	176.9	1.0	0.88	88.0%	1544	N/A	5.0
		27P	PCS-9	1085.1	198.9	199.9	1.0	1.00	100.0%	0	Good	0.0
		28E	HRC-1	1085.1	199.9	200.9	1.0	0.00	0.0%	0	N/A	0.0
	03C	04P	PCS-10	1086.0	170.0	171.0	1.0	0.97	97.0%	0	Good	0.0
		05Y	FPC-2	1086.0	175.0	176.0	1.0	0.87	87.0%	0	N/A	0.0
		06E	HRC-2	1086.0	180.0	181.0	1.0	0.56	56.0%	0	N/A	0.0
		07P	PCS-11	1086.0	184.0	185.0	1.0	0.95	95.0%	1764	Good	2.5
		08Y	FPC-3	1086.0	190.0	191.0	1.0	0.00	0.0%	0	N/A	0.0
		09Y	FPC-4	1086.0	195.0	196.0	1.0	0.85	85.0%	0	N/A	0.0
		10P	PCS-12	1086.0	196.0	197.0	1.0	0.94	94.0%	0	Good	0.0
KGGH02-A	05C	10P	PCS-13	957.2	78.3	79.3	1.0	0.36	36.0%	426	Good	1.0
		12P	PCS-14	957.2	86.0	87.0	1.0	0.85	85.0%	706	Good	3.0
	05D	5P	PCS-15	955.1	44.9	45.9	1.0	0.00	0.0%	0	Good	0.0
		6P	PCS-16	955.1	76.9	77.9	1.0	1.00	100.0%	603	Good	15.0
		7Y	FPC-5	955.1	84.9	85.9	1.0	0.88	88.0%	1600	N/A	15.0
		8E	HRC-3	955.1	88.9	89.9	1.0	0.24	24.0%	0	N/A	0.0
		9P	PCS-17	955.1	92.9	93.9	1.0	0.00	0.0%	0	Good	0.0
		10E	HRC-4	955.1	114.9	115.9	1.0	0.55	55.0%	1470	N/A	1.0
		11Y	FPC-6	955.1	124.9	125.9	1.0	0.88	88.0%	1470	N/A	2.0
		12P	PCS-18	955.1	200.0	201.0	1.0	1.00	100.0%	103	Good	2.0
KGGH06-A	07B	11P	PCS-19	1295.8	84.2	85.2	1.0	0.89	89.0%	1338	Good	1.0
		12Y	FPC-7	1295.8	85.2	86.2	1.0	0.90	90.0%	0	N/A	0.0
		16Y	FPC-8	1295.8	114.2	115.2	1.0	0.80	80.0%	0	N/A	0.0
		21P	PCS-20	1295.8	148.2	149.2	1.0	1.20	120.0%	1470	Good	4.0
		22E	HRC-5	1295.8	149.2	150.2	1.0	0.79	79.0%	441	N/A	1.0
		28P	PCS-21	1295.8	193.4	194.4	1.0	0.92	92.0%	1103	Good	1.0
		29Y	FPC-9	1295.8	194.4	195.4	1.0	0.70	70.0%	0	N/A	0.0
GD-3-1	10B	5P	PCS-22	1049.4	31.4	32.4	1.0	0.00	0.0%	100	Good	0.0
		8Y	FPC-10	1049.4	50.2	51.2	1.0	0.90	90.0%	1470	N/A	Stored
		11E	HRC-6	1049.4	70.0	71.0	1.0	0.17	17.0%	0	N/A	0.0

India National Gas Hydrate Program Expedition NGHP-01

Pressure Coring Log

Site No.	Hole No.	Core No.	Core System & Sequence	Sea Floor Depth (mbrf)	Depth @ Top (mbsf)	Depth @ Bottom (mbsf)	Meters Advanced	Meters of Core Recov.	% Recov.	Deck Pressure (PSI)	Methane Tool Run (Good/Bad)	Gas Rec (Liters)
		7P	PCS-28	1045.8	47.7	48.7	1.0	0.00	0.0%	779	Good	2.0
		9Y	FPC-16	1045.8	93.3	94.3	1.0	0.88	88.0%	1926	N/A	6.0
		10E	HRC-11	1045.8	94.3	95.3	1.0	0.00	0.0%	0	N/A	0.0
		11P	PCS-29	1045.8	95.3	96.3	1.0	0.58	58.0%	0	Good	0.0
GDGH14-A	14A	9P	PCS-30	906.6	71.0	72.0	1.0	0.79	79.0%	0	Good	0.0
		10Y	FPC-17	906.6	72.0	73.0	1.0	0.87	87.0%	0	N/A	0.0
		14P	PCS-31	906.6	100.0	101.0	1.0	0.91	91.0%	0	Good	0.0
		15E	HRC-12	906.6	101.0	102.0	1.0	0.34	34.0%	1250	N/A	1.7
GDGH-11	15A	10P	PCS-32	937.9	85.7	86.7	1.0	0.05	5.0%	1029	Good	-----
		11Y	FPC-18	937.9	86.7	87.7	1.0	0.84	84.0%	1426	N/A	3.5
		15P	PCS-33	937.9	115.0	116.0	1.0	0.88	88.0%	0	Good	0.0
		16Y	FPC-19	937.9	116.0	117.0	1.0	0.91	91.0%	1470	N/A	2.0
07 Stepout	16A	13P	PCS-34	1264.5	104.2	105.2	1.0	0.92	92.0%	853	Good	1.0
		14Y	FPC-20	1264.5	105.2	106.2	1.0	0.68	68.0%	0	N/A	0.0
		21P	PCS-35	1264.5	162.2	163.2	1.0	0.93	93.0%	0	Good	0.0
		22E	HRC-13	1264.5	163.2	164.2	1.0	0.43	43.0%	1764	N/A	2.0
ANGH01	17A	20Y	FPC-21	1356.0	175.5	176.5	1.0	0.90	90.0%	0	N/A	0.0
		37P	PCS-36	1356.0	328.0	329.0	1.0	0.93	93.0%	794	Good	1.7
		38Y	FPC-22	1356.0	329.0	330.0	1.0	0.87	87.0%	2455	N/A	1.9
		48P	PCS-37	1356.0	412.7	413.7	1.0	0.89	89.0%	1544	Good	2.5
		49E	HRC-14	1356.0	413.7	414.7	1.0	0.87	87.0%	1838	N/A	1.9
		59P	PCS-38	1356.0	499.6	500.6	1.0	0.60	60.0%	0	Good	0.0
		60Y	FPC-23	1356.0	500.6	501.6	1.0	0.87	87.0%	0	N/A	0.0
		70P	PCS-39	1356.0	586.3	586.8	0.5	0.13	26.0%	470	Good	0.0
		71E	HRC-15	1356.0	586.8	587.8	1.0	0.00	0.0%	2176	N/A	0.0
		81E	HRC-16	1356.0	672.3	673.3	1.0	0.42	42.0%	2352	N/A	4.0
MNGH - Gap Site	19A	15P	PCS-40	1434.2	126.0	127.0	1.0	0.98	98.0%	1397	Good	1.5
		16Y	FPC-24	1434.2	127.0	128.0	1.0	0.96	96.0%	0	N/A	0.0
		17E	HRC-17	1434.2	128.0	129.0	1.0	0.96	96.0%	1911	N/A	3.5
		25P	PCS-41	1434.2	193.3	194.3	1.0	0.85	85.0%	0	Good	0.0
		26Y	FPC-25	1434.2	194.3	195.3	1.0	0.87	87.0%	0	N/A	0.0
		27E	HRC-18	1434.2	195.3	196.3	1.0	1.10	110.0%	1911	N/A	8.0
GDGH05	20A	20P	PCS-42	1157.9	147.8	148.8	1.0	0.57	57.0%	0	Good	N/A
New FR1	21A	2Y	FPC-26	1049.0	58.0	59.0	1.0	0.84	84.0%	1617	N/A	Stored
		3E	HRC-19	1049.0	59.0	60.0	1.0	1.08	108.0%	1544	N/A	Stored
		6Y	FPC-27	1049.0	69.0	70.0	1.0	0.94	94.0%	0	N/A	0.0
		7E	HRC-20	1049.0	70.0	71.0	1.0	1.09	109.0%	1514	N/A	70.0
		10Y	FPC-28	1049.0	80.0	81.0	1.0	0.88	88.0%	0	N/A	0.0
		11E	HRC-21	1049.0	81.0	82.0	1.0	0.47	47.0%	1470	N/A	PV
	21B	1E	HRC-22	1050.0	55.0	56.0	1.0	0.50	50.0%	1499	N/A	PV
		2Y	FPC-29	1050.0	56.0	57.0	1.0	0.00	0.0%	0	N/A	0.0
	21C	1Y	FPC-30	1049.0	55.0	56.0	1.0	0.85	85.0%	1764	N/A	PV
		2E	HRC-23	1049.0	56.5	57.5	1.0	1.10	110.0%	1544	N/A	Stored
		3Y	FPC-31	1049.0	76.0	77.0	1.0	0.85	85.0%	1646	N/A	PV
		4E	HRC-24	1049.0	77.0	78.0	1.0	1.08	108.0%	1544	N/A	Stored

TOTAL METERS CORED:	96.5
TOTAL METERS OF CORE RECOVERED:	68.48
PERCENT RECOVERY:	71.0%
TOTAL METERS OF CORE RECOVERED (UNDER PRESSURE):	42.44

India National Gas Hydrate Program Expedition NGHP-01 "Sea Floor" Depth to "Water" Depth Conversion

PROSPECTUS DESIGNATION	SITE/HOLE NUMBER	SPUD DATE	SHIPS DRAFT (meters)	CORRECTED PDR DEPTH (mbrf)	OFFICIAL "SEA FLOOR" DEPTH		"WATER" DEPTH	MET/ ABOVE/ PDR D
					DES to Sea Floor	TYPE OF	Sea Surface to Sea Floor	
					(mbrf)	DETERMINATION	(meters)	
KKGH-01	NGHP-01- <u>01A</u>	6-May-06	6.47	2674.0	2674.2	APC Core	2663.2	-0.
KGGH03-A	NGHP-01- <u>02A</u>	21-May-06	6.33	1069.0	1069.0	LWD Tag	1057.9	N/
	NGHP-01- <u>02B</u>	21-May-06	6.33	1069.0	1069.0	Offset	1057.9	N/
GDGH05-A	NGHP-01- <u>03A</u>	22-May-06	6.33	1091.4	1092.0	LWD Tag	1080.8	N/
	NGHP-01- <u>03B</u>	29-Jun-06	6.11	1091.4	1085.1	APC Core	1073.7	6.
	NGHP-01- <u>03C</u>	2-Jul-06	6.12	1091.4	1086.0	APC Core	1074.6	5.
KGGH01	NGHP-01- <u>04A</u>	23-May-06	6.30	1092.4	1092.0	LWD Tag	1080.8	N/
KGGH02-A	NGHP-01- <u>05A</u>	25-May-06	6.28	962.4	963.0	LWD Tag	951.8	N/
	NGHP-01- <u>05B</u>	5-Jun-06	6.13	962.4	952.0	LWD Tag	940.7	N/
	NGHP-01- <u>05C</u>	10-Jun-06	6.10	962.4	957.2	APC Core	945.8	5.
	NGHP-01- <u>05D</u>	12-Jun-06	6.04	962.4	955.1	APC Core	943.7	7.
	NGHP-01- <u>05E</u>	14-Jun-06	5.97	962.4	955.1	Hole D	943.6	N/
KGGH04	NGHP-01- <u>06A</u>	26-May-06	6.27	1172.4	1171.0	LWD Tag	1159.8	N/
KGGH06-A	NGHP-01- <u>07A</u>	27-May-06	6.24	1297.4	1297.0	LWD Tag	1285.8	N/
	NGHP-01- <u>07B</u>	5-Jul-06	6.02	1297.4	1295.8	APC Core	1284.3	1.
	NGHP-01- <u>07C</u>	7-Jul-06	5.95	1297.4	1295.8	Offset	1284.3	N/
	NGHP-01- <u>07D</u>	8-Jul-06	5.94	1297.4	1295.8	Offset	1284.3	N/
MNGH01-1A	NGHP-01- <u>08A</u>	29-May-06	6.22	1701.4	1700.0	LWD Tag	1688.7	N/
MNGH01-2	NGHP-01- <u>09A</u>	31-May-06	6.20	1950.4	1946.0	LWD Tag	1934.7	N/
GD-3-1	NGHP-01- <u>10A</u>	3-Jun-06	6.13	1055.4	1049.0	LWD Tag	1037.7	N/
	NGHP-01- <u>10B</u>	16-Jun-06	5.94	1055.4	1049.4	APC Core	1037.9	6.
	NGHP-01- <u>10C</u>	18-Jun-06	5.87	1055.4	1050.4*	APC Core	N/A	N/
	NGHP-01- <u>10D</u>	18-Jun-06	5.94	1055.4	1050.4	Hole C	1038.9	N/
GDGH12-A	NGHP-01- <u>11A</u>	4-Jun-06	6.12	1032.4	1018.0	LWD Tag	1006.6	N/
1st New Site	NGHP-01- <u>12A</u>	21-Jun-06	5.84	1049.4	1045.8	APC Core	1034.2	3.
2nd New Site	NGHP-01- <u>13A</u>	23-Jun-06	5.84	1049.4	1044.0	XCB Tag	1032.4	5.
GDGH14-A	NGHP-01- <u>14A</u>	10-Jul-06	6.02	908.6	906.6	APC Core	895.1	2.
GDGH11	NGHP-01- <u>15A</u>	13-Jul-06	6.02	942.4	937.9	APC Core	926.4	4.
Stepout Site	NGHP-01- <u>16A</u>	15-Jul-06	5.91	1267.4	1264.5	APC Core	1252.9	2.
1st ANGH01	NGHP-01- <u>17A</u>	20-Jul-06	5.80	1358.4	1356.0	APC Core	1344.3	2.
	NGHP-01- <u>17B</u>	26-Jul-06	5.67	1358.4	1356.0	XCB Tag	1344.2	N/
MNGH-REL 5	NGHP-01- <u>18A</u>	2-Aug-06	5.59	1391.4	1386.1	APC Core	1374.2	5.
MNGH-GapS	NGHP-01- <u>19A</u>	5-Aug-06	5.68	1439.3	1434.2	APC Core	1422.4	5.
	NGHP-01- <u>19B</u>	7-Aug-06	5.63	1439.3	1433.2	APC Core	1421.4	6.
KGGH05	NGHP-01- <u>20A</u>	10-Aug-06	5.57	1157.4	1157.9	APC Core	1146.0	-0.
	NGHP-01- <u>20B</u>	11-Aug-06	5.55	1157.4	1157.9	Offset	1146.0	N/
New Site FR1	NGHP-01- <u>21A</u>	12-Aug-06	5.53	1055.4	1049.0	Offset	1037.1	N/

**India National Gas Hydrate Program
Expedition NGHP-01
"Sea Floor" Depth to "Water" Depth Conversion**

PROSPECTUS DESIGNATION	SITE/HOLE NUMBER	SPUD DATE	SHIPS DRAFT (meters)	CORRECTED PDR DEPTH (mbrf)	OFFICIAL "SEA FLOOR" DEPTH		"WATER" DEPTH	MET ABOVE/ PDR D
					DES to Sea Floor	TYPE OF	Sea Surface to Sea Floor	
					(mbrf)	DETERMINATION	(meters)	
	NGHP-01- 21B	13-Aug-06	5.53	1056.4	1050.0	Offset	1038.1	N/
	NGHP-01- 21C	14-Aug-06	5.52	1055.4	1049.0	Offset	1037.0	N/

India National Gas Hydrate Program Expedition NGHP-01 Bit Summary

LEG	SITE HOLE	MFG	SIZE	TYPE	SN	METER CORED	METER DRILLED WASHED	TOTAL METER	PREV METERS	CUM METERS	HOURS F/HOLE	PREV HOURS	HOURS TOTAL
1	NGHP-01-01A	RBI	11-7/16"	C-3	CD978	285.0	5.0	290.0	0.0	290.0	9.55	0.00	9.55
2	NGHP-01-02A	Hughes	9-7/8"	J4	495FM	0.0	50.3	50.3	0.0	50.3	2.07	40.58	42.65
	NGHP-01-02B	Hughes	9-7/8"	J4	495FM	0.0	250.0	250.0	50.3	300.3	12.33	42.65	54.98
	NGHP-01-03A	Hughes	9-7/8"	J4	495FM	0.0	300.0	300.0	300.3	600.3	12.85	54.98	67.83
	NGHP-01-04A	Hughes	9-7/8"	J4	495FM	0.0	300.0	300.0	600.3	900.3	14.25	67.83	82.08
	NGHP-01-05A	Hughes	9-7/8"	J4	495FM	0.0	200.0	200.0	900.3	1100.3	10.90	82.08	92.98
	NGHP-01-06A	Hughes	9-7/8"	J4	495FM	0.0	350.0	350.0	1100.3	1450.3	19.17	92.98	112.15
	NGHP-01-07A	Hughes	9-7/8"	J4	495FM	0.0	260.0	260.0	1450.3	1710.3	11.32	112.15	123.47
	NGHP-01-08A	Hughes	9-7/8"	J4	495FM	0.0	350.0	350.0	1710.3	2060.3	14.50	123.47	137.97
	NGHP-01-09A	Hughes	9-7/8"	J4	495FM	0.0	330.0	330.0	2060.3	2390.3	14.50	137.97	152.47
	NGHP-01-10A	Hughes	9-7/8"	J4	495FM	0.0	205.0	205.0	2390.3	2595.3	8.00	152.47	160.47
	NGHP-01-11A	Hughes	9-7/8"	J4	495FM	0.0	200.0	200.0	2595.3	2795.3	5.75	160.47	166.22
	NGHP-01-05B	Hughes	9-7/8"	J4	495FM	0.0	200.0	200.0	2795.3	2995.3	7.25	166.22	173.47
3A	NGHP-01-05C	RBI	11-7/16"	C-3	CD978	200.0	0.0	200.0	290.0	490.0	11.00	9.55	20.55
	NGHP-01-05D	RBI	11-7/16"	C-3	CD978	43.9	157.1	201.0	490.0	691.0	6.08	20.55	26.63
	NGHP-01-05E	RBI	11-7/16"	C-3	CD978	0.0	200.0	200.0	691.0	891.0	5.87	26.63	32.50
	NGHP-01-10B	RBI	11-7/16"	C-3	CD978	204.9	0.0	204.9	891.0	1095.9	18.00	32.50	50.50
	NGHP-01-10C	RBI	11-7/16"	C-3	CD978	9.5	23.1	32.6	1095.9	1128.5	0.00	50.50	50.50
	NGHP-01-10D	RBI	11-7/16"	C-3	CD978	203.8	0.0	203.8	1128.5	1332.3	16.68	50.50	67.18
	NGHP-01-12A	RBI	11-7/16"	C-3	CD978	62.1	88.8	150.9	1332.3	1483.2	5.08	67.18	72.26
	NGHP-01-13A	RBI	11-7/16"	C-3	CD978	0.0	200.0	200.0	1483.2	1683.2	7.00	72.26	79.26
3B	NGHP-01-03B	RBI	11-7/16"	C-3	CD978	300.0	0.0	300.0	1332.3	1632.3	15.04	79.26	94.30
	NGHP-01-03C	RBI	11-7/16"	C-3	CD978	35.5	264.5	300.0	1632.3	1932.3	9.80	94.30	104.10
	NGHP-01-07B	RBI	11-7/16"	C-3	CD978	211.6	0.0	211.6	1932.3	2143.9	10.50	104.10	114.60
	NGHP-01-07C	RBI	11-7/16"	C-3	CD978	0.0	191.2	191.2	2143.9	2335.1	2.60	114.60	117.20
	NGHP-01-07D	RBI	11-7/16"	C-3	CD978	28.8	231.2	260.0	2335.1	2595.1	7.30	117.20	124.50
	NGHP-01-14A	RBI	11-7/16"	C-3	CD978	180.0	0.0	180.0	2595.1	2775.1	8.00	124.50	132.50
	NGHP-01-15A	RBI	11-7/16"	C-3	CD978	200.0	0.0	200.0	2775.1	2975.1	9.60	132.50	142.10
	NGHP-01-16A	RBI	11-7/16"	C-3	CD978	217.0	0.0	217.0	2975.1	3192.1	10.00	142.10	152.10
4	NGHP-01-17A	RBI	11-7/16"	C-3	CD978	691.6	0.0	691.6	3192.1	3883.7	32.00	152.10	184.10
	NGHP-01-17B	RBI	11-7/16"	C-3	CD978	0.0	718.0	718.0	3883.7	4601.7	22.70	184.10	206.80
	NGHP-01-18A	RBI	11-7/16"	C-3	CD978	186.0	4.0	190.0	4601.7	4791.7	3.20	206.80	210.00
	NGHP-01-19A	RBI	11-7/16"	C-3	CD978	296.0	9.0	305.0	4791.7	5096.7	5.90	210.00	215.90
	NGHP-01-19B	RBI	11-7/16"	C-3	CD978	26.3	253.7	280.0	5096.7	5376.7	4.30	215.90	220.20
	NGHP-01-20A	RBI	11-7/16"	C-3	CD978	148.8	0.0	148.8	5376.7	5525.5	6.10	220.20	226.30
	NGHP-01-20B	RBI	11-7/16"	C-3	CD978	38.5	148.8	187.3	5525.5	5712.8	5.80	226.30	232.10
	NGHP-01-21A	RBI	11-7/16"	C-3	CD978	43.1	48.4	91.5	5712.8	5804.3	2.50	232.10	234.60
	NGHP-01-21B	RBI	11-7/16"	C-3	CD978	2.0	198.0	200.0	5804.3	6004.3	5.40	234.60	240.00
	NGHP-01-21C	RBI	11-7/16"	C-3	CD978	4.0	74.0	78.0	6004.3	6082.3	2.60	240.00	242.60

India National Gas Hydrate Program Expedition NGHP-01

Operations Time Distribution

DATE 2005	SITE HOLE	PORT	U/W	BREAKDOWN OF TIME SPENT ON-SITE OPERATING													B
				PIPE TRIP	W-LINE CORE	DRILL WASH	APCT-3 DVTP	LOGGING		REENTRY TIME	RECONC CSG/CMT	SUBSEA TV/VIT	STUCK PIPE	SEVER FISHING	WOW or ICE		
								W-LINE	LWD								
A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	S		
28-Apr	Port	18.00	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
29-Apr	Port	24.00	----	----	----	----	----	----	----	----	LEG 1	----	----	----	----	----	
30-Apr	Port	24.00	----	----	----	----	----	----	----	----		----	----	----	----	----	
1-May	Port	24.00	----	----	----	----	----	----	----	----		----	----	----	----	----	
2-May	Port	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
3-May	Port	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
4-May	Port	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
5-May	P/UW	7.00	17.00	----	----	----	----	----	----	----	----	----	----	----	----	----	
6-May	UW/01A		6.75	9.75	7.50	----	----	----	----	----	----	----	----	----	----	----	
7-May	01A	----	----	----	21.50	----	2.50	----	----	----	----	----	----	----	----	----	
8-May	01A	----	----	4.00	15.00	----	1.00	3.00	----	----	----	----	----	----	----	----	
9-May	01A	----	----	2.00	----	----	----	22.00	----	----	----	----	----	----	----	----	
10-May	01A/UW		20.25	3.75	----	----	----	----	----	----	----	----	----	----	----	----	
11-May	UW	----	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	
12-May	UW	----	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	
13-May	UW	----	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	
14-May	UW	----	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	
15-May	UW	----	12.00	----	----	----	----	----	----	----	----	----	----	----	----	----	
16-May	P/UW	17.50	0.75	----	----	----	----	----	----	----	----	----	----	----	----	----	
17-May	Port	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
18-May	Port	24.00	----	----	----	----	----	----	----	----	LEG 2	----	----	----	----	----	
19-May	P/UW	13.00	11.00	----	----	----	----	----	----	----		----	----	----	----	----	
20-May	UW/02A		7.75	----	----	----	----	----	16.25	----		----	----	----	----	----	----
21-May	02A/02B		----	----	----	----	----	----	24.00	----	----	----	----	----	----	----	
22-May	02B/UW/03A		1.00	----	----	----	----	----	23.00	----	----	----	----	----	----	----	
23-May	03A/UW/04A		1.25	----	----	----	----	----	22.75	----	----	----	----	----	----	----	
24-May	04A/UW/05A		1.00	----	----	----	----	----	23.00	----	----	----	----	----	----	----	
25-May	05A/UW/06A		1.25	----	----	----	----	----	22.75	----	----	----	----	----	----	----	
26-May	06A	----	----	----	----	----	----	----	24.00	----	----	----	----	----	----	----	
27-May	06A/UW/07A		5.00	----	----	----	----	----	19.00	----	----	----	----	----	----	----	
28-May	07A/UW		12.25	----	----	----	----	----	11.75	----	----	----	----	----	----	----	
29-May	UW/08A		11.00	----	----	----	----	----	13.00	----	----	----	----	----	----	----	
30-May	08A/UW/09A		1.75	----	----	----	----	----	22.25	----	----	----	----	----	----	----	
31-May	09A	----	----	----	----	----	----	----	24.00	----	----	----	----	----	----	----	
1-Jun	09A/UW		15.50	----	----	----	----	----	7.25	----	----	----	----	----	----	----	
2-Jun	10A/UW		18.50	----	----	----	----	----	5.50	----	----	----	----	----	----	----	
3-Jun	UW/11A		2.00	----	----	----	----	----	22.00	----	----	----	----	----	----	----	
4-Jun	11A/UW/05B		2.75	----	----	----	----	----	21.25	----	----	----	----	----	----	----	
5-Jun	05B/UW		12.75	----	----	----	----	----	11.25	----	----	----	----	----	----	----	
6-Jun	UW/P	2.25	14.00	----	----	----	----	----	----	----	----	----	----	----	----	----	

India National Gas Hydrate Program Expedition NGHP-01

Operations Time Distribution

DATE 2005	SITE HOLE	PORT	U/W	BREAKDOWN OF TIME SPENT ON-SITE OPERATING													B
				PIPE TRIP	W-LINE CORE	DRILL WASH	APCT-3 DVTP	LOGGING		REENTRY TIME	RECONC CSG/CMT	SUBSEA TV/VIT	STUCK PIPE	SEVER FISHING	WOW or ICE		
								W-LINE	LWD								
A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	S		
7-Jun	Port	24.00	----	----	----	----	----	----	----	----	LEG 3A		----	----	----	.	
8-Jun	Port	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	.	
9-Jun	P/UW	17.75	6.25	----	----	----	----	----	----	----	----	----	----	----	----	.	
10-Jun	UW/05C		14.50	4.75	3.75	----	1.00	----	----	----	----	----	----	----	----	.	
11-Jun	05C	----	----	----	23.00	----	1.00	----	----	----	----	----	----	----	----	.	
12-Jun	05C/D	----	----	1.75	13.50	6.75	1.50	----	----	----	----	----	----	----	----	.	
13-Jun	05D	----	----	7.50	3.00	7.00	----	6.00	----	----	----	----	----	----	----	.	
14-Jun	05D/05E		----	3.50	----	12.00	----	7.50	----	----	----	----	----	----	----	.	
15-Jun	05E/UW/10B		2.50	3.00	----	----	----	18.25	----	----	----	----	----	----	----	.	
16-Jun	10B	----	----	2.25	20.75	----	1.00	----	----	----	----	----	----	----	----	.	
17-Jun	10B	----	----	----	23.00	----	1.00	----	----	----	----	----	----	----	----	.	
18-Jun	10B/10C/10D		----	2.50	19.75	----	1.50	----	----	----	----	----	----	----	----	.	
19-Jun	10D	----	----	----	22.00	----	2.00	----	----	----	----	----	----	----	----	.	
20-Jun	10D	----	----	5.00	8.50	3.50	1.00	5.50	----	----	----	----	----	----	----	.	
21-Jun	10D/12A		----	3.00	2.00	4.50	----	13.50	----	----	----	----	----	----	----	.	
22-Jun	12A	----	----	1.00	13.75	6.50	----	----	----	----	----	----	2.75	----	----	.	
23-Jun	12A/13A		----	2.00	----	10.50	----	10.50	----	----	----	----	----	----	----	.	
24-Jun	13A/UW	----	18.50	3.25	----	----	----	1.50	----	----	----	----	----	----	----	.	
25-Jun	UW/P	15.75	1.75	----	----	----	----	----	----	----	----	----	----	----	----	.	
26-Jun	Port	24.00	----	----	----	----	----	----	----	----	----	----	----	----	----	.	
27-Jun	Port	24.00	----	----	----	----	----	----	----	----	LEG 3B		----	----	----	.	
28-Jun	Port	15.50	8.50	----	----	----	----	----	----	----	----	----	----	----	----	.	
29-Jun	UW/03B		10.50	5.50	7.00	----	1.00	----	----	----	----	----	----	----	----	.	
30-Jun	03B	----	----	----	23.00	----	1.00	----	----	----	----	----	----	----	----	.	
1-Jul	03B/C	----	----	2.00	18.75	----	2.75	----	----	----	----	----	----	----	----	.	
2-Jul	03C	----	----	----	23.25	----	----	----	----	----	----	----	0.75	----	----	.	
3-Jul	03C	----	----	3.00	3.25	9.75	1.00	5.75	----	----	----	----	----	----	----	.	
4-Jul	03C	----	3.25	----	----	----	----	17.50	----	----	----	----	----	----	----	.	
5-Jul	07B	----	1.75	4.75	16.50	----	1.00	----	----	----	----	----	----	----	----	.	
6-Jul	07B	----	----	----	22.00	----	2.00	----	----	----	----	----	----	----	----	.	
7-Jul	07B/C/D		----	10.00	3.25	7.25	----	----	----	----	----	----	----	----	----	.	
8-Jul	07D	----	----	6.25	6.50	8.25	1.00	----	----	----	----	----	----	----	----	.	
9-Jul	07D	----	----	1.75	----	----	----	21.25	----	----	----	----	----	----	----	.	
10-Jul	07D/UW/14A		5.00	7.00	10.25	----	----	1.25	----	----	----	----	----	----	----	.	
11-Jul	14A	----	----	2.50	17.50	----	2.00	1.50	----	----	----	----	----	----	----	.	
12-Jul	UW/15A	----	1.25	4.75	----	----	----	18.00	----	----	----	----	----	----	----	.	
13-Jul	15A	----	----	1.50	20.25	----	2.25	----	----	----	----	----	----	----	----	.	
14-Jul	15A	----	----	2.25	5.75	----	1.25	13.25	----	----	----	----	----	----	----	.	
15-Jul	UW/16A	----	4.50	3.25	14.25	----	2.00	----	----	----	----	----	----	----	----	.	
16-Jul	16A	----	----	2.50	16.00	----	3.50	1.00	----	----	----	----	----	----	----	.	

India National Gas Hydrate Program Expedition NGHP-01

Operations Time Distribution

DATE 2005	SITE HOLE	PORT	U/W	BREAKDOWN OF TIME SPENT ON-SITE OPERATING													B
				PIPE TRIP	W-LINE CORE	DRILL WASH	APCT-3 DVTP	LOGGING		REENTRY TIME	RECONC CSG/CMT	SUBSEA TV/VIT	STUCK PIPE	SEVER FISHING	WOW or ICE		
								W-LINE	LWD								
A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	S		
17-Jul	16A/UW	----	8.00	3.50	-----	-----	-----	11.50	-----	-----	-----	-----	-----	-----	-----	1	
18-Jul	U/W	-----	24.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
19-Jul	U/W	-----	24.00	-----	-----	-----	-----	-----	-----	-----	LEG 4	-----	-----	-----	-----	1	
20-Jul	UW/17A	-----	15.00	5.50	3.25	-----	0.25	-----	-----	-----		-----	-----	-----	-----	1	
21-Jul	17A	-----	-----	-----	22.25	-----	1.75	-----	-----	-----	-----	-----	-----	-----	-----	1	
22-Jul	17A	-----	-----	-----	22.00	-----	2.00	-----	-----	-----	-----	-----	-----	-----	-----	1	
23-Jul	17A	-----	-----	-----	21.75	-----	2.25	-----	-----	-----	-----	-----	-----	-----	-----	1	
24-Jul	17A	-----	-----	-----	22.75	-----	1.25	-----	-----	-----	-----	-----	-----	-----	-----	1	
25-Jul	17A	-----	-----	-----	21.00	-----	3.00	-----	-----	-----	-----	-----	-----	-----	-----	1	
26-Jul	17A/B	-----	-----	8.00	-----	4.00	-----	10.00	-----	-----	-----	-----	-----	-----	-----	1	
27-Jul	17B	-----	-----	-----	-----	24.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
28-Jul	17B	-----	-----	2.00	-----	4.50	-----	15.50	-----	-----	-----	-----	-----	-----	-----	1	
29-Jul	17B/UW	-----	3.50	4.00	-----	-----	-----	16.50	-----	-----	-----	-----	-----	-----	-----	1	
30-Jul	UW	-----	24.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
31-Jul	UW	-----	24.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
1-Aug	UW	-----	24.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
2-Aug	UW/18A	-----	12.50	8.50	0.50	-----	-----	-----	-----	-----	-----	-----	-----	-----	2.50	1	
3-Aug	18A	-----	-----	3.75	15.50	-----	2.75	-----	-----	-----	-----	-----	-----	-----	1.50	1	
4-Aug	18A/UW	-----	12.75	5.25	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
5-Aug	19A	-----	-----	1.00	15.50	-----	2.00	-----	-----	-----	-----	-----	-----	-----	-----	1	
6-Aug	19A	-----	-----	-----	22.25	-----	1.75	-----	-----	-----	-----	-----	-----	-----	-----	1	
7-Aug	19A	-----	-----	4.00	1.50	9.00	2.00	6.50	-----	-----	-----	-----	-----	-----	-----	1	
8-Aug	19A/B	-----	-----	1.50	-----	0.50	-----	21.00	-----	-----	-----	-----	-----	-----	-----	1	
9-Aug	19B/UW	-----	20.00	4.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
10-Aug	UW/20A	-----	14.75	3.75	-----	-----	-----	5.50	-----	-----	-----	-----	-----	-----	-----	1	
11-Aug	20A	-----	-----	2.00	-----	1.50	-----	18.00	-----	-----	-----	-----	-----	-----	-----	1	
12-Aug	20A/B/UW/21A	-----	1.00	7.50	-----	9.00	-----	5.50	-----	-----	-----	-----	-----	-----	-----	1	
13-Aug	21A/21B	-----	-----	-----	18.50	3.25	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
14-Aug	21B	-----	-----	2.50	-----	5.50	-----	14.00	-----	-----	-----	-----	-----	-----	-----	1	
15-Aug	21B/C/UW	-----	2.50	6.50	1.75	3.50	-----	7.75	-----	-----	-----	-----	-----	-----	-----	1	
16-Aug	UW	-----	19.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
17-Aug	Port	18.75	1.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
18-Aug	Port	24.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
19-Aug	Port	19.00	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	
TOTAL (HRS)		456.50	579.75	189.25	593.00	140.75	53.25	299.00	313.00	0.00	0.00	0.00	3.50	0.00	4.00	0	
TOTAL (DAYS)		19.02	24.16	7.89	24.71	5.86	2.22	12.46	13.04	0.00	0.00	0.00	0.15	0.00	0.17	0	

Note-1: Arrive Mumbai

DGH Contract Commence @ 0600 hr 28 April 2006

India National Gas Hydrate Program Expedition NGHP-01

Temperature Tool Deployments

Site No.	Hole No.	Core No.	Core System	Depth (mbsf)
NGHP-01-01 (KKGH-01)	01A	4H	APCT	42.3
		7H	APCT	63.3
		9H	APCT	82.3
		13H	APCT	112.8
		--	DVTP	164.5
		--	DVTP	214.6
NGHP-01-03 (GDGH05-A)	03B	3H	ACPT-3	33.9
		5H	ACPT-3	52.9
		7H	ACPT-3	71.7
		--	DVTP	151.7
		--	DVTP	220.3
		--	DVTP	300.0
NGHP-01-05 (KGGH02-A)	05C	3H	APCT-3	30.8
		4H	APCT	40.3
		6H	APCT-3	59.3
		--	DVTP	115.8
		--	DVTP	200.0
	05D	3H	APCT	35.9
		4H	APCT	44.9
NGHP-01-07 (KGGH06-A)	07B	3H	APCT-3	31.2
		5H	APCT-3	50.2
		7H	APCT-3	69.2
		--	DVTP	115.2
		--	DVTP	174.2
	07D	--	DVTP	260.0
NGHP-01-10 (GD-3-1)	10B	--	DVTP	32.4
		--	DVTP	99.2
		--	DVTP	176.1
	10D	--	DVTP	59.8
		--	DVTP	126.8
		--	DVTP	203.8
NGHP-01-14 (GDGH14-A)	14A	3H	APCT-3	33.0
		5H	APCT-3	52.0
		7H	APCT-3	71.0
		--	DVTP	150.0
		--	DVTP	169.2
		--	DVTP	180.0
NGHP-01-15 (GDGH-11)	15A	3H	APCT-3	38.1
		5H	APCT-3	57.1
		7H	APCT-3	76.1
		--	DVTP	136.2
		--	DVTP	193.8
NGHP-01-16	16A	3H	APCT-3	35.5
(Stepout Hole from Site NGHP-01-07)		5H	APCT-3	54.5
		7H	APCT-3	65.8
		--	DVTP	125.4
		--	DVTP	144.6

India National Gas Hydrate Program Expedition NGHP-01

Temperature Tool Deployments

		--	DVTP	182.6
		--	DVTP	209.8
		--	DVTP	217.0
NGHP-01-17 (ANGH01)	17A	3H	APCT-3	33.0
		5H	APCT-3	52.0
		7H	APCT-3	71.0
		--	DVTP	203.9
		--	DVTP	330.0
		--	DVTP	366.8
		--	DVTP	414.7
		--	DVTP	501.6
		--	DVTP	587.8
		--	DVTP	625.0
		--	DVTP	662.7
NGHP-01-18 (MNGH-Reliance Site 5)	18A	3H	APCT-3	35.9
		5H	APCT-3	54.9
		7H	APCT-3	73.9
		--	DVTP	135.2
		--	DVTP	190.0
NGHP-01-19 (MNGH - Gap Site)	19A	3H	APCT-3	33.8
		5H	APCT-3	52.8
		7H	APCT-3	66.3
		--	DVTP	117.4
		--	DVTP	157.9
		--	DVTP	196.3
		--	DVTP	300.0
		--	DVTP	305.0
NGHP-01-20 (KGGH05)	20A	3H	APCT-3	32.5
		--	DVTP	70.9

Appendix 2. OP_SCHD (Operations Schedules)

India National Gas Hydrate Program (NGHP) Operations Schedule for Expedition NGHP-01

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Arrive Mumbai: Contract Commence				0600 28-Apr-06
Mobilization/Mumbai Port Call	0600 28-Apr	169.00	7.0	0700 05-May
Leg 1 (West Coast Core Hole)	0700 05-May-06	263.50	11.0	0630 16-May-06
Chennai I Port Call	0630 16-May	78.50	3.3	1300 19-May
Leg 2 (LWD/MWD Drilling)	1300 19-May-06	440.75	18.4	2145 06-Jun-06
Chennai II Port Call	2145 06-Jun	68.00	2.8	1745 09-Jun
Leg 3A (East Coast Coring - 1)	1745 09-Jun-06	374.50	15.6	0815 25-Jun-06
Chennai III Port Call	0815 25-Jun	79.25	3.3	1530 28-Jun
Leg 3B (East Coast Coring - 2)	1530 28-Jun-06	456.50	19.0	1600 17-Jul-06
Helicopter Science Party Crew Change	0800 17-Jul-06	*** 3 trips ***		0800 17-Jul-06
Leg 4 (Andaman, Mahanadi, & KG Coring)	1600 17-Jul-06	733.25	30.6	0515 17-Aug-06
De-mobilization/Chennai IV Port Call	0515 17-Aug	61.75	2.6	1900 19-Aug
Depart Chennai: Completion of Contract				1900 19-Aug-06
Total Length of India Expedition NGHP-01		113.5	Days	

India National Gas Hydrate Program (NGHP) - Expedition 1 Operations Schedule for Leg 1

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Arrive Mumbai: Contract Commence				0600 28-Apr-06
Mobilization/Mumbai Port Call	0600 28-Apr	169.00	7.0	0700 05-May
Begin Leg 1 (West Coast Core Hole)				0700 05-May-06
Transit 246 nmi to Site 01 (KKGH01) @ 10.2 kt	0700 05-May	23.75	1.0	0645 06-May
Hole-01A: APC to refusal (152.8 mbsf/XCB to 290.0)	0645 06-May	68.00	2.8	0245 09-May
- includes 6ea PCS, 3ea APCT, & 3ea DVTP				
- wireline logging w/triple combo, FMS-sonic &	0245 09-May	13.75	0.6	1630 09-May
- VSP, zero offset, POOH, secure rig for transit	1630 09-May	11.25	0.5	0345 10-May
Transit 1393 nmi to Chennai Pilot Station @ 10.9 kt	0345 10-May	128.25	5.3	1200 15-May
Standby at Chennai Pilot Station	1200 15-May	17.75	0.7	0545 16-May
Transit from pilot station to dock/1st Line Ashore	0545 16-May	0.75	0.0	0630 16-May
End Leg 1 (West Coast Core Hole)				0630 16-May-06

India National Gas Hydrate Program (NGHP) - Expedition 1

Operations Schedule for Leg 2

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Chennai-I Port Call (no crew change)	0630 16-May	78.50	3.3	1300 19-May
Begin Leg 2 (LWD/MWD Drilling)				1300 19-May-06
Transit 191.0 nmi to Site 02 (KGGH03-A) @ 10.2 kt	1300 19-May	18.75	0.8	0745 20-May
Hole-02A: LWD/MWD to 50.3 mbsf (test hole)	0745 20-May	19.25	0.8	0300 21-May
Hole-02B: LWD/MWD to 250.0 mbsf	0300 21-May	24.25	1.0	0315 22-May
Transit 4.8 nmi to Site 03 (GDDH05-A) @ 4.8 kt	0315 22-May	1.00	0.0	0415 22-May
Hole-03A: LWD/MWD to 300.0 mbsf	0415 22-May	30.00	1.3	1015 23-May
Transit 6.5 nmi to Site 04 (KGGH01-A) @ 5.3 kt	1015 23-May	1.25	0.1	1130 23-May
Hole-04A: LWD/MWD to 300.0 mbsf	1130 23-May	27.50	1.1	1500 24-May
Transit 5.3 nmi to Site 05 (KGGH02-A) @ 5.3 kt	1500 24-May	1.00	0.0	1600 24-May
Hole-05A: LWD/MWD to 200.0 mbsf	1600 24-May	25.50	1.1	1730 25-May
Transit 5.5 nmi to Site 06 (KGGH04-A) @ 4.4 kt	1730 25-May	1.25	0.1	1845 25-May
Hole-06A: LWD/MWD to 350.0 mbsf	1845 25-May	34.25	1.4	0500 27-May
Transit 44.0 nmi to Site 07 (KGGH06-A) @ 8.8 kt	0500 27-May	5.00	0.2	1000 27-May
Hole-07A: LWD/MWD to 260.0 mbsf	1000 27-May	25.75	1.1	1145 28-May
Transit 227.0 nmi to Site 08 (MNGH01-1-A) @ 9.8 kt	1145 28-May	23.25	1.0	1100 29-May
Hole-08A: LWD/MWD to 350.0 mbsf	1100 29-May	34.25	1.4	2115 30-May
Transit 12.6 nmi to Site 09 (MNGH01-2) @ 7.2 kt	2115 30-May	1.75	0.1	2300 30-May
Hole-09A: LWD/MWD to 330.0 mbsf	2300 30-May	32.25	1.3	0715 01-Jun
Transit 46.6 nmi to Site 10 (GD-3-1) @ 8.1 kt	0715 01-Jun	5.75	0.2	1300 01-Jun
Rendezvous with tug (tool/personnel exchange)	1300 01-Jun	1.25	0.1	1415 01-Jun
Continue Transit 232.4 nmi to Site 10 (GD-3-1) @ 8.2 kt	1415 01-Jun	28.25	1.2	1830 02-Jun
Hole-010A: LWD/MWD to 205.5 mbsf	1830 02-Jun	26.75	1.1	2115 03-Jun
Transit 11.9 nmi to Site 11 (GDGH12-A) @ 6.0 kt	2115 03-Jun	2.00	0.1	2315 03-Jun
Hole-011A: LWD/MWD to 200.0 mbsf	2315 03-Jun	14.50	0.6	1345 04-Jun
Move in DP mode 3.8 nmi to Site 05 (KGGH02-A) @ 1.0 kt	1345 04-Jun	2.75	0.1	1630 04-Jun
Hole-05B: LWD/MWD to 200.0 mbsf	1630 04-Jun	18.75	0.8	1115 05-Jun
Transit 205.0 nmi to Chennai Pilot Station @ 8.0 kt	1115 05-Jun	25.50	1.1	1245 06-Jun
Standby at Pilot Station	1245 06-Jun	7.75	0.3	2030 06-Jun
Transit from pilot station to dock/1st Line Ashore	2030 06-Jun	1.25	0.1	2145 06-Jun
End Leg 2 (LWD/MWD Drilling)				2145 06-Jun-06

India National Gas Hydrate Program (NGHP) - Expedition 1 Operations Schedule for Leg 3A

