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MINERALS MANAGEMENT SERVICE
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Plans Section, GOM OCS Region, New Orleans, LA

Addendum to Development Operations Coordination Document

for the

Cascade / Chinook Development Project

August 2, 2007

Submitted by:

PETROBRAS AMERICA INC.

Summary of Modifications

DOCD Section No.	DOCD Section Name	Description of Modifications to DOCD Submitted to MMS on June 12, 2007	Addendum Attachment No.
1	Introduction and Plan Contents	PAI changed the OCS-G number from 16987 to 16997 on OCS Plan Information Form for Chinook Well #2 (page 1-15) in Section 1(a) to accurately represent the location of Chinook Well #2 in WR Block 469. Also changed the anchor locations on OCS Plan Information Forms for Cascade East and Cascade West to be consistent with the modified MODU anchor patterns described in R1.4.	R1.1
		PAI modified Figure 1-3 – Field Layout (page 1-18) in Section 1(b). This change allows for an accurate representation of the location of the Chinook Well #2 in WR Block 469.	R1.2
		PAI modified Figure 1-5 – Chinook Field Layout (page 1-20) in Section 1(b). This change allows for an accurate representation of the location of the Chinook Well #2 in WR Block 469.	R1.3
		PAI modified Figure 1-8 – FPSO / Rig Mooring Arrangements. The preliminary MODU anchor patterns for the Cascade East and Cascade West drill centers have been resubmitted in two new drawings in order to move several of the anchor locations away from the Sigsbee Escarpment.	R1.4
2	General Information	PAI provided clarification on the duration of Phase 1 production operations if Phase 2 is not initiated. Intended to supplement Section 2(c) on page 2-2 of the DOCD.	R2.1
		PAI provided additional information (boiling point distribution) to supplement 2(d) Table 2-3 – Oils Characteristics (page 2-3).	R2.2
		PAI provided additional information related to historical oil spill performance for FPSOs utilized in Brazil. Intended to supplement Section 2(e) on page 2-11 of the DOCD.	R2.3
		PAI clarifies that information in Section 2(e) Table 2-7 – Shuttle Vessel Environmental Operating Parameters is applicable to all types of shuttle Vessels being considered for the Cascade / Chinook Development Project (i.e. Shuttle Tankers and Articulated Tug Barges).	R2.4
9	Oil Spill Information	PAI has modified the information described in Section 9(a) Table 9-3 – OSRO Mechanical Recovery Capabilities (page 9-2) and in Section 9(a) Table 9-4 – Dispersant Inventories (page 9-2) associated with CCA to more accurately reflect the available resources from this OSRO outside of its area of interest (per their by-laws).	R9.1
		PAI modified the new WCD (MMS jurisdiction) information described in 9(a) Table 9-5 – Worst Case Discharge (page 9-3) to include volumes related to the Chinook-to-FPSO ROW Pipelines and Risers. PAI also modified the volume for the Lease Term Pipelines and Risers which were overstated due to a mathematical error.	R9.1
		PAI clarifies that the new WCD (MMS jurisdiction) information described in 9(a) Table 9-5 – Worst Case Discharge (page 9-3) will be submitted to MMS prior to approval of the DOCD.	R9.1
		PAI submits a new appendix (Appendix 7) to describe the CGA equipment response times to support the USCG WCD for offshore spills from the FPSO and Shuttle Vessel for NEPA evaluation considerations.	R9.2
		PAI submits a new appendix (Appendix 8) to describe the CGA equipment response times to support the USCG WCD for nearshore / inland spills near Houston region of GoM for NEPA evaluation considerations.	R9.3
		PAI submits a new appendix (Appendix 9) to describe the CGA equipment response times to support the USCG WCD for nearshore / inland spills near Mobile region of GoM for NEPA evaluation considerations.	R9.4
		PAI submits a new appendix (Appendix 10) to describe the CGA equipment response times to support the USCG WCD for nearshore / inland spills near Corpus Christi region of GoM for NEPA evaluation considerations.	R9.5
		PAI submits a new appendix (Appendix 11) to describe the CCA equipment response times to support the USCG WCD for offshore spills from the FPSO and Shuttle Vessel for NEPA evaluation considerations.	R9.6
		PAI submits a new appendix (Appendix 12) to describe the CCA equipment response times to support the USCG WCD for nearshore / inland spills near Corpus Christi region of GoM for NEPA evaluation considerations.	R9.7
		PAI has included a copy of the contact with CCA.	R9.8

Summary of Modifications, Continued

DOCD Section No.	DOCD Section Name	Description of Modifications to DOCD Submitted June 12, 2007	Addendum Attachment No.
14	Related Facilities and Operations Information	PAI modified Figure 14-3 – Illustration of Subsea Facilities Layout (page 14-4) in Section 14(a). This change allows for an accurate representation of the location of the Chinook Well #2 in WR Block 469.	R14.1
		PAI modified Figure 14-4 – Cascade East Drill Center (page 14-5) in Section 14(a). Changed to maintain consistent format with Figures 14-5 and 14-6.	R14.2
		PAI modified Figure 14-5 – Cascade West Drill Center (page 14-6) in Section 14(a). Changed to identify coordinates of the well location and to maintain consistent format with Figures 14-4 and 14-6.	R14.3
		PAI modified Figure 14-6 – Chinook Drill Center (page 14-7) in Section 14(a). This change allows for an accurate representation of the location of the Chinook Well #2 in WR Block 469.	R14.4
16	Onshore Support Facilities Information	PAI modified Section 16(d) Tables 16-2, 16-3, and 16-4 (pages 16-2 and 16-3) to identify the physical locations of the (permitted and existing) onshore waste disposal sites for Drilling and Completion Operations, FPSO Production Operations, and Shuttle Vessel Operations.	R16.1
19	EIA	PAI has modified Section 19(c) to include a description of potential ship strike impacts related to marine mammals and sea turtles.	R19.1
		PAI has modified Section 19(c) to include a description of potential oil spill impacts related to gulf sturgeon.	R19.2
		PAI has modified Section 19(c) to include a description of potential oil spill impacts related to barriers islands.	R19.3
		PAI has clarified Appendix 2(b) to indicate that no chemosynthetic communities have been identified in the Cascade / Chinook Project Development areas.	R19.4

Attachment R1.1

OCS PLAN INFORMATION FORM

Proposed Well/Structure Location				
Well or Structure Name/Number (If renaming well or structure, reference previous name): Chinook/Development Well No. 2			Subsea Completion	
Anchor Radius (if applicable) in feet: Not Applicable - DP Drilling Rig			X Yes	No
	Surface Location	**Bottom-Hole Location (For Wells) - PROPRIETARY**		
Lease No.	OCS-G 16997			
Area Name	Walker Ridge Protraction Area			
Block No.	Walker Ridge Block 469			
Blockline Departures (in feet)	7310.00' FEL			
	32.00' FNL			
Lambert X-Y coordinates	X: 2,447,890.00'			
	Y: 9,630,688.00'			
Latitude/ Longitude	Latitude: 26°31'10.78"			
	Longitude: 90°31'48.95"			
	TVD (Feet): **PROPRIETARY**	MD (Feet): **PROPRIETARY**	Water Depth (Feet): 8,800	

Anchor Locations for Drilling Rig

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
N/A	N/A	N/A	N/A	N/A	N/A

Paperwork Reduction Act of 1995 Statement: The Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35) requires us to inform you that MMS collects this information as part of an applicant's Exploration Plan or Development Operations Coordination Document submitted for MMS approval. We use the information to facilitate our review and data entry for OCS plans. We will protect proprietary data according to the Freedom of Information Act and 30 CFR 250.196. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget Control Number. The use of this form is voluntary. The public reporting burden for this form is included in the burden for preparing Exploration Plans and Development Operations Coordination Documents. We estimate that burden to average 600 hours per response, or 640 with an accompanying EP, or 690 with an accompanying DPP or DOCD, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms associated with subpart B. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Mail Stop 4230, Minerals Management Service, 1849 C Street, NW., Washington, DC 20240.