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Leg 3A (East Coast Coring-1)				2145 06-Jun-06
Chennai-II Port Call (no crew change)	2145 06-Jun	68.00	2.8	1745 09-Jun
Transit 203 nmi to Site 05 (KGGH02-A) @ 9.8 kt	1745 09-Jun	20.75	0.9	1430 10-Jun
Hole-05C: APC to refusal (78.3 mbsf)/XCB to 200.0 mbsf - includes 2ea PCS, 3ea APC3/APCT & 3ea DVTP	1430 10-Jun	38.50	1.6	0500 12-Jun
Hole-05D: Drill/spot core with APC/XCB to 201.0 mbsf - includes 4ea PCS (TBD), 2ea FPC, 2ea HRC - wireline logging with triple combo only	0500 12-Jun	45.50	1.9	0230 14-Jun
Hole-05E: Drill dedicated logging hole to 200.0 mbsf - wireline logging w/triple combo, FMS-sonic & - VSP, zero offset	0230 14-Jun	41.50	1.7	2000 15-Jun
Transit 15.5 nmi to Site 10 (GD-3-1) @ 6.5 kt	2000 15-Jun	2.50	0.1	2230 15-Jun
Hole-10B: APC 2 cores (12.6 mbsf)/XCB to 204.9 mbsf - includes 3ea PCS, 3ea DVTP, 3 FPC, & 2 HRC	2230 15-Jun	61.25	2.6	1145 18-Jun
Hole-10C/D: APC 4 cores (32.6 mbsf)/XCB to 204.9 mbsf - incl. 3ea PCS, 2ea FPC, & 2ea HRC (possible 3 ea DVTP) - wireline logging w/triple combo, FMS-sonic & - VSP, zero offset	1145 18-Jun	78.75	3.3	1830 21-Jun
Site/Hole-12A: Offset 500m SE f/10A - APC/XCB/P-Core	1830 21-Jun	30.00	1.3	0030 23-Jun
Site/Hole-13A: Offset 150m NW from 12A - WL logging Hole	0030 23-Jun	29.00	1.2	0530 24-Jun
Transit 180.0 nmi to Chennai Pilot Station @ 9.2 kt	0530 24-Jun	19.50	0.8	0100 25-Jun
Standby @ Chennai Pilot Station/Pilot aboard @ 0736 hr	0100 25-Jun	6.50	0.3	0730 25-Jun
Arrive Dockside Chennai/1st Line 0816 hr	0730 25-Jun	0.75	0.0	0815 25-Jun
End Leg 3A (East Coast Coring-1)				0815 25-Jun-06

India National Gas Hydrate Program (NGHP)

Expedition 1 - Leg 3B Operations Schedule

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Leg 3B (East Coast Coring-2)				0815 25-Jun-06
Chennai-III Port Call (crew chg 27th, depart 28th)	0815 25-Jun	79.25	3.3	1530 28-Jun
Transit 192.0 nmi to Site 03 (GDGH05-A) @ 10.1 kt	1530 28-Jun	19.00	0.8	1030 29-Jun
Hole-03B: APC to refusal (~100m)/XCB to 300.0 mbsf	1030 29-Jun	60.00	2.5	2230 01-Jul
- Temp Measurements: 4ea APC3/APCT/3ea DVTP				
- Pressure Coring: 3ea PCS, 1ea FPC, 1ea HRC				
Hole-03C: Drill/pressure core to 300.0 mbsf	2230 01-Jul	70.25	2.9	2045 04-Jul
- includes 3ea PCS, 2ea FPC, 2ea HRC				
- Pressure Coring: 3ea PCS, 2ea FPC, 1ea HRC				
- Wireline Logging: w/triple combo, FMS-sonic				
- VSP cancelled (unable to lower tool in open hole)				
Transit 58.0 nmi to Site 07 (KGGH06-A) @ 11.6 kt	2045 04-Jul	5.00	0.2	0145 05-Jul
Hole-07B: APC to refusal (78.7m)/XCB to 211.6 mbsf	0145 05-Jul	51.00	2.1	0445 07-Jul
- Temperature: 3ea APC3/APCT & 2ea DVTP				
- Pressure Coring: 3ea PCS, 3ea FPC, 1ea HRC				
(Abandoned hole due to stuck XCB cutting shoe)				
Hole-07C: Drill to 184.2 mbsf/POOH to check BHA	0445 07-Jul	15.25	0.6	2000 07-Jul
(pump pressure problem/abandon hole)				
Hole-07D: Drill to 260.0 mbsf w/4ea XCB & 1ea DVTP	2000 07-Jul	58.00	2.4	0600 10-Jul
- Wireline Log: w/triple combo/VSP/FMS-Sonic				
Transit 44.0 nmi to Site 14 (GDGH14-A) @ 11.6 kt	0600 10-Jul	5.00	0.2	1100 10-Jul
Hole-14A: APC to refusal (71.0 m)/XCB to 180.0 mbsf	1100 10-Jul	57.75	2.4	2045 12-Jul
- Temp Measurements: 3ea APC/3 & 2ea DVTP				
- Pressure Coring: 2ea PCS, 1ea FPC, 1ea HRC				
- Wireline Logging: w/triple combo, FMS-sonic &				
- VSP, zero offset				
DP move 4.5 nmi to Site 15 (GDGH11) @ 3.6 kt	2045 12-Jul	1.25	0.1	2200 12-Jul
Hole-15A: APC to refusal (76.1 m)/XCB to 200.0 mbsf	2200 12-Jul	50.00	2.1	0000 15-Jul
- Temp Measurements: 3ea APC3/APCT/3ea DVTP				
- Pressure Coring: 2ea PCS, 1ea FPC, 1ea HRC				
- Wireline Logging: w/triple combo, FMS-sonic				
Transit 43.0 nmi to Site 16 (New-Stepout Site) @ 9.6 kt	0000 15-Jul	4.50	0.2	0430 15-Jul
Hole-16A: Drill/pressure core to 220.0 mbsf	0430 15-Jul	59.50	2.5	1600 17-Jul
- Temp Measurements: 3ea APC3/APCT/5ea DVTP				
- Pressure Coring: 2ea PCS, 1ea FPC, 1ea HRC				
- Wireline Log: w/triple combo & FMS-sonic only				
End Leg 3B (East Coast Coring-2)				1600 17-Jul
Helicopter Rendezvous-3 trips req'd for science party crew chg		0800 17-Jul-06		1600 17-Jul-06

India National Gas Hydrate Program (NGHP) - Expedition 1 Operations Schedule for Leg 4

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Leg 4 (Andaman, Mahanadi, & KG Coring)				1600 17-Jul-06
Transit 746.2 nmi to Site 17 (ANGH01) @ 10.5 kt	1600 17-Jul	71.00	3.0	1500 20-Jul
Hole-17A: APC to refusal (118.5 m)/XCB to 691.6 mbsf	1500 20-Jul	149.25	6.2	2015 26-Jul
- Temp Measurements: 4ea APC3/8ea DVTP				
- Pressure Coring: 4ea PCS, 3ea FPC, 3ea HRC				
Hole-17B: Drill dedicated logging hole to 718.0 mbsf	2015 26-Jul	72.25	3.0	2030 29-Jul
- Wireline Logging: w/triple combo, FMS-sonic &				
- VSP, zero offset				
Transit 726 nmi to Site 18 (MNGH-Reliance 5) @ 8.3 kt	2030 29-Jul	88.00	3.7	1230 02-Aug
Hole-18A: APC to refusal (115.9m)/XCB to 190.0 mbsf	1230 02-Aug	37.50	1.6	0200 04-Aug
- Temperature: 2ea APC3/APCT & 2ea DVTP				
Transit 12.0 nmi to Site 19 (MNGH-Gap Site) @ 0.9 kt	0200 04-Aug	12.75	0.5	1445 04-Aug
Hole-19A: APC to 94.8 m/XCB to 300.0 mbsf	1445 04-Aug	71.75	3.0	1430 07-Aug
- Temperature: 3ea APC3 & 5ea DVTP				
- Pressure Coring: 2ea PCS, 2ea FPC, 2ea HRC				
Hole-19B: 3ea APC plus logging hole to 280.0 mbsf	1430 07-Aug	37.50	1.6	0400 09-Aug
- Wireline Logging: w/triple combo, FMS-sonic &				
- VSP, zero offset				
Transit 12.0 nmi to Site 18 @ 10.5 kt (rec beacon)	0400 09-Aug	2.75	0.1	0645 09-Aug
Transit 301.0 nmi to Site 20 (KGGH05) @ 9.3 kt	0645 09-Aug	32.25	1.3	1500 10-Aug
Hole-20A: APC to refusal (22.9 m)/XCB to 148.8 mbsf	1500 10-Aug	33.75	1.4	0045 12-Aug
- Temperature: 1ea APC3 & 1ea DVTP				
- Pressure Coring: 1ea PCS/Abandon Hole				
Hole-20B: Attempt 2nd core hole to 300.0 mbsf	0045 12-Aug	15.75	0.7	1630 12-Aug
- Abandon hole at 187.3 mbsf/hole packing off				
DP Move 3.3 nmi to Site NGHP-01-21 (FR1 Site) @ 3.3 kt	1630 12-Aug	1.00	0.0	1730 12-Aug
Hole-21A: Pressure core/4ea XCB hole to 91.5 mbsf	1730 12-Aug	22.00	0.9	1530 13-Aug
- Pressure Coring: No PCS, 3ea FPC & 3ea HRC				
Hole-21B: PCore +Logging hole to 205.0 mbsf	1530 13-Aug	33.00	1.4	0030 15-Aug
- Pressure Coring: 1ea FPC & 1ea HRC				
- Wireline Logging: Marginal triple combo only				
Hole-21C: Pressure core hole to 78.0 mbsf	0030 15-Aug	21.00	0.9	2130 15-Aug
- Pressure Coring: 2ea FPC & 2ea HRC				
Transit ~197 nmi to Chennai @ 8.9 kt	2130 15-Aug	21.25	0.9	1845 16-Aug
Standby at Pilot Station	1845 16-Aug	9.50	0.4	0415 17-Aug
Transit from Pilot Station to Dock - 1st Line 0510 hr	0415 17-Aug	1.00	0.0	
End Leg 4 (Andaman, Mahanadi, & KG Coring)				0515 17-Aug
Chennai Port Call (Demobilization)	0515 17-Aug	61.75	2.6	1900 19-Aug
Depart Chennai for Singapore End of Expedition NGHP-01				1900 19-Aug

India National Gas Hydrate Program (NGHP) - Expedition 1

Operations Schedule for Leg 1

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Arrive Mumbai: Contract Commence				0600 28-Apr-06
Mobilization/Mumbai Port Call	0600 28-Apr	169.00	7.0	0700 05-May
Begin Leg 1 (West Coast Core Hole)				0700 05-May-06
Transit 246 nmi to Site 01 (KKGH01) @ 10.2 kt	0700 05-May	23.75	1.0	0645 06-May
Hole-01A: APC to refusal (152.8 mbsf/XCB to 290.0)	0645 06-May	68.00	2.8	0245 09-May
- includes 6ea PCS, 3ea APCT, & 3ea DVTP				
- wireline logging w/triple combo, FMS-sonic &	0245 09-May	13.75	0.6	1630 09-May
- VSP, zero offset, POOH, secure rig for transit	1630 09-May	11.25	0.5	0345 10-May
Transit 1393 nmi to Chennai Pilot Station @ 10.9 kt	0345 10-May	128.25	5.3	1200 15-May
Standby at Chennai Pilot Station	1200 15-May	17.75	0.7	0545 16-May
Transit f/pilot station to dock/1st Line Ashore	0545 16-May	0.75	0.0	0630 16-May
End Leg 1 (West Coast Core Hole)				0630 16-May-06

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01- (KKGH01)

Operations Schedule for Hole 01A (APC/XCB/PCS Core Hole)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)			
		(hours)	(days)				
Begin Hole NGHP-01-01A				0645 06-May	Sea Floor (m)		
End Sea Voyage/Switch to DP mode	0645 06-May	0.00	0.0	0645 06-May	2674.2		
PU drill collars/strap/drift all DC's	0645 06-May	2.75	0.1	0930 06-May	mbsf	mbrf	Adv
RIH to 2675 mbrf (drift/strap all DP)	0930 06-May	5.50	0.2	1500 06-May			
PU top drive/knobbies, space out DP, pump pig	1500 06-May	1.50	0.1	1630 06-May			
Spud attempt #1 - zero recovery	1630 06-May	0.75	0.0	1715 06-May			
Spud hole (sea floor @ 2674.2 mbrf)	1715 06-May	0.50	0.0	1745 06-May	0.0	2,674.2	0.0
1st core-on-deck (1H) to 2.3 mbsf	1745 06-May	0.50	0.0	1815 06-May	4.3	2,678.5	4.3
APC core 2H	1815 06-May	2.50	0.1	2045 06-May	13.8	2,688.0	9.5
APC core 3H	2045 06-May	1.50	0.1	2215 06-May	23.3	2,697.5	9.5
APC core 4H w/APCT-1	APCT 2215 06-May	1.25	0.1	2330 06-May	32.8	2,707.0	9.5
APC core 5H	2330 06-May	1.75	0.1	0115 07-May	42.3	2,716.5	9.5
PCS/PCSM-1 core 6P (1m overdrill)	PCS-1 0115 07-May	1.50	0.1	0245 07-May	44.3	2,718.5	2.0
APC core 7H w/APCT-2	APCT 0245 07-May	1.50	0.1	0415 07-May	53.8	2,728.0	9.5
APC core 8H	0415 07-May	0.75	0.0	0500 07-May	63.3	2,737.5	9.5
APC core 9H w/APCT-3	APCT 0500 07-May	1.25	0.1	0615 07-May	72.8	2,747.0	9.5
APC core 10H	0615 07-May	1.00	0.0	0715 07-May	82.3	2,756.5	9.5
APC core 11H	0715 07-May	0.75	0.0	0800 07-May	91.8	2,766.0	9.5
PCS/PCSM-2 core 12P (1m overdrill)	PCS-2 0800 07-May	1.25	0.1	0915 07-May	93.8	2,768.0	2.0
APC core 13H w/APCT-4	APCT 0915 07-May	1.25	0.1	1030 07-May	103.3	2,777.5	9.5
APC core 14H through 19H	1030 07-May	4.75	0.2	1515 07-May	152.8	2,827.0	49.5
PCS/PCSM-3 core 20P (1m overdrill)	PCS-3 1515 07-May	1.25	0.1	1630 07-May	154.8	2,829.0	2.0
Switch to XCB core 21X to 164.5 mbsf	1630 07-May	1.50	0.1	1800 07-May	164.5	2,838.7	9.7
DVTP-1 temperature	DVTP 1800 07-May	1.00	0.0	1900 07-May	164.5	2,838.7	0.0
XCB core 22X through 25X to 203.0 mbsf	1900 07-May	6.25	0.3	0115 08-May	203.0	2,877.2	38.5
PCS/PCSM-4 core 26P (1m overdrill)	PCS-4 0115 08-May	1.25	0.1	0230 08-May	205.0	2,879.2	2.0
XCB core 27X to 214.6 mbsf	0230 08-May	1.25	0.1	0345 08-May	214.6	2,888.8	9.6
DVTP-2 temperature	DVTP 0345 08-May	1.00	0.0	0445 08-May	214.6	2,888.8	0.0
XCB core 28X through 30X 243.6 mbsf	0445 08-May	4.00	0.2	0845 08-May	243.6	2,917.8	29.0
PCS/PCSM-5 core 31P (1m overdrill)	PCS-5 0845 08-May	1.00	0.0	0945 08-May	245.6	2,919.8	2.0
XCB core 32X through 35X to 282.1 mbsf	0945 08-May	3.75	0.2	1330 08-May	282.1	2,956.3	36.5
XCB core 36X to 289.0 mbsf	1330 08-May	1.00	0.0	1430 08-May	289.0	2,963.2	6.9
PCS/PCSM-6 core 37P (1m overdrill)	PCS-6 1430 08-May	1.00	0.0	1530 08-May	290.0	2,964.2	1.0
Sweep Hole/wiper trip/displace hole f/logging	1530 08-May	4.00	0.2	1930 08-May			
POOH, rack TD/PU knobby/set EOP @ 83.9 mbsf	1930 08-May	1.50	0.1	2100 08-May			
Rig-up for wireline logging	2100 08-May	0.50	0.0	2130 08-May			
MU/RIH/log with Triple Combo to 283.8 mbsf	2130 08-May	6.50	0.3	0400 09-May			
Log with FMS-sonic to 285.8 mbsf	0400 09-May	6.25	0.3	1015 09-May			
MU/trouble shoot VSP tools/tools won't pass bit	1015 09-May	11.25	0.5	2130 09-May			
Rig-down from wireline logging	2130 09-May	0.50	0.0	2200 09-May			
POOH/clear sea floor at 2220 hr	2200 09-May	0.25	0.0	2215 09-May			
Cont. POOH/rack BHA in derrick/prepare f/transit	2215 09-May	5.50	0.2	0345 10-May			
Switch to cruise mode @ 0345 hr	0345 10-May	0.00	0.0	0345 10-May			
End Hole NGHP1-01A				0345 10-May			
Total Hours/Days		93.00	3.9				

India National Gas Hydrate Program (NGHP) - Expedition 1 Operations Schedule for Leg 2

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Chennai-I Port Call (no crew change)	0630 16-May	78.50	3.3	1300 19-May
Begin Leg 2 (LWD/MWD Drilling)				1300 19-May-06
Transit 191.0 nmi to Site 02 (KGGH03-A) @ 10.2 kt	1300 19-May	18.75	0.8	0745 20-May
Hole-02A: LWD/MWD to 50.3 mbsf (test hole)	0745 20-May	19.25	0.8	0300 21-May
Hole-02B: LWD/MWD to 250.0 mbsf	0300 21-May	24.25	1.0	0315 22-May
Transit 4.8 nmi to Site 03 (GDDH05-A) @ 4.8 kt	0315 22-May	1.00	0.0	0415 22-May
Hole-03A: LWD/MWD to 300.0 mbsf	0415 22-May	30.00	1.3	1015 23-May
Transit 6.5 nmi to Site 04 (KGGH01-A) @ 5.3 kt	1015 23-May	1.25	0.1	1130 23-May
Hole-04A: LWD/MWD to 300.0 mbsf	1130 23-May	27.50	1.1	1500 24-May
Transit 5.3 nmi to Site 05 (KGGH02-A) @ 5.3 kt	1500 24-May	1.00	0.0	1600 24-May
Hole-05A: LWD/MWD to 200.0 mbsf	1600 24-May	25.50	1.1	1730 25-May
Transit 5.5 nmi to Site 06 (KGGH04-A) @ 4.4 kt	1730 25-May	1.25	0.1	1845 25-May
Hole-06A: LWD/MWD to 350.0 mbsf	1845 25-May	34.25	1.4	0500 27-May
Transit 44.0 nmi to Site 07 (KGGH06-A) @ 8.8 kt	0500 27-May	5.00	0.2	1000 27-May
Hole-07A: LWD/MWD to 260.0 mbsf	1000 27-May	25.75	1.1	1145 28-May
Transit 227.0 nmi to Site 08 (MNGH01-1-A) @ 9.8 kt	1145 28-May	23.25	1.0	1100 29-May
Hole-08A: LWD/MWD to 350.0 mbsf	1100 29-May	34.25	1.4	2115 30-May
Transit 12.6 nmi to Site 09 (MNGH01-2) @ 7.2 kt	2115 30-May	1.75	0.1	2300 30-May
Hole-09A: LWD/MWD to 330.0 mbsf	2300 30-May	32.25	1.3	0715 01-Jun
Transit 46.6 nmi to Site 10 (GD-3-1) @ 8.1 kt	0715 01-Jun	5.75	0.2	1300 01-Jun
Rendezvous with tug (tool/personnel exchange)	1300 01-Jun	1.25	0.1	1415 01-Jun
Continue Transit 232.4 nmi to Site 10 (GD-3-1) @ 8.2 kt	1415 01-Jun	28.25	1.2	1830 02-Jun
Hole-010A: LWD/MWD to 205.5 mbsf	1830 02-Jun	26.75	1.1	2115 03-Jun
Transit 11.9 nmi to Site 11 (GDGH12-A) @ 6.0 kt	2115 03-Jun	2.00	0.1	2315 03-Jun
Hole-011A: LWD/MWD to 200.0 mbsf	2315 03-Jun	14.50	0.6	1345 04-Jun
Move in DP mode 3.8 nmi to Site 05 (KGGH02-A) @ 1.0 kt	1345 04-Jun	2.75	0.1	1630 04-Jun
Hole-05B: LWD/MWD to 200.0 mbsf	1630 04-Jun	18.75	0.8	1115 05-Jun
Transit 205.0 nmi to Chennai Pilot Station @ 8.0 kt	1115 05-Jun	25.50	1.1	1245 06-Jun
Standby at Pilot Station	1245 06-Jun	7.75	0.3	2030 06-Jun
Transit f/pilot station to dock/1st Line Ashore	2030 06-Jun	1.25	0.1	2145 06-Jun
End Leg 2 (LWD/MWD Drilling)				2145 06-Jun-06

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-02 (KGGH03-A)

Operations Schedule for Hole 02A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-02A				0745 20-May
End Sea Voyage/Switch to DP mode/position ship	0745 20-May	0.25	0.0	0800 20-May
Layout SBDC/PU 8-1/4" drill collar	0800 20-May	0.50	0.0	0830 20-May
MU LWD/MWD tools and BHA	0830 20-May	4.50	0.2	1300 20-May
Pick-up top drive & function test LWD/MWD tools	1300 20-May	1.00	0.0	1400 20-May
Rack top drive	1400 20-May	0.50	0.0	1430 20-May
Load Cs 137 source material	1430 20-May	1.00	0.0	1530 20-May
RIH with LWD BHA and 1-stand of DP.	1530 20-May	0.50	0.0	1600 20-May
PU circ head/LO/PU top drive/function test tools/rack TD	1600 20-May	2.00	0.1	1800 20-May
RIH with DP to 1030.3 mbrf and PU top drive	1800 20-May	2.50	0.1	2030 20-May
Calibrate drawworks encoder/geolograph/pump test	2030 20-May	2.50	0.1	2300 20-May
Space out DP/tag sea floor @ 1069.0 mbrf/offset 2.0m N	2300 20-May	1.00	0.0	0000 21-May
Spud Hole NGHP-01-02A @ 0005 hr (mudline @ 1069.0 mbrf)	0000 21-May	0.00	0.0	0000 21-May
LWD/MWD to 1119.3 mbrf (50.3 mbsf)/pump 10 bbl heavy mud	0000 21-May	2.75	0.1	0245 21-May
POOH with LWD tools/Clear sea floor @ 0305 hr	0245 21-May	0.25	0.0	0300 21-May
End Hole NGHP-01-02A				0300 21-May
Total Hours/Days		19.25	0.8	

Operations Schedule for Hole 02B (LWD/MWD Drilling)

Begin Hole NGHP-01-02B				0300 21-May-06
Offset vessel 3m north of Hole 02A/space out DP	0300 21-May	0.00	0.0	0300 21-May
Spud Hole NGHP-01-02B @ 0325 hr (mudline @ 1,069.0 mbrf)	0300 21-May	0.50	0.0	0330 21-May
LWD/MWD @ 25m/hr ROP to TD @ 1319.0 mbrf (250.0 mbsf)	0330 21-May	15.50	0.6	1900 21-May
Displace hole w/60 bbls 10.5 ppg mud/POOH w/TD to 76.3 mbsf	1900 21-May	1.50	0.1	2030 21-May
Reverse log with LWD/MWD @ 125 m/hr to S/F.	2030 21-May	1.75	0.1	2215 21-May
Clear sea floor at 2215 hr/POOH with top drive to 1030.6 mbrf	2215 21-May	0.25	0.0	2230 21-May
Rack top drive	2230 21-May	0.50	0.0	2300 21-May
POOH with DP	2300 21-May	1.50	0.1	0030 22-May
Rack BHA/layout NMR, remove source/download data	0030 22-May	2.75	0.1	0315 22-May
Pull thrusters/hydrophones/prep for transit/begin sea voyage	0315 22-May	0.00	0.0	0315 22-May
End Hole NGHP1-02B				0315 22-May
Total Hours/Days		24.25	1.0	

LWD/MWD Drilling Parameters			
	TOUR	0000-1200	1200-2400
WOB:		2-5K	5-10K
RPM:		60	60
SPM:		80	80
Pressure:		700 psi	700 psi
Torque (amps):		100	100-150
ROP:		----	25 m/hr

India National Gas Hydrate Program (NGHP) - Expedition 1
Site NGHP-01-03 (GDDH-05-A)
Operations Schedule for Hole 03A
(LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-03A				0415 22-May
End Sea Voyage/Switch to DP mode/position ship	0415 22-May	0.25	0.0	0430 22-May
Upload tools/load source/RIH to 150 mbrf	0430 22-May	1.50	0.1	0600 22-May
PU top drive/test tools/rack top drive	0600 22-May	1.00	0.0	0700 22-May
RIH to 1077.2 mbrf	0700 22-May	1.50	0.1	0830 22-May
PU top drive	0830 22-May	0.50	0.0	0900 22-May
Space out DP/tag sea floor (mudline @ 1092.0 mbrf)/offset 2m	0900 22-May	0.25	0.0	0915 22-May
Spud Hole NGHP-01-03A @ 0915 hr	0915 22-May	0.00	0.0	0915 22-May
LWD/MWD to 300.0 mbsf	0915 22-May	16.00	0.7	0115 23-May
Displace hole to 92.5 bbls of 10.5 ppg	0115 23-May	0.50	0.0	0145 23-May
POOH with top drive to 23.1 mbsf	0145 23-May	1.75	0.1	0330 23-May
Log with LWD/MWD to 14.5 mbsf	0330 23-May	1.00	0.0	0430 23-May
Clear sea floor @ 0430 hr.	0430 23-May	0.00	0.0	0430 23-May
Rack top drive	0430 23-May	0.50	0.0	0500 23-May
POOH to surface/rack BHA/download data	0500 23-May	3.00	0.1	0800 23-May
Check float valve & bit/layout GeoVision & SonicVision	0800 23-May	1.50	0.1	0930 23-May
P/U GeoVision & SonicVision/secure for sea	0930 23-May	0.75	0.0	1015 23-May
Switch to cruise mode/begin transit	1015 23-May	0.00	0.0	1015 23-May
End Hole NGHP-01-03A				1015 23-May

Total Hours/Days

30.00 1.3

LWD/MWD Drilling Parameters			
	TOUR	0000-1200	1200-2400
WOB:		2K	6-10K
RPM:		60	60
SPM:		75	75
GPM:		370	370
Pressure:		550 psi	650 psi
Torque (amps):		----	100-125
ROP:		----	25 m/hr

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-04 (KGGH01-A)

Operations Schedule for Hole 04A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-04A				1130 23-May
End Sea Voyage/Switch to DP mode/position ship	1130 23-May	0.00	0.0	1130 23-May
Upload tools/deck test tools/load source	1130 23-May	1.50	0.1	1300 23-May
RIH w/2-stands/PU circulating head/function test tools	1300 23-May	0.50	0.0	1330 23-May
RIH to 1048.2 mbrf	1330 23-May	1.50	0.1	1500 23-May
Pick up top drive	1500 23-May	0.50	0.0	1530 23-May
Space out/tag sea bed (mudline @ 1092.0 mbrf)/offset 2m N	1530 23-May	0.50	0.0	1600 23-May
Spud Hole NGHP-01-04A @ 1610 hr	1600 23-May	0.25	0.0	1615 23-May
LWD/MWD to 300.0 mbsf	1615 23-May	17.50	0.7	0945 24-May
Displace hole to 92.5 bbls of 10.5 ppg	0945 24-May	0.50	0.0	1015 24-May
POOH with top drive to 214.7 mbsf	1015 24-May	0.50	0.0	1045 24-May
Rack top drive	1045 24-May	0.50	0.0	1115 24-May
POOH/clear sea floor @ 1130 hr	1115 24-May	0.25	0.0	1130 24-May
POOH to surface/rack BHA	1130 24-May	2.00	0.1	1330 24-May
Upload tools/source/download data/clear DES @ 1450 hr	1330 24-May	1.25	0.1	1445 24-May
Switch to cruise mode/begin transit	1445 24-May	0.25	0.0	1500 24-May
End Hole NGHP-01-04A				1500 24-May

Total Hours/Days

27.50 1.1

LWD/MWD Drilling Parameters			
	TOUR	1200-2400	0000-1200
WOB:		4-6K	5-10K
RPM:		60	60
SPM:		75	75
GPM:		370	370
Pressure:		600 psi	600 psi
Torque (amps):		100	100
ROP:		25 m/hr	25 m/hr

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-05 (KGGH-02-A)

Operations Schedule for Hole 05A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-05A				1600 24-May
End Sea Voyage/Switch to DP mode/position ship	1600 24-May	0.00	0.0	1600 24-May
Upload data/troubleshoot SonicVision/deck test/load source	1600 24-May	2.50	0.1	1830 24-May
RIH to 114.8 mbrf/test tools/RIH to 935.0 mbrf	1830 24-May	2.00	0.1	2030 24-May
PU top drive	2030 24-May	0.50	0.0	2100 24-May
Space out DP/tag sea floor (mudline @ 963.0 mbrf)/offset 2m	2100 24-May	0.25	0.0	2115 24-May
Spud Hole NGHP-01-05A @ 2205 hr	2115 24-May	0.75	0.0	2200 24-May
LWD/MWD to 200.0 mbsf	2200 24-May	13.75	0.6	1145 25-May
Displace hole to 56.6 bbls of 10.5 ppg/perform LWD downlink	1145 25-May	0.75	0.0	1230 25-May
POOH to 143.2 mbsf and rack top drive	1230 25-May	0.50	0.0	1300 25-May
POOH with DP/clear sea floor @ 1335 hr/rack 2-stds DC's	1300 25-May	2.00	0.1	1500 25-May
Rem source/Dload data, C/O tools/batteries/clr DES @ 1720 hr	1500 25-May	2.25	0.1	1715 25-May
Switch to cruise mode/begin transit	1715 25-May	0.25	0.0	1730 25-May
End Hole NGHP-01-05A				1730 25-May
Total Hours/Days		25.50	1.1	

LWD/MWD Drilling Parameters			
	TOUR	1200-2400	0000-1200
WOB:	2K	8-10K	
RPM:	30	60	
SPM:	75	75	
GPM:	370	370	
Pressure:	500 psi	600 psi	
Torque (amps):	----	----	
ROP:	----	----	

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-06 (KGGH04-A)

Operations Schedule for Hole 06A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-06A				1845 25-May
End Sea Voyage/Switch to DP mode/position ship	1845 25-May	0.25	0.0	1900 25-May
M/U GeoVision/deck test/load source/RIH to 114.8 mbrf/test	1900 25-May	2.00	0.1	2100 25-May
Continue RIH to 1133.4 mbrf	2100 25-May	1.50	0.1	2230 25-May
PU top drive	2230 25-May	0.50	0.0	2300 25-May
Space out DP/tag sea floor (mudline @ 1171.0 mbrf)	2300 25-May	1.00	0.0	0000 26-May
Spud Hole NGHP-01-06A @ 0024 hr	0000 26-May	0.25	0.0	0015 26-May
LWD/MWD to 350.0 mbsf	0015 26-May	22.75	0.9	2300 26-May
Displace hole to 110 bbls of 10.5 ppg/perform LWD downlink	2300 26-May	0.75	0.0	2345 26-May
POOH to 338.7 mbsf and rack top drive	2345 26-May	0.25	0.0	0000 27-May
POOH to 278.0 mbrf/rack top drive	0000 27-May	0.75	0.0	0045 27-May
POOH/clear sea floor @ 0120 hr/POOH to 143.3 mbrf	0045 27-May	2.75	0.1	0330 27-May
Rack BHA/download data/breakout bit/inspect float	0330 27-May	1.50	0.1	0500 27-May
Switch to cruise mode/begin transit	0500 27-May	0.00	0.0	0500 27-May
End Hole NGHP-01-06A				0500 27-May

Total Hours/Days

34.25 1.4

LWD/MWD Drilling Parameters			
	TOUR	0000-1200	1200-2400
WOB:		2-6K	5-10K
RPM:		60	60
SPM:		75	100
GPM:		370	500
Pressure:		600 psi	1150 psi
Torque (amps):		75-100	100-125
ROP:		----	----

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-07 (KGGH06-A)

Operations Schedule for Hole 07A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-07A				1000 27-May
End Sea Voyage/Switch to DP mode/position ship	1000 27-May	0.25	0.0	1015 27-May
Upload tools/load source/RIH to 113.6 mbrf/test	1015 27-May	1.75	0.1	1200 27-May
Continue RIH to 1133.4 mbrf	1200 27-May	2.00	0.1	1400 27-May
PU top drive	1400 27-May	0.50	0.0	1430 27-May
Space out DP/tag mudline @ 1297.0 mbrf/offset 2m N	1430 27-May	0.75	0.0	1515 27-May
Spud Hole NGHP-01-07A @ 1525 hr	1515 27-May	0.25	0.0	1530 27-May
LWD/MWD to 260.0 mbsf	1530 27-May	14.00	0.6	0530 28-May
Displace hole to 79 bbls of 10.5 ppg/perform LWD downlink	0530 28-May	0.50	0.0	0600 28-May
POOH to 1504.7 mbrf/clear sea floor@0726 hr/rack top drive	0600 28-May	1.00	0.0	0700 28-May
POOH to 143.3 mbrf	0700 28-May	2.00	0.1	0900 28-May
Rack BHA/rem source/download data/inspect bit & float	0900 28-May	1.00	0.0	1000 28-May
Layout LWD tools to pipe racker and riser hatch	1000 28-May	1.75	0.1	1145 28-May
Switch to cruise mode/begin transit	1145 28-May	0.00	0.0	1145 28-May
End Hole NGHP-01-07A				1145 28-May
Total Hours/Days		25.75	1.1	

LWD/MWD Drilling Parameters			
	TOUR	1200-2400	0000-1200
WOB:		5-8K	----
RPM:		60	----
SPM:		75	----
GPM:		370	----
Pressure:		650 psi	----
Torque (amps):		100-125	----
ROP:		----	----

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-08 (MNGH01-1-A)

Operations Schedule for Hole 08A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-08A				1100 29-May
End Sea Voyage/Switch to DP mode/position ship	1100 29-May	0.00	0.0	1100 29-May
PU mousehole, bit, GeoVison/EcoScope/SonicVision tools	1100 29-May	1.00	0.0	1200 29-May
Cont w/MWD BHA/deck test/trouble shoot/re-test/load source	1200 29-May	5.00	0.2	1700 29-May
Continue RIH to 1673.5/kill DP mbrf	1700 29-May	2.50	0.1	1930 29-May
PU top drive	1930 29-May	0.50	0.0	2000 29-May
Calibrate encoder/space out/tag ML @ 1,700.0 mbrf/offset 2m	2000 29-May	1.00	0.0	2100 29-May
Spud Hole NGHP-01-08A @ 2110 hr	2100 29-May	0.25	0.0	2115 29-May
LWD/MWD to 350.0 mbsf	2115 29-May	18.25	0.8	1530 30-May
Displace hole to 110 bbls of 10.5 ppg/POOH w/TD to 291.1 mbsf	1530 30-May	0.50	0.0	1600 30-May
Rack TD/POOH to 1,504.7 mbrf/clear sea floor@1655 hr/rack BHA	1600 30-May	4.00	0.2	2000 30-May
Unload source/Dload data/inspect bit/float/clear DES @ 2120 hr	2000 30-May	1.25	0.1	2115 30-May
Switch to cruise mode/begin transit	2115 30-May	0.00	0.0	2115 30-May
End Hole NGHP-01-08A				2115 30-May

Total Hours/Days

34.25 1.4

LWD/MWD Drilling Parameters			
	TOUR	1200-2400	0000-1200
WOB:		2K	2-6K
RPM:		60	60
SPM:		75	75
GPM:		370	370
Pressure:		625 psi	650
Torque (amps):		75	75-100
ROP:		----	----

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-09 (MNGH01-2)

Operations Schedule for Hole 09A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-09A				2300 30-May
End Sea Voyage/Switch to DP mode/position ship	2300 30-May	0.00	0.0	2300 30-May
PU & initialize LWD asbly/load source	2300 30-May	2.50	0.1	0130 31-May
RIH 300 ft/test tools	0130 31-May	0.50	0.0	0200 31-May
Continue RIH to 1933.6/kill DP mbrf	0200 31-May	2.50	0.1	0430 31-May
PU top drive	0430 31-May	0.50	0.0	0500 31-May
Space out/tag ML @ 1946.0 mbrf/offset 2m N	0500 31-May	1.00	0.0	0600 31-May
Spud Hole NGHP-01-09A @ 0630 hr	0600 31-May	0.50	0.0	0630 31-May
LWD/MWD to 330.0 mbsf	0630 31-May	17.75	0.7	0015 01-Jun
Displace hole to 103 bbls of 10.5 ppg mud/POOH to 247.5 mbsf	0015 01-Jun	0.75	0.0	0100 01-Jun
Clear sea floor@0205 hr/rack top drive	0100 01-Jun	0.50	0.0	0130 01-Jun
POOH to 142.5 mbrf	0130 01-Jun	3.50	0.1	0500 01-Jun
Rack BHA/Dload data/inspect bit/float	0500 01-Jun	1.00	0.0	0600 01-Jun
LO LWD asbly to pipe racker/bit clear DES @ 0700 hr	0600 01-Jun	1.00	0.0	0700 01-Jun
Switch to cruise mode/begin transit	0700 01-Jun	0.25	0.0	0715 01-Jun
End Hole NGHP-01-09A				0715 01-Jun

Total Hours/Days

32.25	1.3
-------	-----

LWD/MWD Drilling Parameters			
	TOUR	1200-2400	0000-1200
WOB:		2-5K	5K
RPM:		60	60
SPM:		75	75
GPM:		370	370
Pressure:		650 psi	700
Torque (amps):		75-100	75-100
ROP:		----	----

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-10 (GD-3-1)

Operations Schedule for Hole 10A (LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-10A				1830 02-Jun
End Sea Voyage/Switch to DP mode/position ship	1830 02-Jun	0.00	0.0	1830 02-Jun
MU LWD asbly/PU NMR tool/LO tools/load source/RIH to 143.2 mbrf	1830 02-Jun	5.00	0.2	2330 02-Jun
PU circulating head/function test tools	2330 02-Jun	0.50	0.0	0000 03-Jun
Continue RIH to 1030.2/deploy VIT (subsea TV)	0000 03-Jun	2.00	0.1	0200 03-Jun
PU top drive	0200 03-Jun	0.50	0.0	0230 03-Jun
Observe sea floor for obstructions/tag SF @ 1049.0 mbrf	0230 03-Jun	0.50	0.0	0300 03-Jun
Recover VIT	0300 03-Jun	1.00	0.0	0400 03-Jun
Spud Hole NGHP-01-10A @ 0430 hr	0400 03-Jun	0.50	0.0	0430 03-Jun
LWD/MWD to 205.5 mbsf	0430 03-Jun	11.50	0.5	1600 03-Jun
(note excess torque/circ 3X annular vol/25 bbl sweep)	1600 03-Jun	0.00	0.0	1600 03-Jun
Displace hole to 60 bbls of 10.5 ppg mud	1600 03-Jun	0.50	0.0	1630 03-Jun
POOH to 125.7 mbsf/rack top drive	1630 03-Jun	1.00	0.0	1730 03-Jun
POOH w/DP/clr sea floor @1740 hr/rack DC's	1730 03-Jun	2.00	0.1	1930 03-Jun
Dload & layout NMR/rem source/changeout batteries	1930 03-Jun	1.75	0.1	2115 03-Jun
Switch to cruise mode/begin transit	2115 03-Jun	0.00	0.0	2115 03-Jun
End Hole NGHP-01-10A				2115 03-Jun

Total Hours/Days

26.75 1.1

LWD/MWD Drilling Parameters			
	TOUR	1200-2400	0000-1200
WOB:		2-4K	5K
RPM:		60	60
SPM:		75	75
GPM:		370	370
Pressure:		650 psi	725
Torque (amps):		75-100	100-150
ROP:		----	----

India National Gas Hydrate Program (NGHP) - Expedition 1
Site NGHP-01-11 (GDGH12-A)
Operations Schedule for Hole 11A
(LWD/MWD Drilling)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-11A				2315 03-Jun
End Sea Voyage/Switch to DP mode/position ship	2315 03-Jun	0.25	0.0	2330 03-Jun
MU LWD asbly/initialize tools/load source/upload & test	2330 03-Jun	2.00	0.1	0130 04-Jun
RIH w/DP to 1002.7 mbrf	0130 04-Jun	1.50	0.1	0300 04-Jun
PU top drive	0300 04-Jun	0.50	0.0	0330 04-Jun
Space out/tag SF @ 1018.0 mbrf	0330 04-Jun	0.50	0.0	0400 04-Jun
Spud Hole NGHP-01-11A @ 0400 hr	0400 04-Jun	0.00	0.0	0400 04-Jun
LWD/MWD @ 50 m/hr & 30 m/hr to 200.0 mbsf	0400 04-Jun	7.75	0.3	1145 04-Jun
Displace hole to 56 bbls of 10.5 ppg mud	1145 04-Jun	0.25	0.0	1200 04-Jun
POOH to 156.4 mbsf/rack top drive	1200 04-Jun	0.50	0.0	1230 04-Jun
POOH w/DP/clr sea floor @1255 hr/set EOP @ 791.8 mbrf	1230 04-Jun	1.00	0.0	1330 04-Jun
Rec beacon/pull hydrophones/begin move to next site	1330 04-Jun	0.25	0.0	1345 04-Jun
End Hole NGHP-01-11A				1345 04-Jun
Total Hours/Days		14.50	0.6	

LWD/MWD Drilling Parameters			
	TOUR	0000-1200	1200-2400
WOB:		2-6K	4K
RPM:		60	60
SPM:		75	75
GPM:		370	370
Pressure:		650 psi	650
Torque (amps):		75-100	75
ROP:		----	30 m/hr

India National Gas Hydrate Program (NGHP) - Expedition 1 Operations Schedule for Leg 3A

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Leg 3A (East Coast Coring-1)				2145 06-Jun-06
Chennai-II Port Call (no crew change)	2145 06-Jun	68.00	2.8	1745 09-Jun
Transit 203 nmi to Site 05 (KGGH02-A) @ 9.8 kt	1745 09-Jun	20.75	0.9	1430 10-Jun
Hole-05C: APC to refusal (78.3 mbsf)/XCB to 200.0 mbsf - includes 2ea PCS, 3ea APC3/APCT & 3ea DVTP	1430 10-Jun	38.50	1.6	0500 12-Jun
Hole-05D: Drill/spot core with APC/XCB to 201.0 mbsf - includes 4ea PCS (TBD), 2ea FPC, 2ea HRC - wireline logging with triple combo only	0500 12-Jun	45.50	1.9	0230 14-Jun
Hole-05E: Drill dedicated logging hole to 200.0 mbsf - wireline logging w/triple combo, FMS-sonic & - VSP, zero offset	0230 14-Jun	41.50	1.7	2000 15-Jun
Transit 15.5 nmi to Site 10 (GD-3-1) @ 6.5 kt	2000 15-Jun	2.50	0.1	2230 15-Jun
Hole-10B: APC 2 cores (12.6 mbsf)/XCB to 204.9 mbsf - includes 3ea PCS, 3ea DVTP, 3 FPC, & 2 HRC	2230 15-Jun	61.25	2.6	1145 18-Jun
Hole-10C/D: APC 4 cores (32.6 mbsf)/XCB to 204.9 mbsf - incl. 3ea PCS, 2ea FPC, & 2ea HRC (possible 3 ea DVTP) - wireline logging w/triple combo, FMS-sonic & - VSP, zero offset	1145 18-Jun	78.75	3.3	1830 21-Jun
Site/Hole-12A: Offset 500m SE f/10A - APC/XCB/P-Core	1830 21-Jun	30.00	1.3	0030 23-Jun
Site/Hole-13A: Offset 150m NW f/12A - WL logging Hole	0030 23-Jun	29.00	1.2	0530 24-Jun
Transit 180.0 nmi to Chennai Pilot Station @ 9.2 kt	0530 24-Jun	19.50	0.8	0100 25-Jun
Standby @ Chennai Pilot Station/Pilot aboard @ 0736 hr	0100 25-Jun	6.50	0.3	0730 25-Jun
Arrive Dockside Chennai/1st Line 0816 hr	0730 25-Jun	0.75	0.0	0815 25-Jun
End Leg 3A (East Coast Coring-1)				0815 25-Jun-06

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-05 (KGGH02-A)

Operations Schedule for Hole 05C (APC/XCB/PCS Core Hole)

Reference PDR Depth: 961.4 mbrf

Reference BSR Depth: 125 mbsf (estimate)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-05C				1430 10-Jun-06	957.2		
End Sea Voyage/Switch to DP mode	1430 10-Jun	0.00	0.0	1430 10-Jun	957.2		
Make up APC/XCB BHA & RIH to 937.5 mbrf	1430 10-Jun	4.00	0.2	1830 10-Jun	mbsf	mbrf	Adv
Pick up TD/offset vessel 10m SW of Hole A	1830 10-Jun	0.50	0.0	1900 10-Jun			
Space out DP/Spud hole (sea floor @ 957.2 mbrf)	1900 10-Jun	0.25	0.0	1915 10-Jun	0.0	957.2	0.0
1st core-on-deck (1H) to 2.3 mbsf	1915 10-Jun	0.25	0.0	1930 10-Jun	2.3	959.5	2.3
APC core 2H to 11.8 mbsf	1930 10-Jun	1.00	0.0	2030 10-Jun	11.8	969.0	9.5
APC core 3H w/APC3 & APC-M to 21.3 mbsf	APCT-3 2030 10-Jun	1.25	0.1	2145 10-Jun	21.3	978.5	9.5
APC core 4H w/APCT & APC-M to 30.8 mbsf	APCT 2145 10-Jun	1.25	0.1	2300 10-Jun	30.8	988.0	9.5
APC core 5H w/APC-M to 40.3 mbsf	2300 10-Jun	1.00	0.0	0000 11-Jun	40.3	997.5	9.5
APC 6H w/APC3 & APC-M (damaged/lost data)	APC3 0000 11-Jun	1.25	0.1	0115 11-Jun	49.8	1,007.0	9.5
APC core 7H to 59.3 mbsf	0115 11-Jun	1.50	0.1	0245 11-Jun	59.3	1,016.5	9.5
APC core 8H to 68.8 mbsf	0245 11-Jun	1.00	0.0	0345 11-Jun	68.8	1,026.0	9.5
APC core 9H to 78.3 mbsf, sweep hole	0345 11-Jun	2.25	0.1	0600 11-Jun	78.3	1,035.5	9.5
PCS-1 core (10P) to 87.8 mbsf	PCS 0600 11-Jun	1.75	0.1	0745 11-Jun	79.3	1,036.5	1.0
XCB core 11X to 97.3 mbsf, sweep hole	0745 11-Jun	1.00	0.0	0845 11-Jun	86.0	1,043.2	6.7
PCS-2 core (12P) to 98.3 mbsf	PCS 0845 11-Jun	1.00	0.0	0945 11-Jun	87.0	1,044.2	1.0
XCB core 13X to 96.6 mbsf	0945 11-Jun	1.25	0.1	1100 11-Jun	96.6	1,053.8	9.6
XCB core 14X to 106.2 mbsf	1100 11-Jun	0.75	0.0	1145 11-Jun	106.2	1,063.4	9.6
XCB core 15X to 115.8 mbsf	1145 11-Jun	1.25	0.1	1300 11-Jun	115.8	1,073.0	9.6
DVTP-1 temperature @ 115.8 mbsf	DVTP 1300 11-Jun	1.00	0.0	1400 11-Jun	115.8	1,073.0	0.0
XCB core 16X to 125.5 mbsf	1400 11-Jun	1.00	0.0	1500 11-Jun	125.5	1,082.7	9.7
XCB core 17X to 135.1 mbsf	1500 11-Jun	0.75	0.0	1545 11-Jun	135.1	1,092.3	9.6
XCB core 18X to 144.7 mbsf	1545 11-Jun	1.00	0.0	1645 11-Jun	144.7	1,101.9	9.6
XCB core 19X to 154.3 mbsf	1645 11-Jun	0.75	0.0	1730 11-Jun	154.3	1,111.5	9.6
XCB core 20X to 163.9 mbsf	1730 11-Jun	2.50	0.1	2000 11-Jun	163.9	1,121.1	9.6
XCB core 21X to 173.5 mbsf	2000 11-Jun	1.50	0.1	2130 11-Jun	173.5	1,130.7	9.6
XCB core 22X to 183.1 mbsf	2130 11-Jun	1.50	0.1	2300 11-Jun	183.1	1,140.3	9.6
XCB core 23X to 192.7 mbsf	2300 11-Jun	1.75	0.1	0045 12-Jun	192.7	1,149.9	9.6
XCB core 24X to 200.0 mbsf	0045 12-Jun	1.25	0.1	0200 12-Jun	200.0	1,157.2	7.3
DVTP-2 temperature @ 200.0 mbsf	DVTP 0200 12-Jun	1.00	0.0	0300 12-Jun	200.0	1,157.2	0.0
Displace hole to 79 bbls of 10.5 ppg mud	0300 12-Jun	0.50	0.0	0330 12-Jun	Hole TD		
POOH with top drive/clear sea floor	0330 12-Jun	1.50	0.1	0500 12-Jun			
End Hole NGHP-01-05C				0500 12-Jun			
Total Hours/Days		38.50	1.6				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-05 (KGGH02-A)

Operations Schedule for Hole 05D (Pressure Coring Hole)

Reference PDR Depth: 961.4 mbrf

Reference BSR Depth: 125 mbsf (estimate)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-05D				0500 12-Jun-06	955.1		
Offset ship 10 m NE of Hole A & P/U top drive	0500 12-Jun	0.00	0.0	0500 12-Jun	955.1		
Space out for spud/place bit @ 953 mbrf	0500 12-Jun	0.25	0.0	0515 12-Jun	mbsf	mbrf	Adv
RIH with APC/Spud Hole (sea floor @ 955.1 mbrf)	0515 12-Jun	0.25	0.0	0530 12-Jun	0.0	955.1	0.0
APC core 1H on deck to 7.4m	0530 12-Jun	0.50	0.0	0600 12-Jun	7.4	962.5	7.4
APC core 2H on deck to 16.9 mbsf	0600 12-Jun	0.75	0.0	0645 12-Jun	16.9	972.0	9.5
APC core 3H on deck w/APCT to 26.4 mbsf	APCT 0645 12-Jun	0.75	0.0	0730 12-Jun	26.4	981.5	9.5
APC core 4H on deck w/APCT to 35.9 mbsf	APCT 0730 12-Jun	1.50	0.1	0900 12-Jun	35.9	991.0	9.5
Wash down 9.0m to 1000 mbrf/sweep hole	0900 12-Jun	1.00	0.0	1000 12-Jun	44.9	1,000.0	9.0
PCS-1 Pressure Core (5P) to 45.9 mbsf	PCS-1 1000 12-Jun	0.50	0.0	1030 12-Jun	45.9	1,001.0	1.0
Wash down 31.0m to 1032 mbrf/sweep hole	1030 12-Jun	0.75	0.0	1115 12-Jun	76.9	1,032.0	31.0
PCS-2 Pressure Core (6P) to 77.9 mbsf	PCS-2 1115 12-Jun	1.50	0.1	1245 12-Jun	77.9	1,033.0	1.0
Wash/drill down 7.0m to 1040 mbrf/sweep hole	1245 12-Jun	0.75	0.0	1330 12-Jun	84.9	1,040.0	7.0
FPC-1 Pressure Core (7Y) to 85.9 mbsf	FPC-1 1330 12-Jun	1.50	0.1	1500 12-Jun	85.9	1,041.0	1.0
Wash/drill down 3.0m to 1044 mbrf/sweep hole	1500 12-Jun	0.50	0.0	1530 12-Jun	88.9	1,044.0	3.0
HRC-1 Pressure Core (8E) to 89.9 mbsf	HRC-1 1530 12-Jun	1.75	0.1	1715 12-Jun	89.9	1,045.0	1.0
Wash/drill down 3.0m to 1048 mbrf/sweep hole	1715 12-Jun	0.50	0.0	1745 12-Jun	92.9	1,048.0	3.0
PCS-3 Pressure Core (9P) to 93.9 mbsf	PCS-3 1745 12-Jun	1.00	0.0	1845 12-Jun	93.9	1,049.0	1.0
Wash/drill down 21.0m to 1070 mbrf/sweep hole	1845 12-Jun	2.50	0.1	2115 12-Jun	114.9	1,070.0	21.0
HRC-2 Pressure Core (10E) to 115.9 mbsf	HRC-2 2115 12-Jun	2.00	0.1	2315 12-Jun	115.9	1,071.0	1.0
Wash/drill down 9.0m to 1080 mbrf/sweep hole	2315 12-Jun	1.75	0.1	0100 13-Jun	124.9	1,080.0	9.0
FPC-2 Pressure Core (11Y) to 125.9 mbsf	FPC-2 0100 13-Jun	1.50	0.1	0230 13-Jun	125.9	1,081.0	1.0
Drill down 74.1m to 1155.1 mbrf/pull CB/sweep hole	0230 13-Jun	6.00	0.3	0830 13-Jun	200.0	1,155.1	74.1
PCS-4 Pressure Core (12P) to 201.0 mbsf	PCS-4 0830 13-Jun	1.50	0.1	1000 13-Jun	201.0	1,156.1	1.0
Wiper trip to 60 mbsf and back with top drive	1000 13-Jun	2.00	0.1	1200 13-Jun			
Remedial hole conditioning/wiper trips/reaming/sweeps	1200 13-Jun	4.00	0.2	1600 13-Jun			
Displace hole with 10.5 ppg mud	1600 13-Jun	0.50	0.0	1630 13-Jun			
POOH/set back top drive/set EOP @ 60 mbsf to log	1630 13-Jun	1.50	0.1	1800 13-Jun			
Move tools/rig-up for wireline logging	1800 13-Jun	0.75	0.0	1845 13-Jun			
Deploy Triple Combo tool suite & log to ~128 mbsf	WL Log 1845 13-Jun	6.00	0.3	0045 14-Jun			
Rig-down from wireline logging	0045 14-Jun	1.25	0.1	0200 14-Jun			
POOH. Clear sea floor.	0200 14-Jun	0.50	0.0	0230 14-Jun			
End Hole NGHP-01-05D				0230 14-Jun			
Total Hours/Days		45.50	1.9				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-05 (KGGH02-A)

Operations Schedule for Hole 05E (Dedicated Wireline Logging Hole)

Reference PDR Depth: 961.4 mbrf

Reference BSR Depth: 125 mbsf (estimate)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	
		(hours)	(days)		
Begin Hole NGHP-01-05E				0230 14-Jun-06	
Offset ship 10 m NW of Hole A	0230 14-Jun	0.00	0.0	0230 14-Jun	
PU top drive/space out for spudding	0230 14-Jun	1.00	0.0	0330 14-Jun	
Spud Hole (sea floor @ 955.1 mbrf)	0330 14-Jun	0.00	0.0	0330 14-Jun	
Drill to TD of 200.0 mbsf/sweep hole w/25 bbl Sepiolite	0330 14-Jun	9.50	0.4	1300 14-Jun	
Recover center bit & displace hole with 10.5 ppg mud	1300 14-Jun	1.00	0.0	1400 14-Jun	
POOH w/top drive to 67.6 mbsf (10-15K O/P, 20K drag)	1400 14-Jun	1.00	0.0	1500 14-Jun	
Wash/ream hole down to 1155.1 mbrf (200.0 mbsf)	1500 14-Jun	1.50	0.1	1630 14-Jun	
Pump 25 bbl sweep & displace hole with 10.5 ppg mud	1630 14-Jun	0.50	0.0	1700 14-Jun	
POOH/rack TD & set EOP @ 67.5 mbsf to log	1700 14-Jun	1.50	0.1	1830 14-Jun	
Rig-up for wireline logging	WL Log VSP	1830 14-Jun	0.50	1900 14-Jun	
Log with DSI/Gamma to ~200 mbsf		1900 14-Jun	5.00	0.2	0000 15-Jun
Log with Triple Combo to ~200 mbsf		0000 15-Jun	5.00	0.2	0500 15-Jun
Log with FMS-sonic to ~198 mbsf		0500 15-Jun	4.25	0.2	0915 15-Jun
Deploy VSP to ~197 mbsf (daylight only)		0915 15-Jun	6.75	0.3	1600 15-Jun
Rig-down from wireline logging		1600 15-Jun	1.00	0.0	1700 15-Jun
POOH/clear sea floor		1700 15-Jun	0.25	0.0	1715 15-Jun
POOH to rig floor/recover beacon		1715 15-Jun	2.25	0.1	1930 15-Jun
Pull thrusters & hydrophones/prepare rig for transit		1930 15-Jun	0.50	0.0	2000 15-Jun
End Hole NGHP-01-05E				2000 15-Jun	
Total Hours/Days		41.50	1.7		

Note: IODP Marine Mammal Watch policies in effect during VSP operations.

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-10 (GD-3-1)

Operations Schedule for Hole 10B

Reference PDR Depth: 1,055.4 mbrf

Reference BSR Depth: ~175 mbsf (estimate)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-10B				2230 15-Jun-06	1049.4		
End Sea Voyage/Switch to DP mode	2230 15-Jun	0.00	0.0	2230 15-Jun	1049.4		
Make up APC/XCB BHA & RIH to 1,022.4 mbrf	2230 15-Jun	3.00	0.1	0130 16-Jun	mbsf	mbrf	Adv
Pick up top drive	0130 16-Jun	0.50	0.0	0200 16-Jun			
Space out DP to 1043.0 mbrf/Spud hole (1,049.4 mbrf)	0200 16-Jun	0.25	0.0	0215 16-Jun	0.0	1,049.4	0.0
1st core-on-deck (1H) to 1,052.5 mbrf	0215 16-Jun	0.50	0.0	0245 16-Jun	3.1	1,052.5	3.1
APC core 2H to 1062.0 mbrf Target	0245 16-Jun	1.00	0.0	0345 16-Jun	12.6	1,062.0	9.5
Switch to XCB core 3X to 1,071.4 mbrf Depths	0345 16-Jun	1.50	0.1	0515 16-Jun	22.0	1,071.4	9.4
XCB core 4X to 1080.8 mbrf (mbrf)	0515 16-Jun	1.00	0.0	0615 16-Jun	31.4	1,080.8	9.4
PCS pressure core (5P) to 1,081.8 mbrf 1085 PCS-1	0615 16-Jun	1.00	0.0	0715 16-Jun	32.4	1,081.8	1.0
DVTP temperature @ 1,082.8 mbrf DVTP-1	0715 16-Jun	1.00	0.0	0815 16-Jun	32.4	1,081.8	0.0
XCB core 6X to 1,091.2 mbrf	0815 16-Jun	1.25	0.1	0930 16-Jun	41.8	1,091.2	9.4
XCB core 7X to 1,099.6 mbrf (20 min @ TD only)	0930 16-Jun	1.50	0.1	1100 16-Jun	50.2	1,099.6	8.4
FPC pressure core (8Y) to 1,100.6 mbrf 1100 FPC-1	1100 16-Jun	1.50	0.1	1230 16-Jun	51.2	1,100.6	1.0
XCB core 9X to 1,110.0 mbrf (20 min @ TD & @ SF)	1230 16-Jun	1.75	0.1	1415 16-Jun	60.6	1,110.0	9.4
XCB core 10X to 1,119.4 mbrf (20 min @ TD & @ SF)	1415 16-Jun	2.75	0.1	1700 16-Jun	70.0	1,119.4	9.4
HRC press core (11E) to 1,120.4 mbrf 1120 HRC-1	1700 16-Jun	1.50	0.1	1830 16-Jun	71.0	1,120.4	1.0
XCB core 12X to 1,129.8 mbrf (20 min @ TD & @ SF)	1830 16-Jun	2.25	0.1	2045 16-Jun	80.4	1,129.8	9.4
XCB core 13X to 1,139.2 mbrf (20 min @ TD & @ SF)	2045 16-Jun	2.00	0.1	2245 16-Jun	89.8	1,139.2	9.4
XCB core 14X to 1,147.6 mbrf (20 min @ TD & @ SF)	2245 16-Jun	2.50	0.1	0115 17-Jun	98.2	1,147.6	8.4
PCS press core (15P) to 1,148.6 mbrf 1155 PCS-2	0115 17-Jun	1.50	0.1	0245 17-Jun	99.2	1,148.6	1.0
DVTP temperature @ 1,148.6 mbrf DVTP-2	0245 17-Jun	1.00	0.0	0345 17-Jun	99.2	1,148.6	0.0
XCB core 16X to 1,158.2 mbrf (20 min @ TD & @ SF)	0345 17-Jun	2.50	0.1	0615 17-Jun	108.8	1,158.2	9.6
XCB core 17X to 1,166.8 mbrf (20 min @ TD & @ SF)	0615 17-Jun	2.00	0.1	0815 17-Jun	117.4	1,166.8	8.6
FPC press core (18Y) to 1,167.8 mbrf 1168 FPC-2	0815 17-Jun	1.25	0.1	0930 17-Jun	118.4	1,167.8	1.0
XCB core 19X to 1,177.4 mbrf (20 min @ TD & @ SF)	0930 17-Jun	2.75	0.1	1215 17-Jun	128.0	1,177.4	9.6
XCB core 20X to 1,186.0 mbrf (20 min @ TD & @ SF)	1215 17-Jun	2.00	0.1	1415 17-Jun	136.6	1,186.0	8.6
FPC press core (21Y) to 1,187.0 mbrf 1190 FPC-3	1415 17-Jun	1.75	0.1	1600 17-Jun	137.6	1,187.0	1.0
XCB core 22X to 1,191.5 mbrf (20 min @ TD & @ SF)	1600 17-Jun	2.75	0.1	1845 17-Jun	142.1	1,191.5	4.5
XCB core 23X to 1,196.7 mbrf (20 min @ TD & @ SF)	1845 17-Jun	2.25	0.1	2100 17-Jun	147.3	1,196.7	5.2
XCB core 24X to 1,206.3 mbrf (20 min @ TD only)	2100 17-Jun	1.50	0.1	2230 17-Jun	156.9	1,206.3	9.6
XCB core 25X to 1,215.9 mbrf	2230 17-Jun	1.25	0.1	2345 17-Jun	166.5	1,215.9	9.6
XCB core 26X to 1,223.5 mbrf	2345 17-Jun	1.50	0.1	0115 18-Jun	174.1	1,223.5	7.6
HRC press core (27E) to 1,224.5 mbrf HRC-2	0115 18-Jun	2.75	0.1	0400 18-Jun	175.1	1,224.5	1.0
PCS press core (28P) to 1,225.5 mbrf 1225 PCS-3	0400 18-Jun	1.50	0.1	0530 18-Jun	176.1	1,225.5	1.0
DVTP temperature @ 1,225.5 mbrf DVTP-3	0530 18-Jun	1.50	0.1	0700 18-Jun	176.1	1,225.5	0.0
XCB core 29X to 1,235.1 mbrf (W-PAKS ONLY ON THIS CORE)	0700 18-Jun	1.00	0.0	0800 18-Jun	185.7	1,235.1	9.6
XCB core 30X to 1,244.7 mbrf	0800 18-Jun	1.25	0.1	0915 18-Jun	195.3	1,244.7	9.6
XCB core 31X to TD @ 1,254.3 mbrf (204.9 mbsf)	0915 18-Jun	1.00	0.0	1015 18-Jun	204.9	1,254.3	9.6
Displace with 10.5 ppg mud	1015 18-Jun	0.25	0.0	1030 18-Jun			
POOH w/top drive/clear sea floor	1030 18-Jun	1.25	0.1	1145 18-Jun			
End Hole NGHP-01-10B				1145 18-Jun			

Total Hours/Days

61.25 2.6

Note-1: All pressure cores had 20 min wait time on-bottom prior to coring and again at the sea floor during retrieval.

Note-2: Select XCB cores had either 20 min wait time on-bottom or 20 min wait time at the sea floor as noted.

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-10 (GD-3-1)

Operations Schedule for Hole 10C/D

Reference PDR Depth: 1055.4 mbrf

Reference BSR: ~175 mbsf (est)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)		mbsf	mbrf	Adv
Begin Hole NGHP-01-10C				1145 18-Jun-06			
Offset 10m NW of Hole 10A/spaceout DP	1145 18-Jun	1.25	0.1	1300 18-Jun			
Spud Hole 10C - Full core barrel (missed mudline)	1300 18-Jun	0.25	0.0	1315 18-Jun			
End Hole 10C/Begin Hole 10D (spaceout DP)	1315 18-Jun	0.00	0.0	1315 18-Jun			
Standby for lab/Spud hole 10D (sea floor @ 1050.4 mbrf)	1315 18-Jun	1.00	0.0	1415 18-Jun	0.0	1,050.4	0.0
Core 1H on-deck to 4.1 mbsf	1415 18-Jun	0.25	0.0	1430 18-Jun	4.1	1,054.5	4.1
APC core 2H to 1064.0 mbrf NO W-PAKS	1430 18-Jun	0.25	0.0	1445 18-Jun	13.6	1,064.0	9.5
APC core 3H to 1073.5 mbrf Target	1445 18-Jun	1.25	0.1	1600 18-Jun	23.1	1,073.5	9.5
APC core 4H to 1083.0 mbrf Depths	1600 18-Jun	1.00	0.0	1700 18-Jun	32.6	1,083.0	9.5
Switch to XCB core 5X to 1090.5 mbrf (mbrf)	1700 18-Jun	1.75	0.1	1845 18-Jun	40.1	1,090.5	7.5
PCS press core (6P) to 1091.5 mbrf 1090 PCS-1	1845 18-Jun	1.50	0.1	2015 18-Jun	41.1	1,091.5	1.0
XCB core 7X to 1100.9 mbrf	2015 18-Jun	1.25	0.1	2130 18-Jun	50.5	1,100.9	9.4
XCB core 8X to 1109.2 mbrf	2130 18-Jun	1.25	0.1	2245 18-Jun	58.8	1,109.2	8.3
FPC press core (9Y) to 1110.2 mbrf 1110 FPC-1	2245 18-Jun	1.50	0.1	0015 19-Jun	59.8	1,110.2	1.0
DVTP temperature @ 1110.2 mbrf DVTP-1	0015 19-Jun	1.00	0.0	0115 19-Jun	59.8	1,110.2	0.0
XCB core 10X to 1119.6 mbrf	0115 19-Jun	1.50	0.1	0245 19-Jun	69.2	1,119.6	9.4
XCB core 11X to 1128.2 mbrf	0245 19-Jun	1.50	0.1	0415 19-Jun	77.8	1,128.2	8.6
HRC press core (12E) to 1129.2 mbrf 1130 HRC-1	0415 19-Jun	2.25	0.1	0630 19-Jun	78.8	1,129.2	1.0
XCB core 13X to 1138.8 mbrf	0630 19-Jun	1.00	0.0	0730 19-Jun	88.4	1,138.8	9.6
XCB core 14X to 1147.4 mbrf	0730 19-Jun	1.75	0.1	0915 19-Jun	97.0	1,147.4	8.6
PCS press core (15P) to 1148.4 mbrf 1150 PCS-2	0915 19-Jun	1.50	0.1	1045 19-Jun	98.0	1,148.4	1.0
XCB core 16X to 1158.0 mbrf	1045 19-Jun	1.00	0.0	1145 19-Jun	107.6	1,158.0	9.6
XCB core 17X to 1167.6 mbrf	1145 19-Jun	1.50	0.1	1315 19-Jun	117.2	1,167.6	9.6
XCB core 18X to 1176.2 mbrf	1315 19-Jun	1.25	0.1	1430 19-Jun	125.8	1,176.2	8.6
FPC pressure core (19Y) to 1177.2 mbrf 1176 FPC-2	1430 19-Jun	1.25	0.1	1545 19-Jun	126.8	1,177.2	1.0
DVTP temperature @ 1177.2 mbrf DVTP-2	1545 19-Jun	1.50	0.1	1715 19-Jun	126.8	1,177.2	0.0
XCB core 20X to 1186.8 mbrf	1715 19-Jun	1.75	0.1	1900 19-Jun	136.4	1,186.8	9.6
XCB core 21X to 1195.5 mbrf	1900 19-Jun	1.25	0.1	2015 19-Jun	145.1	1,195.5	8.7
HRC pressure core (22E) to 1196.5 mbrf 1200 HRC-2	2015 19-Jun	1.75	0.1	2200 19-Jun	146.1	1,196.5	1.0
XCB core 23X to 1206.2 mbrf	2200 19-Jun	2.00	0.1	0000 20-Jun	155.8	1,206.2	9.7
XCB core 24X to 1214.8 mbrf	0000 20-Jun	1.25	0.1	0115 20-Jun	164.4	1,214.8	8.6
PCS pressure core (25P) to 1215.8 mbrf 1215 PCS-3	0115 20-Jun	1.50	0.1	0245 20-Jun	165.4	1,215.8	1.0
XCB core 26X to 1225.4 mbrf	0245 20-Jun	1.50	0.1	0415 20-Jun	175.0	1,225.4	9.6
XCB core 27X to 1235.0 mbrf	0415 20-Jun	1.25	0.1	0530 20-Jun	184.6	1,235.0	9.6
XCB core 28X to 1244.6 mbrf	0530 20-Jun	1.50	0.1	0700 20-Jun	194.2	1,244.6	9.6
XCB core 29X to 1254.2 mbrf	0700 20-Jun	1.50	0.1	0830 20-Jun	203.8	1,254.2	9.6
Wiper trip/hole conditioning	0830 20-Jun	3.50	0.1	1200 20-Jun			
DVTP temperature @ TD of 1254.2 mbrf DVTP-3	1200 20-Jun	1.00	0.0	1300 20-Jun			
Sweep hole & displace with 10.5 ppg mud	1300 20-Jun	0.50	0.0	1330 20-Jun			
POOH/set back top drive/set EOP @ 60 mbsf to log	1330 20-Jun	1.50	0.1	1500 20-Jun			
Move tools/rig-up for wireline logging	1500 20-Jun	0.75	0.0	1545 20-Jun			
Log with Triple Combo (bridge @ 152.6 mbsf) WL	1545 20-Jun	4.75	0.2	2030 20-Jun			
L/O tools/tie back sheaves/ream/condition hole Log	2030 20-Jun	8.00	0.3	0430 21-Jun			
Rig-up/log with FMS-sonic	0430 21-Jun	5.50	0.2	1000 21-Jun			
Deploy VSP (during daylight hours only) VSP	1000 21-Jun	7.50	0.3	1730 21-Jun			
Rig-down from wireline logging	1730 21-Jun	0.50	0.0	1800 21-Jun			
POOH/clear sea floor	1800 21-Jun	0.50	0.0	1830 21-Jun			
End Hole NGHP-01-10D				1830 21-Jun			

Note: IODP
Marine Mammal Watch
policies in effect during
VSP operations.

Total Hours/Days
Page 1 of 2

78.75 3.3

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-12 (1st New Site)

Operations Schedule for Hole 12A

(Bonus "Delineation" Hole)

Sea Floor Depth: 1,045.8.0 mbrf

Reference PDR Depth: 1,049.4 mbrf

Reference BSR: ~175 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	
		(hours)	(days)		
Begin Hole NGHP-01-12A				1830 21-Jun-06	Sea Floor (m)
Pull 3 stds above SF/rec beacon/slip & cut drill line	1830 21-Jun	1.50	0.1	2000 21-Jun	1045.8
Offset 500m SE of Hole 10A on a bearing of 147°	2000 21-Jun	1.00	0.0	2100 21-Jun	
Space out DP with bit at 1042.0 mbrf	2100 21-Jun	1.00	0.0	2200 21-Jun	(bottom of core @)
RIH w/APC-Spud hole 12A (sea floor@ 1045.8 mbrf)	2200 21-Jun	1.00	0.0	2300 21-Jun	mbsf mbrf Adv
APC Core 1H on-deck to 5.7 mbsf (0 rec on 1st att.)	2300 21-Jun	0.00	0.0	2300 21-Jun	5.7 1,051.5 5.7
APC core 2H to 15.2 mbsf	2300 21-Jun	0.75	0.0	2345 21-Jun	15.2 1,061.0 9.5
APC core 3H to 24.7 mbsf	2345 21-Jun	0.75	0.0	0030 22-Jun	24.7 1,070.5 9.5
Drill w/XCB to 40.0 mbsf Target depths for Pressure Core Package #1: 40-65 mbsf	0030 22-Jun	1.50	0.1	0200 22-Jun	40.0 1,085.8 15.3
XCB core 4X to 45.7 mbsf	0200 22-Jun	0.50	0.0	0230 22-Jun	45.7 1,091.5 5.7
FPC press core (5Y) to 46.7 mbsf	FPC-1 0230 22-Jun	1.75	0.1	0415 22-Jun	46.7 1,092.5 1.0
HRC press core (6E) to 47.7 mbsf	HRC-1 0415 22-Jun	2.25	0.1	0630 22-Jun	47.7 1,093.5 1.0
PCS press core (7P) to 48.7 mbsf	PCS-1 0630 22-Jun	1.00	0.0	0730 22-Jun	48.7 1,094.5 1.0
Drill w/XCB to 85.0 mbsf Target depths for Pressure Core Package #2: 85-110 mbsf	0730 22-Jun	1.75	0.1	0915 22-Jun	83.8 1,129.6 35.1
XCB core 8X to 93.3 mbsf	0915 22-Jun	1.00	0.0	1015 22-Jun	93.3 1,139.1 9.5
FPC press core (9Y) to 94.3 mbsf	FPC-2 1015 22-Jun	1.50	0.1	1145 22-Jun	94.3 1,140.1 1.0
HRC press core (10E) to 95.3 mbsf	HRC-2 1145 22-Jun	1.75	0.1	1330 22-Jun	95.3 1,141.1 1.0
PCS press core (11P) to 96.3 mbsf	PCS-2 1330 22-Jun	1.00	0.0	1430 22-Jun	96.3 1,142.1 1.0
XCB core 12X to 102.9 mbsf	1430 22-Jun	1.25	0.1	1545 22-Jun	102.9 1,148.7 6.6
Drill w/XCB to 141.3 mbsf Target depths for Pressure Core Package #3: 140-165 mbsf	1545 22-Jun	3.25	0.1	1900 22-Jun	141.3 1,187.1 38.4
XCB core 13X to 150.9 mbsf - TD of Hole 12A	1900 22-Jun	1.25	0.1	2015 22-Jun	150.9 1,196.7 9.6
Abort FPC due to hole trouble/stuck pipe/work free	2015 22-Jun	1.75	0.1	2200 22-Jun	
POOH with FPC and layout - stuck pipe	2200 22-Jun	0.25	0.0	2215 22-Jun	
Work stuck pipe free with 50K O/P & 50 amps torque	2215 22-Jun	0.25	0.0	2230 22-Jun	
Rack sinker bars and work pipe	2230 22-Jun	0.50	0.0	2300 22-Jun	
POOH w/top drive to 90.9 mbsf. DP free at 110.1 mbsf	2300 22-Jun	1.00	0.0	0000 23-Jun	
POOH/clear sea floor @ 0035 hr	0000 23-Jun	0.50	0.0	0030 23-Jun	
End Hole NGHP-01-12A				0030 23-Jun	
Total Hours/Days		30.00	1.3		

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-13 (2nd New Site)

Operations Schedule for Hole 13A (Dedicated Wireline Logging Hole)

Reference PDR Depth: N/A mbrf

Reference BSR Depth: ~175 mbsf (estimate)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-13A				0030 23-Jun-06
Offset ship 150 m NW of Hole 12A (bearing 327°)	0030 23-Jun	0.50	0.0	0100 23-Jun
Space out for spudding	0100 23-Jun	0.50	0.0	0130 23-Jun
Spud Hole (sea floor @ 1044.0 mbrf)	0130 23-Jun	0.00	0.0	0130 23-Jun
Drill to TD of 200.0 mbsf/sweep w/Sepiolite mud	0130 23-Jun	10.00	0.4	1130 23-Jun
Recover center bit	1130 23-Jun	0.50	0.0	1200 23-Jun
Displace hole with 10.5 ppg mud	1200 23-Jun	0.50	0.0	1230 23-Jun
POOH/rack TD & set EOP @ ~60 mbsf to log	1230 23-Jun	1.00	0.0	1330 23-Jun
Rig-up for wireline logging	1330 23-Jun	0.50	0.0	1400 23-Jun
MU/RIH/tool won't exit pipe/trouble shoot problem	1400 23-Jun	6.50	0.3	2030 23-Jun
Log with Triple Combo to ~149 mbsf	2030 23-Jun	4.00	0.2	0030 24-Jun
Rig-down from wireline logging	0030 24-Jun	1.00	0.0	0130 24-Jun
POOH/clear sea floor @ 0155 hr	0130 24-Jun	0.50	0.0	0200 24-Jun
POOH to rig floor/rec beacon/check connections	0200 24-Jun	2.75	0.1	0445 24-Jun
Pull thrusters/hydrophones/prepare for transit	0445 24-Jun	0.75	0.0	0530 24-Jun
Switch to cruise mode @ 0536 hr/UW for Chennai	0530 24-Jun	0.00	0.0	0530 24-Jun
End Hole NGHP-01-13A				0530 24-Jun
Total Hours/Days		29.00	1.2	

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-13 (2nd New Site)

Operations Schedule for Hole 13A (Dedicated Wireline Logging Hole)

Reference PDR Depth: N/A mbrf

Reference BSR Depth: ~175 mbsf (estimate)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-13A				0030 23-Jun-06
Offset ship 150 m NW of Hole 12A (bearing 327°)	0030 23-Jun	0.50	0.0	0100 23-Jun
Space out for spudding	0100 23-Jun	0.50	0.0	0130 23-Jun
Spud Hole (sea floor @ 1044.0 mbrf)	0130 23-Jun	0.00	0.0	0130 23-Jun
Drill to TD of 200.0 mbsf/sweep w/Sepiolite mud	0130 23-Jun	10.00	0.4	1130 23-Jun
Recover center bit	1130 23-Jun	0.50	0.0	1200 23-Jun
Displace hole with 10.5 ppg mud	1200 23-Jun	0.50	0.0	1230 23-Jun
POOH/rack TD & set EOP @ ~60 mbsf to log	1230 23-Jun	1.00	0.0	1330 23-Jun
Rig-up for wireline logging	1330 23-Jun	0.50	0.0	1400 23-Jun
MU/RIH/tool won't exit pipe/trouble shoot problem	1400 23-Jun	6.50	0.3	2030 23-Jun
Log with Triple Combo to ~149 mbsf	2030 23-Jun	4.00	0.2	0030 24-Jun
Rig-down from wireline logging	0030 24-Jun	1.00	0.0	0130 24-Jun
POOH/clear sea floor @ 0155 hr	0130 24-Jun	0.50	0.0	0200 24-Jun
POOH to rig floor/rec beacon/check connections	0200 24-Jun	2.75	0.1	0445 24-Jun
Pull thrusters/hydrophones/prepare for transit	0445 24-Jun	0.75	0.0	0530 24-Jun
Switch to cruise mode @ 0536 hr/UW for Chennai	0530 24-Jun	0.00	0.0	0530 24-Jun
End Hole NGHP-01-13A				0530 24-Jun
Total Hours/Days		29.00	1.2	

India National Gas Hydrate Program (NGHP)

Expedition 1 - Leg 3B Operations Schedule

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Leg 3B (East Coast Coring-2)				0815 25-Jun-06
Chennai-III Port Call (crew chg 27th, depart 28th)	0815 25-Jun	79.25	3.3	1530 28-Jun
Transit 192.0 nmi to Site 03 (GDGH05-A) @ 10.1 kt	1530 28-Jun	19.00	0.8	1030 29-Jun
Hole-03B: APC to refusal (~100m)/XCB to 300.0 mbsf	1030 29-Jun	60.00	2.5	2230 01-Jul
- Temp Measurements: 4ea APC3/APCT/3ea DVTP				
- Pressure Coring: 3ea PCS, 1ea FPC, 1ea HRC				
Hole-03C: Drill/pressure core to 300.0 mbsf	2230 01-Jul	70.25	2.9	2045 04-Jul
- includes 3ea PCS, 2ea FPC, 2ea HRC				
- Pressure Coring: 3ea PCS, 2ea FPC, 1ea HRC				
- Wireline Logging: w/triple combo, FMS-sonic				
- VSP cancelled (unable to lower tool in open hole)				
Transit 58.0 nmi to Site 07 (KGGH06-A) @ 11.6 kt	2045 04-Jul	5.00	0.2	0145 05-Jul
Hole-07B: APC to refusal (78.7m)/XCB to 211.6 mbsf	0145 05-Jul	51.00	2.1	0445 07-Jul
- Temperature: 3ea APC3/APCT & 2ea DVTP				
- Pressure Coring: 3ea PCS, 3ea FPC, 1ea HRC				
(Abandoned hole due to stuck XCB cutting shoe)				
Hole-07C: Drill to 184.2 mbsf/POOH to check BHA	0445 07-Jul	15.25	0.6	2000 07-Jul
(pump pressure problem/abandon hole)				
Hole-07D: Drill to 260.0 mbsf w/4ea XCB & 1ea DVTP	2000 07-Jul	58.00	2.4	0600 10-Jul
- Wireline Log: w/triple combo/VSP/FMS-Sonic				
Transit 44.0 nmi to Site 14 (GDGH14-A) @ 11.6 kt	0600 10-Jul	5.00	0.2	1100 10-Jul
Hole-14A: APC to refusal (71.0 m)/XCB to 180.0 mbsf	1100 10-Jul	57.75	2.4	2045 12-Jul
- Temp Measurements: 3ea APC/3 & 2ea DVTP				
- Pressure Coring: 2ea PCS, 1ea FPC, 1ea HRC				
- Wireline Logging: w/triple combo, FMS-sonic &				
- VSP, zero offset				
DP move 4.5 nmi to Site 15 (GDGH11) @ 3.6 kt	2045 12-Jul	1.25	0.1	2200 12-Jul
Hole-15A: APC to refusal (76.1 m)/XCB to 200.0 mbsf	2200 12-Jul	50.00	2.1	0000 15-Jul
- Temp Measurements: 3ea APC3/APCT/3ea DVTP				
- Pressure Coring: 2ea PCS, 1ea FPC, 1ea HRC				
- Wireline Logging: w/triple combo, FMS-sonic				
Transit 43.0 nmi to Site 16 (New-Stepout Site) @ 9.6 kt	0000 15-Jul	4.50	0.2	0430 15-Jul
Hole-16A: Drill/pressure core to 220.0 mbsf	0430 15-Jul	59.50	2.5	1600 17-Jul
- Temp Measurements: 3ea APC3/APCT/5ea DVTP				
- Pressure Coring: 2ea PCS, 1ea FPC, 1ea HRC				
- Wireline Log: w/triple combo & FMS-sonic only				
End Leg 3B (East Coast Coring-2)				1600 17-Jul
Helicopter Rendezvous-3 trips req'd for science party crew chg		0800 17-Jul-06		1600 17-Jul-06

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-03 (GDGH05-A)

Operations Schedule for Hole 03B (APC/XCB/PCS Core Hole)

Est. Hydrates: 1,256 to 1,288 mbrf (~BSR depth)

Reference Depth (Hole 3A): 1,092.0 mbrf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-03B				1030 29-Jun-06	1085.1		
End sea voyage/switch to DP mode/deploy beacon	1030 29-Jun	0.25	0.0	1045 29-Jun	1085.1		
Offset ship 10m SW of Hole 03A coordinates	1045 29-Jun	0.00	0.0	1045 29-Jun	mbsf	mbrf	Adv
Make up APC/XCB BHA & RIH to 1050.0 mbrf	1045 29-Jun	3.50	0.1	1415 29-Jun			
Pick up top drive	1415 29-Jun	0.50	0.0	1445 29-Jun			
Space out DP with bit at 1081.0 mbrf	1445 29-Jun	0.50	0.0	1515 29-Jun			
Full core/missed mudline Target	1515 29-Jun	0.50	0.0	1545 29-Jun			
Spud Hole (mudline @ 1085.1 mbrf) Depths	1545 29-Jun	0.25	0.0	1600 29-Jun	0.0	1,085.1	0.0
1st core-on-deck (1H) to 5.4 mbsf (mbrf)	1600 29-Jun	0.25	0.0	1615 29-Jun	5.4	1,090.5	5.4
APC core 2H to 14.9 mbsf	1615 29-Jun	0.75	0.0	1700 29-Jun	14.9	1,100.0	9.5
APC core 3H w/APC3 to 24.4 mbsf APC-3	1700 29-Jun	0.75	0.0	1745 29-Jun	24.4	1,109.5	9.5
APC core 4H to 33.9 mbsf	1745 29-Jun	0.75	0.0	1830 29-Jun	33.9	1,119.0	9.5
APC core 5H w/APC3 to 43.4 mbsf APC-3	1830 29-Jun	1.00	0.0	1930 29-Jun	43.4	1,128.5	9.5
APC core 6H to 52.9 mbsf	1930 29-Jun	0.75	0.0	2015 29-Jun	52.9	1,138.0	9.5
APC core 7H w/APC3 to 62.4 mbsf APC-3	2015 29-Jun	1.00	0.0	2115 29-Jun	62.4	1,147.5	9.5
Switch to XCB core 8X to 71.7 mbsf	2115 29-Jun	2.00	0.1	2315 29-Jun	71.7	1,156.8	9.3
XCB core 9X to 81.3 mbsf	2315 29-Jun	2.25	0.1	0130 30-Jun	81.3	1,166.4	9.6
XCB core 10X to 90.8 mbsf	0130 30-Jun	1.00	0.0	0230 30-Jun	90.8	1,175.9	9.5
XCB core 11X to 99.7 mbsf	0230 30-Jun	1.50	0.1	0400 30-Jun	99.7	1,184.8	8.9
XCB core 12X to 104.9 mbsf	0400 30-Jun	1.25	0.1	0515 30-Jun	104.9	1,190.0	5.2
PCS/M core 13P to 105.9 mbsf-full/69bar 1190 PCS/M-1	0515 30-Jun	1.75	0.1	0700 30-Jun	105.9	1,191.0	1.0
XCB core 14X to 115.5 mbsf	0700 30-Jun	1.00	0.0	0800 30-Jun	115.5	1,200.6	9.6
XCB core 15X to 124.4 mbsf	0800 30-Jun	1.00	0.0	0900 30-Jun	124.4	1,209.5	8.9
XCB core 16X to 133.2 mbsf	0900 30-Jun	0.75	0.0	0945 30-Jun	133.2	1,218.3	8.8
XCB core 17X to 141.9 mbsf	0945 30-Jun	0.75	0.0	1030 30-Jun	141.9	1,227.0	8.7
XCB core 18X to 151.7 mbsf	1030 30-Jun	1.00	0.0	1130 30-Jun	151.7	1,236.8	9.8
DVTP temperature @ 151.7 mbsf 1240 DVTP-1	1130 30-Jun	1.00	0.0	1230 30-Jun	151.7	1,236.8	0.0
XCB core 19X thru 21X to 174.9 mbsf	1230 30-Jun	3.25	0.1	1545 30-Jun	174.9	1,260.0	23.2
PCS/M core (22P) to 175.9 mbsf 1260 PCS/M-2	1545 30-Jun	0.75	0.0	1630 30-Jun	175.9	1,261.0	1.0
FPC core (23Y) to 176.9 mbrf FPC-1	1630 30-Jun	1.75	0.1	1815 30-Jun	176.9	1,262.0	1.0
XCB core 24X to 186.6 mbsf	1815 30-Jun	2.00	0.1	2015 30-Jun	186.6	1,271.7	9.7
XCB core 25X to 196.3 mbsf	2015 30-Jun	1.50	0.1	2145 30-Jun	196.3	1,281.4	9.7
XCB core 26X to 198.9 mbsf	2145 30-Jun	0.75	0.0	2230 30-Jun	198.9	1,284.0	2.6
PCS/M core (27P) to 199.9 mbsf 1284 PCS/M-3	2230 30-Jun	1.25	0.1	2345 30-Jun	199.9	1,285.0	1.0
HRC core (28E) to 200.9 mbrf HRC-1	2345 30-Jun	2.50	0.1	0215 01-Jul	200.9	1,286.0	1.0
XCB core 29 through 30X to 220.3 mbsf	0215 01-Jul	2.50	0.1	0445 01-Jul	220.3	1,305.4	19.4
DVTP temperature @ 220.3 mbsf 1300 DVTP-2	0445 01-Jul	1.25	0.1	0600 01-Jul	220.3	1,305.4	0.0
XCB core 31X thru 32X to 239.6 mbsf	0600 01-Jul	3.75	0.2	0945 01-Jul	239.6	1,324.7	19.3
XCB core 33X thru 34X to 258.0 mbsf	0945 01-Jul	2.75	0.1	1230 01-Jul	258.0	1,343.1	18.4
XCB core 35X thru 36X to 277.4 mbsf	1230 01-Jul	3.25	0.1	1545 01-Jul	277.4	1,362.5	19.4
XCB core 37X thru 38X to 295.8 mbsf	1545 01-Jul	3.00	0.1	1845 01-Jul	295.8	1,380.9	18.4
XCB core 39X to 300.0 mbsf	1845 01-Jul	0.75	0.0	1930 01-Jul	300.0	1,385.1	4.2
DVTP temperature @ TD of 300.0 mbsf 1385 DVTP-3	1930 01-Jul	1.50	0.1	2100 01-Jul	Hole TD		
Displace hole to 92 bbls of 10.5 ppg mud	2100 01-Jul	0.25	0.0	2115 01-Jul			
Rack top drive/POOH/clear sea floor	2115 01-Jul	1.25	0.1	2230 01-Jul			
End Hole NGHP-01-03B				2230 01-Jul			
Total Hours/Days		60.00	2.5				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-03 (GDGH05-A)

Operations Schedule for Hole 03C (Pressure Coring Hole)

Sea Floor Depth (Hole 3C): 1,086.0 mbrf

Est. Hydrates: 1,256 to 1,288 mbrf (~BSR depth)