Attachment R1.1, Continued

OCS PLAN INFORMATION FORM

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Cascade West/Development Well No. 3	Subsea Completion			
Anchor Radius (if applicable) in feet: Approximately 8750'	X	Yes		No

	Surface Location	Bottom-Hole Location (For Wells) - PROPRIETARY
Lease No.	OCS-G 16969	
Area Name	Walker Ridge Protraction Area	
Block No.	Walker Ridge Block 249	
Blockline Departures (in feet)	1623.00' FEL	
	3984.00' FNL	
Lambert X-Y coordinates	X: 2,453,577.00'	
	Y: 9,705,936.00'	
Latitude/ Longitude	Latitude: 26°43'34.53"	
	Longitude: 90°30'30.24"	
	TVD (Feet): **PROPRIETARY**	MD (Feet): **PROPRIETARY** Water Depth (Feet): 8,100

Anchor Locations for Drilling Rig (Preliminary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
1	WR	249	2,446,379.00'	9,700,918.00'	8748
2	WR	249	2,445,081.00'	9,703,679.00'	8748
3	WR	205	2,449,933.00'	9,714,083.00	8748
4	WR	205	2,452,882.00'	9,714,864.00'	8748
5	WR	206	2,460,968.00'	9,711,099.00'	8748
6	WR	250	2,462,269.00'	9,708,331.00'	8748
7	WR	250	2,457,418.00'	9,697,926.00'	8748
8	WR	249	2,454,469.00'	9,697,146'	8748
A	WR	249	2,444,819.00'	9,706,720.00'	8751
B	WR	205	2,447.435.00'	9,712,329.00'	8751
C	WR	250	2,462,531.00'	9,705,290.00'	8751
D	WR	250	2,459,915.00'	9,699,681.00'	8751

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OCS PLAN INFORMATION FORM

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Cascade East/Development Well No. 4	Subsea Completion			
Anchor Radius (if applicable) in feet: Approximately 8750'	X	Yes		No

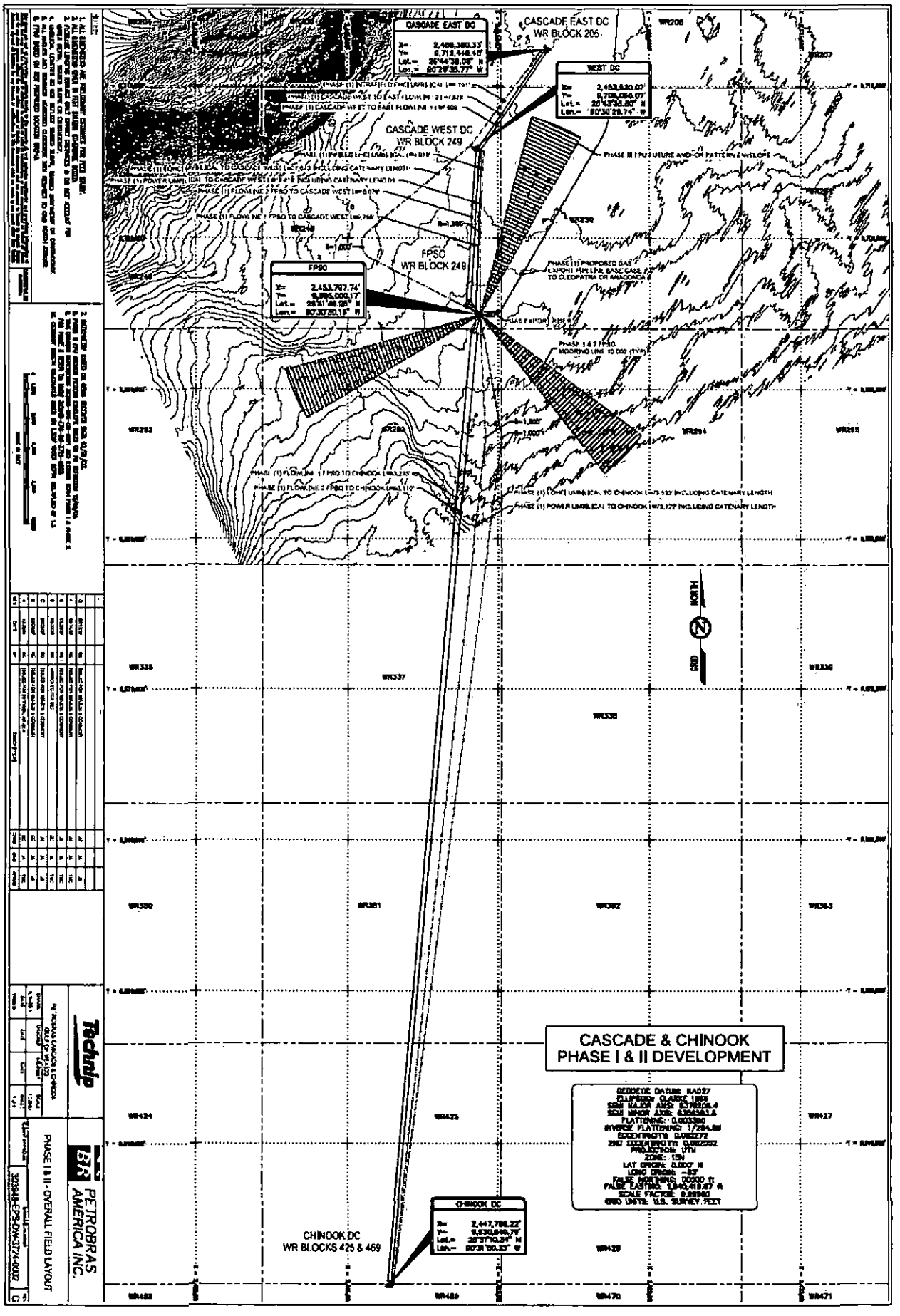
	Surface Location	Bottom-Hole Location (For Wells) - PROPRIETARY
Lease No.	OCS-G 16965	
Area Name	Walker Ridge Protraction Area	
Block No.	Walker Ridge Block 206	
Blockline Departures (in feet)	2440.00' FSL	
	3289.00' FWL	
Lambert X-Y coordinates	X: 2,458,489.00'	
	Y: 9,712,360.00'	
Latitude/ Longitude	Latitude: 26°44'37.17"	
	Longitude: 90°29'35.77"	
	TVD (Feet): **PROPRIETARY**	MD (Feet): **PROPRIETARY** Water Depth (Feet): 8,160

Anchor Locations for Drilling Rig (Preliminary)