Reference Depth (Hole 3B): 1,085.1 mbrf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-03C				2230 01-Jul-06	1086.0		
Offset ship 10 m NE of Hole A & P/U top drive	2230 01-Jul	0.25	0.0	2245 01-Jul			
Space out for spud/place bit @ 1086.0 mbrf	2245 01-Jul	1.00	0.0	2345 01-Jul	mbsf	mbrf	Adv
Missed mudline - near empty barrel	2345 01-Jul	0.25	0.0	0000 02-Jul			
RIH with APC/Spud Hole (sea floor @ 1086.0 mbrf)	0000 02-Jul	0.50	0.0	0030 02-Jul	0.0	1,086.0	0.0
APC core 1H on deck to 9.5 mbsf Target	0030 02-Jul	0.00	0.0	0030 02-Jul	9.5	1,095.5	9.5
APC core 2H on deck to 19.0 mbsf Depths	0030 02-Jul	1.50	0.1	0200 02-Jul	19.0	1,105.0	9.5
APC core 3H on deck to 28.5 mbsf (mbrf)	0200 02-Jul	1.50	0.1	0330 02-Jul	28.5	1,114.5	9.5
Wash/drill 141.5 m to 170.0 mbrf/sweep hole	0330 02-Jul	6.00	0.3	0930 02-Jul	170.0	1,256.0	141.5
PCS Pressure Core (4P) to 171.0 mbsf 1256 PCS/M-1	0930 02-Jul	1.00	0.0	1030 02-Jul	171.0	1,257.0	1.0
Wash 4.0 m to 175.0 mbrf/sweep hole	1030 02-Jul	0.75	0.0	1115 02-Jul	175.0	1,261.0	4.0
FPC Pressure Core (5Y) to 176.0 mbsf 1261 FPC-1	1115 02-Jul	1.75	0.1	1300 02-Jul	176.0	1,262.0	1.0
Wash/drill 4.0 m to 180.0 mbrf/sweep hole	1300 02-Jul	0.75	0.0	1345 02-Jul	180.0	1,266.0	4.0
(note: stuck pipe/hole problems)							
HRC Pressure Core (6E) to 181.0 mbsf 1266 HRC-1	1345 02-Jul	3.00	0.1	1645 02-Jul	181.0	1,267.0	1.0
Wash/drill 3.0 m to 184.0 mbrf/sweep hole	1645 02-Jul	0.75	0.0	1730 02-Jul	184.0	1,270.0	3.0
PCS Pressure Core (7P) to 185.0 mbsf 1270 PCS/M-2	1730 02-Jul	1.00	0.0	1830 02-Jul	185.0	1,271.0	1.0
Wash/drill 5.0 m to 190.0 mbrf/sweep hole	1830 02-Jul	0.75	0.0	1915 02-Jul	190.0	1,276.0	5.0
FPC Pressure Core (8Y) to 191.0 mbsf 1276 FPC-2	1915 02-Jul	1.75	0.1	2100 02-Jul	191.0	1,277.0	1.0
Wash/drill 5.0 m to 196.0 mbrf/sweep hole	2100 02-Jul	0.75	0.0	2145 02-Jul	196.0	1,282.0	5.0
FPC Pressure Core (9Y) to 197.0 mbsf 1282 FPC-3	2145 02-Jul	4.25	0.2	0200 03-Jul	197.0	1,283.0	1.0
PCS Pressure Core (10P) to 198.0 mbsf 1283 PCS/M-3	0200 03-Jul	1.50	0.1	0330 03-Jul	198.0	1,284.0	1.0
Drill 102.0 m to 300.0 mbrf/sweep/hole/pull C'bit	0330 03-Jul	7.00	0.3	1030 03-Jul	300.0	1,386.0	102.0
Wiper trip to 60 mbsf and back with top drive	1030 03-Jul	5.00	0.2	1530 03-Jul	Hole TD		
(incl additional hole conditioning/reaming/sweeps, etc.)							
DVTP temperature @ TD of 300.0 mbsf	1530 03-Jul	1.00	0.0	1630 03-Jul			
Displace hole with 10.5 ppg mud/POOH w/2-stands	1630 03-Jul	0.25	0.0	1645 03-Jul			
Set back top drive/POOH/set EOP @ 60 mbsf to log	1645 03-Jul	1.50	0.1	1815 03-Jul			
Rig-up for wireline logging	1815 03-Jul	1.00	0.0	1915 03-Jul			
Triple Combo log to 300.0 mbsf	1915 03-Jul	6.25	0.3	0130 04-Jul			
Move pipe/clear bridge/FMS-Sonic log to 300.0 mbsf	0130 04-Jul	10.00	0.4	1130 04-Jul			
VSP logged (daylight only/mammal watch)	1130 04-Jul	4.50	0.2	1600 04-Jul			
Rig-down from wireline logging	1600 04-Jul	0.75	0.0	1645 04-Jul			
POOH/clear sea floor.	1645 04-Jul	0.50	0.0	1715 04-Jul			
POOH to rig floor/recover beacon/secure rig for transit	1715 04-Jul	1.75	0.1	1900 04-Jul			
Difficulty releasing beacon/release OK/recover beacon	1900 04-Jul	1.00	0.0	2000 04-Jul			
Switch to cruise mode/pull thrusters & hydrophones	2000 04-Jul	0.75	0.0	2045 04-Jul			
End Hole NGHP-01-03C				2045 04-Jul			
Total Hours/Days		70.25	2.9				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-07 (KGGH06-A)

Operations Schedule for Hole 07B (APC/XCB/PCS Core Hole)

Est. Hydrates: 1,360.0 to 1,484.0 mbrf (~BSR depth)

Possible Free Gas: 1,484.0 to 1,520.0 mbrf

Reference Depth (Hole 7A): 1,297.0 mbrf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Bottom of core		
		(hours)	(days)		mbsf	mbrf	Adv
Begin Hole NGHP-01-07B				0145 05-Jul-06	Sea Floor (m)		
End sea voyage/switch to DP mode/deploy beacon	0145 05-Jul	0.25	0.0	0200 05-Jul	1295.8		
Offset ship 10m SE of Hole 07A coordinates	0200 05-Jul	0.00	0.0	0200 05-Jul			
Make up APC/XCB BHA & RIH to 1246.0 mbrf	0200 05-Jul	4.00	0.2	0600 05-Jul			
PU top drive/space out DP with bit @ 1289 mbrf	0600 05-Jul	0.75	0.0	0645 05-Jul			
(water core/lower pipe 4m) Target	0645 05-Jul	0.75	0.0	0730 05-Jul			
Spud Hole (mudline @ 1295.8 mbrf) Depths	0730 05-Jul	0.00	0.0	0730 05-Jul	0.0	1,295.8	0.0
1st core-on-deck (1H) to 2.7 mbsf (mbrf)	0730 05-Jul	0.25	0.0	0745 05-Jul	2.7	1,298.5	2.7
APC core 2H to 12.2 mbsf	0745 05-Jul	0.75	0.0	0830 05-Jul	12.2	1,308.0	9.5
APC core 3H w/APC3 to 21.7 mbsf APC-3	0830 05-Jul	1.00	0.0	0930 05-Jul	21.7	1,317.5	9.5
APC core 4H to 31.2 mbsf	0930 05-Jul	0.50	0.0	1000 05-Jul	31.2	1,327.0	9.5
APC core 5H w/APC3 to 40.7 mbsf W-Paks APC-3	1000 05-Jul	1.00	0.0	1100 05-Jul	40.7	1,336.5	9.5
APC core 6H to 50.2 mbsf on all XCB	1100 05-Jul	0.50	0.0	1130 05-Jul	50.2	1,346.0	9.5
APC core 7H w/APCT to 59.7 mbsf cores APC-3	1130 05-Jul	1.00	0.0	1230 05-Jul	59.7	1,355.5	9.5
APC core 8H to 69.2 mbsf	1230 05-Jul	1.25	0.1	1345 05-Jul	69.2	1,365.0	9.5
APC core 9H to 78.7 mbsf	1345 05-Jul	1.25	0.1	1500 05-Jul	78.7	1,374.5	9.5
Switch to XCB core 10X to 84.2 mbsf	1500 05-Jul	1.00	0.0	1600 05-Jul	84.2	1,380.0	5.5
PCS/M press. core (11P) to 85.2 mbsf 1380 +1m PCS-M-1	1600 05-Jul	1.00	0.0	1700 05-Jul	85.2	1,381.0	1.0
FPC press. core (12Y) to 86.2 mbsf 1381 +1m FPC-1	1700 05-Jul	2.25	0.1	1915 05-Jul	86.2	1,382.0	1.0
XCB core 13X to 95.7 mbsf	1915 05-Jul	0.75	0.0	2000 05-Jul	95.7	1,391.5	9.5
XCB core 14X to 105.3 mbsf	2000 05-Jul	0.75	0.0	2045 05-Jul	105.3	1,401.1	9.6
XCB core 15X to 114.2 mbsf	2045 05-Jul	1.00	0.0	2145 05-Jul	114.2	1,410.0	8.9
FPC press. core (16Y) to 115.2 mbrf 1410 +1m FPC-2	2145 05-Jul	2.25	0.1	0000 06-Jul	115.2	1,411.0	1.0
DVTP temperature @ 115.2 mbsf 1411 +9m DVTP-1	0000 06-Jul	1.00	0.0	0100 06-Jul	115.2	1,411.0	0.0
XCB core 17X to 124.8 mbsf	0100 06-Jul	1.25	0.1	0215 06-Jul	124.8	1,420.6	9.6
XCB core 18X to 134.4 mbsf	0215 06-Jul	1.75	0.1	0400 06-Jul	134.4	1,430.2	9.6
XCB core 19X to 144.0 mbsf	0400 06-Jul	1.75	0.1	0545 06-Jul	144.0	1,439.8	9.6
XCB core 20X to 148.2 mbsf	0545 06-Jul	1.25	0.1	0700 06-Jul	148.2	1,444.0	4.2
PCS/M core (21P) to 149.2 mbsf 1444 +1m PCS-M-2	0700 06-Jul	1.25	0.1	0815 06-Jul	149.2	1,445.0	1.0
HRC press. core (22E) to 150.2 mbrf 1445 +1m HRC-1	0815 06-Jul	2.50	0.1	1045 06-Jul	150.2	1,446.0	1.0
XCB core 23X to 159.8 mbsf	1045 06-Jul	1.50	0.1	1215 06-Jul	159.8	1,455.6	9.6
XCB core 24X to 169.4 mbsf	1215 06-Jul	1.25	0.1	1330 06-Jul	169.4	1,465.2	9.6
XCB core 25X to 174.2 mbsf	1330 06-Jul	1.00	0.0	1430 06-Jul	174.2	1,470.0	4.8
DVTP temperature @ 174.2 mbsf 1470 +9m DVTP-2	1430 06-Jul	1.00	0.0	1530 06-Jul	174.2	1,470.0	0.0
XCB core 26X to 183.8 mbsf	1530 06-Jul	1.25	0.1	1645 06-Jul	183.8	1,479.6	9.6
XCB core 27X to 193.4 mbsf	1645 06-Jul	1.50	0.1	1815 06-Jul	193.4	1,489.2	9.6
PCS/M core (28P) to 194.4 mbsf 1490 +1m PCS-M-3	1815 06-Jul	1.25	0.1	1930 06-Jul	194.4	1,490.2	1.0
FPC pressure core (29Y) to 195.4 mbrf 1491 +1m FPC-3	1930 06-Jul	1.75	0.1	2115 06-Jul	195.4	1,491.2	1.0
XCB core 30X to 201.9 mbsf	2115 06-Jul	1.50	0.1	2245 06-Jul	201.9	1,497.7	6.5
XCB core 31X to 211.6 mbsf (unable to recover core barrel)	2245 06-Jul	1.50	0.1	0015 07-Jul	211.6	1,507.4	9.7
Work core barrel attempted jar off - no recovery	0015 07-Jul	3.00	0.1	0315 07-Jul	Hole TD		
Displace hole with 10.5 ppg mud	0315 07-Jul	0.50	0.0	0345 07-Jul			
POOH/set back top drive	0345 07-Jul	0.50	0.0	0415 07-Jul			
POOH (wet trip)/clear sea floor @ 0440hrs	0415 07-Jul	0.50	0.0	0445 07-Jul			
End Hole NGHP-01-07B				0445 07-Jul			

Total Hours/Days **51.00 2.1**

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-07

Operations Schedule for Hole 07C

Reference Depth (Hole 7A): 1,297.0 mbrf

Est. Hydrates: 1,360.0 to 1,484.0 mbrf (~BSR depth)

Possible Free Gas: 1,484.0 to 1,520.0 mbrf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Bottom of core		
		(hours)	(days)		mbsf	mbrf	Adv
Begin Hole NGHP-01-07C				0445 07-Jul-06			
Offset ship 10 m NW of Hole 07A	0445 07-Jul	0.00	0.0	0445 07-Jul			
POOH (wet trip) to rig floor	0445 07-Jul	2.25	0.1	0700 07-Jul			
Recover core barrel with Core 31X on deck (XCB Ext sub swelled)	0700 07-Jul	0.25	0.0	0715 07-Jul			
Inspect bit/LFV/prepare to RIH	0715 07-Jul	1.50	0.1	0845 07-Jul			
RIH with DP to sea floor/PU top drive	0845 07-Jul	2.75	0.1	1130 07-Jul			
Space out for spudding	1130 07-Jul	0.25	0.0	1145 07-Jul			
Spud Hole @ 1140 hr (sea floor @ 1295.8 mbrf)	1145 07-Jul	0.00	0.0	1145 07-Jul	0.0	1,295.8	0.0
Drill to 231.2 mbsf/sweep hole/recover core bit (TBD) - Not conducted	1145 07-Jul	0.00	0.0	1145 07-Jul	231.2	1,527.0	231.2
Drill to 184.2 mbsf (lost ~350 psi pump press)	1145 07-Jul	5.25	0.2	1700 07-Jul	240.8	1,536.6	9.6
Recover core barrel low pump pressure	1700 07-Jul	1.50	0.1	1830 07-Jul	250.4	1,546.2	9.6
Displace hole with 50 bbls 10.5 ppg mud	1830 07-Jul	0.50	0.0	1900 07-Jul			
POOH with TD/clear sea floor @ 2005 hr	1900 07-Jul	1.00	0.0	2000 07-Jul			
End Hole NGHP-01-07C				2000 07-Jul			
Total Hours/Days		15.25	0.6				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-07

Operations Schedule for Hole 07D (XCB Coring/Logging Hole)

Est. Hydrates: 1,360.0 to 1,484.0 mbrf (~BSR depth)

Possible Free Gas: 1,484.0 to 1,520.0 mbrf

Reference Depth (Hole 7A): 1,297.0 mbrf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Bottom of core			
		(hours)	(days)		mbsf	mbrf	Adv	
Begin Hole NGHP-01-07D				2000 07-Jul-06	Sea Floor (m)			
Offset ship 10 m NE of Hole 07A	2000 07-Jul	0.25	0.0	2015 07-Jul	1295.8			
Deploy VIT to inspect drill pipe (no cracks observed)	2015 07-Jul	2.00	0.1	2215 07-Jul				
Recover center bit	2215 07-Jul	0.50	0.0	2245 07-Jul				
Rack top drive/POOH to transition pipe	2245 07-Jul	2.75	0.1	0130 08-Jul				
Break & NDT inspect all BHA connections/no cracks found	0130 08-Jul	3.00	0.1	0430 08-Jul				
RIH with DP to 1275.0 mbrf	0430 08-Jul	2.75	0.1	0715 08-Jul				
PU top drive/space out for spudding	0715 08-Jul	0.50	0.0	0745 08-Jul				
Spud Hole @ 0750 hr (sea floor @ 1295.8 mbrf)	0745 08-Jul	0.00	0.0	0745 08-Jul				0.0
Drill to 231.2 mbsf/sweep hole/recover c'bit	0745 08-Jul	7.75	0.3	1530 08-Jul	231.2	1,527.0	231.2	
Sweep hole/recover center bit	1530 08-Jul	0.50	0.0	1600 08-Jul	231.2	1,527.0	0.0	
XCB core 1X to 239.0 mbsf (pulled early due to slow ROP)	1600 08-Jul	1.50	0.1	1730 08-Jul	239.0	1,534.8	7.8	
XCB core 2X to 246.6 mbsf	1730 08-Jul	2.00	0.1	1930 08-Jul	246.6	1,542.4	7.6	
XCB core 3X to 253.3 mbsf	1930 08-Jul	1.25	0.1	2045 08-Jul	253.3	1,549.1	6.7	
XCB core 4X to 260.0 mbsf	2045 08-Jul	1.50	0.1	2215 08-Jul	260.0	1,555.8	6.7	
DVTP temperature @ TD of 260.0 mbsf	DVTP-1	2215 08-Jul	1.25	0.1	2330 08-Jul	Hole TD		
Sweep hole/POOH 1-stand/set back TD	2330 08-Jul	0.75	0.0	0015 09-Jul				
Wiper trip to 60 mbsf and back (2m fill @ TD)/PU top drive	0015 09-Jul	1.50	0.1	0145 09-Jul				
Pump LFV go-devil/displace hole with 10.5 ppg mud	0145 09-Jul	1.00	0.0	0245 09-Jul				
SBTD/POOH/set EOP @ 57.7 mbsf to log	0245 09-Jul	1.00	0.0	0345 09-Jul				
Rig-up for wireline logging	0345 09-Jul	1.00	0.0	0445 09-Jul				
Log with Triple Combo to TD @ 260.0 mbsf	Wireline	0445 09-Jul	5.50	0.2				1015 09-Jul
Log with VSP to TD (daylight only)	VSP	1015 09-Jul	8.75	0.4				1900 09-Jul
Log w/FMS-Sonic to TD (work tool stuck @ bit)	Logging	1900 09-Jul	5.50	0.2	0030 10-Jul			
Rig-down from wireline logging	0030 10-Jul	0.75	0.0	0115 10-Jul				
POOH/clear sea floor @ 0125 hr	0115 10-Jul	0.25	0.0	0130 10-Jul				
POOH to rig floor/recover both beacons	0130 10-Jul	4.00	0.2	0530 10-Jul				
Cruise mode/pull thrusters/prep for transit/UW @ 0600 hr	0530 10-Jul	0.50	0.0	0600 10-Jul				
End Hole NGHP-01-07D				0600 10-Jul				
Total Hours/Days		58.00	2.4					

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-14 (GDGH14-A)

Operations Schedule for Hole 14A (APC/XCB/PCS Core Hole)

Latitude: 016° 03.5577 N

PDR Depth: 908.6 mbrf

No

Longitude: 082° 05.6218 E

Water Depth: 906.6 mbrf

BSR Depth: 109.0 mbsf (est)

Whirlpaks

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	
		(hours)	(days)		
Begin Hole NGHP-01-14A				1100 10-Jul-06	Sea Floor (mbrf) 906.6
End sea voyage/switch to DP mode/deploy beacon	1100 10-Jul	0.25	0.0	1115 10-Jul	
Make up APC/XCB BHA & RIH to 881.0 mbrf/PU top drive	1115 10-Jul	2.75	0.1	1400 10-Jul	
Space out DP with bit @ 902.0 mbrf	1400 10-Jul	0.25	0.0	1415 10-Jul	Bottom of core
Water core - missed mudline	1415 10-Jul	0.25	0.0	1430 10-Jul	mbsf mbrf Adv
Spud Hole @ 1435 hr (mudline @ 906.6 mbrf)	1430 10-Jul	0.00	0.0	1430 10-Jul	0.0 906.6 0.0
1st core-on-deck (1H) to 4.5 mbsf	1430 10-Jul	0.25	0.0	1445 10-Jul	4.5 911.1 4.5
APC core 2H to 14.0 mbsf	1445 10-Jul	0.75	0.0	1530 10-Jul	14.0 920.6 9.5
APC core 3H w/APC3/T to 920.6 mbsf Target	APCT-3 1530 10-Jul	1.00	0.0	1630 10-Jul	23.5 930.1 9.5
APC core 4H to 33.0 mbsf Depths	1630 10-Jul	0.75	0.0	1715 10-Jul	33.0 939.6 9.5
APC core 5H w/APC3/T to 42.5 mbsf (mbsf)	APCT-3 1715 10-Jul	1.25	0.1	1830 10-Jul	42.5 949.1 9.5
APC core 6H to 52.0 mbsf	1830 10-Jul	0.50	0.0	1900 10-Jul	52.0 958.6 9.5
APC core 7H w/APC3/T to mbsf	APCT-3 1900 10-Jul	1.25	0.1	2015 10-Jul	61.5 968.1 9.5
APC core 8H to 71.0 mbsf	2015 10-Jul	0.50	0.0	2045 10-Jul	71.0 977.6 9.5
PCS/M press. core (9P) to 72.0 mbsf 75.0	PCS/M-1 2045 10-Jul	1.75	0.1	2230 10-Jul	72.0 978.6 1.0
FPC press. core (10Y) to 73.0 mbrf	FPC-1 2230 10-Jul	1.50	0.1	0000 11-Jul	73.0 979.6 1.0
Switch to XCB core 11X to 82.6 mbsf	0000 11-Jul	1.00	0.0	0100 11-Jul	82.6 989.2 9.6
XCB core 12X to 92.2 mbsf	0100 11-Jul	1.00	0.0	0200 11-Jul	92.2 998.8 9.6
XCB core 13X to 100.0 mbsf	0200 11-Jul	1.00	0.0	0300 11-Jul	100.0 1,006.6 7.8
PCS/M press. core (14P) to 101.0 mbsf 100.0	PCS/M-2 0300 11-Jul	1.25	0.1	0415 11-Jul	101.0 1,007.6 1.0
HRC press. core (15E) to 102.0 mbrf	HRC-1 0415 11-Jul	2.00	0.1	0615 11-Jul	102.0 1,008.6 1.0
XCB core 16X to 111.6 mbsf	0615 11-Jul	1.25	0.1	0730 11-Jul	111.6 1,018.2 9.6
XCB core 17X to 121.2 mbsf	0730 11-Jul	0.75	0.0	0815 11-Jul	121.2 1,027.8 9.6
XCB core 18X to 130.8 mbsf	0815 11-Jul	1.75	0.1	1000 11-Jul	130.8 1,037.4 9.6
XCB core 19X to 140.4 mbsf	1000 11-Jul	1.25	0.1	1115 11-Jul	140.4 1,047.0 9.6
XCB core 20X to 150.0 mbsf	1115 11-Jul	1.00	0.0	1215 11-Jul	150.0 1,056.6 9.6
DVTP temperature @ 150.0 mbsf	DVTP-1 1215 11-Jul	1.00	0.0	1315 11-Jul	150.0 1,056.6 0.0
XCB core 21X to 159.5 mbsf	1315 11-Jul	1.50	0.1	1445 11-Jul	159.6 1,066.2 9.6
XCB core 22X to 169.1 mbsf	1445 11-Jul	1.25	0.1	1600 11-Jul	169.2 1,075.8 9.6
DVTP temperature @ 169.2 mbsf	DVTP-2 1600 11-Jul	1.00	0.0	1700 11-Jul	169.2 1,075.8 0.0
XCB core 23X to 180.0 mbsf	1700 11-Jul	1.50	0.1	1830 11-Jul	180.0 1,086.6 10.8
DVTP temperature @ TD of 180.0 mbsf	DVTP-3 1830 11-Jul	1.00	0.0	1930 11-Jul	180.0 1,086.6
Sweep hole/wiper trip to 59.4 mbsf and back w/top drive	1930 11-Jul	1.25	0.1	2045 11-Jul	Hole TD
Remedial hole conditioning/wiper trips/reaming/sweeps	2045 11-Jul	0.00	0.0	2045 11-Jul	
Displace hole with 10.5 ppg mud	2045 11-Jul	0.50	0.0	2115 11-Jul	
POOH/set back top drive/set EOP @ 58.4 mbsf to log	2115 11-Jul	1.25	0.1	2230 11-Jul	
Rig-up for wireline logging	2230 11-Jul	1.00	0.0	2330 11-Jul	
Deploy Triple Combo tool suite	2330 11-Jul	4.50	0.2	0400 12-Jul	
(problem getting downhole/add jt of DP-EOP @ 67.4 mbsf)	0400 12-Jul	0.50	0.0	0430 12-Jul	
Deploy Triple Combo tool suite to TD at 180.0 mbsf	0430 12-Jul	4.00	0.2	0830 12-Jul	
Deploy FMS-Sonic tool suite to TD @ 180.0 mbsf	0830 12-Jul	4.00	0.2	1230 12-Jul	
Deploy VSP tool suite to TD @ 180.0 mbsf (daylight only)	1230 12-Jul	5.00	0.2	1730 12-Jul	
Rig-down from wireline logging	1730 12-Jul	1.00	0.0	1830 12-Jul	
POOH/clear sea floor @ 1845 hr. POOH/recover beacon	1830 12-Jul	2.25	0.1	2045 12-Jul	
Raise hydrophones/initiate DP move	2045 12-Jul	0.00	0.0	2045 12-Jul	
End Hole NGHP-01-14A				2045 12-Jul	

Total Hours/Days 57.75 2.4

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-15 (GDGH11)

Operations Schedule for Hole 15A (APC/XCB/PCS Core Hole)

Latitude: 016° 05.6983 N

PDR Depth: 942.4 mbrf

BSR Depth:

Longitude: 082° 09.7467 E

Water Depth: 937.9 mbrf

126.0 mbsf (est)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	
		(hours)	(days)		
Begin Hole NGHP-01-15A				2200 12-Jul-06	Sea Floor (mbrf)
End DP move (4.5 NMI)/deploy hydrophones & beacon	2200 12-Jul	0.00	0.0	2200 12-Jul	937.9
Make up APC/XCB BHA & RIH to 909.0 mbrf/PU top drive	2200 12-Jul	2.50	0.1	0030 13-Jul	Bottom of core
Space out DP with bit @ 937.0 mbrf	0030 13-Jul	0.50	0.0	0100 13-Jul	mbsf mbrf Adv
Spud Hole @ 0125 hr (mudline @ 937.9 mbrf)	0100 13-Jul	0.50	0.0	0130 13-Jul	0.0 937.9 0.0
1st core-on-deck (1H) to 9.6 mbsf	0130 13-Jul	0.00	0.0	0130 13-Jul	9.6 947.5 9.6
APC core 2H to 19.1 mbsf	0130 13-Jul	0.75	0.0	0215 13-Jul	19.1 957.0 9.5
APC core 3H w/APC3/T to 28.6 mbsf Target	APCT-3 0215 13-Jul	1.00	0.0	0315 13-Jul	28.6 966.5 9.5
APC core 4H to 38.1 mbsf Depths	0315 13-Jul	1.00	0.0	0415 13-Jul	38.1 976.0 9.5
APC core 5H w/APC3/T to 47.6 mbsf (mbsf)	APCT-3 0415 13-Jul	1.00	0.0	0515 13-Jul	47.6 985.5 9.5
APC core 6H to 57.1 mbsf	0515 13-Jul	0.75	0.0	0600 13-Jul	57.1 995.0 9.5
APC core 7H w/APC3/T to 66.6 mbsf	APCT-3 0600 13-Jul	1.00	0.0	0700 13-Jul	66.6 1,004.5 9.5
APC core 8H to 76.1 mbsf	0700 13-Jul	0.75	0.0	0745 13-Jul	76.1 1,014.0 9.5
Switch to XCB core 9X to 85.7 mbsf	0745 13-Jul	1.50	0.1	0915 13-Jul	85.7 1,023.6 9.6
PCS/M press. core (10P) to 86.7 mbsf ~90	PCS/M-1 0915 13-Jul	1.25	0.1	1030 13-Jul	86.7 1,024.6 1.0
FPC press. core (11Y) to 87.7 mbrf	FPC-1 1030 13-Jul	1.50	0.1	1200 13-Jul	87.7 1,025.6 1.0
XCB core 12X to 97.3 mbsf	1200 13-Jul	0.75	0.0	1245 13-Jul	97.3 1,035.2 9.6
XCB core 13X to 106.9 mbsf	1245 13-Jul	0.50	0.0	1315 13-Jul	106.9 1,044.8 9.6
XCB core 14X to 115.0 mbsf	1315 13-Jul	1.00	0.0	1415 13-Jul	115.0 1,052.9 8.1
PCS/M press. core (15P) to 116.0 mbsf ~115	PCS/M-2 1415 13-Jul	0.75	0.0	1500 13-Jul	116.0 1,053.9 1.0
FPC press. core (16Y) to 117.0 mbrf	FPC-2 1500 13-Jul	1.75	0.1	1645 13-Jul	117.0 1,054.9 1.0
XCB core 17X to 126.6 mbsf	1645 13-Jul	1.00	0.0	1745 13-Jul	126.6 1,064.5 9.6
XCB core 18X to 136.2 mbsf	1745 13-Jul	1.25	0.1	1900 13-Jul	136.2 1,074.1 9.6
DVTP temperature @ 136.2 mbsf ~135	DVTP-1 1900 13-Jul	1.25	0.1	2015 13-Jul	136.2 1,074.1 0.0
XCB core 19X to 145.8 mbsf	2015 13-Jul	1.50	0.1	2145 13-Jul	145.8 1,083.7 9.6
XCB core 20X to 155.4 mbsf	2145 13-Jul	1.25	0.1	2300 13-Jul	155.4 1,093.3 9.6
XCB core 21X to 165.0 mbsf	2300 13-Jul	1.25	0.1	0015 14-Jul	165.0 1,102.9 9.6
XCB core 22X to 174.6 mbsf	0015 14-Jul	1.50	0.1	0145 14-Jul	174.6 1,112.5 9.6
XCB core 23X to 184.2 mbsf	0145 14-Jul	1.25	0.1	0300 14-Jul	184.2 1,122.1 9.6
XCB core 24X to 193.8 mbsf	0300 14-Jul	1.50	0.1	0430 14-Jul	193.8 1,131.7 9.6
DVTP temperature @ 193.8 mbsf	DVTP-2 0430 14-Jul	1.25	0.1	0545 14-Jul	193.8 1,131.7 0.0
XCB core 25X to 200.0 mbsf	0545 14-Jul	1.25	0.1	0700 14-Jul	200.0 1,137.9 6.2
Sweep hole/wiper trip to 60 mbsf and back with top drive	0700 14-Jul	2.00	0.1	0900 14-Jul	Hole TD
Deploy LFV go-devil & displace hole with 10.5 ppg mud	0900 14-Jul	1.00	0.0	1000 14-Jul	
POOH/set back top drive/set EOP @ 64.6 mbsf to log	1000 14-Jul	0.75	0.0	1045 14-Jul	
Rig-up for wireline logging	1045 14-Jul	1.25	0.1	1200 14-Jul	
Deploy Triple Combo tool suite & log to TD @ 200.0 mbsf	1200 14-Jul	3.50	0.1	1530 14-Jul	
Deploy FMS-Sonic tool suite & log to TD @ 200.0 mbsf	1530 14-Jul	4.50	0.2	2000 14-Jul	
Rig-down from wireline logging	2000 14-Jul	1.00	0.0	2100 14-Jul	
POOH/clear sea floor.	2100 14-Jul	0.25	0.0	2115 14-Jul	
POOH to rig floor/recover beacon	2115 14-Jul	2.25	0.1	2330 14-Jul	
Pull thrusters & hydrophones/prepare rig for transit	2330 14-Jul	0.50	0.0	0000 15-Jul	
End Hole NGHP-01-15A				0000 15-Jul	

Total Hours/Days

50.00

2.1

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-16 (Stepout Hole from Site NGHP-01-07)

Operations Schedule for Hole 16A (APC/XCB/PCS Core Hole)

Latitude: 016° 35.5986 N

PDR Depth: 1,267.4 mbrf

Longitude: 082° 41.0070 E

Water Depth: 1,251.0 mbrf

BSR Depth: 170.0 mbsf (est)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	
		(hours)	(days)		
Begin Hole NGHP-01-16A				0430 15-Jul-06	Sea Floor (m)
End sea voyage/switch to DP mode/deploy beacon	0430 15-Jul	0.25	0.0	0445 15-Jul	1264.5
MU APC/XCB BHA/RIH to 1247.0 mbrf/PU TD	0445 15-Jul	2.75	0.1	0730 15-Jul	Bottom of core
Space out DP with bit @ 1262.0 mbrf Target	0730 15-Jul	0.50	0.0	0800 15-Jul	mbsf mbrf Adv
Spud Hole (mudline @ 1264.5 mbrf) Depths	0800 15-Jul	0.00	0.0	0800 15-Jul	0.0 1,264.5 0.0
1st core-on-deck (1H) to 0.7 mbsf (mbsf)	0800 15-Jul	0.25	0.0	0815 15-Jul	7.0 1,271.5 7.0
APC core 2H to 16.5 mbsf	0815 15-Jul	0.50	0.0	0845 15-Jul	16.5 1,281.0 9.5
APC core 3H w/APC3/T to 26.0 mbsf APCT-3	0845 15-Jul	0.75	0.0	0930 15-Jul	26.0 1,290.5 9.5
APC core 4H to 35.5 mbsf	0930 15-Jul	0.75	0.0	1015 15-Jul	35.5 1,300.0 9.5
APC core 5H w/APC3/T to 45.0 mbsf APCT-3	1015 15-Jul	1.00	0.0	1115 15-Jul	45.0 1,309.5 9.5
APC core 6H to 54.5 mbsf	1115 15-Jul	0.75	0.0	1200 15-Jul	54.5 1,319.0 9.5
APC core 7H w/APC3/T to 60.3 mbsf APCT-3	1200 15-Jul	1.00	0.0	1300 15-Jul	60.3 1,324.8 5.8
APC core 8H to 65.8 mbsf	1300 15-Jul	0.75	0.0	1345 15-Jul	65.8 1,330.3 5.5
Switch to XCB core 9X to 75.4 mbsf	1345 15-Jul	1.50	0.1	1515 15-Jul	75.4 1,339.9 9.6
XCB core 10X to 85.0 mbsf	1515 15-Jul	1.25	0.1	1630 15-Jul	85.0 1,349.5 9.6
XCB core 11X to 94.6 mbsf	1630 15-Jul	0.50	0.0	1700 15-Jul	94.6 1,359.1 9.6
XCB core 12X to 104.2 mbsf	1700 15-Jul	1.00	0.0	1800 15-Jul	104.2 1,368.7 9.6
PCS/M press. core (13P) to 105.2 mbsf 105+5m PCS/M-1	1800 15-Jul	0.75	0.0	1845 15-Jul	105.2 1,369.7 1.0
FPC press. core (14Y) to 106.2 mbrf FPC-1	1845 15-Jul	1.75	0.1	2030 15-Jul	106.2 1,370.7 1.0
XCB core 15X to 115.8 mbsf	2030 15-Jul	0.75	0.0	2115 15-Jul	115.8 1,380.3 9.6
XCB core 16X to 125.4 mbsf	2115 15-Jul	1.00	0.0	2215 15-Jul	125.4 1,389.9 9.6
DVTP temperature - bad run 129+9m DVTP-1	2215 15-Jul	1.00	0.0	2315 15-Jul	125.4 1,389.9 0.0
XCB core 17X to 135.0 mbsf	2315 15-Jul	1.00	0.0	0015 16-Jul	135.0 1,399.5 9.6
XCB core 18X to 144.6 mbsf	0015 16-Jul	1.25	0.1	0130 16-Jul	144.6 1,409.1 9.6
DVTP temperature @ 144.6 mbsf DVTP-2	0130 16-Jul	1.00	0.0	0230 16-Jul	144.6 1,409.1 0.0
XCB core 19X to 154.2 mbsf	0230 16-Jul	1.50	0.1	0400 16-Jul	154.2 1,418.7 9.6
XCB core 20X to 162.2 mbsf	0400 16-Jul	1.25	0.1	0515 16-Jul	162.2 1,426.7 8.0
PCS/M press. core 21P to 163.2 mbsf 165+5m PCS/M-2	0515 16-Jul	1.25	0.1	0630 16-Jul	163.2 1,427.7 1.0
HRC press. core (22E) to 164.2 mbrf HRC-1	0630 16-Jul	2.00	0.1	0830 16-Jul	164.2 1,428.7 1.0
XCB core 23X to 173.8 mbsf	0830 16-Jul	0.75	0.0	0915 16-Jul	173.8 1,438.3 9.6
XCB core 24X to 182.6 mbsf	0915 16-Jul	1.00	0.0	1015 16-Jul	182.6 1,447.1 8.8
DVTP temperature @ 182.6 mbsf 180+9m DVTP-3	1015 16-Jul	1.25	0.1	1130 16-Jul	182.6 1,447.1 0.0
XCB core 25X to 191.3 mbsf	1130 16-Jul	1.50	0.1	1300 16-Jul	191.3 1,455.8 8.7
XCB core 26X to 200.9 mbsf	1300 16-Jul	1.25	0.1	1415 16-Jul	200.9 1,465.4 9.6
XCB core 27X to 210.5 mbsf	1415 16-Jul	1.50	0.1	1545 16-Jul	209.8 1,474.3 8.9
DVTP temperature @ 210.5 mbsf DVTP-4	1545 16-Jul	1.25	0.1	1700 16-Jul	209.8 1,474.3 0.0
XCB core 28X to 217.0 mbsf	1700 16-Jul	1.50	0.1	1830 16-Jul	217.0 1,481.5 7.2
DVTP temperature @ TD of 217.0 mbsf DVTP-5	1830 16-Jul	1.00	0.0	1930 16-Jul	217.0 1,481.5 TD
Sweep hole/wiper trip to 60 mbsf and back with top drive	1930 16-Jul	1.50	0.1	2100 16-Jul	
Deploy LFV Go-devil/displace hole w/70 bbls 10.5 ppg mud	2100 16-Jul	1.00	0.0	2200 16-Jul	
POOH/set back top drive/set EOP @ 60 mbsf to log	2200 16-Jul	1.00	0.0	2300 16-Jul	
Rig-up/Deploy Triple Combo/Work tool to TD/log up	2300 16-Jul	6.50	0.3	0530 17-Jul	
Deploy FMS-Sonic tool suite to TD/log/Rig-down	0530 17-Jul	6.00	0.3	1130 17-Jul	
Clear sea floor @ 1200 hr/POOH to rig floor/layout DC's	1130 17-Jul	3.50	0.1	1500 17-Jul	
Recover beacon/pull thrusters & hydrophones	1500 17-Jul	1.00	0.0	1600 17-Jul	
End Hole NGHP-01-16A				1600 17-Jul	
Total Hours/Days		59.50	2.5		

Note: Helicopter(s)
Science Staff
crew change on
17-Jul-06

India National Gas Hydrate Program (NGHP) - Expedition 1 Operations Schedule for Leg 4

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Leg 4 (Andaman & Mahanadi Coring)				1600 17-Jul-06
Transit 746.2 nmi to Site 17 (ANGH01) @ 10.5 kt	1600 17-Jul	71.00	3.0	1500 20-Jul
Hole-17A: APC to refusal (118.5 m)/XCB to 691.6 mbsf	1500 20-Jul	149.25	6.2	2015 26-Jul
- Temp Measurements: 4ea APC3/8ea DVTP				
- Pressure Coring: 4ea PCS, 3ea FPC, 3ea HRC				
Hole-17B: Drill dedicated logging hole to 718.0 mbsf	2015 26-Jul	72.25	3.0	2030 29-Jul
- Wireline Logging: w/triple combo, FMS-sonic &				
- VSP, zero offset				
Transit 726 nmi to Site 18 (MNGH-Reliance 5) @ 8.3 kt	2030 29-Jul	88.00	3.7	1230 02-Aug
Hole-18A: APC to refusal (115.9m)/XCB to 190.0 mbsf	1230 02-Aug	37.50	1.6	0200 04-Aug
- Temperature: 2ea APC3/APCT & 2ea DVTP				
Transit 12.0 nmi to Site 19 (MNGH-Gap Site) @ 0.9 kt	0200 04-Aug	12.75	0.5	1445 04-Aug
Hole-19A: APC to 94.8 m/XCB to 300.0 mbsf	1445 04-Aug	71.75	3.0	1430 07-Aug
- Temperature: 3ea APC3 & 5ea DVTP				
- Pressure Coring: 2ea PCS, 2ea FPC, 2ea HRC				
Hole-19B: 3ea APC plus logging hole to 280.0 mbsf	1430 07-Aug	37.50	1.6	0400 09-Aug
- Wireline Logging: w/triple combo, FMS-sonic &				
- VSP, zero offset				
Transit 12.0 nmi to Site 18 @ 10.5 kt (rec beacon)	0400 09-Aug	2.75	0.1	0645 09-Aug
Transit 301.0 nmi to Site 20 (KGGH05) @ 9.3 kt	0645 09-Aug	32.25	1.3	1500 10-Aug
Hole-20A: APC to refusal (22.9 m)/XCB to 148.8 mbsf	1500 10-Aug	33.75	1.4	0045 12-Aug
- Temperature: 1ea APC3 & 1ea DVTP				
- Pressure Coring: 1ea PCS/Abandon Hole				
Hole-20B: Attempt 2nd core hole to 300.0 mbsf	0045 12-Aug	15.75	0.7	1630 12-Aug
- Abandon hole at 187.3 mbsf/hole packing off				
DP Move 3.3 nmi to Site NGHP-01-21 (FR1 Site) @ 3.3 kt	1630 12-Aug	1.00	0.0	1730 12-Aug
Hole-21A: Pressure core/4ea XCB hole to 91.5 mbsf	1730 12-Aug	22.00	0.9	1530 13-Aug
- Pressure Coring: No PCS, 3ea FPC & 3ea HRC				
Hole-21B: PCore +Logging hole to 205.0 mbsf	1530 13-Aug	33.00	1.4	0030 15-Aug
- Pressure Coring: 1ea FPC & 1ea HRC				
- Wireline Logging: Marginal triple combo only				
Hole-21C: Pressure core hole to 78.0 mbsf	0030 15-Aug	21.00	0.9	2130 15-Aug
- Pressure Coring: 2ea FPC & 2ea HRC				
Transit ~197 nmi to Chennai @ 8.9 kt	2130 15-Aug	21.25	0.9	1845 16-Aug
Standby at Pilot Station	1845 16-Aug	9.50	0.4	0415 17-Aug
Transit to Berth/1st Line Ashore @ 0510 hr	0415 17-Aug	1.00	0.0	
End Leg 4 (Andaman & Mahanadi Coring)				0515 17-Aug
Chennai Port Call (Demobilization)	0515 17-Aug	61.75	2.6	1900 19-Aug
Depart Chennai for Singapore End of Expedition NGHP-01				1900 19-Aug

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-17 (ANGH01)

Operations Schedule for Hole 17A (APC/XCB/PCS Core Hole)