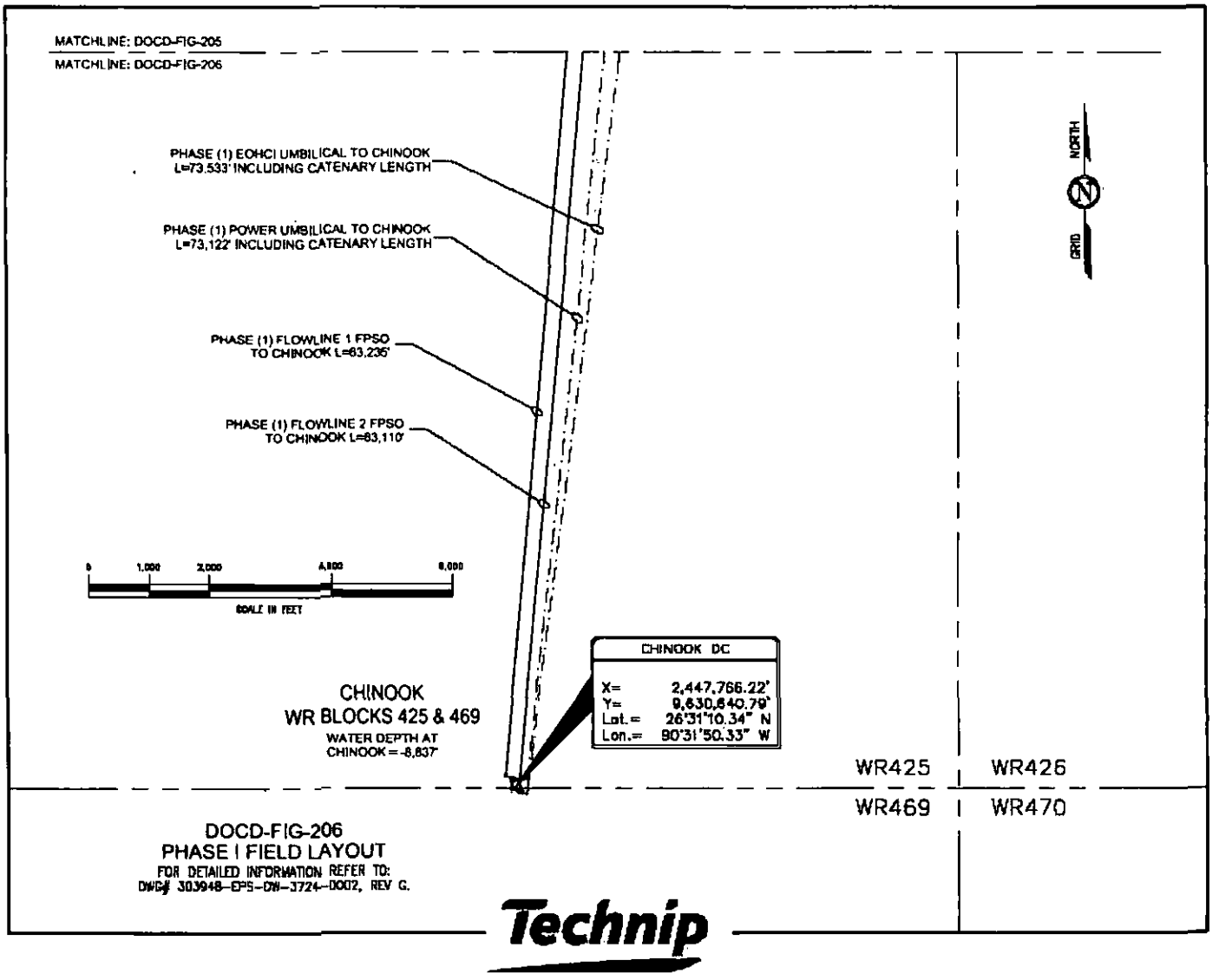
Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
1	WR	249	2,451,774.00'	9,706,449.00'	8748
2	WR	249	2,450,149.00'	9,709,031.00'	8748
3	WR	205	2,453,697.00'	9,719,949.00'	8748
4	WR	206	2,456.529.00'	9,721,083.00'	8748
5	WR	206	2,465,014.00'	9,718,332.00'	8748
6	WR	206	2,466,642.00'	9,715,743.00'	8748
7	WR	250	2,463,095.00'	9,704,825.00'	8748
8	WR	250	2,460,263.00'	9,703,691.00'	8748
A	WR	205	2,449,519.00'	9,712,018.00'	8751
B	WR	205	2,451,432.00'	9,717,903.00'	8751
C	WR	206	2,467,273.00'	9,712,756.00'	8751
D	WR	250	2,465,360.00'	9,706,870.00'	8751

Paperwork Reduction Act of 1995 Statement: The Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35) requires us to inform you that MMS collects this information as part of an applicant's Exploration Plan or Development Operations Coordination Document submitted for MMS approval. We use the information to facilitate our review and data entry for OCS plans. We will protect proprietary data according to the Freedom of Information Act and 30 CFR 250.196. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget Control Number. The use of this form is voluntary. The public reporting burden for this form is included in the burden for preparing Exploration Plans and Development Operations Coordination Documents. We estimate that burden to average 600 hours per response, or 640 with an accompanying EP, or 690 with an accompanying DPP or DOCD, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms associated with subpart B. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Mail Stop 4230, Minerals Management Service, 1849 C Street, NW., Washington, DC 20240.

Attachment R1.2



Attachment R1.3

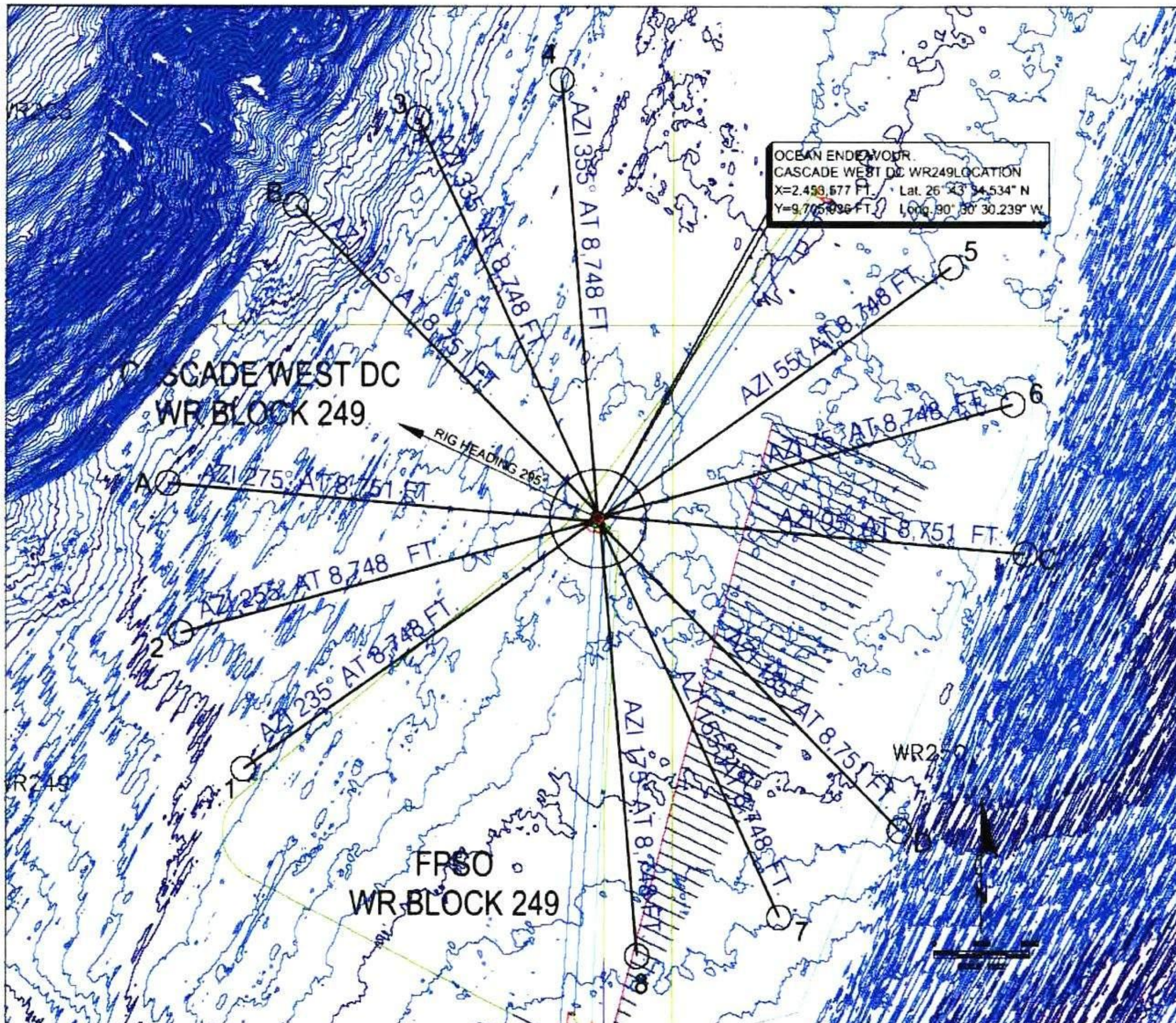


Attachment R1.4

MMS has communicated to PAI that there is a potential for chemosynthetic communities to exist on several areas of the Sigsbee Escarpment in the development areas of Cascade and Chinook. This information is based upon proprietary information that MMS has in its possession.

PAI has previously provided the preliminary MODU and FPSO anchor patterns in Figure 1-8 – FPSO / Rig Mooring Arrangements. These MODU anchors patterns were developed early to support planning for the soils survey program and for inclusion in the DOCD, fully understanding that the preliminary anchor patterns would be modified after more detailed engineering was to be performed.

PAI has recently revisited the preliminary locations of the MODU anchor patterns at the Cascade East and Cascade West drill centers. This results in all anchors being located off of the Sigsbee Escarpment which will allow PAI to avoid any potential chemosynthetic communities identified by MMS that may potentially exist on the escarpment. PAI has provided new (but still preliminary) MODU anchor patterns below to represent the change. Furthermore, PAI will not install any facilities in any areas that MMS has identified as potential locations for chemosynthetic communities.



WELL COORDINATES
(SURFACE LOCATION)

PROPOSED WELL	X (FT)	Y (FT)
	2,453,577	[illegible]

ANCHOR COORDINATES		
LINE #	X LOCATION (FT.)	Y LOCATION (FT.)
1	2,448,379	9,700,918
2	2,448,081	9,702,479
3	2,449,933	9,714,082
4	2,452,892	9,714,094
5	2,460,588	9,711,083
6	2,462,249	9,708,331
7	2,457,418	9,697,928
8	2,454,440	9,697,140
A	2,444,819	9,706,720
B	2,447,433	9,712,289
C	2,462,831	9,706,280
D	2,460,813	9,699,481

NOTES:
1. ALL LINES ARE AT 200-KIPS PAYLOAD SURVIVAL TENSION
2. PRELIMINARY PATTERN ANALYSIS REQUIRED TO VERIFY IF IT MEETS API-RP-2SK RECOMMENDATIONS.
3. THE MOORING LINE COMPONENTS ARE AS FOLLOWS

LINE#	3 1/2 IN. EEIPS WIRE (FT.)	3 3/4 IN. EEIPS WIRE (FT.)	3 9/16 IN. CHAIN (FT.)	6.3 IN. POLYESTER (FT.)	3 3/4 IN. EEIPS WIRE (FT.)	ANCHOR TYPE
1	2,000	[illegible]	146	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
2	3,000	[illegible]	146	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
3	3,000	[illegible]	146	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
4	2,000	[illegible]	140	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
5	3,000	[illegible]	145	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
6	3,000	[illegible]	145	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
7	2,000	[illegible]	145	8,000	500	[illegible] FT. x 70 FT. PILE
8	3,000	[illegible]	145	8,000	500	[illegible] FT. x 70 FT. PILE

LINE#	3 1/2 IN. EEIPS WIRE (FT.)	3 3/4 IN. EEIPS WIRE (FT.)	3 9/16 IN. CHAIN (FT.)	6.3 IN. POLYESTER (FT.)	3 3/4 IN. EEIPS WIRE (FT.)	ANCHOR TYPE
A	700	1,300	146	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
B	700	1,300	146	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
C	700	1,300	145	8,000	[illegible]	[illegible] FT. x 70 FT. PILE
D	700	1,300	146	8,000	[illegible]	[illegible] FT. x 70 FT. PILE

LINE #	LINE HEADING (DEG)	ANCHOR DISTANCE (FT)
1	235	8,748
2	255	8,748
3	335	8,748
4	355	8,748
5	55	8,748
6	75	8,748
7	155	8,748
8	175	8,748
A	275	8,751
B	315	8,751
C	95	8,751
D	135	8,751

PETROBRAS AMERICA INC.

A.F.M.

REV.	DATE	DESCRIPTION	APPROVAL		INITIAL	DATE
				DRAFTER	P.J.L.	7/30/07
				CHECKED	D.S.	7/30/07
				ENGINEER	D.S.	7/30/07