Latitude: 010° 45.1912' N

PDR Depth: 1,358.4 mbrf

Prospectus Depth: 1,336 mbrf

Longitude: 093° 06.7365' E

Water Depth: 1,356.0 mbrf

BSR Depth: Est @ 609 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-17A				1500 20-Jul-06	1356.0		
End sea voyage/lower thrusters/switch to DP mode	1500 20-Jul	0.50	0.0	1530 20-Jul	mbsf	mbrf	Adv
Deploy beacon/pick up drill collars/MU BHA	1530 20-Jul	2.00	0.1	1730 20-Jul			
RIH w/DP (fill pipe) to 1304.0 mbrf (TBD)	1730 20-Jul	2.00	0.1	1930 20-Jul			
Pick up top drive/space out DP to 1351.0 mbsf	1930 20-Jul	0.50	0.0	2000 20-Jul			
MU & RIH with APC Target	2000 20-Jul	0.75	0.0	2045 20-Jul			
Spud Hole-2nd try (mudline @ 1356.0m) Depths	2045 20-Jul	0.25	0.0	2100 20-Jul	0.0	1,356.0	0.0
1st core-on-deck (1H) to 4.5 mbsf (mbsf)	2100 20-Jul	0.25	0.0	2115 20-Jul	4.5	1,360.5	4.5
APC core 2H to 14.0 mbsf	2115 20-Jul	0.50	0.0	2145 20-Jul	14.0	1,370.0	9.5
APC core 3H w/APC3/T to 23.5 mbsf APCT-3	2145 20-Jul	1.00	0.0	2245 20-Jul	23.5	1,379.5	9.5
APC core 4H to 33.0 mbsf	2245 20-Jul	0.50	0.0	2315 20-Jul	33.0	1,389.0	9.5
APC core 5H w/APC3/T to 42.5 mbsf APCT-3	2315 20-Jul	1.00	0.0	0015 21-Jul	42.5	1,398.5	9.5
APC core 6H to 52.0 mbsf	0015 21-Jul	0.75	0.0	0100 21-Jul	52.0	1,408.0	9.5
APC core 7H w/APC3/T to 61.5 mbsf APCT-3	0100 21-Jul	1.00	0.0	0200 21-Jul	61.5	1,417.5	9.5
APC core 8H to 71.0 mbsf	0200 21-Jul	0.75	0.0	0245 21-Jul	71.0	1,427.0	9.5
APC core 9H to 80.5 mbsf	0245 21-Jul	0.75	0.0	0330 21-Jul	80.5	1,436.5	9.5
APC core 10H to 90.0 mbsf	0330 21-Jul	0.75	0.0	0415 21-Jul	90.0	1,446.0	9.5
APC core 11H to 99.5 mbsf	0415 21-Jul	0.75	0.0	0500 21-Jul	99.5	1,455.5	9.5
APC core 12H to 109.0 mbsf	0500 21-Jul	0.75	0.0	0545 21-Jul	109.0	1,465.0	9.5
APC core 13H to 118.5 mbsf	0545 21-Jul	0.75	0.0	0630 21-Jul	118.5	1,474.5	9.5
Switch to XCB core 14X to 128.1 mbsf	0630 21-Jul	1.50	0.1	0800 21-Jul	128.1	1,484.1	9.6
XCB core 15X to 137.7 mbsf	0800 21-Jul	1.00	0.0	0900 21-Jul	137.7	1,493.7	9.6
XCB core 16X to 146.6 mbsf	0900 21-Jul	0.75	0.0	0945 21-Jul	146.6	1,502.6	8.9
XCB core 17X to 156.3 mbsf	0945 21-Jul	1.25	0.1	1100 21-Jul	156.3	1,512.3	9.7
XCB core 18X to 165.9 mbsf	1100 21-Jul	1.00	0.0	1200 21-Jul	165.9	1,521.9	9.6
XCB core 19X to 175.5 mbsf	1200 21-Jul	1.00	0.0	1300 21-Jul	175.5	1,531.5	9.6
FPC core (20Y) to 176.5 mbrf 177+2m FPC-1	1300 21-Jul	2.75	0.1	1545 21-Jul	176.5	1,532.5	1.0
XCB core 21X to 185.2 mbsf	1545 21-Jul	1.50	0.1	1715 21-Jul	185.2	1,541.2	8.7
XCB core 22X to 194.9 mbsf	1715 21-Jul	2.00	0.1	1915 21-Jul	194.9	1,550.9	9.7
XCB core 23X to 203.9 mbsf	1915 21-Jul	1.50	0.1	2045 21-Jul	203.9	1,559.9	9.0
DVTP temperature @ 203.9 mbsf 200+9m DVTP-1	2045 21-Jul	1.00	0.0	2145 21-Jul	203.9	1,559.9	0.0
XCB core 24X to 213.5 mbsf	2145 21-Jul	1.25	0.1	2300 21-Jul	213.5	1,569.5	9.6
XCB core 25X to 223.1 mbsf	2300 21-Jul	1.00	0.0	0000 22-Jul	223.1	1,579.1	9.6
XCB core 26X to 232.8 mbsf	0000 22-Jul	1.25	0.1	0115 22-Jul	232.8	1,588.8	9.7
XCB core 27X to 242.5 mbsf	0115 22-Jul	1.00	0.0	0215 22-Jul	242.5	1,598.5	9.7
XCB core 28X to 251.8 mbsf	0215 22-Jul	1.00	0.0	0315 22-Jul	251.8	1,607.8	9.3
XCB core 29X to 261.4 mbsf	0315 22-Jul	1.00	0.0	0415 22-Jul	261.4	1,617.4	9.6
XCB core 30X to 270.3 mbsf	0415 22-Jul	1.00	0.0	0515 22-Jul	270.3	1,626.3	8.9
XCB core 31X to 279.9 mbsf	0515 22-Jul	1.25	0.1	0630 22-Jul	279.9	1,635.9	9.6
XCB core 32X to 289.6 mbsf	0630 22-Jul	0.75	0.0	0715 22-Jul	289.6	1,645.6	9.7
XCB core 33X to 299.2 mbsf	0715 22-Jul	1.50	0.1	0845 22-Jul	299.2	1,655.2	9.6
XCB core 34X to 308.8 mbsf	0845 22-Jul	0.75	0.0	0930 22-Jul	308.8	1,664.8	9.6
XCB core 35X to 318.4 mbsf	0930 22-Jul	1.00	0.0	1030 22-Jul	318.5	1,674.5	9.7
XCB core 36X to 328.0 mbsf	1030 22-Jul	1.00	0.0	1130 22-Jul	328.0	1,684.0	9.5

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-17 (ANGH01)

Operations Schedule for Hole 17A (APC/XCB/PCS Core Hole)

Latitude: 010° 45.1912' N

PDR Depth: 1,358.4 mbrf

Prospectus Depth: 1,336 mbrf

Longitude: 093° 06.7365' E

Water Depth: 1,356.0 mbrf

BSR Depth: Est @ 609 mbsf

Operations Task Description			Starting (time/date)	Actual Time Req'd		Completion (time/date)			
				(hours)	(days)				
PCS/M core (37P) to 329.0 mbsf	330+9m	PCS/M-1	1130 22-Jul	1.75	0.1	1315 22-Jul	329.0	1,685.0	1.0
FPC pressure core (38Y) to 330.0 mbrf		FPC-2	1315 22-Jul	2.25	0.1	1530 22-Jul	330.0	1,686.0	1.0
DVTP temperature @ 330.0 mbsf		DVTP-2	1530 22-Jul	1.00	0.0	1630 22-Jul	330.0	1,686.0	0.0
XCB core 39X to 337.6 mbsf			1630 22-Jul	0.75	0.0	1715 22-Jul	337.6	1,693.6	7.6
XCB core 40X to 347.3 mbsf			1715 22-Jul	1.00	0.0	1815 22-Jul	347.3	1,703.3	9.7
XCB core 41X to 357.0 mbsf			1815 22-Jul	1.50	0.1	1945 22-Jul	357.0	1,713.0	9.7
XCB core 42X to 366.8 mbsf			1945 22-Jul	1.00	0.0	2045 22-Jul	366.8	1,722.8	9.8
DVTP temperature @ 366.8 mbsf		DVTP-3	2045 22-Jul	1.00	0.0	2145 22-Jul	366.8	1,722.8	0.0
XCB core 43X to 376.1 mbsf			2145 22-Jul	1.00	0.0	2245 22-Jul	376.1	1,732.1	9.3
XCB core 44X to 385.7 mbsf			2245 22-Jul	1.25	0.1	0000 23-Jul	385.7	1,741.7	9.6
XCB core 45X to 395.4 mbsf			0000 23-Jul	1.00	0.0	0100 23-Jul	395.4	1,751.4	9.7
XCB core 46X to 405.1 mbsf			0100 23-Jul	0.75	0.0	0145 23-Jul	405.1	1,761.1	9.7
XCB core 47X to 412.7 mbsf			0145 23-Jul	0.75	0.0	0230 23-Jul	412.7	1,768.7	7.6
PCS/M core (48P) to 413.7 mbsf	410+9m	PCS/M-2	0230 23-Jul	2.25	0.1	0445 23-Jul	413.7	1,769.7	1.0
HRC press core (49E) to 414.7 mbrf		HRC-1	0445 23-Jul	2.25	0.1	0700 23-Jul	414.7	1,770.7	1.0
DVTP temperature @ 414.7 mbsf		DVTP-4	0700 23-Jul	1.00	0.0	0800 23-Jul	414.7	1,770.7	0.0
XCB core 50X to 424.3 mbsf			0800 23-Jul	1.00	0.0	0900 23-Jul	424.3	1,780.3	9.6
XCB core 51X to 434.0 mbsf			0900 23-Jul	1.00	0.0	1000 23-Jul	434.0	1,790.0	9.7
XCB core 52X to 443.7 mbsf			1000 23-Jul	1.00	0.0	1100 23-Jul	443.7	1,799.7	9.7
XCB core 53X to 453.4 mbsf			1100 23-Jul	1.50	0.1	1230 23-Jul	453.4	1,809.4	9.7
XCB core 54X to 463.0 mbsf			1230 23-Jul	0.75	0.0	1315 23-Jul	463.0	1,819.0	9.6
XCB core 55X to 472.7 mbsf			1315 23-Jul	1.00	0.0	1415 23-Jul	472.7	1,828.7	9.7
XCB core 56X to 482.4 mbsf (encountered hard layer)			1415 23-Jul	1.75	0.1	1600 23-Jul	482.4	1,838.4	9.7
XCB core 57X to 492.0 mbsf			1600 23-Jul	1.25	0.1	1715 23-Jul	492.0	1,848.0	9.6
XCB core 58X to 499.6 mbsf			1715 23-Jul	1.00	0.0	1815 23-Jul	499.6	1,855.6	7.6
PCS/M core (59P) to 500.6 mbsf (0Bar)	500+9m	PCS/M-3	1815 23-Jul	2.00	0.1	2015 23-Jul	500.6	1,856.6	1.0
FPC pressure core (60Y) to 501.6 mbrf	0Bar	FPC-3	2015 23-Jul	2.25	0.1	2230 23-Jul	501.6	1,857.6	1.0
DVTP temperature @ 501.6 mbsf	N/G	DVTP-4	2230 23-Jul	1.25	0.1	2345 23-Jul	501.6	1,857.6	0.0
XCB core 61X to 511.2 mbsf			2345 23-Jul	2.00	0.1	0145 24-Jul	511.2	1,867.2	9.6
XCB core 62X to 520.8 mbsf			0145 24-Jul	1.25	0.1	0300 24-Jul	520.8	1,876.8	9.6
XCB core 63X to 530.3 mbsf			0300 24-Jul	1.25	0.1	0415 24-Jul	530.3	1,886.3	9.5
XCB core 64X to 540.0 mbsf			0415 24-Jul	2.00	0.1	0615 24-Jul	540.0	1,896.0	9.7
XCB core 65X to 549.7 mbsf			0615 24-Jul	2.00	0.1	0815 24-Jul	549.7	1,905.7	9.7
XCB core 66X to 559.4 mbsf			0815 24-Jul	1.25	0.1	0930 24-Jul	559.4	1,915.4	9.7
XCB core 67X to 569.0 mbsf			0930 24-Jul	2.25	0.1	1145 24-Jul	569.0	1,925.0	9.6
XCB core 68X to 578.7 mbsf			1145 24-Jul	1.50	0.1	1315 24-Jul	578.7	1,934.7	9.7
XCB core 69X to 586.3 mbsf			1315 24-Jul	1.75	0.1	1500 24-Jul	586.3	1,942.3	7.6
PCS/M core (70P) to 586.8 mbsf (32Bar)	590+9m	PCS/M-4	1500 24-Jul	2.25	0.1	1715 24-Jul	586.8	1,942.8	0.5
HRC press core (71E) to 587.8 mbrf	148Bar	HRC-2	1715 24-Jul	2.25	0.1	1930 24-Jul	587.8	1,943.8	1.0
DVTP temperature @ 587.8 mbsf	Fair	DVTP-5	1930 24-Jul	1.25	0.1	2045 24-Jul	587.8	1,943.8	0.0
XCB core 72X to 597.0 mbsf			2045 24-Jul	2.00	0.1	2245 24-Jul	597.0	1,953.0	9.2
XCB core 73X to 606.7 mbsf			2245 24-Jul	1.50	0.1	0015 25-Jul	606.7	1,962.7	9.7
XCB core 74X to 616.3 mbsf			0015 25-Jul	1.50	0.1	0145 25-Jul	616.3	1,972.3	9.6
XCB core 75X to 625.0 mbsf			0145 25-Jul	2.00	0.1	0345 25-Jul	625.0	1,981.0	8.7

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-17 (ANGH01)

Operations Schedule for Hole 17A (APC/XCB/PCS Core Hole)

Latitude: 010° 45.1912' N

PDR Depth: 1,358.4 mbrf

Prospectus Depth: 1,336 mbrf

Longitude: 093° 06.7365' E

Water Depth: 1,356.0 mbrf

BSR Depth: Est @ 609 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)			
		(hours)	(days)				
DVTP temperature @ 625.0 mbsf	N/G	DVTP-6	0345 25-Jul	1.25	0.1	0500 25-Jul	625.0 1,981.0 0.0
XCB core 76X to 634.4 mbsf			0500 25-Jul	1.50	0.1	0630 25-Jul	634.4 1,990.4 9.4
XCB core 77X to 644.1 mbsf			0630 25-Jul	1.50	0.1	0800 25-Jul	644.1 2,000.1 9.7
XCB core 78X to 653.8 mbsf			0800 25-Jul	2.75	0.1	1045 25-Jul	653.8 2,009.8 9.7
XCB core 79X to 662.7 mbsf			1045 25-Jul	1.00	0.0	1145 25-Jul	662.7 2,018.7 8.9
DVTP temperature @ 662.7 mbsf	Good	DVTP-7	1145 25-Jul	1.75	0.1	1330 25-Jul	662.7 2,018.7 0.0
XCB core 80X to 672.3 mbsf			1330 25-Jul	1.25	0.1	1445 25-Jul	672.3 2,028.3 9.6
HRC press core (81E) to 673.3 mbrf	160Bar	HRC-3	1445 25-Jul	3.50	0.1	1815 25-Jul	673.3 2,029.3 1.0
XCB core 82X to 682.9 mbsf			1815 25-Jul	1.75	0.1	2000 25-Jul	682.9 2,038.9 9.6
XCB core 83X to 691.6 mbsf			2000 25-Jul	2.00	0.1	2200 25-Jul	691.6 2,047.6 8.7
Problems landing core barrel			2200 25-Jul	2.00	0.1	0000 26-Jul	691.6 2,047.6 TD
Sweep hole w/50 bbl Sepiolite			0000 26-Jul	1.00	0.0	0100 26-Jul	
SBTD/wiper trip to 60 mbsf and back			0100 26-Jul	4.00	0.2	0500 26-Jul	
Wash 17m fill/sweep hole w/50 bbls Sepiolite at TD			0500 26-Jul	1.00	0.0	0600 26-Jul	
Deploy go-devil/displace hole w/260 bbls/POOH w/TD			0600 26-Jul	1.00	0.0	0700 26-Jul	
Set back top drive/POOH/set EOP @ 62.2 mbsf to log			0700 26-Jul	2.00	0.1	0900 26-Jul	
Rig-up for wireline logging			0900 26-Jul	1.00	0.0	1000 26-Jul	
Triple Combo/unable to pass 144.0 mbsf/POOH w/tools			1000 26-Jul	4.00	0.2	1400 26-Jul	
Lower drill pipe to 175.0 mbsf			1400 26-Jul	0.50	0.0	1430 26-Jul	
Triple Combo log/unable to pass 191.0			1430 26-Jul	2.75	0.1	1715 26-Jul	
POOH w/logging tools			1715 26-Jul	1.00	0.0	1815 26-Jul	
Rig-down from wireline logging			1815 26-Jul	1.25	0.1	1930 26-Jul	
POOH/clear sea floor @ 2010 hr.			1930 26-Jul	0.75	0.0	2015 26-Jul	
End Hole NGHP-01-17A						2015 26-Jul	
Total Hours/Days				149.25	6.2		

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-17 (ANGH01)

Operations Schedule for Hole 17B (Dedicated Logging Hole)

Latitude: 010° 45.1804' N

PDR Depth: 1,358.4 mbrf

Prospectus Depth: 1,336 mbrf

Longitude: 093° 06.7365' E

Water Depth: 1,356.0 mbrf

BSR Depth: Est @ 609 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-17B				2015 26-Jul-06
Offset ship 20m South of Hole 17A	2015 26-Jul	0.00	0.0	2015 26-Jul
Pick up top drive/space out for spudding	2015 26-Jul	0.75	0.0	2100 26-Jul
Spud Hole/Drill to 270.0 mbsf (sea floor at 1356.0 mbrf)	2100 26-Jul	9.00	0.4	0600 27-Jul
Drill from 270.0 mbsf to 485.0 mbsf/Chk ctr bit @ 350m	0600 27-Jul	9.75	0.4	1545 27-Jul
Drill from 485.0 mbsf to 700.0 mbsf	1545 27-Jul	10.25	0.4	0200 28-Jul
Drill to TD @ 718.0 mbsf (extension to hole depth)	0200 28-Jul	2.00	0.1	0400 28-Jul
Sweep hole w/50 bbl Sepiolite mud/recover ctr bit	0400 28-Jul	1.50	0.1	0530 28-Jul
Deploy go-devil/displace hole w/260 bbls/POOH w/TD	0530 28-Jul	1.00	0.0	0630 28-Jul
Set back top drive/POOH/set EOP @ 62.2 mbsf to log	0630 28-Jul	2.00	0.1	0830 28-Jul
Rig-up for wireline logging	0830 28-Jul	1.00	0.0	0930 28-Jul
Triple Combo/unable to pass 237.0 mbsf/POOH w/tools	0930 28-Jul	5.00	0.2	1430 28-Jul
Lower drill pipe to 270.0 mbsf & circulate pipe	1430 28-Jul	0.50	0.0	1500 28-Jul
Rig up/RIH w/Triple Combo tools to TD @ 718.0 mbsf	1500 28-Jul	5.00	0.2	2000 28-Jul
M/U up/RIH w/FMS-Sonic to TD @ 718.0 mbsf/log/POOH	2000 28-Jul	8.50	0.4	0430 29-Jul
M/U RIH w/VSP tools to 629.0 mbsf (daylight)/log/POOH	0430 29-Jul	10.75	0.4	1515 29-Jul
Rig-down from wireline logging	1515 29-Jul	1.25	0.1	1630 29-Jul
POOH/clear sea floor.	1630 29-Jul	0.25	0.0	1645 29-Jul
POOH to rig floor/LO DC's/recover beacon	1645 29-Jul	3.50	0.1	2015 29-Jul
Pull thrusters & hydrophones/prepare rig for transit	2015 29-Jul	0.25	0.0	2030 29-Jul
End Hole NGHP-01-17B				2030 29-Jul
Total Hours/Days		72.25	3.0	

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-18 (MNGH-Reliance Site 5)

Operations Schedule for Hole 18A (APC/XCB/PCS Core Hole)

Latitude: 019° 09.1452' N

PDR Depth: 1,391.4 mbrf

Prospectus Depth: 1,360 mbsf

Longitude: 085° 46.3758' E

Water Depth: 1,386.1 mbrf

BSR Depth: N/A (below TD)

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)			
		(hours)	(days)				
Begin Hole NGHP-01-18A				1230 02-Aug-06	Sea Floor (m)		
Switch to DP mode/locate site/deploy beacon	1230 02-Aug	0.50	0.0	1300 02-Aug	1386.1		
PU BHA, pull 5 stds	1300 02-Aug	7.50	0.3	2030 02-Aug	mbsf	mbrf	Adv
WOW-Can't maintain position	2030 02-Aug	2.50	0.1	2300 02-Aug			
RIH/Space out DP with bit @ 1384.0 mbrf	2300 02-Aug	0.50	0.0	2330 02-Aug			
Spud Hole (mudline @ 1386.1) mbrf Target	2330 02-Aug	0.25	0.0	2345 02-Aug	0.0	1,386.1	0.0
1st core-on-deck (1H) to 7.4 mbsf Depths	2345 02-Aug	0.00	0.0	2345 02-Aug	7.4	1,393.5	7.4
APC core 2H to 16.9 mbsf (mbsf)	2345 02-Aug	0.75	0.0	0030 03-Aug	16.9	1,403.0	9.5
APC core 3H w/APC3/T to 26.4 mbsf APCT-3	0030 03-Aug	1.25	0.1	0145 03-Aug	26.4	1,412.5	9.5
APC core 4H to 35.9 mbsf	0145 03-Aug	0.75	0.0	0230 03-Aug	35.9	1,422.0	9.5
APC core 5H w/APC3/T to 45.4 mbsf APCT-3	0230 03-Aug	1.00	0.0	0330 03-Aug	45.4	1,431.5	9.5
APC core 6H to 54.9 mbsf/pull 2-singles off bottom	0330 03-Aug	2.50	0.1	0600 03-Aug	54.9	1,441.0	9.5
WOW/excessive heave	0600 03-Aug	1.50	0.1	0730 03-Aug	54.9	1,441.0	0.0
RIH/APC core 7H w/APC3/T to 64.4 mbsf	0730 03-Aug	1.00	0.0	0830 03-Aug	64.4	1,450.5	9.5
APC core 8H to 73.9 mbsf	0830 03-Aug	0.75	0.0	0915 03-Aug	73.9	1,460.0	9.5
Drill 4.0m/APC core 9H to 87.4 mbsf	0915 03-Aug	0.75	0.0	1000 03-Aug	87.4	1,473.5	13.5
APC core 10H to 96.9 mbsf	1000 03-Aug	0.75	0.0	1045 03-Aug	96.9	1,483.0	9.5
APC core 11H to 106.4 mbsf	1045 03-Aug	0.75	0.0	1130 03-Aug	106.4	1,492.5	9.5
APC core 12H to 115.9 mbsf	1130 03-Aug	0.75	0.0	1215 03-Aug	115.9	1,502.0	9.5
Switch to XCB core 13X to 125.5 mbsf	1215 03-Aug	1.50	0.1	1345 03-Aug	125.5	1,511.6	9.6
XCB core 14X to 135.2 mbsf	1345 03-Aug	0.75	0.0	1430 03-Aug	135.2	1,521.3	9.7
DVTP temperature @ 135.2 mbsf N/G DVTP-1	1430 03-Aug	1.00	0.0	1530 03-Aug	135.2	1,521.3	0.0
XCB core 15X to 144.8 mbsf	1530 03-Aug	0.75	0.0	1615 03-Aug	144.8	1,530.9	9.6
XCB core 16X to 154.6 mbsf	1615 03-Aug	0.75	0.0	1700 03-Aug	154.6	1,540.7	9.8
XCB core 17X to 164.3 mbsf	1700 03-Aug	0.75	0.0	1745 03-Aug	164.3	1,550.4	9.7
XCB core 18X to 173.8 mbsf	1745 03-Aug	1.00	0.0	1845 03-Aug	173.8	1,559.9	9.5
XCB core 19X to 183.5 mbsf	1845 03-Aug	0.75	0.0	1930 03-Aug	183.5	1,569.6	9.7
XCB core 20X to TD @ 190.0 mbsf/rack c'bbls	1930 03-Aug	0.75	0.0	2015 03-Aug	190.0	1,576.1	6.5
DVTP temperature @ 190.0 mbsf Good DVTP-2	2015 03-Aug	1.00	0.0	2115 03-Aug	190.0	1,576.1	TD
Displace hole with 10.5 ppg mud	2115 03-Aug	0.25	0.0	2130 03-Aug	Note: Max TD not >300.0 mbsf		
POOH/set back top drive/clear sea floor @ 2230 hr	2130 03-Aug	1.00	0.0	2230 03-Aug			
Cont. POOH/rack DC's/prep rig f/transit	2230 03-Aug	3.50	0.1	0200 04-Aug			
Beacon recovery deferred due to heavy sea state	0200 04-Aug	0.00	0.0	0200 04-Aug			
End Hole NGHP-01-18A				0200 04-Aug			
Total Hours/Days		37.50	1.6				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-19 (MNGH-Gap Site)

Operations Schedule for Hole 19A

(APC/XCB/PCS Core Hole)

Latitude: 018° 58.6568' N

PDR Depth: 1,439.3 mbrf

Prospectus Depth: 1,410 mbsf

Longitude: 085° 39.5202' E

Water Depth: 1,434.2 mbrf

BSR Depth: Est @ ~200 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)			
		(hours)	(days)				
Begin Hole NGHP-01-19A				1445 04-Aug-06	Sea Floor (m)		
End sea voyage/switch to DP mode/deploy beacon	1445 04-Aug	0.50	0.0	1515 04-Aug	1434.2		
M/U BHA, RIH w/DP, P/U TD, Install Ice Bath	1515 04-Aug	5.75	0.2	2100 04-Aug	mbsf	mbrf	Adv
Standby/trouble shoot port propulsion shaft problem	2100 04-Aug	8.50	0.4	0530 05-Aug			
RIH/Space out DP with bit @ 1430.0 mbrf	0530 05-Aug	1.00	0.0	0630 05-Aug			
RIH w/APC/spud @0700 hr (mudline @1434.2 mbrf)	0630 05-Aug	0.50	0.0	0700 05-Aug	0.0	1,434.2	0.0
1st core-on-deck (1H) to 5.3 mbsf Target	0700 05-Aug	0.25	0.0	0715 05-Aug	5.3	1,439.5	5.3
APC core 2H to 14.8 mbsf Depths	0715 05-Aug	0.75	0.0	0800 05-Aug	14.8	1,449.0	9.5
APC core 3H w/APC3/T to 24.3 mbsf (mbsf) APCT-3	0800 05-Aug	1.00	0.0	0900 05-Aug	24.3	1,458.5	9.5
APC core 4H to 33.8 mbsf	0900 05-Aug	0.50	0.0	0930 05-Aug	33.8	1,468.0	9.5
APC core 5H w/APC3/T to 43.3 mbsf APCT-3	0930 05-Aug	1.00	0.0	1030 05-Aug	43.3	1,477.5	9.5
APC core 6H to 52.8 mbsf	1030 05-Aug	0.75	0.0	1115 05-Aug	52.8	1,487.0	9.5
APC core 7H w/APC3/T to 62.3 mbsf APCT-3	1115 05-Aug	1.00	0.0	1215 05-Aug	62.3	1,496.5	9.5
4.0 m drilled interval to balance drilling kelly	1215 05-Aug	0.25	0.0	1230 05-Aug	66.3	1,500.5	4.0
APC core 8H to 75.8 mbsf	1230 05-Aug	0.50	0.0	1300 05-Aug	75.8	1,510.0	9.5
APC core 9H to 85.3 mbsf	1300 05-Aug	0.75	0.0	1345 05-Aug	85.3	1,519.5	9.5
APC core 10H to 94.8 mbsf	1345 05-Aug	0.50	0.0	1415 05-Aug	94.8	1,529.0	9.5
APC core 11H to 98.3 mbsf	1415 05-Aug	0.75	0.0	1500 05-Aug	98.3	1,532.5	3.5
Switch to XCB core 12X to 107.9 mbsf	1500 05-Aug	1.25	0.1	1615 05-Aug	107.9	1,542.1	9.6
XCB core 13X to 117.4 mbsf	1615 05-Aug	0.50	0.0	1645 05-Aug	117.4	1,551.6	9.5
DVTP temperature @ 117.4 mbsf N/G DVTP-1	1645 05-Aug	1.00	0.0	1745 05-Aug	117.4	1,551.6	0.0
XCB core 14X to 126.0 mbsf Pkg #1	1745 05-Aug	0.75	0.0	1830 05-Aug	126.0	1,560.2	8.6
PCS/M core (15P) to 127.0 mbsf 95 Bars 131+5m PCS/M-1	1830 05-Aug	1.25	0.1	1945 05-Aug	127.0	1,561.2	1.0
FPC press core (16Y) to 128.0 mbsf 0 Bars FPC-1	1945 05-Aug	2.25	0.1	2200 05-Aug	128.0	1,562.2	1.0
HRC press core (17E) to 129.0 mbsf 130 Bars HRC-1	2200 05-Aug	2.00	0.1	0000 06-Aug	129.0	1,563.2	1.0
XCB core 18X to 138.6 mbsf	0000 06-Aug	0.75	0.0	0045 06-Aug	138.6	1,572.8	9.6
XCB core 19X to 148.3 mbsf	0045 06-Aug	1.00	0.0	0145 06-Aug	148.3	1,582.5	9.7
XCB core 20X to 157.9 mbsf	0145 06-Aug	1.00	0.0	0245 06-Aug	157.9	1,592.1	9.6
DVTP temperature @ 157.9 mbsf N/G DVTP-2	0245 06-Aug	1.00	0.0	0345 06-Aug	157.9	1,592.1	0.0
XCB core 21X to 167.5 mbsf	0345 06-Aug	1.00	0.0	0445 06-Aug	167.5	1,601.7	9.6
XCB core 22X to 177.1 mbsf	0445 06-Aug	0.75	0.0	0530 06-Aug	177.1	1,611.3	9.6
XCB core 23X to 186.8 mbsf	0530 06-Aug	0.75	0.0	0615 06-Aug	186.8	1,621.0	9.7
XCB core 24X to 193.3 mbsf Pkg #2	0615 06-Aug	0.75	0.0	0700 06-Aug	193.3	1,627.5	6.5
PCS/M core (25P) to 194.3 mbsf 0 Bars 190+5m PCS/M-2	0700 06-Aug	1.25	0.1	0815 06-Aug	194.3	1,628.5	1.0
FPC press core (26Y) to 195.3 mbrf 0 Bars FPC-2	0815 06-Aug	2.00	0.1	1015 06-Aug	195.3	1,629.5	1.0
HRC press core (27E) to 196.3 mbrf 103 Bars HRC-2	1015 06-Aug	1.75	0.1	1200 06-Aug	196.3	1,630.5	1.0
DVTP temperature @ 196.3 mbsf Good DVTP-3	1200 06-Aug	1.25	0.1	1315 06-Aug	196.3	1,630.5	0.0

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-19 (MNGH-Gap Site)

Operations Schedule for Hole 19A (APC/XCB/PCS Core Hole)

Latitude: 018° 58.6568' N

PDR Depth: 1,439.3 mbrf

Prospectus Depth: 1,410 mbsf

Longitude: 085° 39.5202' E

Water Depth: 1,434.2 mbrf

BSR Depth: Est @ ~200 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)			
		(hours)	(days)				
XCB core 28X to 205.9 mbsf	1315 06-Aug	1.25	0.1	1430 06-Aug	205.9	1,640.1	9.6
XCB core 29X to 215.6 mbsf	1430 06-Aug	0.75	0.0	1515 06-Aug	215.6	1,649.8	9.7
XCB core 30X to 225.2 mbsf	1515 06-Aug	1.00	0.0	1615 06-Aug	225.2	1,659.4	9.6
XCB core 31X to 234.8 mbsf	1615 06-Aug	0.75	0.0	1700 06-Aug	234.8	1,669.0	9.6
XCB core 32X to 244.4 mbsf	1700 06-Aug	1.00	0.0	1800 06-Aug	244.4	1,678.6	9.6
XCB core 33X to 254.0 mbsf	1800 06-Aug	0.75	0.0	1845 06-Aug	254.0	1,688.2	9.6
XCB core 34X to 263.6 mbsf	1845 06-Aug	1.25	0.1	2000 06-Aug	263.6	1,697.8	9.6
XCB core 35X to 273.2 mbsf	2000 06-Aug	0.75	0.0	2045 06-Aug	273.2	1,707.4	9.6
XCB core 36X to 282.8 mbsf	2045 06-Aug	0.75	0.0	2130 06-Aug	282.8	1,717.0	9.6
XCB core 37X to 292.4 mbsf	2130 06-Aug	1.00	0.0	2230 06-Aug	292.4	1,726.6	9.6
XCB core 38X to 300.0 mbsf	2230 06-Aug	1.00	0.0	2330 06-Aug	300.0	1,734.2	7.6
DVTP temperature @ 300.0 mbsf Partial DVTP-4	2330 06-Aug	1.25	0.1	0045 07-Aug	305.0	1,739.2	5.0
Drill 5.0 m to TD @ 305.0 mbsf	0045 07-Aug	1.00	0.0	0145 07-Aug	305.0	1,739.2	TD
DVTP temperature @ TD of 305.0 mbsf Good DVTP-5	0145 07-Aug	1.25	0.1	0300 07-Aug			
Sweep hole/wiper trip to 60 mbsf and back	0300 07-Aug	2.00	0.1	0500 07-Aug			
Ream to TD (5m fill)/sweep hole	0500 07-Aug	1.00	0.0	0600 07-Aug			
Deploy LFV go-devil/displace hole 100 bbls of heavy mud	0600 07-Aug	0.50	0.0	0630 07-Aug			
POOH/set back top drive/set EOP @ 60.8 mbsf to log	0630 07-Aug	1.00	0.0	0730 07-Aug			
Move tools/rig-up for wireline logging	0730 07-Aug	1.00	0.0	0830 07-Aug			
1st-Deploy Triple Combo/unable to pass 145.8 mbsf	0830 07-Aug	4.50	0.2	1300 07-Aug			
Rig-down from wireline logging	1300 07-Aug	1.00	0.0	1400 07-Aug			
POOH/clear sea floor @ 1425 hr	1400 07-Aug	0.50	0.0	1430 07-Aug			
End Hole NGHP-01-19A				1430 07-Aug			
Total Hours/Days		71.75	3.0				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-19

Operations Schedule for Hole 19B (Dedicated Wireline Logging Hole)

Latitude: 018° 58.6532' N

PDR Depth: 1,439.3 mbrf

Prospectus Depth: 1,410 mbsf

Longitude: 085° 39.5160' E

Water Depth: 1,433.2 mbrf

BSR Depth: Est @ ~200 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-19B				1430 07-Aug-06	1433.2		
Offset ship 10m SW of Hole 19A (bearing 228°)	1430 07-Aug	0.00	0.0	1430 07-Aug	1433.2		
RIH/Space out DP with bit @ 1431.0 mbrf	1430 07-Aug	0.75	0.0	1515 07-Aug	mbsf	mbrf	Adv
RIH w/APC/spud @ 1545 hr (mudline @ 1433.2 mbrf)	1515 07-Aug	0.50	0.0	1545 07-Aug	0.0	1,433.2	0.0
1st core-on-deck (1H) to 7.3 mbsf	1545 07-Aug	0.25	0.0	1600 07-Aug	7.3	1,440.5	7.3
APC core 2H to 16.8 mbsf	1600 07-Aug	0.50	0.0	1630 07-Aug	16.8	1,450.0	9.5
APC core 3H to 26.3 mbsf	1630 07-Aug	0.50	0.0	1700 07-Aug	26.3	1,459.5	9.5
Layout APC bbbs/deploy XCB center bit	1700 07-Aug	0.50	0.0	1730 07-Aug	26.3	1,459.5	0.0
Drill to TD of 280.0 mbsf @ ~30 m/hr	1730 07-Aug	6.50	0.3	0000 08-Aug	280.0	1,713.2	253.7
Sweep hole/recover center bit	0000 08-Aug	1.00	0.0	0100 08-Aug	280.0	1,713.2	TD
Displace hole with 100 bbbs of 10.5 ppg Sepiolite mud	0100 08-Aug	0.50	0.0	0130 08-Aug			
POOH/rack TD & set EOP @ 61.8 mbsf to log	0130 08-Aug	0.50	0.0	0200 08-Aug			
Rig-up for wireline logging	0200 08-Aug	1.00	0.0	0300 08-Aug			
Deploy Triple Combo & log to 280.0 mbsf (tight)	0300 08-Aug	5.75	0.2	0845 08-Aug			
Tie back sheaves/RIH w/DP to 177.3 mbsf	0845 08-Aug	0.75	0.0	0930 08-Aug			
Rig-up/Deploy VSP & log from 262.8 mbsf/secure WL	0930 08-Aug	7.00	0.3	1630 08-Aug			
POOH & set EOP @ 61.8 mbsf/rig up sheaves	1630 08-Aug	0.75	0.0	1715 08-Aug			
Deploy FMS-Sonic & log to 266.8 mbsf	1715 08-Aug	5.75	0.2	2300 08-Aug			
Rig-down from wireline logging	2300 08-Aug	0.75	0.0	2345 08-Aug			
POOH/clear sea floor @ 0005 hr	2345 08-Aug	0.25	0.0	0000 09-Aug			
POOH to rig floor/recover beacon @ 0316 hr	0000 09-Aug	3.50	0.1	0330 09-Aug			
Pull thrusters/hydrophones/prepare for transit	0330 09-Aug	0.50	0.0	0400 09-Aug			
Cruise mode @ 0354 hr/UW back to Site NGHP-01-18	0400 09-Aug	0.00	0.0	0400 09-Aug			
End Hole NGHP-01-19B				0400 09-Aug			
Total Hours/Days		37.50	1.6				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-20 (KGGH05)

Operations Schedule for Hole 20A (APC/XCB/Pressure Core Hole)

Latitude: 015° 48.5671' N

PDR Depth: 1,157.4 mbrf

Prospectus Depth: 1,149 mbsf

Longitude: 081° 50.5760' E

Water Depth: 1,157.9 mbrf

BSR Depth: Est @ ~220 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-20A				1500 10-Aug-06	1157.9		
End sea voyage/switch to DP mode/deploy beacon	1500 10-Aug	0.00	0.0	1500 10-Aug	mbsf	mbrf	Adv
Make up APC/XCB BHA & RIH/PU top drive	1500 10-Aug	3.50	0.1	1830 10-Aug			
Offset 10 NW/Space out DP with bit @ 1146.0 mbrf	1830 10-Aug	0.50	0.0	1900 10-Aug			
Water core/lower DP 5m to 1151.0 mbrf	1900 10-Aug	0.50	0.0	1930 10-Aug			
Insufficient core/lower DP 3m to 1154.0 mbrf	1930 10-Aug	0.25	0.0	1945 10-Aug			
Spud Hole @ 1950 hr (mudline @ 1157.9 mbrf)	1945 10-Aug	0.00	0.0	1945 10-Aug	0.0	1,157.9	0.0
1st core-on-deck (1H) to 5.6 mbsf	1945 10-Aug	0.25	0.0	2000 10-Aug	5.6	1,163.5	5.6
APC core 2H to 15.1 mbsf	2000 10-Aug	1.25	0.1	2115 10-Aug	15.1	1,173.0	9.5
APC core 3H w/APC3 to 22.9 mbsf (refusal) APCT-3	2115 10-Aug	1.25	0.1	2230 10-Aug	22.9	1,180.8	7.8
Switch to XCB core 4X to 32.5mbsf	2230 10-Aug	1.75	0.1	0015 11-Aug	32.5	1,190.4	9.6
XCB core 5X to 42.1 mbsf	0015 11-Aug	1.00	0.0	0115 11-Aug	42.1	1,200.0	9.6
XCB core 6X to 51.7 mbsf	0115 11-Aug	0.75	0.0	0200 11-Aug	51.7	1,209.6	9.6
XCB core 7X to 61.3 mbsf	0200 11-Aug	1.00	0.0	0300 11-Aug	61.3	1,219.2	9.6
XCB core 8X to 70.9 mbsf	0300 11-Aug	1.00	0.0	0400 11-Aug	70.9	1,228.8	9.6
DVTP temperature @ 70.9 mbsf Good DVTP-1	0400 11-Aug	1.25	0.1	0515 11-Aug	70.9	1,228.8	0.0
XCB core 9X to 80.6 mbsf	0515 11-Aug	1.25	0.1	0630 11-Aug	80.6	1,238.5	9.7
XCB core 10X to 90.2 mbsf Target	0630 11-Aug	0.75	0.0	0715 11-Aug	90.2	1,248.1	9.6
XCB core 11X to 92.2 mbsf (short core) Depths	0715 11-Aug	0.75	0.0	0800 11-Aug	92.2	1,250.1	2.0
XCB core 12X to 97.8 mbsf (half core) (mbsf)	0800 11-Aug	1.00	0.0	0900 11-Aug	97.8	1,255.7	5.6
XCB core 13X to 102.8 mbsf (half core)	0900 11-Aug	1.00	0.0	1000 11-Aug	102.8	1,260.7	5.0
Sweep hole/short trip/pipe annulus appears plugged	1000 11-Aug	2.50	0.1	1230 11-Aug	102.8	1,260.7	0.0
XCB core 14X to 107.4 mbsf (half core)	1230 11-Aug	0.75	0.0	1315 11-Aug	107.4	1,265.3	4.6
XCB core 15X to 112.4 mbsf (half core)	1315 11-Aug	1.00	0.0	1415 11-Aug	112.4	1,270.3	5.0
XCB core 16X to 122.0 mbsf	1415 11-Aug	1.25	0.1	1530 11-Aug	122.0	1,279.9	9.6
XCB core 17X to 131.6 mbsf	1530 11-Aug	1.25	0.1	1645 11-Aug	131.6	1,289.5	9.6
XCB core 18X to 141.2 mbsf	1645 11-Aug	1.00	0.0	1745 11-Aug	141.2	1,299.1	9.6
XCB core 19X to 147.8 mbsf Pkg #1	1745 11-Aug	1.00	0.0	1845 11-Aug	147.8	1,305.7	6.6
PCS/M core (20P) to 148.8 mbsf 150+5m PCS/M-1	1845 11-Aug	1.75	0.1	2030 11-Aug	148.8	1,306.7	1.0
Hole conditioning prior to FPC/HRC coring	2030 11-Aug	3.00	0.1	2330 11-Aug	148.8	1,306.7	0.0
Hole poor/abandon/displace with 60 bbls mud	2330 11-Aug	0.50	0.0	0000 12-Aug			
POOH/clear sea floor @ 0040 hr	0000 12-Aug	0.75	0.0	0045 12-Aug			
End Hole NGHP-01-20A				0045 12-Aug			
Total Hours/Days		33.75	1.4				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-20 (KGGH05)

Operations Schedule for Hole 20B (XCB Core Hole)

Latitude: 015° 48.5709' N

PDR Depth: 1,157.4 mbrf

Prospectus Depth: 1,149 mbsf

Longitude: 081° 50.5720' E

Water Depth: 1,157.9 mbrf

BSR Depth: Est @ ~220 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)	Sea Floor (m)		
		(hours)	(days)				
Begin Hole NGHP-01-20B				0045 12-Aug-06	1157.9		
Offset ship 10m NW of Hole 20A	0045 12-Aug	0.00	0.0	0045 12-Aug			
Drop center bit/space out DP	0045 12-Aug	0.25	0.0	0100 12-Aug	mbsf	mbrf	Adv
Spud hole @ 0115 hr (assume mudline @ 1157.9 mbrf)	0100 12-Aug	0.25	0.0	0115 12-Aug	0.0	1,157.9	0.0
Drill to TD of ~148 mbsf @ ~30 m/hr	0115 12-Aug	6.75	0.3	0800 12-Aug	148.8	1,306.7	148.8
Sweep hole/recover center bit	0800 12-Aug	0.50	0.0	0830 12-Aug	148.8	1,306.7	0.0
XCB core 1X to 158.4 mbsf/Core On-deck	0830 12-Aug	0.75	0.0	0915 12-Aug	158.4	1,316.3	9.6
XCB core 2X to 168.1 mbsf	0915 12-Aug	0.75	0.0	1000 12-Aug	168.1	1,326.0	9.7
XCB core 3X to 177.7 mbsf	1000 12-Aug	0.75	0.0	1045 12-Aug	177.7	1,335.6	9.6
XCB core 4X to 187.3 mbsf	1045 12-Aug	1.25	0.1	1200 12-Aug	187.3	1,345.2	9.6
Decide to abandon hole	1200 12-Aug	0.00	0.0	1200 12-Aug	187.3	1,345.2	TD
Recover core barrel displace hole with 60 bbls of 10.5 ppg mud	1200 12-Aug	0.50	0.0	1230 12-Aug			
POOH/clear sea floor @ 1345 hr	1230 12-Aug	1.25	0.1	1345 12-Aug			
POOH to rig floor/recover beacon @ 1504 hr	1345 12-Aug	2.50	0.1	1615 12-Aug			
Secure rig and begin DP move to next site	1615 12-Aug	0.25	0.0	1630 12-Aug			
End Hole NGHP-01-20B				1630 12-Aug			
Total Hours/Days		15.75	0.7				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-21 (New Site FR1)

Operations Schedule for Hole 21A (XCB/Pressure Core Hole)

Latitude: 015° 51.8531' N

PDR Depth: 1,055.4 mbrf

Prospectus Depth: N/A

Longitude: 081° 50.0827' E

Water Depth: 1,049.0 mbrf

BSR Depth: Est @ ~175 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)			
		(hours)	(days)				
Begin Hole NGHP-01-21A				1730 12-Aug-06	Sea Floor (m)		
End DP move/deploy beacon	1730 12-Aug	0.00	0.0	1730 12-Aug	1049.0		
Offset vessel 20m SE of Hole 10A (bearing 136°)	1730 12-Aug	0.00	0.0	1730 12-Aug			
RIH w/drill string	1730 12-Aug	2.00	0.1	1930 12-Aug	mbsf	mbrf	Adv
Pick up top drive/space out DP	1930 12-Aug	0.25	0.0	1945 12-Aug			
Spud hole @ 1945 hr (Sea floor @ 1049.0 mbrf)	1945 12-Aug	0.00	0.0	1945 12-Aug	0.0	1,049.0	0.0
Drill w/XCB ctr bit to 48.4 mbsf	1945 12-Aug	1.75	0.1	2130 12-Aug	48.4	1,097.4	48.4
Recover center bit/deploy XCB core barrel	2130 12-Aug	0.50	0.0	2200 12-Aug	48.4	1,097.4	0.0
XCB core 1X to 58.0 mbsf Pkg #1	2200 12-Aug	0.50	0.0	2230 12-Aug	58.0	1,107.0	9.6
FPC press core (2Y) 58.0 to 59.0 mbsf 110 Bar FPC-1	2230 12-Aug	1.75	0.1	0015 13-Aug	59.0	1,108.0	1.0
HRC press core (3E) 59.0 to 60.0 mbsf 105 Bar HRC-1	0015 13-Aug	2.00	0.1	0215 13-Aug	60.0	1,109.0	1.0
XCB partial core 4X to 64.5 mbsf	0215 13-Aug	0.75	0.0	0300 13-Aug	64.5	1,113.5	4.5
XCB partial core 5X to 69.0 mbsf Pkg #2	0300 13-Aug	0.75	0.0	0345 13-Aug	69.0	1,118.0	4.5
FPC press core (6Y) to 70.0 mbsf 0 Bar FPC-2	0345 13-Aug	1.75	0.1	0530 13-Aug	70.0	1,119.0	1.0
HRC press core (7E) to 71.0 mbsf 103 Bar HRC-2	0530 13-Aug	2.00	0.1	0730 13-Aug	71.0	1,120.0	1.0
XCB partial core 8X to 75.5 mbsf	0730 13-Aug	0.75	0.0	0815 13-Aug	75.5	1,124.5	4.5
XCB partial core 9X to 80.0 mbsf Pkg #3	0815 13-Aug	0.75	0.0	0900 13-Aug	80.0	1,129.0	4.5
FPC press core (10Y) to 81.0 mbsf 0 Bar FPC-3	0900 13-Aug	1.75	0.1	1045 13-Aug	81.0	1,130.0	1.0
HRC press core (11E) to 82.0 mbsf 100 Bar HRC-3	1045 13-Aug	2.75	0.1	1330 13-Aug	82.0	1,131.0	1.0
XCB core 12X to 87.0 mbsf	1330 13-Aug	0.75	0.0	1415 13-Aug	87.0	1,136.0	5.0
XCB core 13X to 91.5 mbsf	1415 13-Aug	0.75	0.0	1500 13-Aug	91.5	1,140.5	4.5
Displace with 30 bbls of 10.5 ppg Sepiolite mud	1500 13-Aug	0.25	0.0	1515 13-Aug	91.5	1,140.5	TD
POOH/clear sea floor @ 1525 hr/secure DP for move	1515 13-Aug	0.25	0.0	1530 13-Aug			
End Hole NGHP-01-21A				1530 13-Aug			
Total Hours/Days		22.00	0.9				