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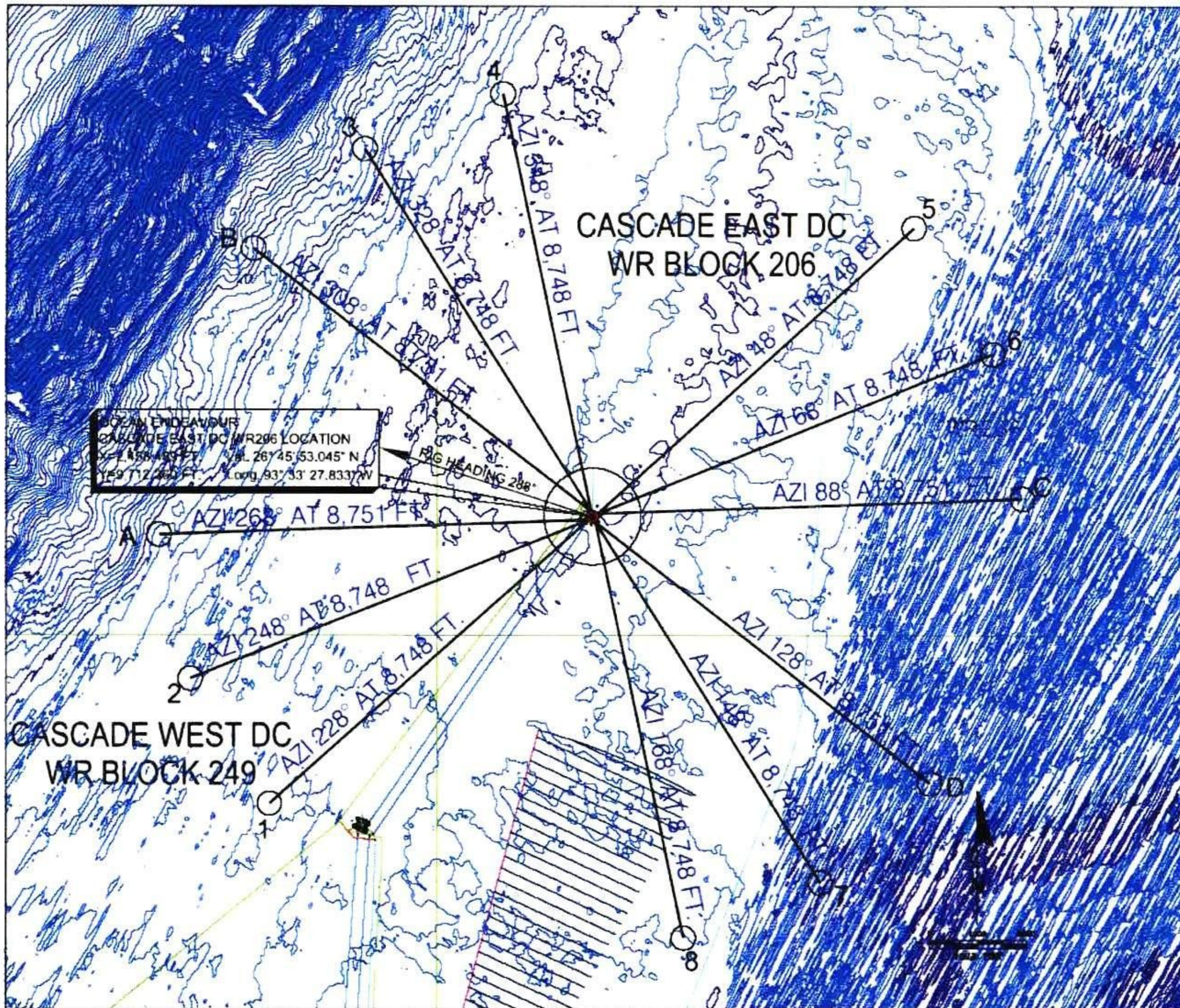
PETROBRAS
OCEAN ENDEAVOR
CASCADE WEST DC BLOCK WR249
PROPOSED MMS MOORING PATTERN

DELMAR SYSTEMS, INC.

SIZE B | SCALE: AS NOTED | DWG #: 5790-MP-02 | REV 0
SHEET: 1 OF 1 | JOB#: 5790

Attachment R1.4, Continued



WELL COORDINATES
(SURFACE LOCATION)

PROPOSED WELL	X (FT)	Y (FT)
	2,488,488	9,712,380

ANCHOR COORDINATES		
LINE #	X LOCATION (FT.)	Y LOCATION (FT.)
1	2,481,774	9,706,448
2	2,480,149	9,709,031
3	2,483,807	9,719,948
4	2,486,389	9,721,062
5	2,485,014	9,718,330
6	2,496,842	9,713,740
7	2,483,085	9,704,655
8	2,490,283	9,700,881
A	2,480,519	9,712,010
B	2,481,492	9,717,880
C	2,487,233	9,712,798
D	2,488,280	9,706,870

NOTE:
1. ALL LINES ARE AT [illegible] PRETENSION TENSION
2. PRELIMINARY MOORING ANALYSIS REQUIRED TO VERIFY IF IT MEETS API-RP-2SK RECOMMENDATIONS.
3. THE MOORING LINE COMPOSITIONS ARE AS FOLLOWS

LINE #	3 1/2 IN. [illegible] WIRE (FT.) [illegible]	3 3/4 IN. [illegible] WIRE (FT.)	3 9/16 IN. CHAIN (FT.)	6.3 IN. POLYESTER (FT.)	3 3/4 IN. [illegible] WIRE (FT.)	ANCHOR TYPE
1	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
2	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
3	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
4	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
5	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
6	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
7	3,000	300	146	8,000	500	[illegible] FT. x 70 FT. PILE
8	3,000	300	145	8,000	500	[illegible] FT. x 70 FT. PILE

LINE #	3 1/4 IN. [illegible] WIRE (FT.) [illegible]	3 3/4 IN. [illegible] WIRE (FT.)	3 9/16 IN. CHAIN (FT.)	6.3 IN. POLYESTER (FT.)	3 3/4 IN. [illegible] WIRE (FT.)	ANCHOR TYPE
A	700	1,300	146	8,000	800	[illegible] FT. x 70 FT. PILE
B	700	1,300	146	8,000	800	[illegible] FT. x 70 FT. PILE
C	700	1,300	146	8,000	800	[illegible] FT. x 70 FT. PILE
D	700	1,300	146	8,000	800	[illegible] FT. x 70 FT. PILE

LINE #	LINE HEADING (DEG)	ANCHOR DISTANCE (FT)
1	228	8,748
2	248	8,748
3	328	8,748
4	348	8,748
5	48	8,748
6	68	8,748
7	148	8,748
8	168	8,748
A	268	8,751
B	308	8,751
C	88	8,751
D	128	8,751

PETROBRAS AMERICA INC.

A.F.M.

REV.	DATE	DESCRIPTION	APPROVAL		INITIAL	DATE
				DRAFTER	P.J.L.	7/30/07
				CHECKED	D.B.	7/30/07
				ENGINEER	D.B.	7/30/07

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PETROBRAS
OCEAN ENDEAVOR
CASCADE EAST DC BLOCK WR206
PROPOSED MMS MOORING PATTERN

DELMAR SYSTEMS, INC

OPERATIONS: 8114 Hwy. 90 West PO Box 129, Broussard, Louisiana 70518, Telephone (337) 365-0180, Fax (337) 369-0837

TECHNICAL AND ENGINEERING: 5434 [illegible] Dr., Suite [illegible], Houston, Texas 77042, Telephone [illegible] 2[illegible]-7100, Fax [illegible]-7140

SIZE	SCALE: AS NOTED	DWG #: 3780-MP-01	REV
B	SHEET: 1 OF 1	JOB: 3780	0

Attachment R2.1

Future phases of the Cascade / Chinook development plan will be pursued depending on the performance of the Cascade and Chinook reservoirs in Phase 1. The three scenarios below are intended to describe how PAI would implement future phases of the development plan based on reservoir productivity.

Scenario 1 – High Reservoir Productivity

If the Cascade and Chinook reservoirs produce at the anticipated volumes (or higher), PAI would likely initiate Phase 2 of the development plan. Phase 2 of the development plan would likely include the addition of multiple wells (number to be determined) to the drilling & completion program. In this scenario, all of the Phase 1 and Phase 2 wells would produce back to the existing FPSO. In this scenario, the duration of production operations utilizing the FPSO will likely be 6-8 years. Furthermore, PAI would likely initiate Phase 3 of the development plan. Phase 3 would include the replacement of the Phase 1 FPSO with a different Floating Production Unit (i.e. the "definitive system") as well as the addition of multiple wells (number to be determined) to the drilling and completion program.

Scenario 2 – Medium Reservoir Productivity

If the Cascade and Chinook reservoirs produce significantly less than the anticipated volumes but at volumes which are commercial viable, PAI could either 1.) continue production operations from only (3) Phase 1 wells for up to 6-8 years utilizing the FPSO or 2.) continue production operations from (3) Phase 1 wells and several additional Phase 2 wells (number to be determined) for up to 6-8 years utilizing the FPSO. In this scenario, PAI would not likely initiate Phase 3 of the development plan.

Scenario 3 – Low Reservoir Productivity

If the Cascade and Chinook reservoirs produce at extremely low volumes, PAI would likely not initiate Phase 2 of the development plan. In this scenario, the duration of production operations utilizing the FPSO could be as short as 1 year. However, PAI could opt to continue producing to the FPSO for a longer duration (potentially up to 6-8 years) if it were commercially viable to do so.

Attachment R2.2

PAI provides the following supplemental oil characteristics information as requested by MMS. This information is representative of the oil from the Cascade and Chinook reservoirs. If additional information is required by MMS, PAI will have to conduct additional testing of limited samples.

Representative Oil Characteristics for Cascade and Chinook Reservoirs

		Boiling Point	
SIMULATED DISTILLATION	Percent Recovery (Weight)	Degree F	Degree C
	Percent Off - IBP	97	36
	Percent Off - 5	262	128
	Percent Off - 10	358	181
	Percent Off - 15	448	231
	Percent Off - 20	520	271
	Percent Off - 25	567	297
	Percent Off - 30	611	322
	Percent Off - 35	666	352
	Percent Off - 40	709	376
	Percent Off - 45	761	405
	Percent Off - 50	808	431
	Percent Off - 55	861	461
	Percent Off - 60	913	489
	Percent Off - 65	966	519
	Percent Off - 70	1021	549
	Percent Off - 75	1077	581
	Percent Off - 80	1202	650
	Percent Off - 85	1287	697
	Percent Off - 90	1288	698
	Percent Off - 95	>1355	>735
	Percent Off - 99	>1355	>735
	Percent Off - FBP	>1355	>735

Attachment R2.3

PAI has provided additional information on historical FPSO oil spill performance from Petrobras Brazil. See table below.

Period (1)	[M] bbls Produced from all FPSOs	Average FPSO Offloadings Per Year	No. of Spills > 1 bbl [Total Volume]	No. of Spills > 50 bbls [Total Volume]
2001 - 2005	887,315	604	10 [141.8]	0 [0]
2006	333,975	720	1 [12.6]	0 [0]
Total	1,221,290		11 [154.4]	0 [0]

Notes :

(1) FPSO specific oil spills could not be determined from data from 1998 through 2000.

Attachment R2.4

PAI clarifies that the information included in Section 2(e)Table 2-7 – Shuttle Vessel Environmental Operating Parameters is applicable to all types of Shuttle Vessels (e.g. Shuttle Tankers and Articulated Tug Barges) being considered for use during Phase 1 of the development plan.

These environmental operating parameters were included in the Shuttle Vessel Technical Specification and are based on FPSO safety guidelines derived from Petrobras Brazil's FPSO operating experience in Brazil.

Attachment R9.1

Sections 9(a) through 9(c) have been re-submitted in their entirety to reflect multiple changes and additional information.

9 Oil Spills Information

9(a) Oil Spill Response Planning

Regional Oil Spill Response Information

All the proposed activities in this DOCD will be covered by the PAI (MMS operator #1207) Regional Oil Spill Response Plan (R-OSRP) filed in accordance with 30 CFR 254.

PAI has submitted a newly updated R-OSRP to MMS in July 2007 in order to achieve the bi-annual updating requirement per the requirements of 30 CFR 254 and NTL 2006 G21.

The updated R-OSRP includes a new "Greater Than 10 Mile From Shore Worst Case Discharge Scenario" which describes the new Worst Case Discharge information associated with activities covered by the DOCD for Phase 1 of the Cascade / Chinook Development Project. The updated R-OSRP covers oil spills under MMS jurisdiction only (e.g. blowouts, topsides facilities, lease term pipelines).

Spill Response Sites

PAI is currently a member of Clean Gulf Associates (CGA) and Clean Caribbean & Americas (CCA).

PAI's primary spill response equipment is provided by CGA as described in the R-OSRP. Table 9-1 indicates the locations of PAI's primary spill response equipment and the locations of the planned staging areas.

Table 9-1 – CGA Oil Spill Response Equipment & Staging Areas

Primary Response Equipment Locations	Preplanned Staging Locations
Ingleside, TX	Fourchon, LA
Galveston, TX	Venice, LA
Lake Charles, LA	Houma, LA
Houma, LA	
Venice, LA	

PAI's also has access to spill response equipment provided by CCA. CCA resources will generally be utilized as secondary spill response equipment by PAI. Table 9-2 indicates the locations of CCA's spill response equipment and the locations of the planned staging areas.

Table 9-2 - CCA Oil Spill Response Equipment & Staging Areas

Response Equipment Locations	Preplanned Staging Locations
Fort Lauderdale, FL	Fourchon, LA (1)

Notes :

(1) CCA mechanical recovery equipment will be flown in to an airport nearest to the spill location and then trucked into a CGA pre-planned staging location. However, CCA equipment can be staged in a number of locations not typically utilized as pre-planned staging areas (e.g. Corpus Christi, Texas) by CGA in order to optimize the timing associated with mobilizing spill response resources in such locations.

OSRO Information

As previously stated, PAI is currently a member of CGA and CCA. The de-rated (i.e. 20% of equipment name plate per manufacturer specification) daily mechanical recovery capabilities for each OSRO is described in Table 9-3.

Table 9-3 – OSRO Mechanical Recovery Capabilities

OSRO	De-Rated Daily Recovery Capability (barrels per day)
CGA	112,291
CCA	18,345 (1)
TOTAL	130,366

Notes :

(1) CCA has (de-rated) daily mechanical recovery capabilities of approximately 48,000 barrels per day. Per CCA By-Laws, 100% of the equipment is available to support Members within CCA's areas of interest. Also per CCA By-Laws, only 25% of the equipment is available to support Members outside of CCA's areas of interest (i.e. in the U.S. GoM). As a result, PAI is only showing (de-rated) daily mechanical recovery capability associated with 25% of CCA's available equipment.

PAI will also utilize dispersants as an alternative response strategy in certain circumstances when approved by regulatory authorities. The dispersant inventories that are available to PAI are described in Table 9-4.

Table 9-4 – Dispersant Inventories

OSRO	Dispersant Inventory (gallons)
CGA	82,650
CCA	20,000 (1)
TOTAL	102,650

Notes :

(1) CCA has dispersant inventories of approximately 30,000 gallons. Per CCA By-Laws, 100% of the dispersants is available to support Members within CCA's areas of interest. Also per CCA By-Laws, only 20,000 gallons of the dispersant is available to support Members outside of CCA's areas of interest (i.e. in the U.S. GoM). As a result, PAI is only showing 20,000 gallons of dispersant. It should be noted that the 10,000 gallons of "reserve" dispersant can be made available with approval from the CCA Directors.

PAI also utilizes other complimentary specialist OSROs as appropriate, including but not limited to AMPOL, Garner Environmental Services, Industrial Cleanup, Oil Mop, and PSC Industrial Services. See the current R-OSRP for a complete listing.