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-21 (FR1 Site)

Operations Schedule for Hole 21B (Pressure Cores/Wireline Logging Hole)

Latitude: 015° 51.8024' N

PDR Depth: 1,056.4 mbrf

Prospectus Depth: N/A

Longitude: 081° 50.1333' E

Water Depth: 1,050.0 mbrf

BSR Depth: Est @ ~175 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-21B				1530 13-Aug-06
Pull 2-stds/Offset 150m SE of Hole 10A (bearing 136°)	1530 13-Aug	0.50	0.0	1600 13-Aug
Space out for spudding	1600 13-Aug	0.25	0.0	1615 13-Aug
Spud Hole @ 1620 hr (sea floor @ 1050.0 mbrf)	1615 13-Aug	0.00	0.0	1615 13-Aug
Drill to 55.0 mbsf	1615 13-Aug	2.25	0.1	1830 13-Aug
Sweep with mud/recover center bit	1830 13-Aug	0.50	0.0	1900 13-Aug
Standby waiting on pressure tools	1900 13-Aug	1.25	0.1	2015 13-Aug
HRC press core (1E) 55.0 to 56.0 mbsf 102 Bar HRC-1	2015 13-Aug	2.00	0.1	2215 13-Aug
FPC press core (2Y) 56.0 to 57.0 mbsf 0 Bar FPC-1	2215 13-Aug	1.50	0.1	2345 13-Aug
Drill to TD of 200.0 mbsf/sweep with Sepiolite mud	2345 13-Aug	4.25	0.2	0400 14-Aug
Recover center bit	0400 14-Aug	0.50	0.0	0430 14-Aug
Sweep/Displace hole w/60 bbls of 10.5 ppg Sepiolite	0430 14-Aug	1.00	0.0	0530 14-Aug
POOH/rack TD & set EOP @ 58.3 mbsf to log	0530 14-Aug	0.50	0.0	0600 14-Aug
Rig-up for wireline logging	0600 14-Aug	1.00	0.0	0700 14-Aug
Attempt to log with Triple Combo	0700 14-Aug	2.50	0.1	0930 14-Aug
Unable to pass bridge in hole @ 101.0mbsf	0930 14-Aug	1.00	0.0	1030 14-Aug
POOH and layout logging tools/tie back WL/sheaves	1030 14-Aug	1.50	0.1	1200 14-Aug
RIH with DP to TD/clear out bridges/PU top drive	1200 14-Aug	1.50	0.1	1330 14-Aug
Deepen hole to 205.0 mbsf	1330 14-Aug	0.50	0.0	1400 14-Aug
Sweep/recover center bit/displace with 60 bbls of 10.5 ppg mud	1400 14-Aug	1.50	0.1	1530 14-Aug
POOH/rack TD/set EOP @ 121.0 mbsf	1530 14-Aug	0.50	0.0	1600 14-Aug
Release WL & logging sheaves	1600 14-Aug	0.25	0.0	1615 14-Aug
- Attempt to log lower hole w/Triple Combo	1615 14-Aug	6.75	0.3	2300 14-Aug
*unable to pass bridge in hole @ 160.0 mbsf				
*Tool stuck in hole/stuck entering pipe/worked free				
Rig-down from wireline logging	2300 14-Aug	1.00	0.0	0000 15-Aug
POOH/clear sea floor @ 0030 hr	0000 15-Aug	0.50	0.0	0030 15-Aug
End Hole NGHP-01-21B				0030 15-Aug
Total Hours/Days		33.00	1.4	

India National Gas Hydrate Program (NGHP) - Expedition 1

Site NGHP-01-21 (FR1 Site)

Operations Schedule for Hole 21C (Pressure Core Hole)

Latitude: 015° 51.8492' N

PDR Depth: 1,055.4 mbsf

Prospectus Depth: N/A

Longitude: 081° 50.0866' E

Water Depth: 1,049.0 mbrf

BSR Depth: Est @ ~175 mbsf

Operations Task Description	Starting (time/date)	Actual Time Req'd		Completion (time/date)
		(hours)	(days)	
Begin Hole NGHP-01-21C				0030 15-Aug-06
Offset ship 30m SE of Hole 10A (bearing 136°)	0030 15-Aug	0.50	0.0	0100 15-Aug
PU TD/deploy center bit/space out for spudding	0100 15-Aug	0.75	0.0	0145 15-Aug
Prepare pressure coring tools for deployment	0145 15-Aug	1.75	0.1	0330 15-Aug
Spud Hole @ 0340 hr (sea floor @ 1049.0)	0330 15-Aug	0.25	0.0	0345 15-Aug
Drill to 55.0 mbsf/sweep w/Sepiolite mud	0345 15-Aug	1.25	0.1	0500 15-Aug
Recover center bit	0500 15-Aug	0.50	0.0	0530 15-Aug
Sweep hole with 15 bbls Sepiolite mud	0530 15-Aug	0.50	0.0	0600 15-Aug
FPC press core (1Y) to 56.0 mbsf 120 Bar FPC-1	0600 15-Aug	1.75	0.1	0745 15-Aug
Drill 0.5m to clean up rathole	0745 15-Aug	0.25	0.0	0800 15-Aug
HRC press core (2E) to 57.5 mbsf 105 Bar HRC-1	0800 15-Aug	1.50	0.1	0930 15-Aug
Deploy center bit and drill to 69.5 mbsf	0930 15-Aug	0.75	0.0	1015 15-Aug
Standby for pressure core tool preparation	1015 15-Aug	1.75	0.1	1200 15-Aug
Drill last 6.5 m to 76.0 mbsf	1200 15-Aug	0.50	0.0	1230 15-Aug
Sweep hole/recover center bit	1230 15-Aug	1.00	0.0	1330 15-Aug
FPC press core (3Y) to 77.0 mbsf 112 Bar FPC-2	1330 15-Aug	1.00	0.0	1430 15-Aug
HRC press core (4E) to 78.0 mbsf 105 Bar HRC-2	1430 15-Aug	1.50	0.1	1600 15-Aug
Displace hole with 30 bbls of 10.5 ppg mud	1600 15-Aug	0.50	0.0	1630 15-Aug
POOH/clear sea floor @ 1715 hr/set back top drive	1630 15-Aug	0.75	0.0	1715 15-Aug
POOH recover beacon @ 1744 hr	1715 15-Aug	1.50	0.1	1845 15-Aug
Layout BHA/drill collars	1845 15-Aug	2.25	0.1	2100 15-Aug
Pull thrusters/prepare for transit	2100 15-Aug	0.50	0.0	2130 15-Aug
UW for Chennai, India @ 2130 hr	2130 15-Aug	0.00	0.0	2130 15-Aug
End Hole NGHP-01-21C				2130 15-Aug
Total Hours/Days		21.00	0.9	

Appendix 3. Singapore Pressure Core Studies

During NGHP Expedition 01, five pressure cores were stored for further investigation on shore (table 1). These cores from Sites NGHP-01-10 and NGHP-01-21 had all been subjected to nondestructive analysis under pressure (see “Sites NGHP-01-10, 12, and 13” and “Site NGHP-01-21”) and all showed evidence that they contained significant quantities of gas hydrate as evidenced by the observed veins and layers in the X-ray images

as well as in the detailed profiles of *P*-wave velocity and gamma density. A shore-based, post-expedition operation was mounted in Singapore from 23 October to 11 November, 2006, under the guidance of P. Kumar, ONGC, to conduct further analyses of these cores under pressure. The operation was mounted again from 25 to 30 November to finalize the distribution of samples of these cores to laboratories around the world for continued study.

Table 3-1. Summary of sample distribution from Singapore post-cruise pressure coring activities.

[USGS, United States Geological Survey; LBNL, Lawrence Berkeley National Laboratory]

Core ID	Sample interval (cm)	Preservation method	Shipping container	Sent to	Comments
NGHP-1-10B-08Y	0–6	refrigeration	USGS cooler	USGS, Woods Hole, USA	
	6–26	liquid nitrogen	Dewar “PNNL”; location 5	Univ. Southampton, UK	
	26–46	liquid nitrogen	Dewar “PNNL”; location 4	Univ. Southampton, UK	
	46–66	liquid nitrogen	Dewar “PNNL”; location 3	Univ. Southampton, UK	
	66–86	liquid nitrogen	Dewar “PNNL”; location 2	Univ. Southampton, UK	
NGHP-1-21A-02Y	86–90	refrigeration	USGS cooler	USGS, Woods Hole, USA	
	4–24	pressure, under methane	PV USGS #1	USGS, Woods Hole, USA	IPTC measurements made
	24–44	pressure, under methane	PV USGS #2	USGS, Woods Hole, USA	IPTC measurements made
	44–64	pressure, under methane	PV USGS #3	USGS, Woods Hole, USA	IPTC measurements made
	64–91	liquid nitrogen	Dewar “USGS#1”; location 5	USGS, Woods Hole, USA	IPTC measurements made; includes core catcher
NGHP-1-21A-03E	0–25	liquid nitrogen	Dewar “LBNL”; location 2	LBNL, Berkeley, USA	IPTC measurements made
	25–45	liquid nitrogen	Dewar “LBNL”; location 3	LBNL, Berkeley, USA	IPTC measurements made
	45–65	liquid nitrogen	Dewar “LBNL”; location 4	LBNL, Berkeley, USA	IPTC measurements made
	65–90	liquid nitrogen	Dewar “LBNL”; location 5	LBNL, Berkeley, USA	IPTC measurements made
	90–115	liquid nitrogen	Dewar “LBNL”; location 6	LBNL, Berkeley, USA	IPTC measurements made
NGHP-1-21C-02E	2–23	liquid nitrogen	Dewar “USGS#1”; location 1	USGS, Woods Hole, USA	IPTC measurements made
	23–46	liquid nitrogen	Dewar “PNNL”; location 1	Univ. Southampton, UK	IPTC measurements made
	46–69	liquid nitrogen	Dewar “LBNL”; location 1	LBNL, Berkeley, USA	IPTC measurements made
	70–115	refrigeration	USGS cooler	USGS, Woods Hole, USA	IPTC measurements made; depressurization experiment conducted
NGHP-1-21C-04E	5–15	pressure, under nitrogen	PV Parkes #2	Univ. Cardiff, UK	
	15–25	dry ice	Parkes cooler	Univ. Cardiff, UK	
	25–35	pressure, under nitrogen	PV Parkes #1	Univ. Cardiff, UK	
	35–45	pressure, under nitrogen	PV Parkes #1	Univ. Cardiff, UK	
	45–55	pressure, under nitrogen	PV Parkes #2	Univ. Cardiff, UK	
	55–65	dry ice	Parkes cooler	Univ. Cardiff, UK	
	65–90	liquid nitrogen	Dewar “USGS#1”; location 2	USGS, Woods Hole, USA	
	90–100	liquid nitrogen	Dewar “USGS#1”; location 4	USGS, Woods Hole, USA	extruded from core liner
	100–115	liquid nitrogen	Dewar “USGS#1”; location 3	USGS, Woods Hole, USA	

Pressure Core Operations

Scientists from Geotek (P. Schultheiss, J. Roberts, M. Holland, and M. Druce) arrived in Singapore in late October, 2006, and transported the storage chambers containing the cores from the hold reefer on the *JOIDES Resolution* where they had been stored since NGHP Expedition 01 ended (fig. 1). The pressure records for the cores showed that they had remained at near-constant pressure (± 10 bar) throughout the time of storage, and the temperature records for the reefer showed that the temperature had not come near the gas-hydrate stability boundary (15°C at the storage pressure of 150 bar) during the time the cores had been stored. The cores were transported in a refrigerated truck to the Fugro/Geotek refrigerated pressure-core-analysis van, which was set up in a container yard in Jurong, Singapore. Each of the five cores was transferred in turn back into the MSCL-P (Pressure Multi-Sensor Core Logger) and 12 sets of two-dimensional X-ray images, *P*-wave velocity profiles, and gamma density profiles were collected for each core at 15-rotation intervals to provide a three-dimensional perspective on the gas-hydrate structures. Subsequently, the five cores were transported by refrigerated truck to nearby Gleneagles Hospital,



Figure 3-1. Five HYACINTH pressure cores stored in the reefer on the *JOIDES Resolution* ready for shore-based studies in Singapore.

where each core (in its storage chamber) underwent an X-ray computed tomography scan (voxel size: one cubic millimeter; fig. 2). The storage chambers were mounted on a wooden cradle that was carefully adjusted, using the laser guides on the table, so that it aligned closely to the center of the rotating scanner. This setup procedure was made using an empty chamber in the cradle. The cores remained cold throughout the 4-min scan before being returned to the refrigerated truck and transported back to the Jurong site.



Figure 3-2. HYACINTH pressure core inside aluminum storage chamber about to undergo X-ray computed tomography scan at Gleneagles Hospital in Singapore.

The Geotek scientists were joined by scientists from the Georgia Institute of Technology (J.C. Santamarina and T.-S. Yun) and the University of Wisconsin (D. Fratta) to conduct further measurements in the Georgia Tech Instrumented Pressure Testing Chamber (IPTC; fig. 3). The IPTC is a HYACINTH-compatible pressure chamber that is connected to the HYACINTH transfer system and enables additional core measurements to be made while the core is still under full *in-situ* pressures. The IPTC allows measurements of *P*-wave velocity, shear wave velocity, strength, resistivity, and temperature to be made through holes drilled in the plastic core liner (Yun and others, 2005). The HYACINTH automated core-positioning system was used to move individual pressure cores through the IPTC with sub-millimeter accuracy. Diametrically opposed holes were drilled in the liner at a measurement site, and then the core was advanced through the IPTC so that the holes were aligned with the first set of sensors and a measurement was made by hand. Measurements were made using the IPTC on three cores (Cores NGHP-01-21A-02Y, -21A-03E, -21C-02E) at 6.8- or 13.6-cm spacing. Core NGHP-01-21A-03E was rotated by 90° and measurements were repeated to examine any anisotropy effects in the core. After the set of IPTC measurements was completed on a core, a final X-ray image was acquired to determine the exact location of the measurements relative to the observed structures inside the core.

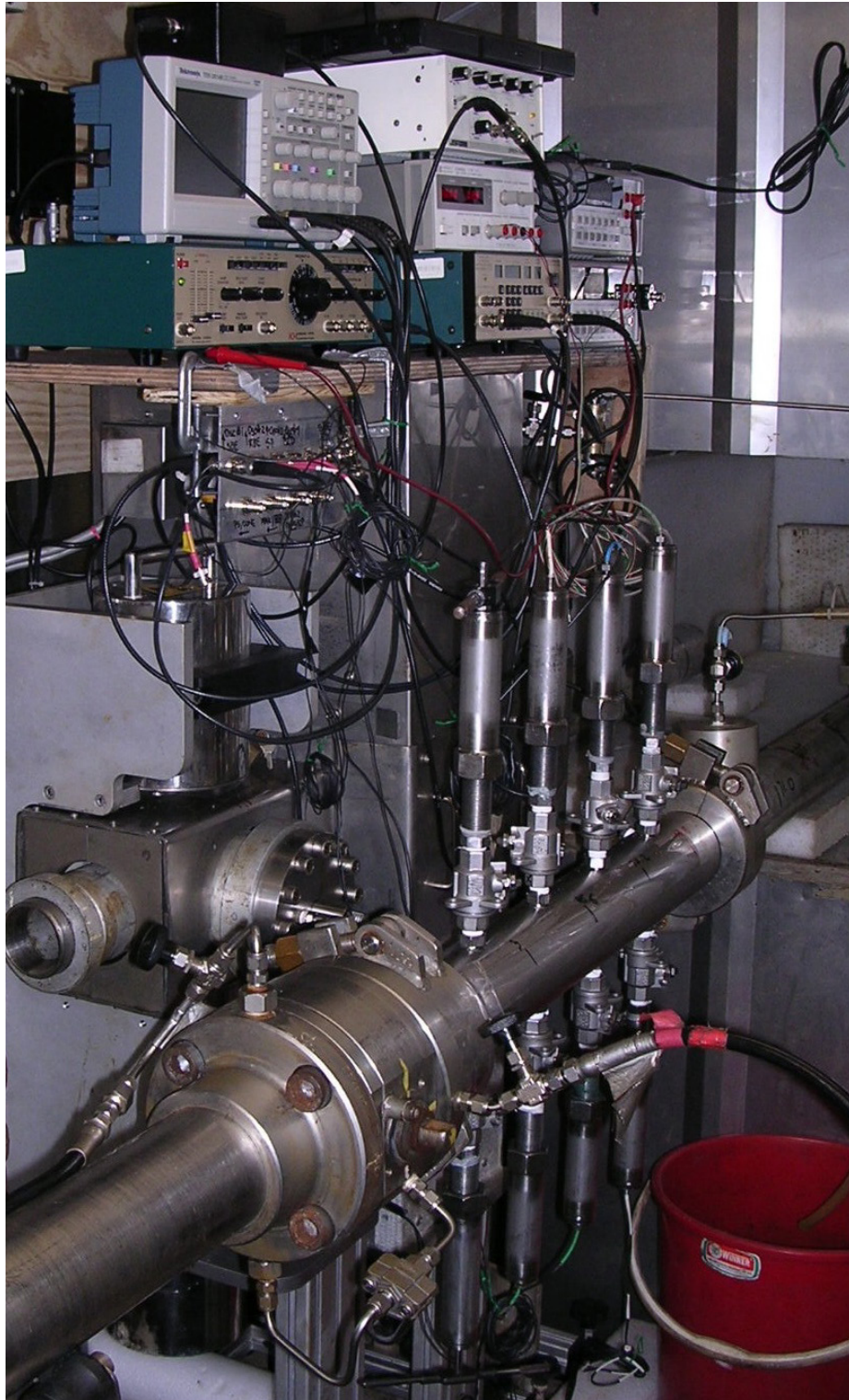


Figure 3-3. The IPTC inside the Fugro/Geotek refrigerated container at the Jurong container yard. The opposing protrusions on the IPTC are, from left, a set of manual drills, a set of *P*-wave transducers, a set of shear wave transducers, and a cone penetrometer and an electrical resistivity probe. [IPTC, Instrumental Pressure Testing Chamber]



Figure 3-4. The PRESS system inside the 40-ft refrigerated container at the Jurong container yard.

The PRESS system (PREssurized SubSampler; fig. 4) was mobilized from the Technical University of Berlin (operators E. Anders and T. Preusse) and installed in an adjacent 40-ft long refrigerated container in the Jurong container yard. The PRESS uses a rotary cutter to segment the cores and was used to cut whole round subsections from HYACINTH cores under pressure and transfer these shorter core lengths into pressure chambers for shipping. Individual cores were transferred from HYACINTH storage chambers into the PRESS. The PRESS uses gas as the pressurizing fluid, not water as the other HYACINTH pressure chambers do.

Cores NGHP-01-21A-02Y and -21C-04E were subsectioned in the PRESS and preserved under pressure for shipment to other laboratories. Both of these cores were subsectioned under nitrogen and subcores were transferred into modified Parr vessels with ball-valve lids (fig. 5). The nitrogen was largely replaced by methane in Parr vessels containing subsamples from Core NGHP-01-21A-02Y by repeatedly overpressurizing the vessels with methane (final gas composition estimated at 80 percent methane and 20 percent nitrogen). The remainder of Core NGHP-01-21A-02Y was rapidly

depressurized and placed in liquid nitrogen as below (table 1). The remainder of Core NGHP-01-21C-04E was rapidly depressurized and frozen on dry ice (table 1).

Cores NGHP-01-21A-03E and -21C-02E were subsectioned and preserved in liquid nitrogen for shipment to other laboratories. Each core was rapidly depressurized and cut into subsections (table 1). Each subsection was labeled, wrapped in aluminum foil, placed in a canvas bag, and immersed in liquid nitrogen. The maximum time any core section remained at one atmosphere, unfrozen, was only 90 sec.

A portion of Core NGHP-01-21C-02E (70–115 cm), cut in the PRESS and transferred back to the MSCL-P, was depressurized with intermediate MSCL-P and IPTC measurements. This sample was refrigerated after depressurization. The rest of this core was subsectioned and preserved in liquid nitrogen, as described above.

We had planned to subsection Core NGHP-01-10B-08Y in the PRESS using methane, rather than nitrogen, but this core became stuck in the PRESS system and had to be rapidly depressurized, subsectioned, and preserved in liquid nitrogen in a fashion similar to the previous cores. We speculate that water, which entered the PRESS from the storage chamber, combined with methane to produce methane hydrate which adhered the core to the PRESS and made it impossible to rotate.

Other Core Operations

In addition to the pressure core work, 12 samples in Parr vessels were rapidly depressurized, wrapped in aluminum foil, placed in canvas bags, and stored in liquid nitrogen or refrigerated coolers (table 2). Growths of secondary methane hydrate were observed on the outside of the core liners.



Figure 3-5. A Parr pressure vessel fitted with a HYACINTH ball valve for shipping short lengths of core under full *in situ* pressures.

Table 3-2. Summary of sample preservation from catwalk-sampled Parr pressure vessels.

Core ID	Sample interval (cm)	Depth (mbsf)	Vessel number	Preservation method	Shipping container	Comments
NGHP-1-10D-10X-1	39–64	60.19	1	liquid nitrogen	Dewar “USGS#2”; location 1	contained data logger, removed
NGHP-1-14A-16X-2	90–120	104.40	2	liquid nitrogen	Dewar “USGS#2”; location 2	contained data logger, removed; cut 3 cm off bottom
NGHP-1-14A-16X-3	90–120	105.90	3	refrigeration	USGS cooler	contained data logger, removed
NGHP-1-21A-01X-2	0–28	49.80	4	refrigeration	USGS cooler	contained data logger, stored with sample
NGHP-1-21A-04X-2	115–143	62.17	5	refrigeration	USGS cooler	
NGHP-1-21A-04X-4	115–138	63.92	6	liquid nitrogen	Dewar “USGS#2”; location 3	
NGHP-1-21A-01X-1	112–140	49.52	7	liquid nitrogen	Dewar “USGS#2”; location 4	cut 2cm off bottom
NGHP-1-21A-08X-4	101–129	75.41	8	refrigeration	USGS cooler	no pressure inside Parr vessel
NGHP-1-21A-09X-4	0–28	79.70	9	liquid nitrogen	Dewar “USGS#2”; location 5	
NGHP-1-21A-12X-3	0–28	83.29	10	refrigeration	USGS cooler	
NGHP-1-21B-01E-1	0–24	55.00	11	liquid nitrogen	Dewar “USGS#2”; location 6	
NGHP-1-21A-12X-1	0–28	82.00	12	refrigeration	USGS cooler	

Notes: All three containers were shipped to the United States Geological Survey at Woods Hole, USA.

Pressure Core Data

The 15° rotations performed on each of the five cores in the MSCL-P showed that many of the lighter sections of core as observed previously (see “Pressure Coring” in “Sites NGHP-01-10, 12, and 13” and “Pressure Coring” in “Site NGHP-01-21”) were in fact vein structures within the core. It became apparent that there were many more veins in the core than could be seen from a single scan. In addition, all the cores contained at least some easily visible sets of subparallel gas-hydrate veins (fig. 6) that might be indicators of prevailing *in-situ* stresses within the formation. The variations in gamma density (fig. 7) reflect the rotation of dipping, massive gas-hydrate veins as well as carbonate nodules. These nodules pass in and out of the 5-mm-diameter gamma beam. The *P*-wave velocity profiles (fig. 8) show velocities well above those of typical sediments without gas hydrate. The apparent low velocities at some angles of rotation are likely to be artifacts of interference caused by the complex vein structures. The X-ray-computed tomography scans show even more complex vein structures than were revealed in the multiple two-dimensional rotation X-rays. Slices from all cores (fig. 9) showed a network of millimeter-thick veins, mainly subvertical, throughout the cores at a density that could not be visualized from the two-dimensional X-ray scans.

The measurements from the IPTC (figs. 10 and 11) were the first direct *P*-wave, shear wave, electrical resistivity, and strength measurements made on sediments containing gas-hydrate veins. The presence of gas hydrate was indicated by increased values of *P*-wave and shear-wave velocities. Small variations in properties were observed between the 0 and 90 data sets from Core NGHP-01-21A-03E.

The sample from Core NGHP-01-21C-02E, which was depressurized in the IPTC, released 27.5 L of gas. This gas was not tested for composition; however, if the gas had been

99.5 percent methane, which is a reasonable assumption for cores from Site NGHP-01-21 (see “Organic Geochemistry” in “Site NGHP-01-21”), the core sample would have contained 158 mL of gas hydrate, equivalent to 30 percent gas hydrate as a percent of pore volume. This is a gas-hydrate content similar to other cores from Sites NGHP-01-10 and -21 (see “Pressure Coring” in “Sites NGHP-01-10, 12, and 13” and “Pressure Coring” in “Site NGHP-01-21”). During the depressurization experiment, changes in pressure, temperature, electrical resistance, *P*-wave velocity, and generated gas with time were observed with the IPTC (figs. 11 and 12).

Observations of Gas Hydrate at *in-situ* Pressure and Temperature

The detailed observations of the five gas-hydrate cores during the postcruise studies in Singapore changed the way that we think about how gas hydrate is hosted in fine-grained sediments. The original X-ray images acquired during the cruise and even the X-ray images of the rotated cores showed that gas hydrate existed in high-angle, subparallel groups of veins (fig. 6). However, the X-ray-computed tomography scans showed that many veins exist in the cores that were not imaged in the two-dimensional X-rays. The sheer quantity of these veins was surprising. The majority of the veins are near-vertical, and while many are in subparallel groups, there may be more than one group of veins with different orientations in a single core (fig. 13). The occasional cross-cutting horizontal vein creates closed sediment cells with bounding subvertical veins of varied orientations, which will have important implications for further advection, diffusion, and gas-hydrate growth in these sediments.

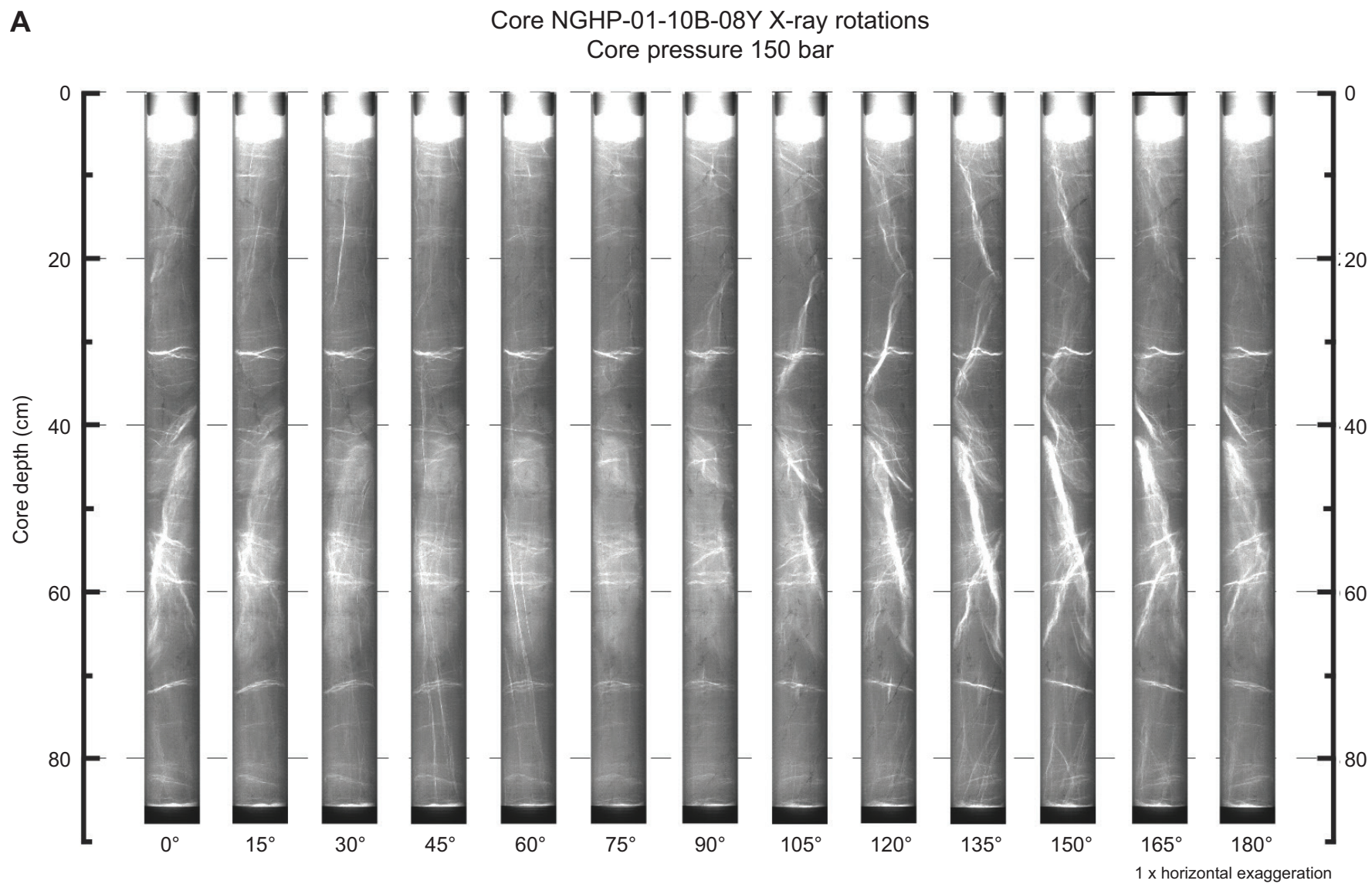


Figure 3-6. X-ray images collected every 15 degrees for each of the five stored pressure cores. Denser areas are dark; light areas are less dense and include gas hydrate.

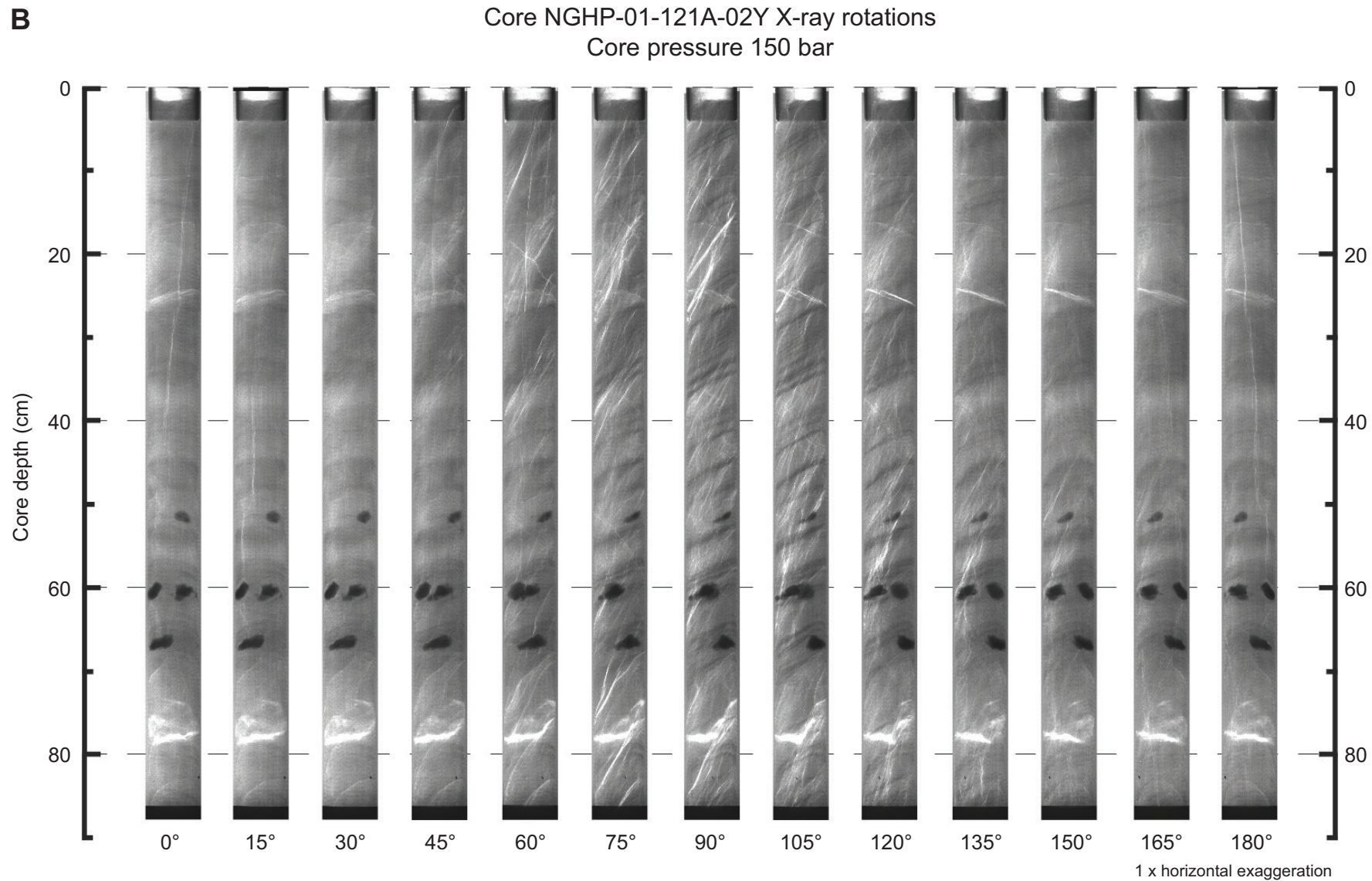


Figure 3–6. X-ray images collected every 15 degrees for each of the five stored pressure cores. Denser areas are dark; light areas are less dense and include gas hydrate.—Continued

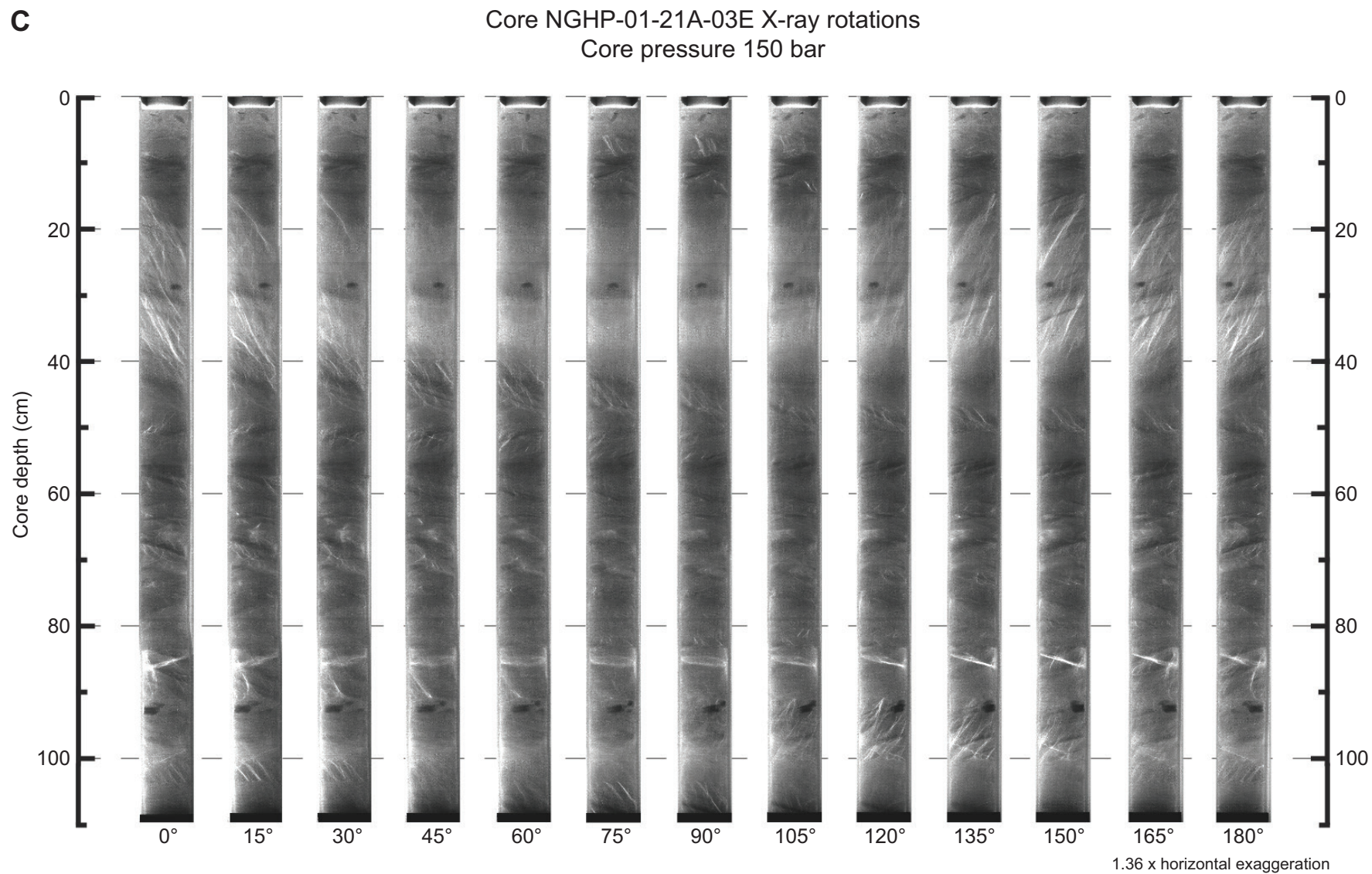


Figure 3-6. X-ray images collected every 15 degrees for each of the five stored pressure cores. Denser areas are dark; light areas are less dense and include gas hydrate.—Continued

D

Core NGHP-01-21C-02E X-ray rotations
Core pressure 150 bar

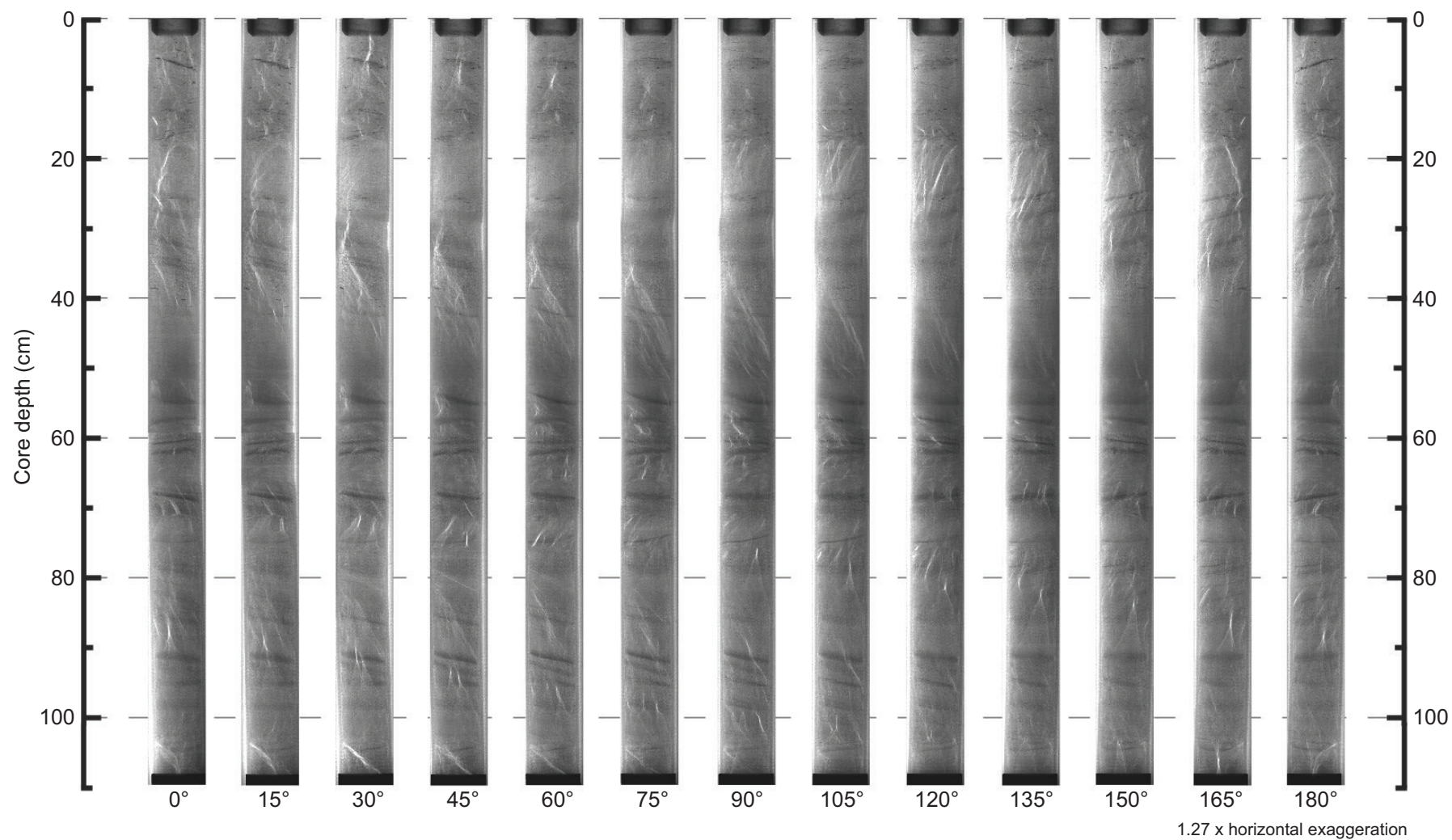


Figure 3-6. X-ray images collected every 15 degrees for each of the five stored pressure cores. Denser areas are dark; light areas are less dense and include gas hydrate.—Continued

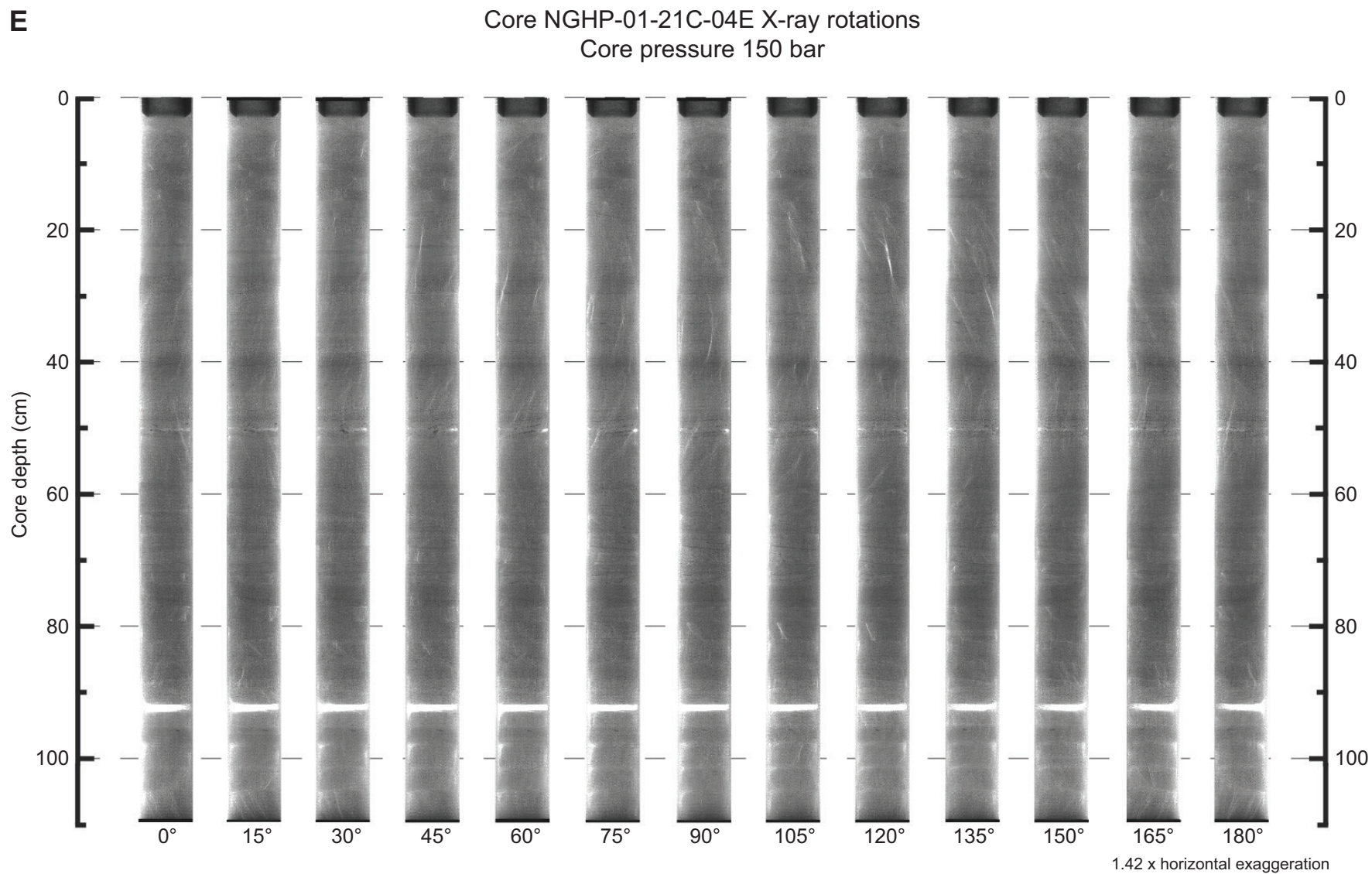


Figure 3-6. X-ray images collected every 15 degrees for each of the five stored pressure cores. Denser areas are dark; light areas are less dense and include gas hydrate.—Continued

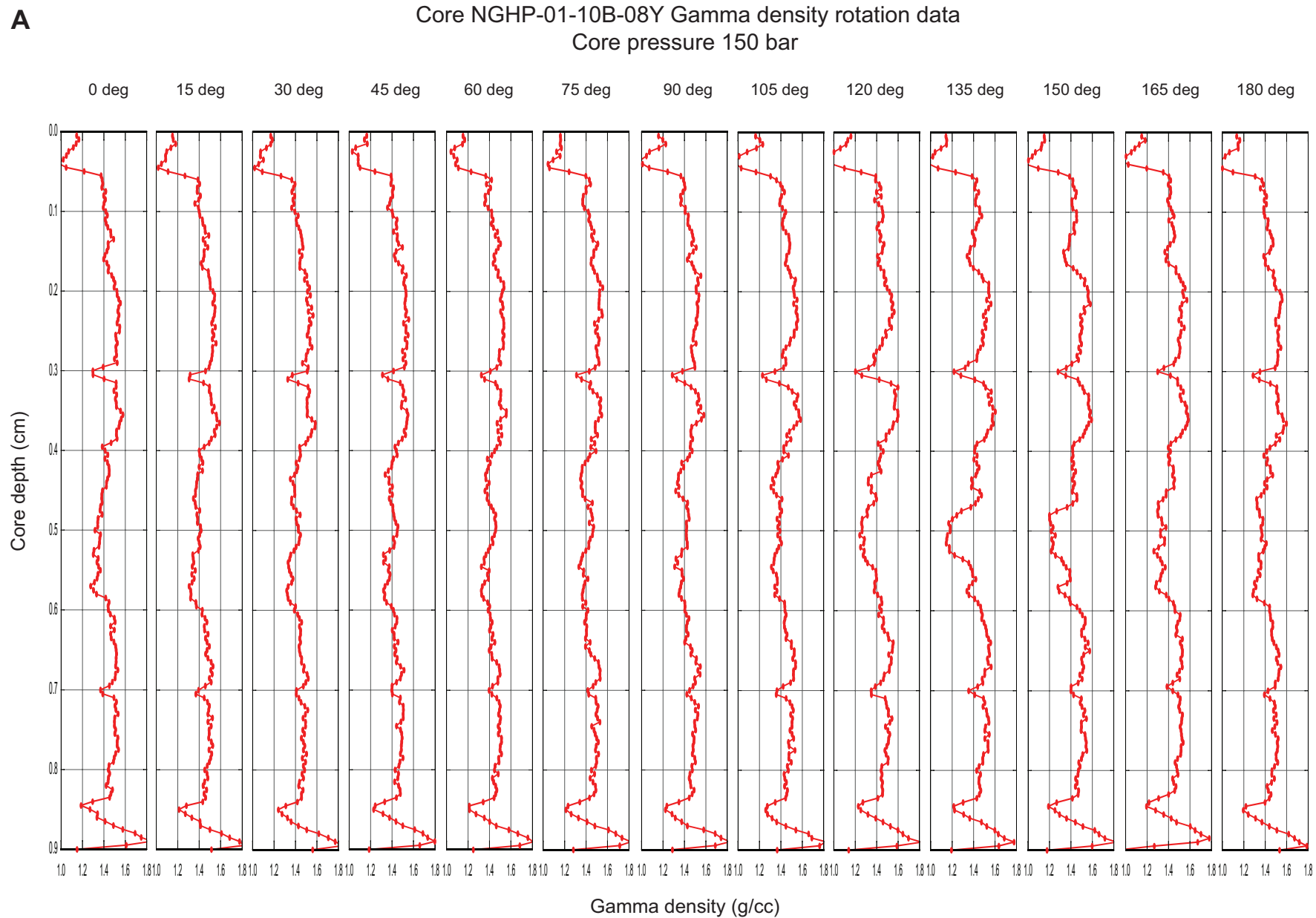


Figure 3–7. Gamma-density profiles collected every 15 degrees for each of the five stored pressure cores.