Worst Case Scenario Determination

WCD Scenario for MMS Jurisdiction :

Table 9-5 provides a comparison of the Worst Case Discharge scenarios from PAI's approved R-OSRP with the Worst Case Discharge scenario from the proposed activities covered by this DOCD. As shown below, the Worst Case Discharge scenario from the proposed activities in this DOCD are greater than those described in PAI's approved R-OSRP. PAI has therefore submitted a new "Greater Than 10 Mile From Shore Worst Case Discharge Scenario" to MMS in July 2007 to reflect the new Worst Case Discharge scenario.

Table 9-5 – Worst Case Discharge (MMS Jurisdiction)

Category	R-OSRP (Far Shore WCD)	DOCD
Type of Activity	Subsea Production Tie-Back to EC Block 373	Subsea Production Produced to FPSO
Facility Location(s)	GB Block 244 OCS-G 15860	WR Block 205 OCS-G 16964 WR Block 206 OCS-G 16965 WR Block 249 OCS-G 16969 WR Block 250 OCS-G 16970 WR Block 425 OCS-G 16987 WR Block 426 OCS-G 16988 WR Block 469 OCS-G 16997 WR Block 470 OCS-G 16998
Facility Designation	Subsea Wells #002 and #003ST01	FPSO and Subsea Wells Cascade #3, Cascade #4, and Chinook #2
Distance to Nearest Shoreline (Miles)	134	166
Volume (barrels) :		
Storage Tanks (total)	N/A (1)	6,010 (2)
On-facility Flowlines	N/A (1)	2,000 (3)
Lease Term Pipelines & Risers	N/A (1)	2,110 (4)
ROW Pipelines & Risers	N/A (1)	7,100 (5)
Uncontrolled Blowout (volume per day)	18,000	12,284
Total Volume	18,000	29,504
Type of Oil (e.g. Crude, Condensate, Diesel)	Crude	Crude
API Gravity	32	23 (6)

Notes for Table 9-5 included on next page.

Notes:

(1) W&T is the operator of EC Block 373; on-facility volumes are not applicable.

(2) Includes FPSO Topsides Tanks only; does not include FPSO Cargo or Fuel Tanks.

(3) On-facility Flowlines includes Processing Piping (including Turret systems).

(4) Includes dual Flowlines from Cascade East DC to Cascade West DC, dual Flowlines from Cascade West DC to FSHR Riser Base near FPSO, and the associated FSHRs.

(5) Includes dual Flowlines from Chinook DC to FSHR Riser Base near FPSO and the associated FSHRs as requested by MMS to accommodate a comprehensive NEPA evaluation. Note that the volume of the ROW pipelines will not be included in the WCD calculation for Total Volume in the updated Regional OSRP (bi-annual update submitted in July 2007) as it is not required per 30 CFR 254.47. The Total Volume without the ROW pipelines will be 22,404.

(6) API Gravity 23 is used for planning purposes; actual range is 17-29.

Additional notes for MMS WCD Scenario :

- PAI is proposing to perform well testing for each of the three new wells covered by this DOCD. PAI is proposing to discharge the well completion fluids (which will not include EPA defined "priority pollutants") per NPDES requirements.

- PAI is not proposing to use oil-based drilling fluids. PAI is proposing to use water-based and synthetic-based drilling fluids for each of the three new wells covered by this DOCD.

9(b) Oil Spill Response Discussion - MMS Jurisdiction

Organization

PAI Qualified Individuals utilize a contract Spill Management Team, The O'Briens Group, to manage oil spill response. CGA and other complimentary specialist OSROs provide access to oil spill response equipment and personnel as described in the PAI R-OSRP.

WCD Planning Volume for NEPA Review

PAI is capable of responding to the Worst Case Discharge (WCD) scenario described in 9(a) which is focused on MMS jurisdiction (i.e. 30 CFR 254.26) related to well blowouts, topsides facilities, and lease term pipelines. For the oil spill response discussion per NTL 2006 G14, the WCD planning volume from an MMS area of interest perspective is 12,284 barrels per day with an API gravity of 23° based on the blowout scenario (which is a larger planning volume than the largest topside tank or production vessel).

Land Segment and Resource Identification

Trajectories of a spill and the probability of it impacting a land segment have been projected utilizing information in the MMS Oil Spill Risk Analysis Model (OSRAM) for the Central and Western Gulf of Mexico available on MMS website using (30) day impact. The results are shown in Table 9-6. These trajectories are consistent with the site specific Oil Spill Risk Analysis (OSRA) performed by MMS in February 2007 as described in 9(d).

Table 9-6 – Trajectory by Land Segment

Area / Block	OCS-G	Launch Area	Land Segment and / or Resource	Conditional Probability (%) within 30 days
WR 205	16964	Central 48	Matagorda County, Texas	1
WR 206	16965		Brazoria County, Texas	1
WR 249	16969		Galveston County, Texas	2
WR 250	16970		Jefferson County, Texas	1
WR 425	16987		Cameron Parish, Louisiana	2
WR 426	16988		Vermilion Parish, Louisiana	1
WR 469	16997		Terrebonne Parish, Louisiana	1
WR 470	16998		LaFourche Parish, LA	1
			Plaquemines Parish, Louisiana	1

The MMS OSRAM identifies a 2% probability of impact to the shorelines of Galveston County, Texas; and / or Cameron Parish, Louisiana within 30 days.

Galveston County includes the Gulf Beach from the west end of Galveston Island at Texas Highway 3005 to the east coast of High Island at the Jefferson County line. Habitats include marshes at the west end of Seawall Boulevard and on the east end of the island and open beaches and avian feeding areas all along the coastline, including a National Audubon Society Sanctuary. The waters of Galveston Bay are classified as an EPA National Estuary.

Cameron Parish includes the east side of Sabine Lake, Sabine National Wildlife Refuge, Calcasieu Lake, Lacassine National Wildlife Refuge (inland) and Grand Lake; along the Gulf beach from Sabine Pass to Big Constance Lake in Rockefeller Wildlife Refuge. This region is composed of open public beaches, marshlands and swamps. It serves as a habitat for numerous birds, finfish and other animals, including several rare, threatened and endangered species.

Additional discussion of protection strategies for potentially affected resources is included in the PAI R-OSRP.

Spill Response

PAI will make every effort to respond to the Worst Case Discharge as effectively as possible. A description of the response equipment available to contain and recover the Worst Case Discharge is shown in Appendix 5.

Using the estimated chemical and physical characteristics of crude, an ADIOS weathering model was run on a similar product from the ADIOS oil database. The results indicate 91% of the product would remain after 12 hours, leaving approximately 11,178 (of the 12,284 total spilled) barrels on the water.

Appendix 5 outlines equipment, personnel, materials and support vessels, and temporary storage equipment to be considered in order to cope with an initial spill of 12,284 barrels. The list estimates individual times needed for procurement, load out, travel time to the site and deployment. If appropriate, 5 sorties (10,000 gallons) from the DC-4 and 5 sorties (5,000 gallons) from the DC-3 should disperse approximately 6,429 barrels of oil.

Offshore response strategies may also include attempting to skim utilizing the HOSS Barge, and five Fast Response Units (FRU), with a total de-rated skimming capacity of 60,740 barrels. Temporary storage associated with the identified skimming equipment equals 5,130 barrels. An additional open ocean storage barge with a capacity of 23,000 barrels would be mobilized as necessary. Safety is first priority; air monitoring will be performed and operations deemed safe prior to any containment / skimming attempts.