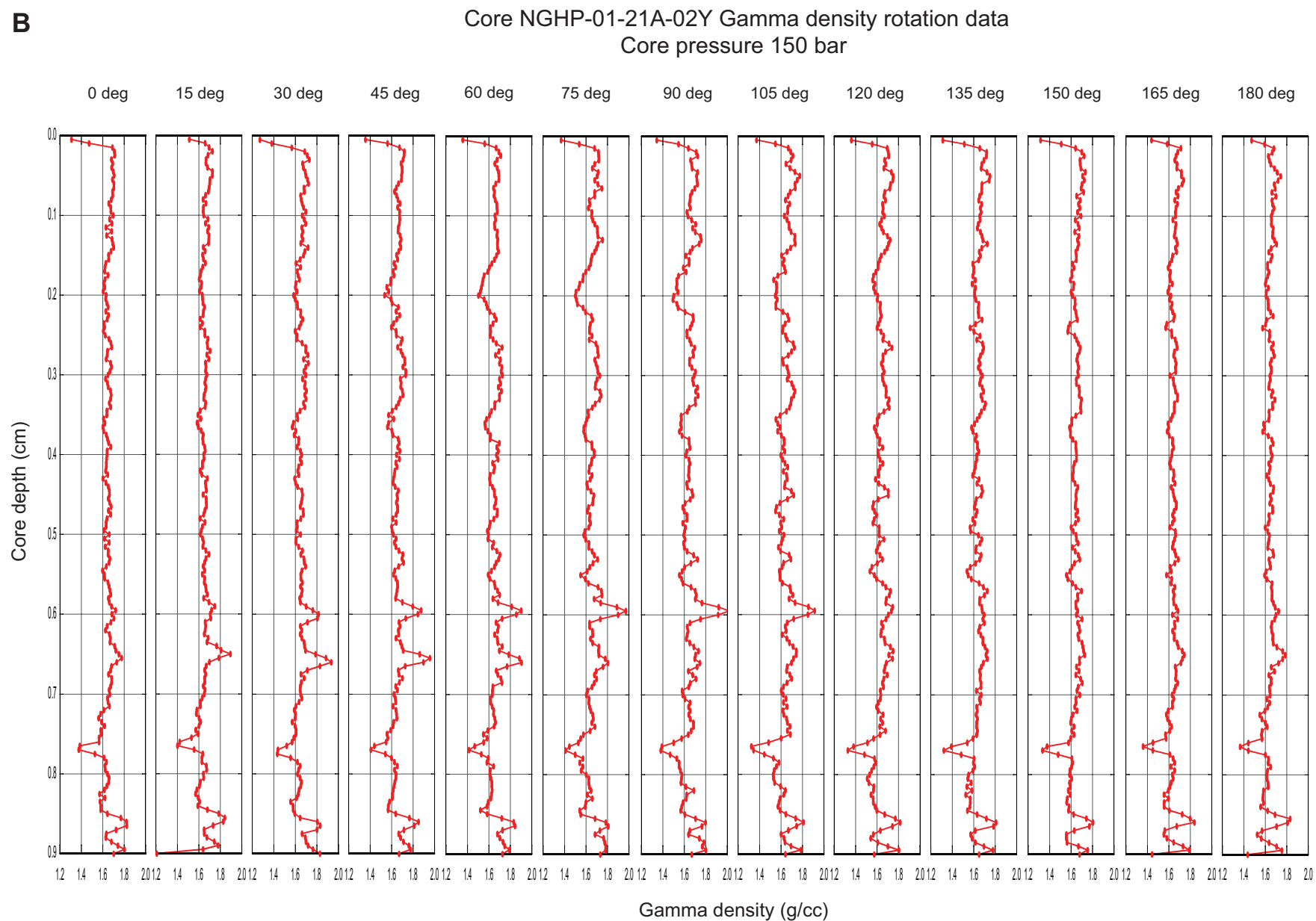


Figure 3-7. Gamma-density profiles collected every 15 degrees for each of the five stored pressure cores.—Continued

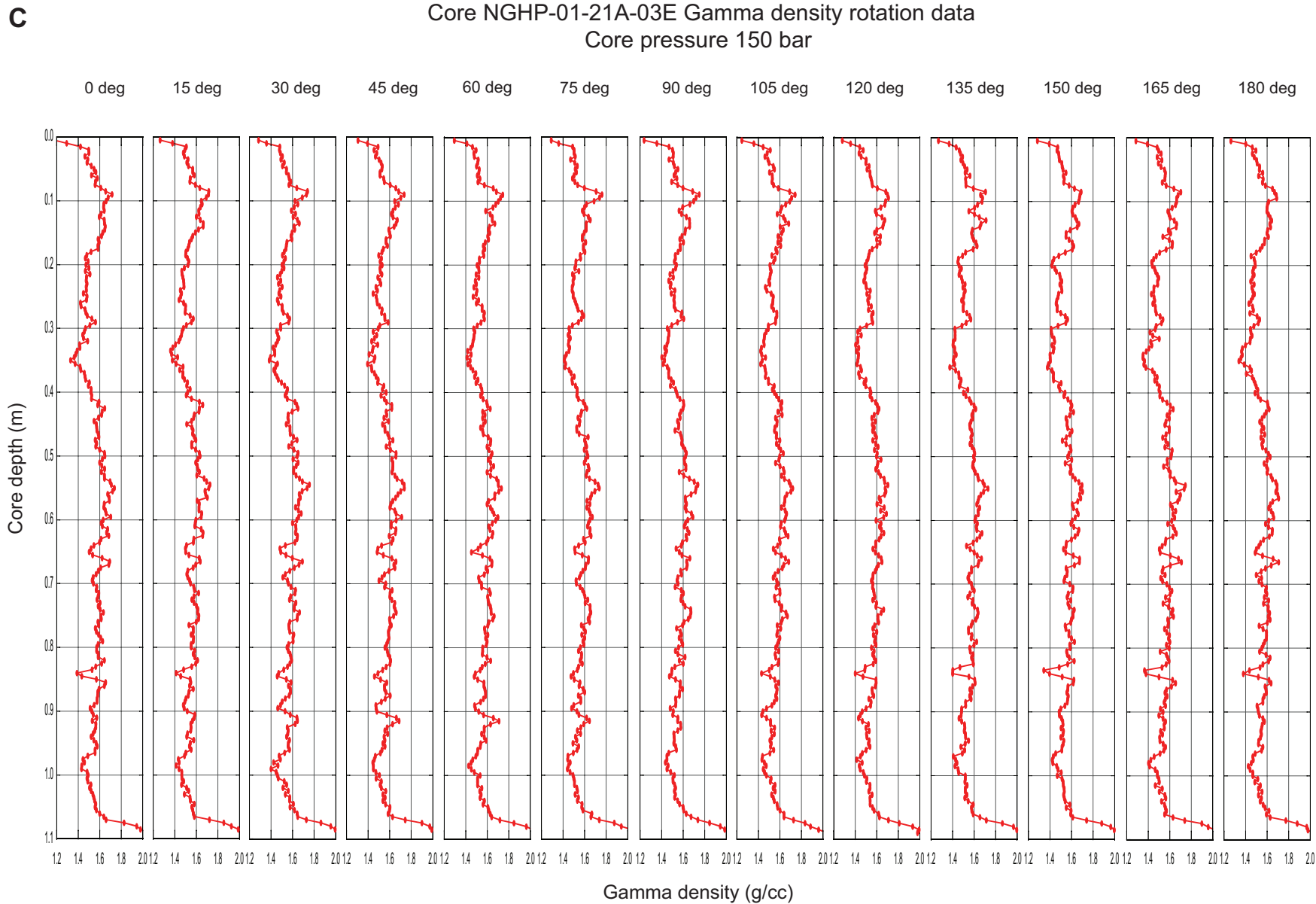


Figure 3–7. Gamma-density profiles collected every 15 degrees for each of the five stored pressure cores.—Continued

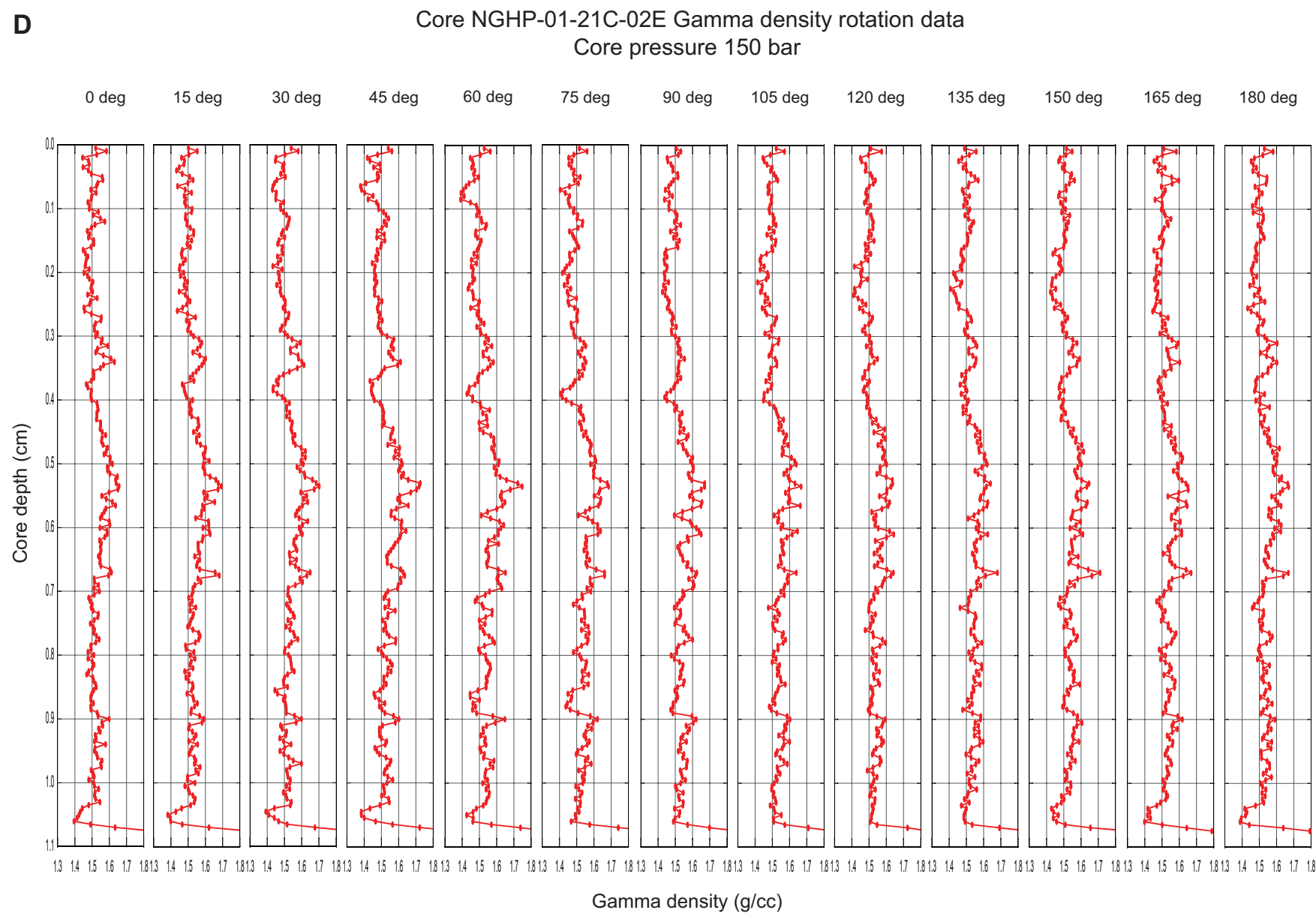


Figure 3–7. Gamma-density profiles collected every 15 degrees for each of the five stored pressure cores.—Continued

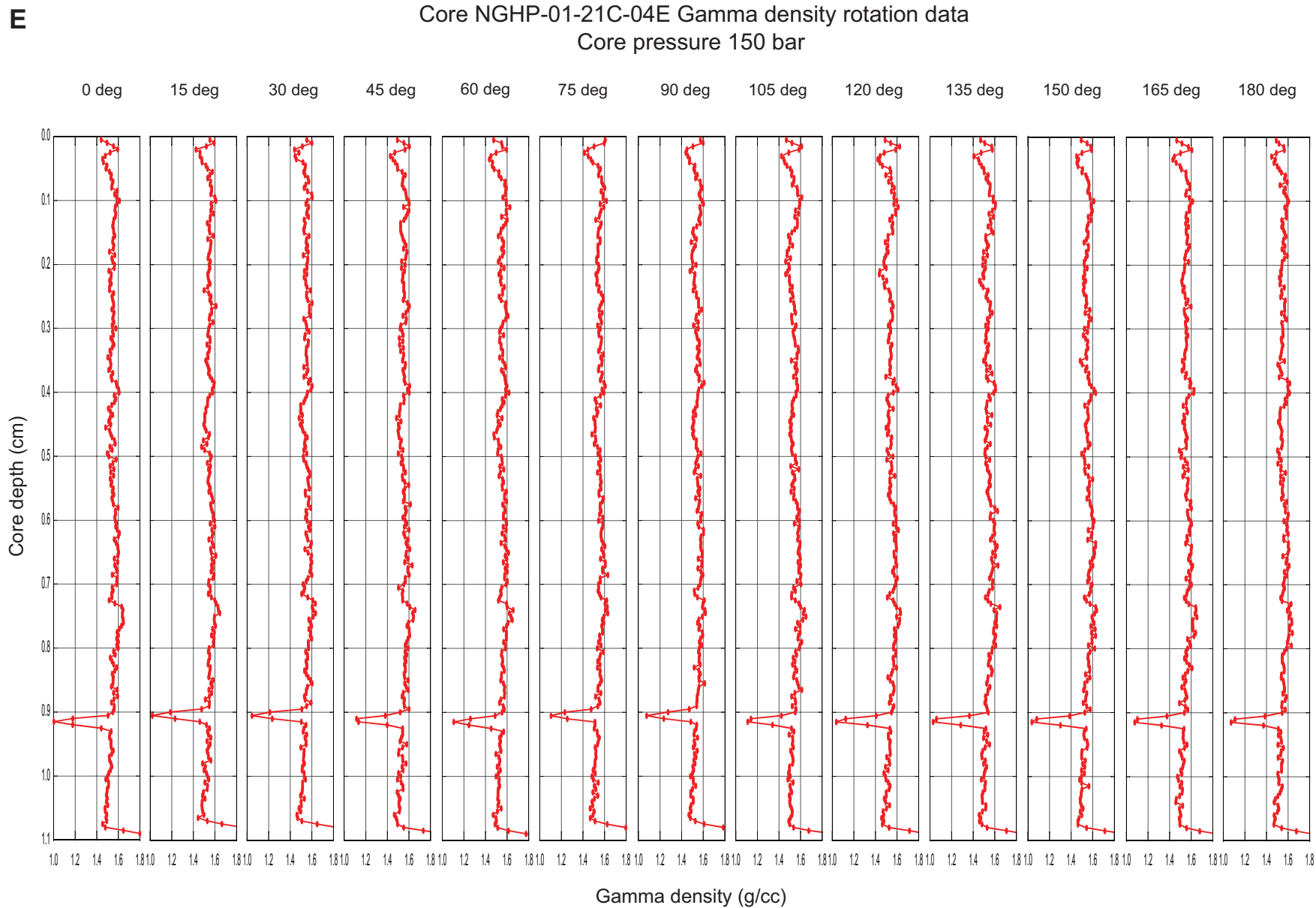


Figure 3–7. Gamma-density profiles collected every 15 degrees for each of the five stored pressure cores.—Continued

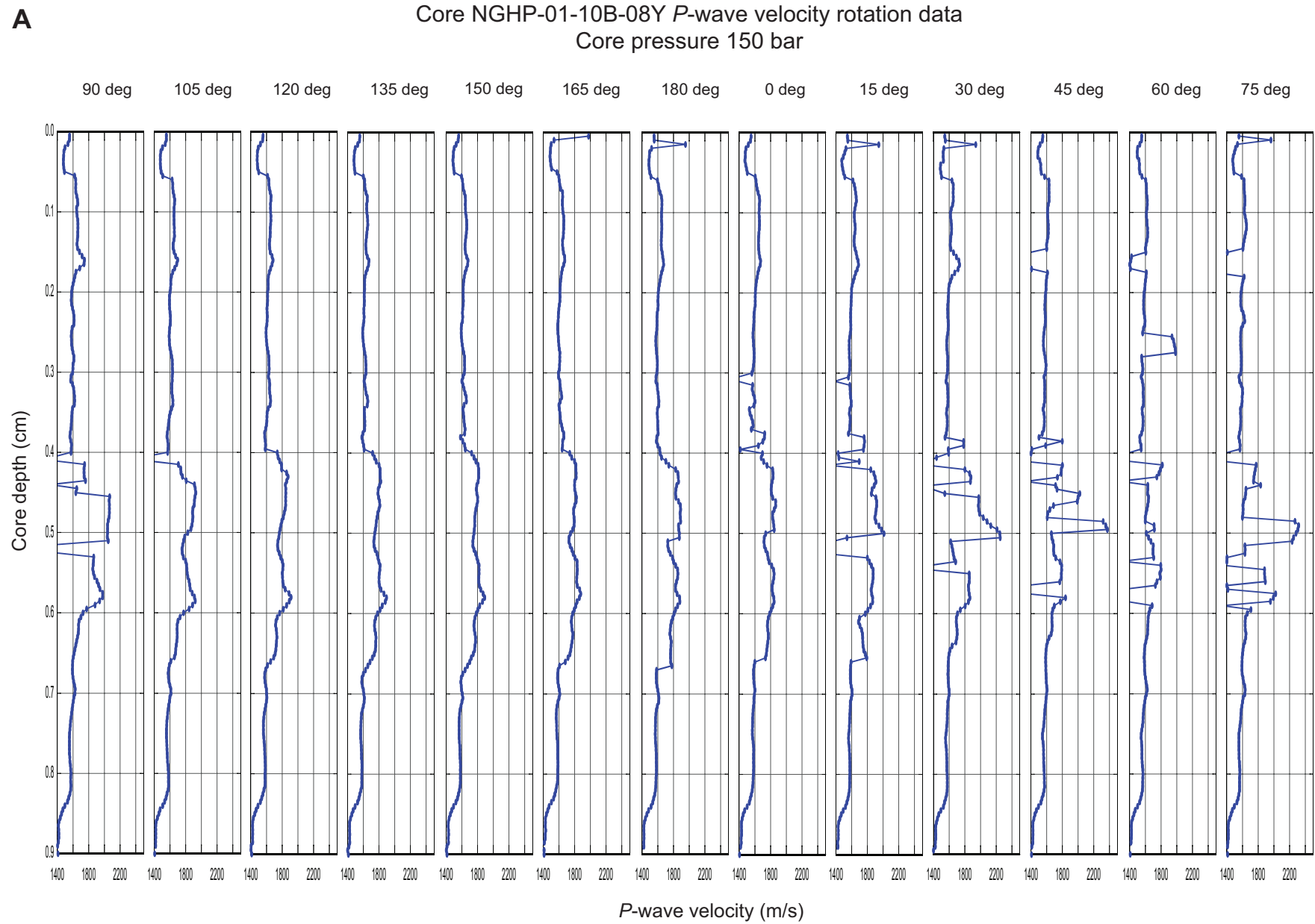


Figure 3–8. *P*-wave velocity profiles collected every 15 degrees for each of the five stored pressure cores.

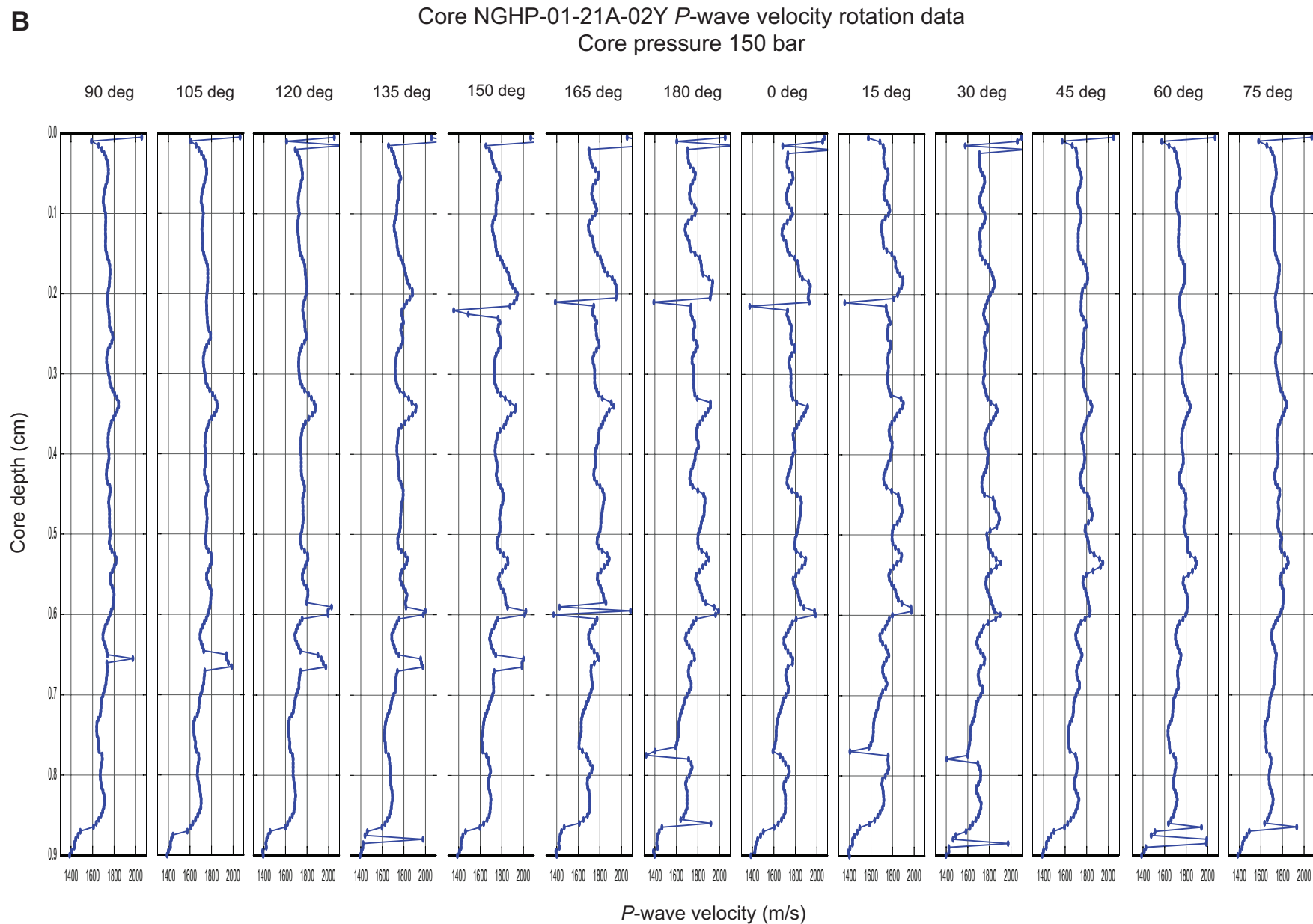


Figure 3-8. *P*-wave velocity profiles collected every 15 degrees for each of the five stored pressure cores.—Continued

C

Core NGHP-01-21A-03E *P*-wave velocity rotation data
Core pressure 150 bar

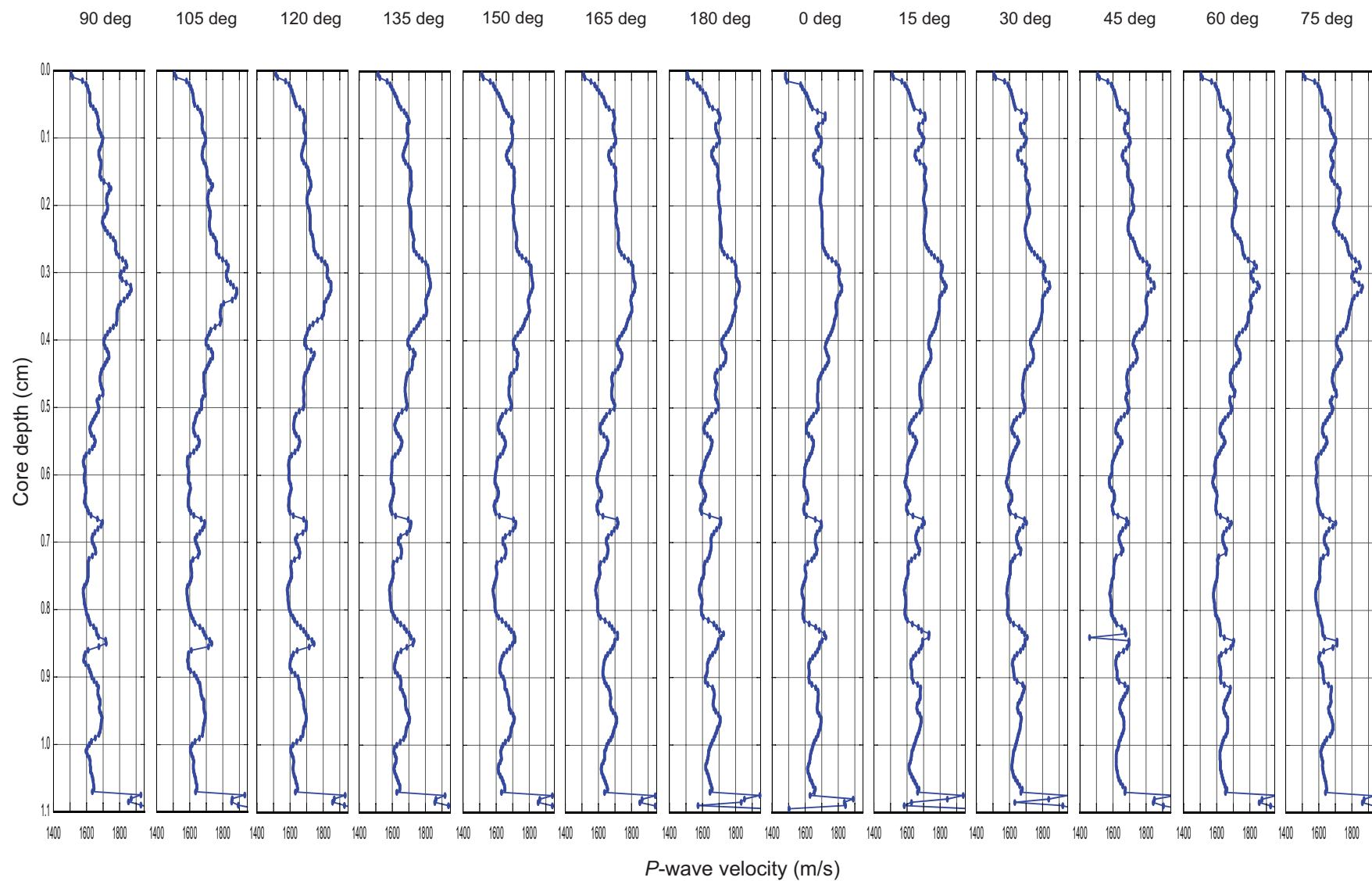


Figure 3-8. *P*-wave velocity profiles collected every 15 degrees for each of the five stored pressure cores.—Continued



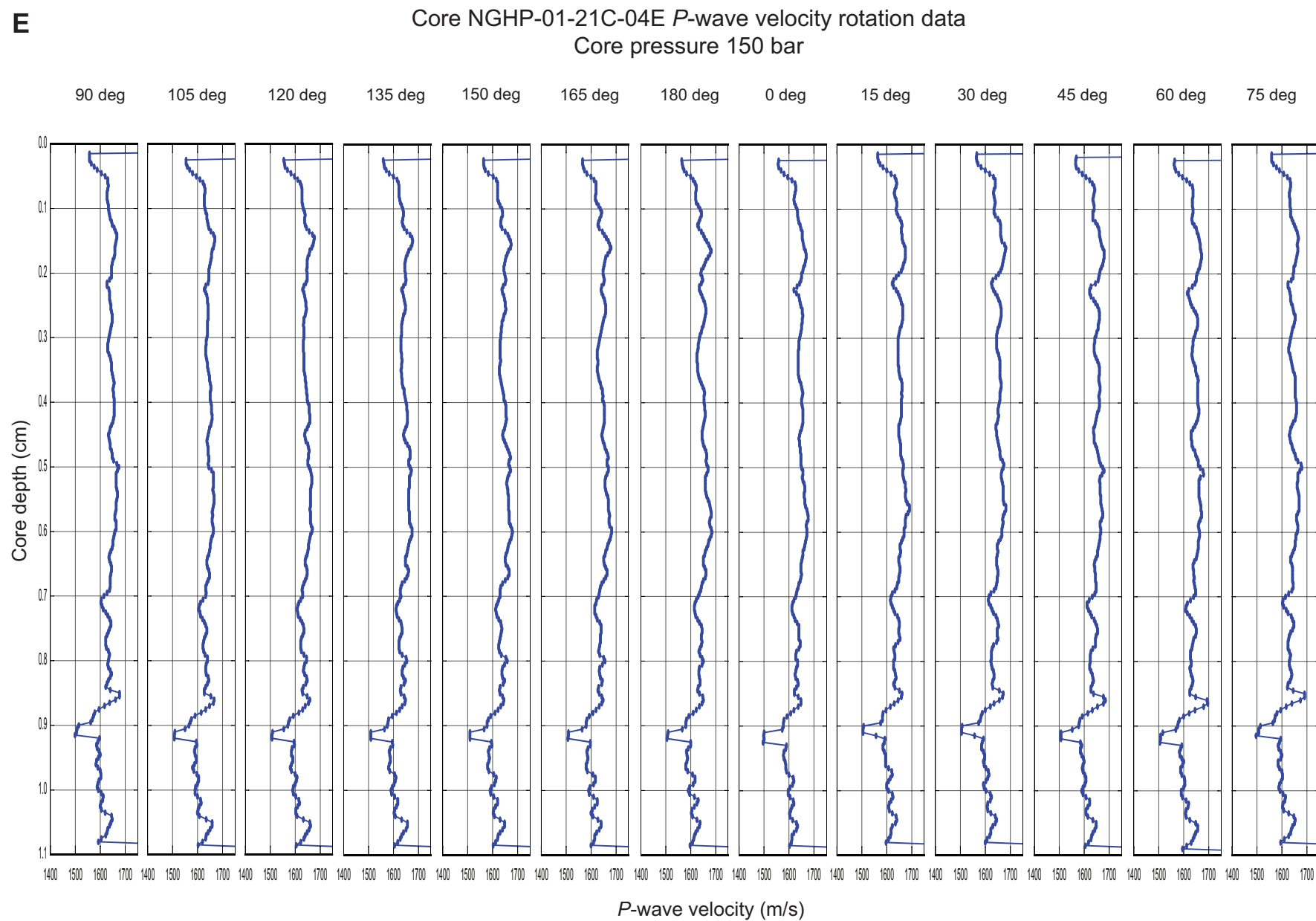


Figure 3-8. *P*-wave velocity profiles collected every 15 degrees for each of the five stored pressure cores.—Continued

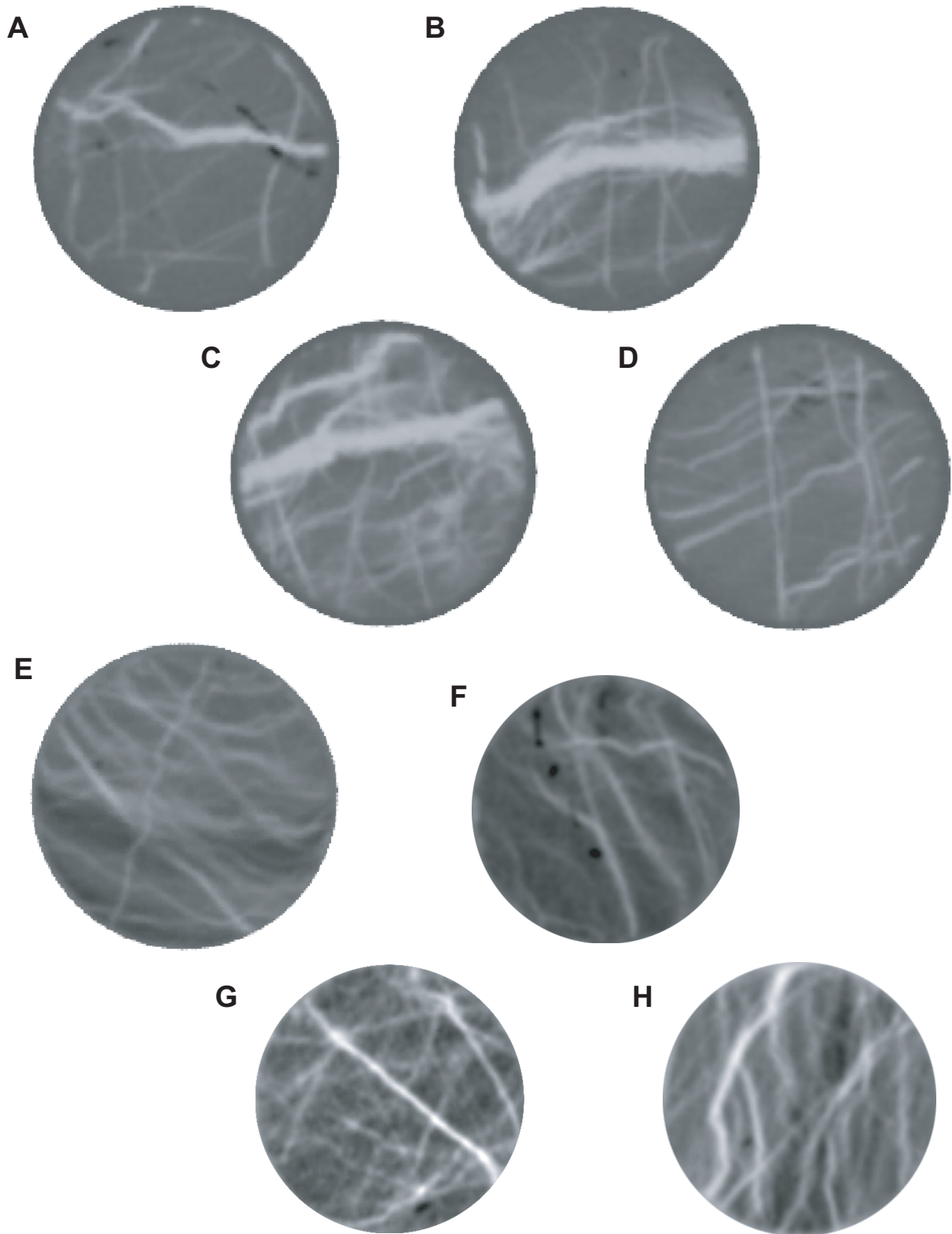


Figure 3-9. Horizontal slices from the three-dimensional, X-ray-computed tomography data sets from each of the five cores, showing the light gas-hydrate veins. Denser areas are dark; light areas are less dense and include gas hydrate.



Figure 3-10. IPTC data collected for each of the three pressure cores tested, including data collected on Core NGHP-01-21A-03E at both 0 and 90. Data include shear-wave velocity, P-wave velocity, electrical conductivity, and strength. X-ray images collected after the IPTC measurements were made are also shown. [IPTC, Instrumented Pressure Testing Chamber]

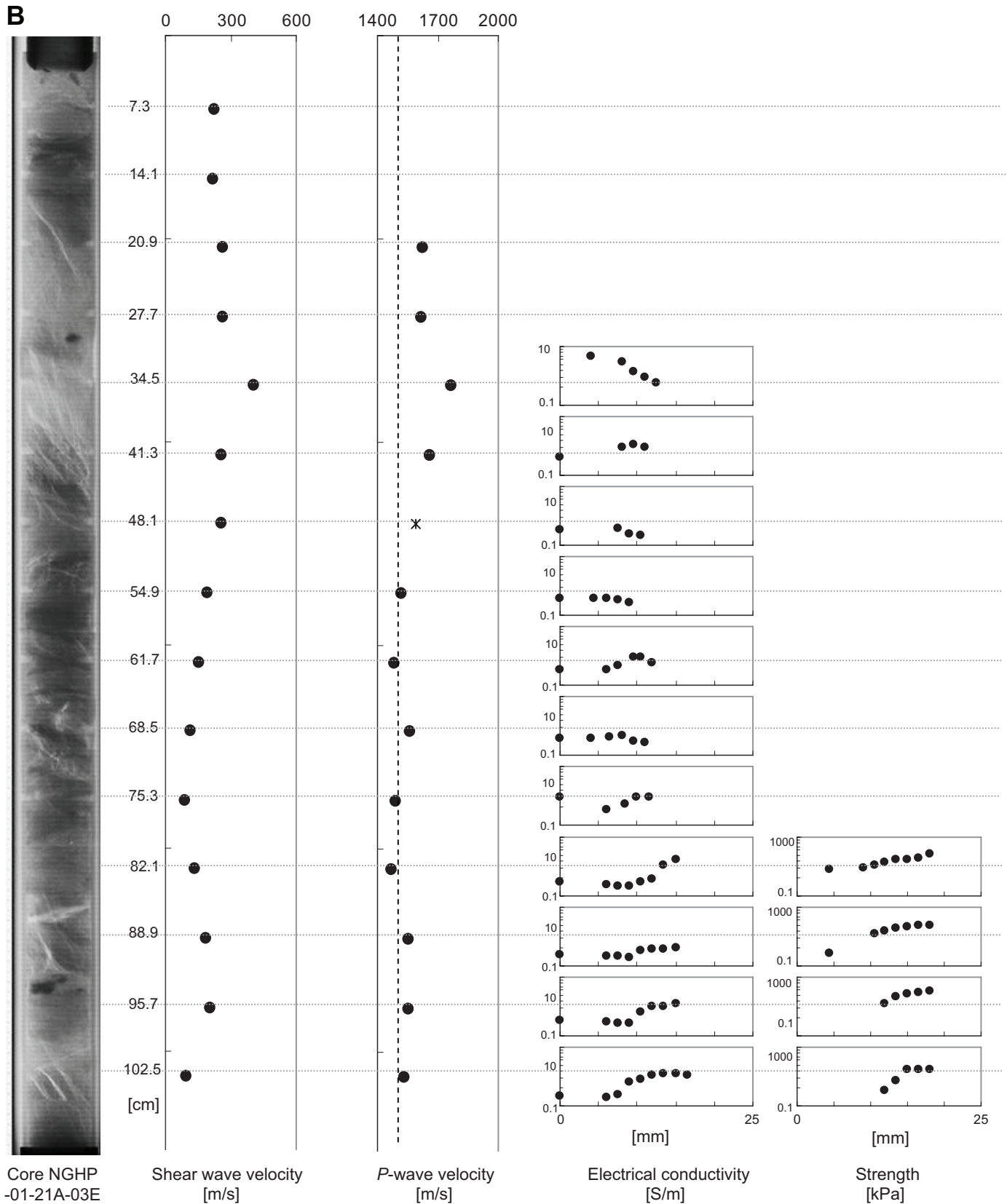


Figure 3-10. IPTC data collected for each of the three pressure cores tested, including data collected on Core NGHP-01-21A-03E at both 0 and 90. Data include shear-wave velocity, P-wave velocity, electrical conductivity, and strength. X-ray images collected after the IPTC measurements were made are also shown. [IPTC, Instrumented Pressure Testing Chamber]—Continued

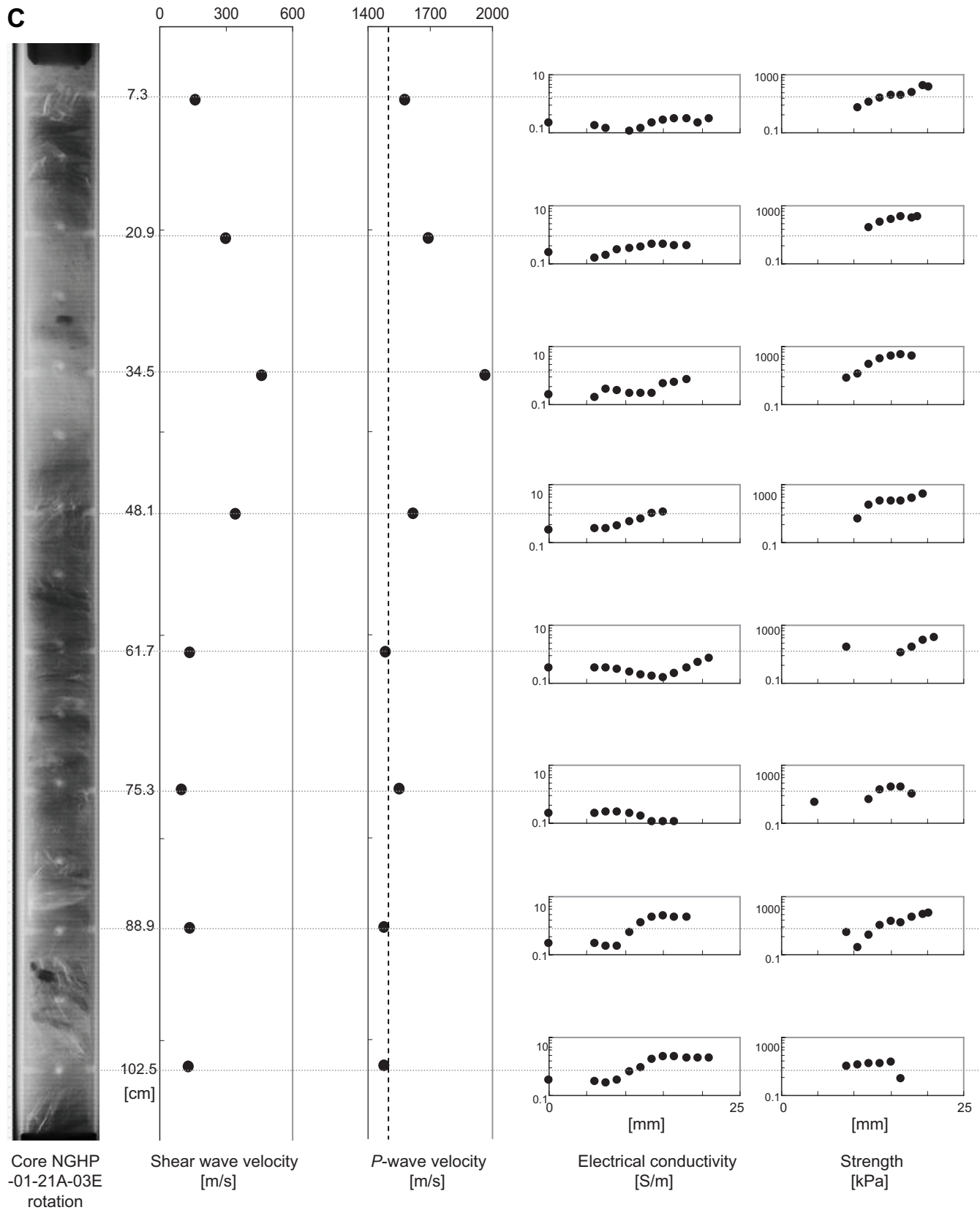


Figure 3–10. IPTC data collected for each of the three pressure cores tested, including data collected on Core NGHP-01-21A-03E at both 0 and 90. Data include shear-wave velocity, P-wave velocity, electrical conductivity, and strength. X-ray images collected after the IPTC measurements were made are also shown. [IPTC, Instrumented Pressure Testing Chamber]—Continued

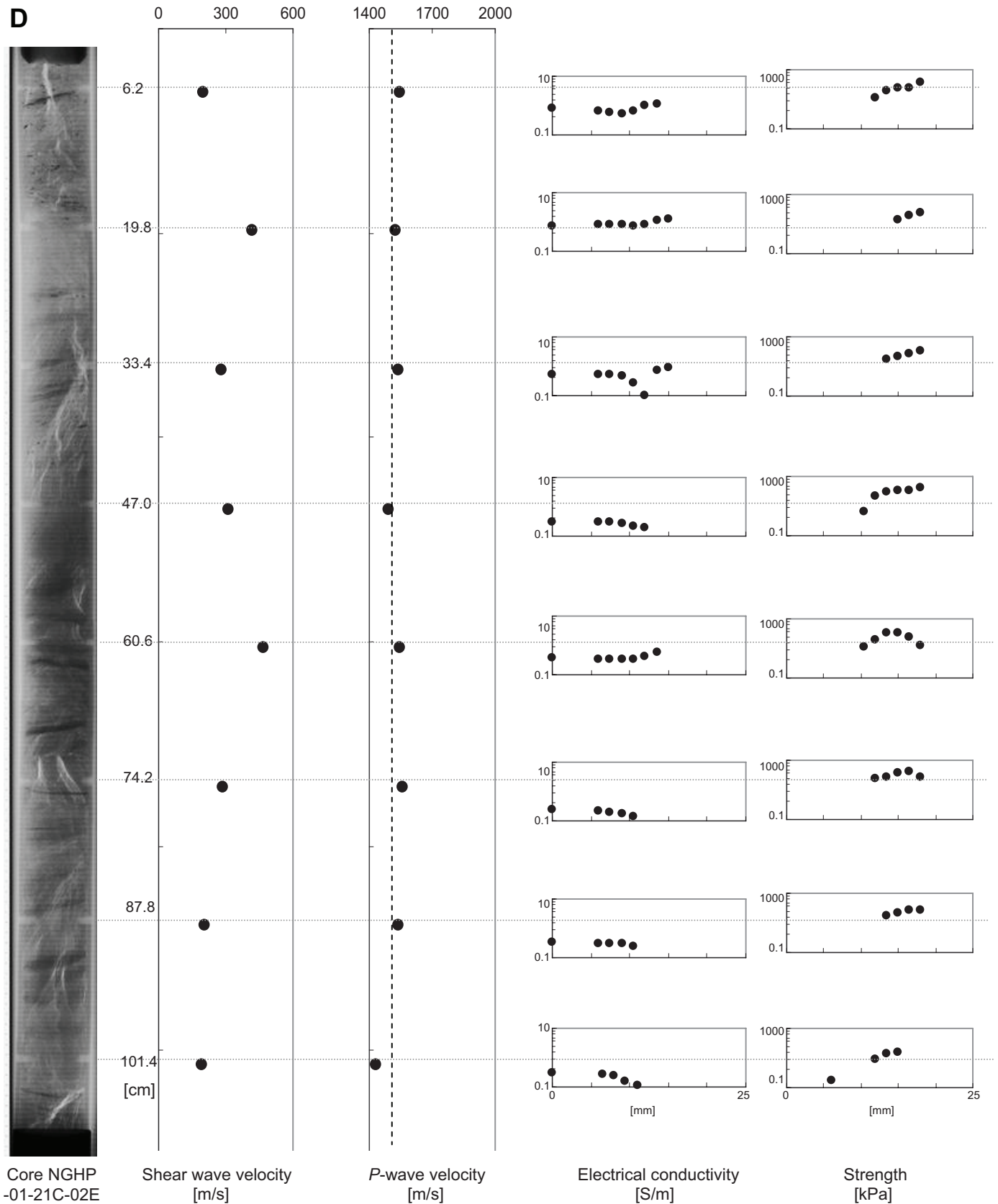


Figure 3-10. IPTC data collected for each of the three pressure cores tested, including data collected on Core NGHP-01-21A-03E at both 0 and 90. Data include shear-wave velocity, P-wave velocity, electrical conductivity, and strength. X-ray images collected after the IPTC measurements were made are also shown. [IPTC, Instrumented Pressure Testing Chamber]—Continued

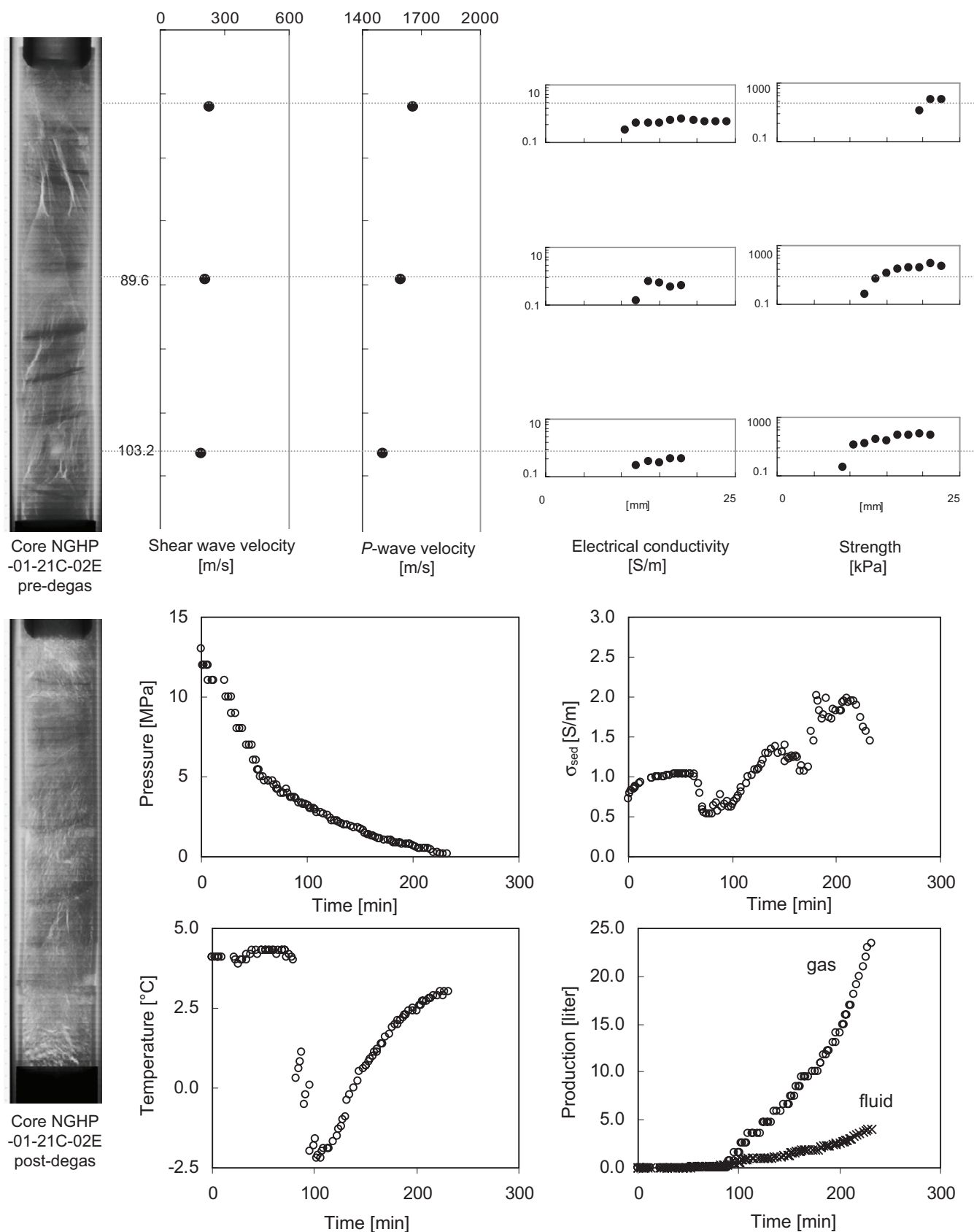


Figure 3-11. IPTC data collected on Sample NGHP-01-21C-02E, 70–115 cm before depressurization and during depressurization. Initial data include shear wave velocity, P-wave velocity, electrical conductivity, and strength. Data during depressurization include pressure, resistivity, temperature, and cumulative gas and fluid evolved over time. [IPTC, Instrumented Pressure Testing Chamber]

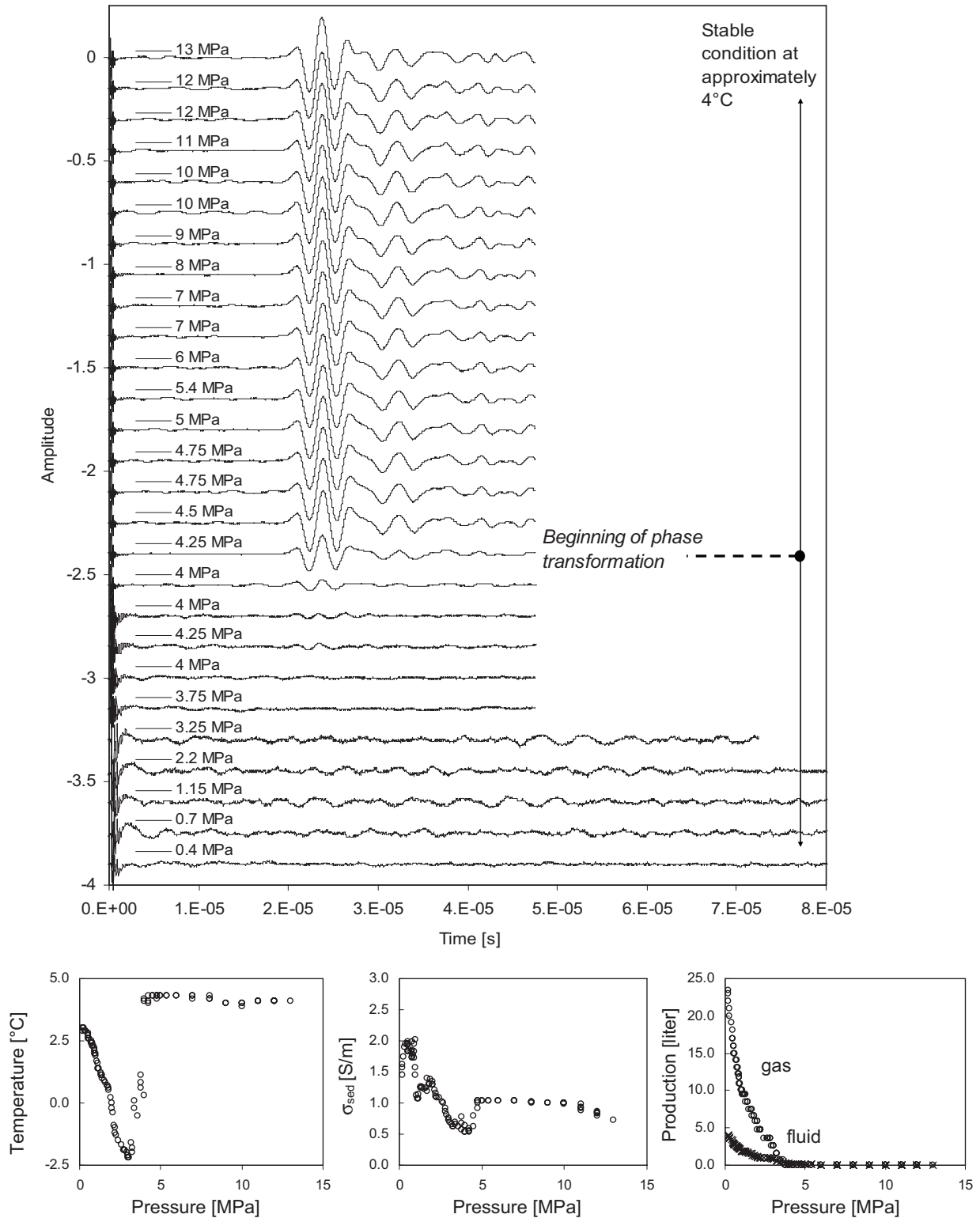


Figure 3-12. Summary of IPTC data vs. pressure during depressurization of Sample NGHP-1-21C-02E, 70–115 cm, including P -wave amplitude signal, temperature, resistivity, and cumulative gas and fluid evolved. [IPTC, Instrumented Pressure Testing Chamber]

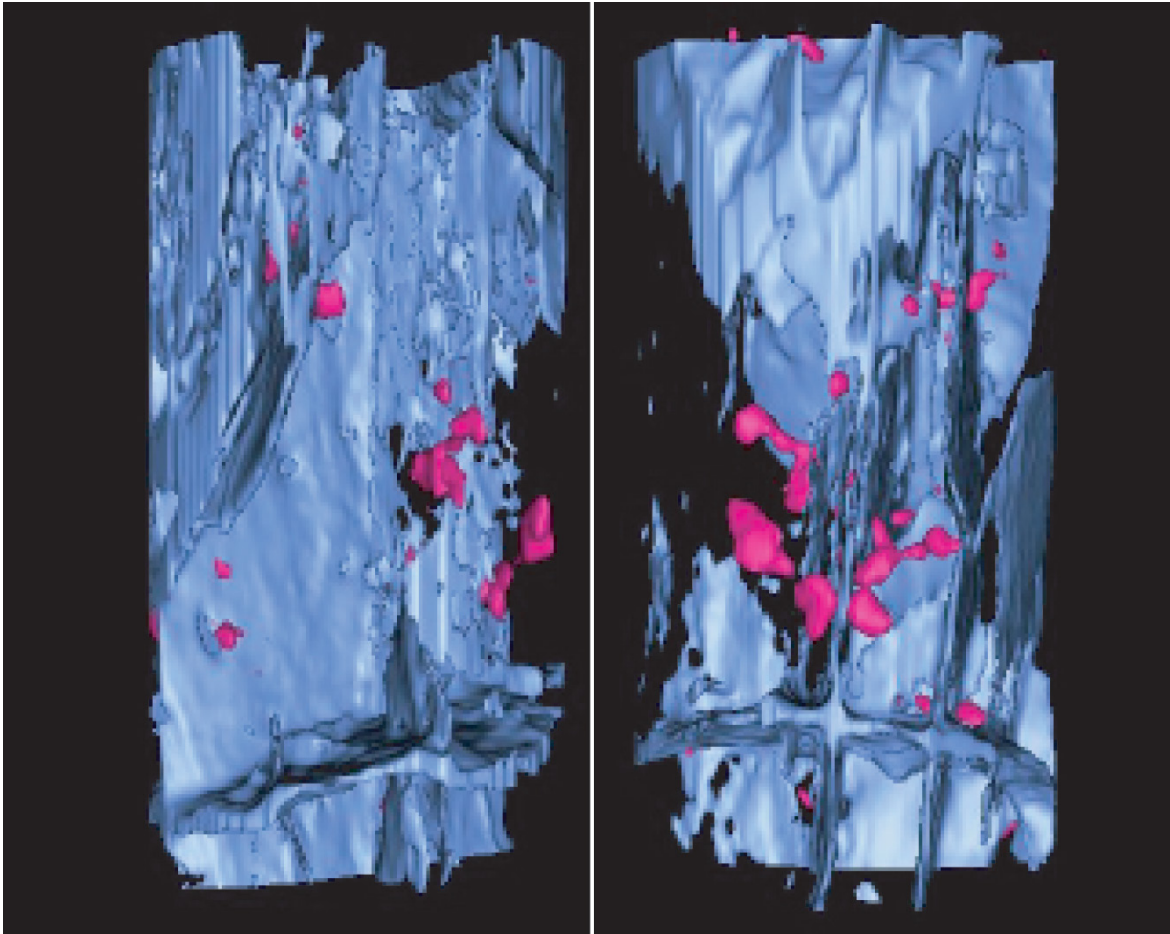


Figure 3-13. Three-dimensional reconstructions from X-ray-computed tomography, showing the subparallel sets of gas-hydrate veins.

While all of these cores are from the same gas-hydrate-rich location (Sites NGHP-01-10 and -21), the plethora of veins in these cores cause us to re-examine earlier conclusions regarding gas hydrate in fine-grained sediments at all sites drilled. It now seems possible that all the gas hydrate in the clay-rich sediments may be in the form of fine, grain-displacing veins and that little, if any, hydrate may exist in a disseminated form (grain-displacing or pore-filling hydrate). The centimeter-sized scale of vein structure, which creates a closed “honeycomb” network, almost certainly explains the very high values of electrical resistivity measured downhole. It is possible that a new empirical formulation other than the “Archie” relationship might now be developed for assessing the hydrate

saturation in fine-grained sediments from electrical resistivity or other downhole measurements. However, these particular results are from an unusually deformed area and it remains to be seen whether fine-vein structures are the exception or the rule of gas-hydrate morphology in clays.

Reference Cited

Yun, T.S, Fransisca, F.M., Santamarina, J.C., and Ruppel, C., 2005, Compressional and shear wave velocities in uncemented sediment containing gas hydrate: *Geophysical Research Letters* v. 32, no. 10. doi:10.1029/2005GL022607.

Appendix 4. Downhole Measurement Lab Tool Test Report

General Information

Time: 19:00 GMT (Local Time = GMT+5.5 (INDIA))
Date of tests: 27 May 2006
Location: Downhole Measurement Lab onboard *JOIDES Resolution*
Medium used: Ice (Chopped)
Reference: Thermometer
Tests done by: Pieter Pretorius

Notes of interest

The Downhole Measurement Lab PC and tools used are non Y2K compliant thus, dates were set back to 1995. Results should be analyzed with this in mind. The dates were left as is, so as not to alter the “raw” data.

Applicable “raw” test result files

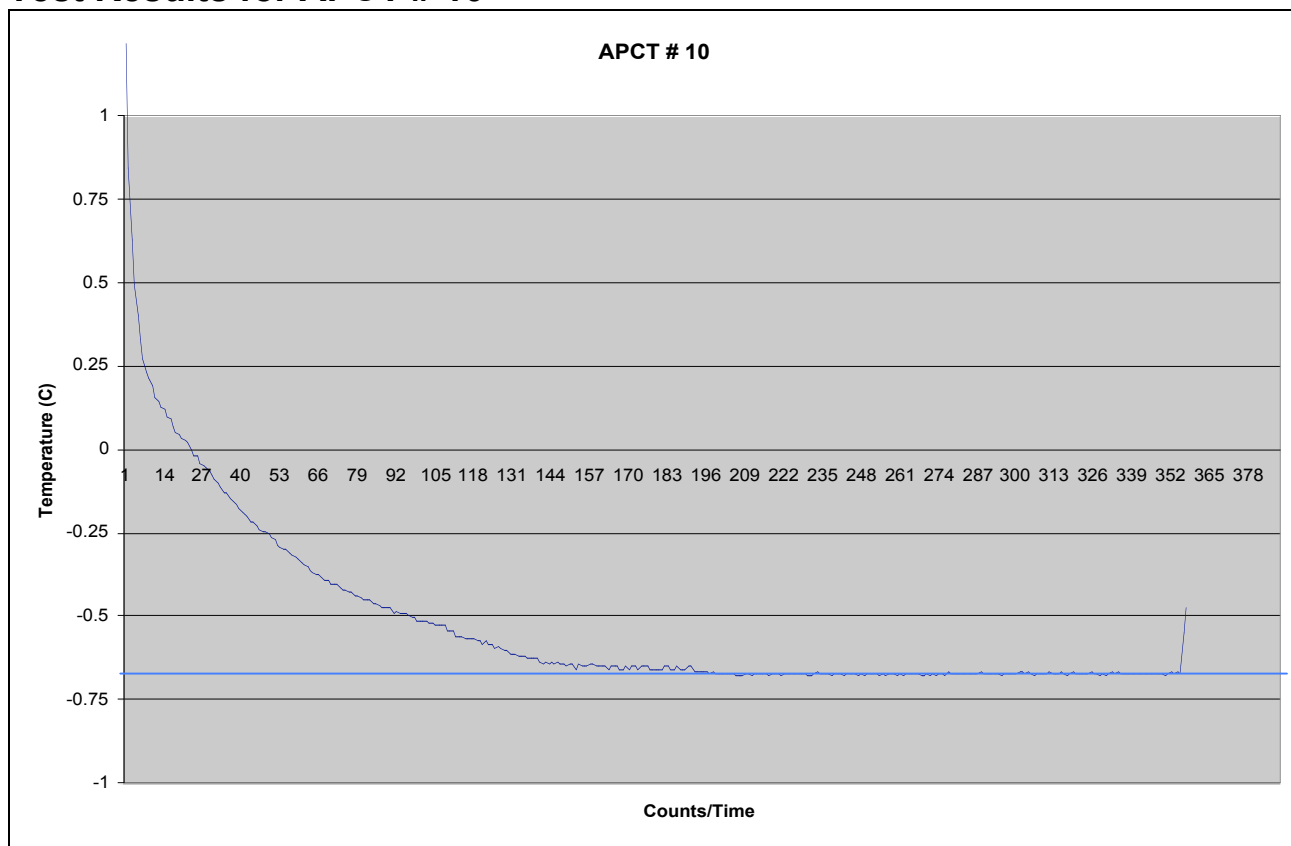
These files are located at APPENDIX/DVTP/RAW_DATA.

Tools tested

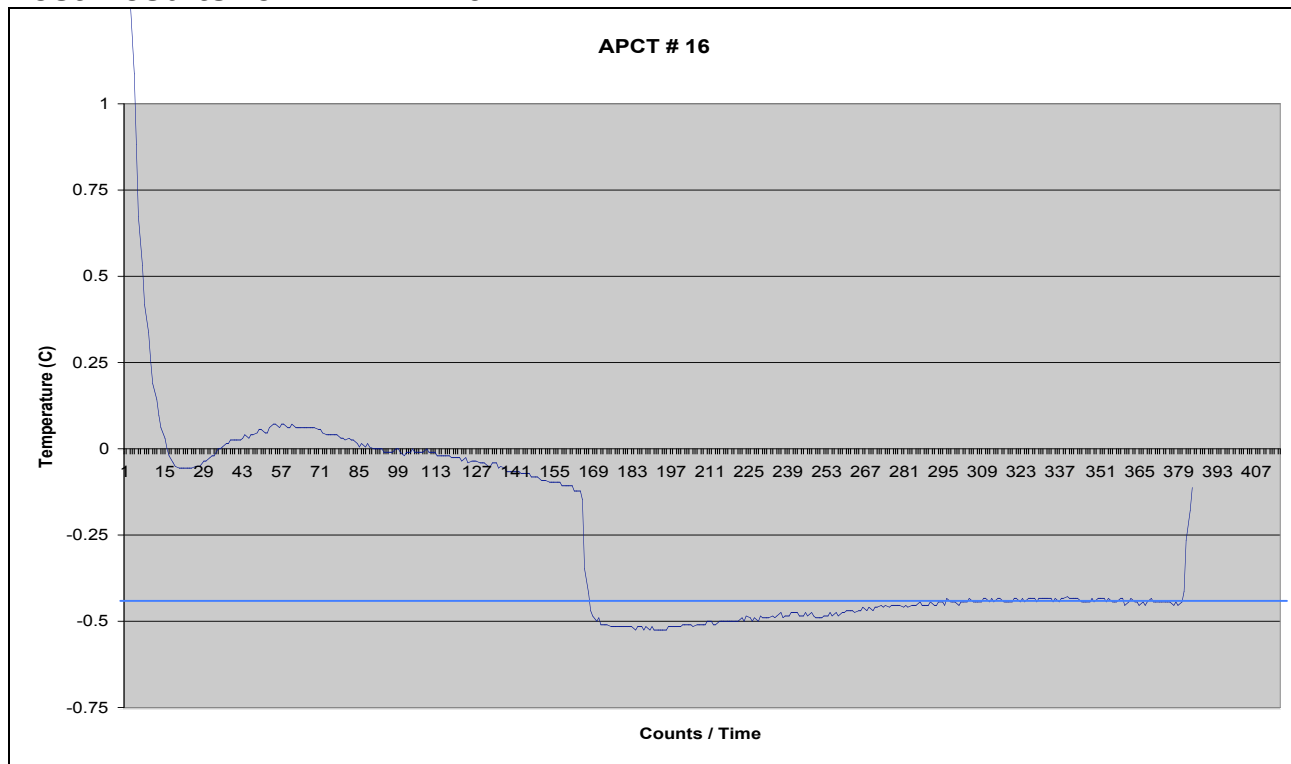
Conducted tests on APCT electronics # 10 and #16 with shoe # 2 and batteries # 1 & 2
Conducted tests on APCM electronics # 1 and # 7 with housing # 5 and battery # 1
Conducted tests on DVTP tool with Tip # 1 (T1=J and T2=K)
Comparison of APC3 and APCT#16

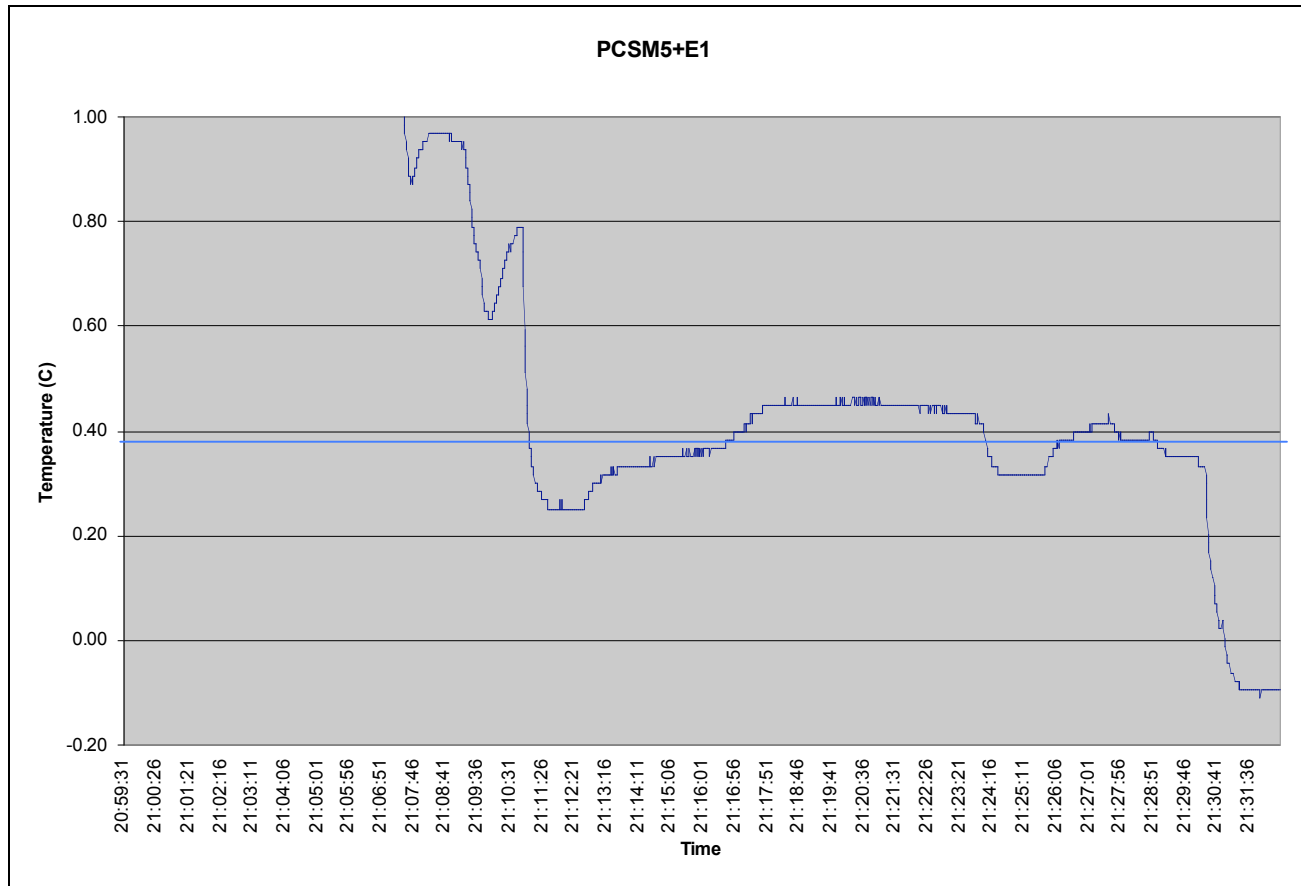
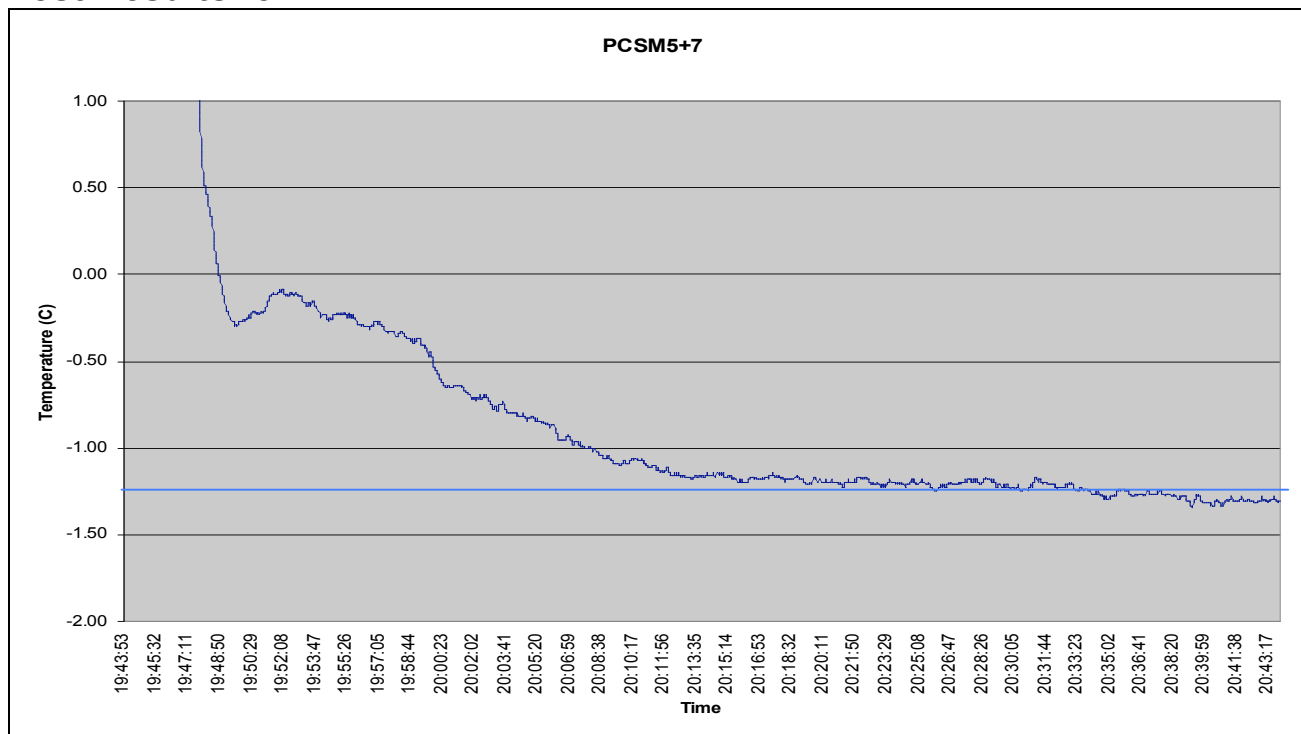


Test Results for APCT # 10



Test Results for APCT # 16

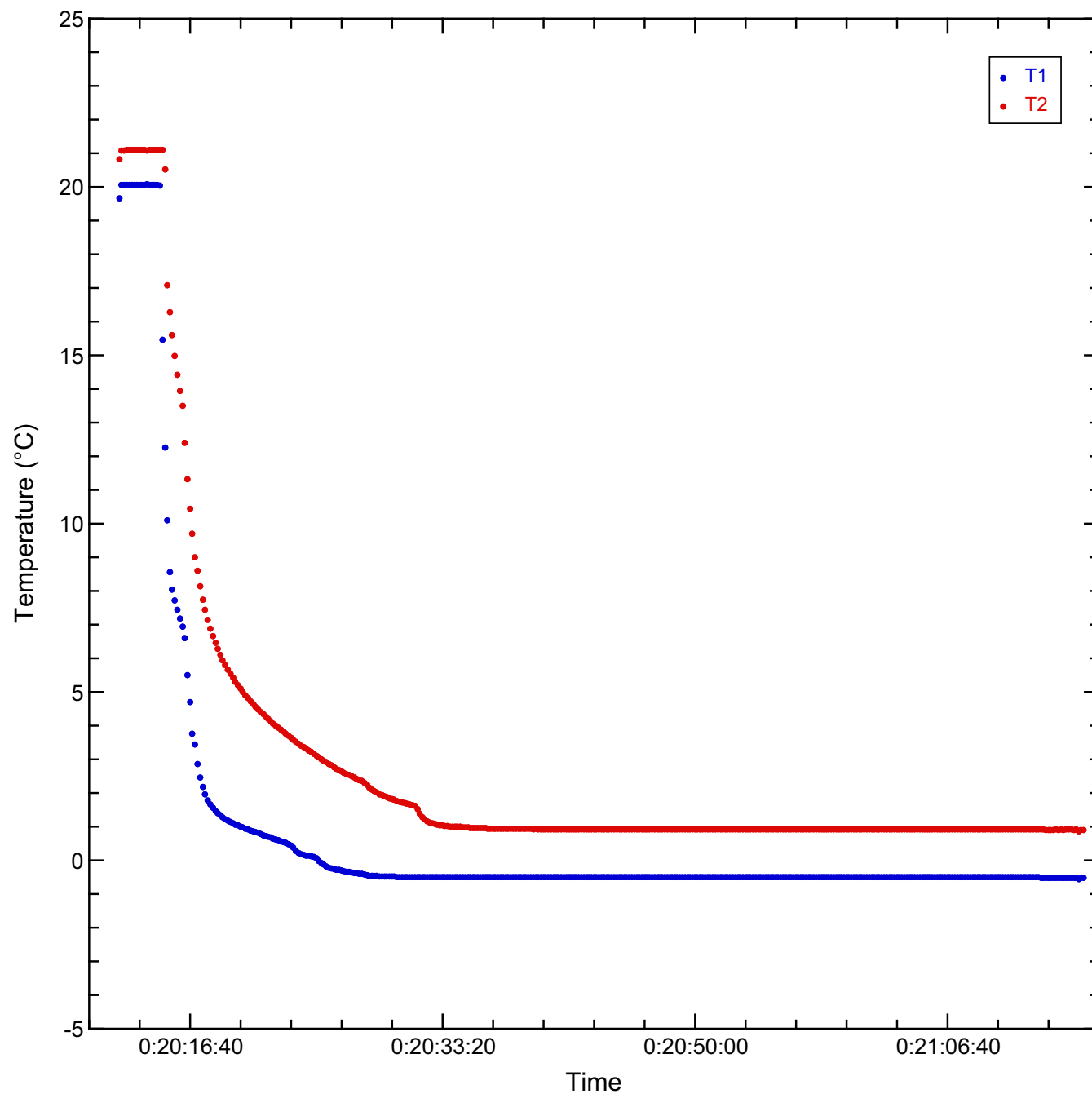


Test Results for APCM # 1**Test Results for APCM # 7**

Test Results for DVTP # 1

A

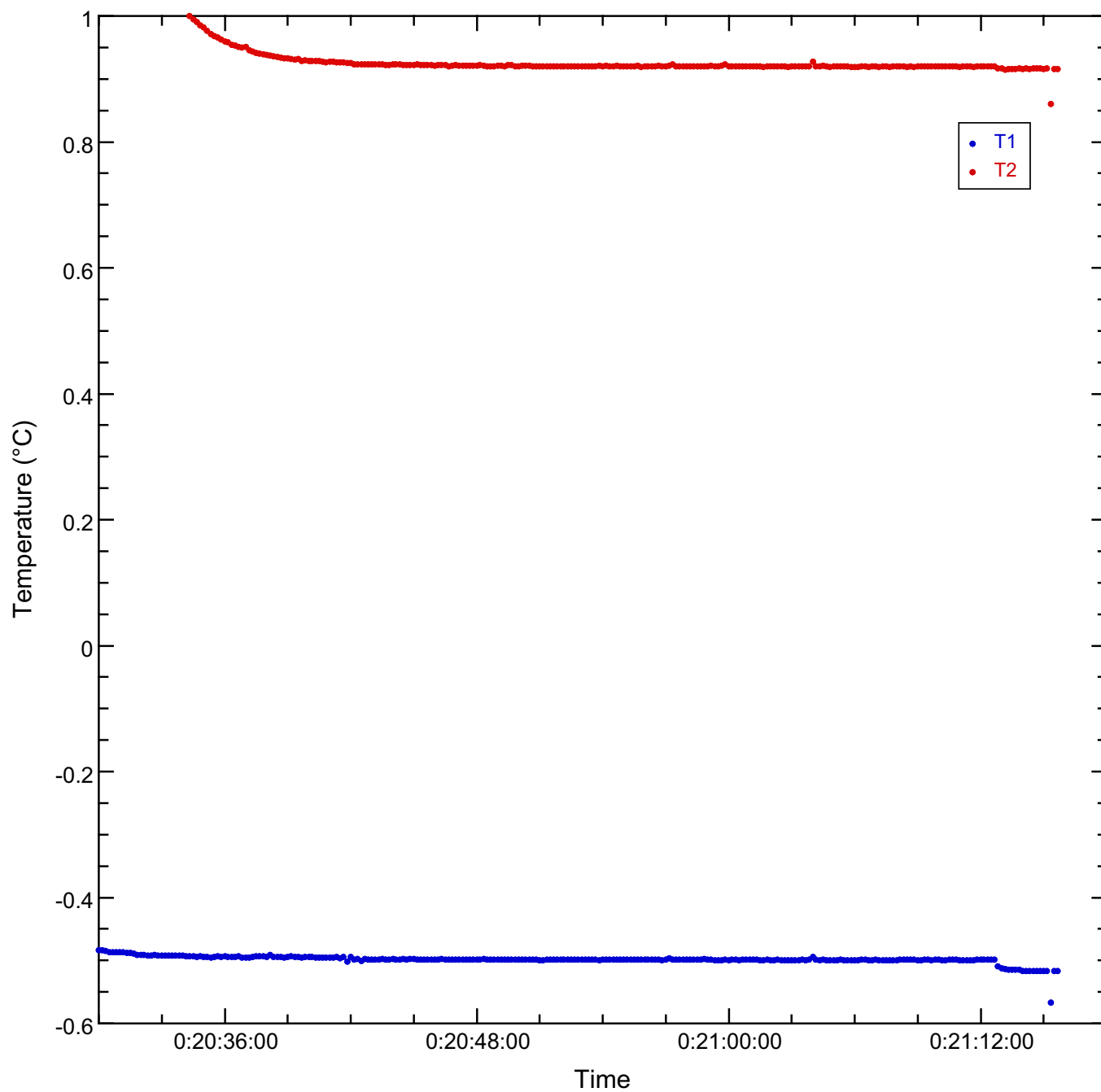
DVTP icebath test



Test Results for DVTP # 1 (continued)

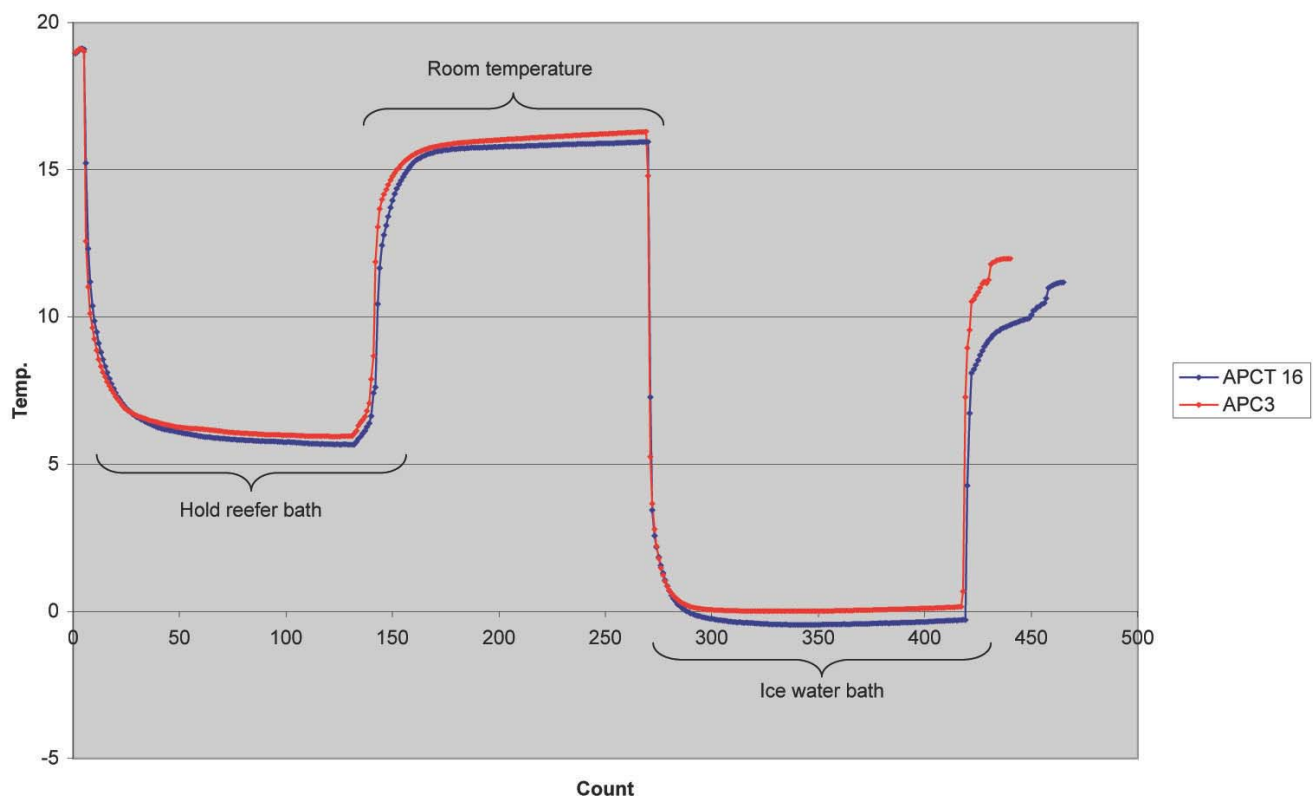
B

DVTP icebath test



Comparison of APC3 and APCT #16

Cal. test



Publishing support provided by:
Denver Publishing Service Center, Denver, Colorado

For more information concerning this publication, contact:
Center Director, USGS Central Energy Resources Science Center
Box 25046, Mail Stop 939
Denver, CO 80225
(303) 236-1647

Or visit the Central Energy Resources Science Center Web site at:
<http://energy.usgs.gov/>

This report is available at: <http://dx.doi.org/10.3133/sir20125054>.