If the spill would go unabated, shoreline impact in coastal environments would depend upon existing environmental conditions. Onshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom in vegetated areas. Strategies would be based upon surveillance and real time trajectories that depict areas of potential impact given actual sea and weather conditions. Strategies from the One Plan Gulf of Mexico Area Contingency Plan (ACP) and Unified Command would be consulted to ensure that environmental and special economic resources would be correctly identified and prioritized to ensure optimal protection. ACPs depict the protection response modes applicable for oil spill clean-up operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Supervisory personnel have the option to modify the deployment and operation of equipment allowing a more effective response to site-specific circumstances.

9(c) Oil Spill Response Discussion - USCG Jurisdiction

This section is provided to assure a comprehensive NEPA review.

PAI is capable of responding to the Worst Case Discharge, the Maximum Most Probable Discharge, and Average Most Probable Discharge scenarios which are focused on USCG jurisdiction related to marine vessels as described in the most recent Memorandum of Agreement between the MMS and the USCG (OCS-03) and 33 CFR Part 155 Subpart D. PAI will utilize existing memberships in CGA and CCA to demonstrate oil spill response capability.

Although PAI is capable of responding to the various USCG defined discharge scenarios, it should be noted that the owners of the FPSO and the Shuttle Vessels will also be responsible for demonstrating that they have the capability to respond to the USCG defined discharge scenarios prior to USCG approval of their vessel specific oil spill response plans. Although each of the organizations (PAI and vessels owners) will be capable of responding to the USCG defined discharge scenarios, it is anticipated that the vessel owners' will have the primary regulatory responsibility as vessel operators while PAI will have secondary regulatory responsibility due to ownership of the produced oil. The details regarding primary and secondary regulatory responsibility will be finalized with the USCG after PAI awards contracts for the provision of the FPSO and Shuttle Vessels (anticipated 3Q07).

Table 9-7 describes the amounts associated with each USCG discharge scenario for the FPSO.

Table 9-7 – FPSO Discharge Scenarios (USCG Jurisdiction)

USCG Discharge Scenario for FPSO	Estimated Amount (barrels)	Comments
Worst Case Discharge	550,000 - 850,000	Equal to discharge of a marine vessel's entire cargo tanks in adverse weather conditions. See notes (1) and (2) for additional details.
Maximum Most Probable Discharge	2,500	Equal to 2,500 barrels of oil for vessels with a cargo capacity equal to or greater than 25,000 barrels OR 10% of the vessels oil cargo capacity with a capacity of less than 25,000 barrels. See note (3) for additional details.
Average Most Probable Discharge	50	Equal to the lessor of 50 barrels of oil or 1% of the cargo from the vessel during cargo oil transfer operations to or from the vessel

Notes for Table 9-7 on next page.

Notes :

(1) The USCG Worst Case Discharge would involve a total loss of the FPSO which is an extreme low probability event given the industry proven controls that PAI will put in place.

(2) The USCG has implemented a geographic (i.e. inland, nearshore, offshore, open ocean) based cap system to identify the amount of planning volumes that must be covered by contract. For offshore spills, the planning volume caps are 12,500 barrels per day for Tier 1, 25,000 barrels per day for Tier 2, and 50,000 barrels per day for Tier 3. When the required planning volume exceeds the cap amounts, the vessel owner is only required to have OSRO contracts in place up to the amount of the caps, but the vessel owner is required to identify sources of additional OSRO resources equivalent to twice the caps listed for each tier or the amount necessary to respond to the required planning volumes (whichever is less). The identified equipment must be capable of arriving at the FPSO within 24 hours for Tier 1, 48 hours for Tier 2, and 72 hours for Tier 3. Although PAI will not be the owner of the FPSO, PAI currently has the capability to respond to the required offshore planning volumes for Tiers 1-3 through CGA spill response resources as described in Appendix 7. Note that for Tier 3, the CGA spill response resources alone exceed the required 50,000 barrel cap (for which spill response resources must be contracted) as well as the incremental 50,000 barrel amount (for which spill response equipment must be identified). Therefore, PAI is not required to identify an additional OSRO to comply with USCG regulations. Note that the FPSO owner will also provide OSRO coverage as required by USCG regulatory requirements. The FPSO owner will describe its OSRO coverage in its vessel specific Oil Spill Response Plan (i.e. SOPEP). The FPSO owner will provide OSRO coverage (over and above PAI's OSRO coverage) as required by the USCG.

(3) The USCG Maximum Most Probable Discharge is significantly greater than an oil spill associated with FPSO offloading, which may be the highest exposure regarding oil spills associated with FPSOs. As described in section 1(f), PAI will utilize a number of industry proven safety and pollution prevention measures to mitigate against oil spills during FPSO offloading. If multiple controls described in section 1(f) failed, the amount of oil spilled during FPSO offloading would likely be an order of magnitude lower (i.e. the amount of oil in the offloading hose) than the amount of the USCG Maximum Most Probable Discharge.

(4) CCA spill response resources are not discussed regarding the FPSO discharge scenarios as they are not needed to comply with planning volume requirements. However, response times for CCA equipment to be mobilized to the FPSO location are included in Attachment 11.

Table 9-8 describes the amounts associated with each USCG discharge scenario for the Shuttle Vessels.

Table 9-8 – Shuttle Vessel Discharge Scenarios (USCG Jurisdiction)

USCG Discharge Scenario for Shuttle Vessels	Estimated Amount (barrels)	Comments
Worst Case Discharge	185,000 - 500,000	Equal to discharge of a marine vessel's entire cargo tanks in adverse weather conditions. See notes (1) and (2) for additional details.
Maximum Most Probable Discharge	2,500	Equal to 2,500 barrels of oil for vessels with a cargo capacity equal to or greater than 25,000 barrels OR 10% of the vessels oil cargo capacity with a capacity of less than 25,000 barrels. See note (3) for additional details.
Average Most Probable Discharge	50	Equal to the lessor of 50 barrels of oil or 1% of the cargo from the vessel during cargo oil transfer operations to or from the vessel

Notes for Table 9-8 on next page.

Attachment R9.1, Continued

Notes :

(1) The USCG Worst Case Discharge would involve a total loss of the Shuttle Vessel which is an extreme low probability event given the industry proven controls that PAI will put in place.

(2) The USCG has implemented a geographic (i.e. inland, nearshore, offshore, open ocean) based cap system to identify the amount of planning volumes that must be covered by contract. For offshore spills, the planning volume caps are 12,500 barrels per day for Tier 1, 25,000 barrels per day for Tier 2, and 50,000 barrels per day for Tier 3. When the required planning volume exceeds the cap amounts, the vessel owner is only required to have OSRO contracts in place up to the amount of the caps, but the vessel owner is required to identify sources of additional OSRO resources equivalent to twice the caps listed for each tier or the amount necessary to respond to the required planning volumes (whichever is less). The identified equipment must be capable of arriving at the offshore spill location (i.e. at the FPSO) within 24 hours for Tier 1, 48 hours for Tier 2, and 72 hours for Tier 3. Although PAI will not be the owner of the Shuttle Vessel, PAI currently has the capability to respond to the required offshore planning volumes for Tiers 1-3 through CGA spill response resources as described in Appendix 7. Note that for Tier 3, the CGA spill response resources alone exceed the required 50,000 barrel cap (for which spill response resources must be contracted) as well as the incremental 34,000 barrel amount (for which spill response equipment must be identified). Therefore, PAI is not required to identify an additional OSRO to comply with USCG regulations for the offshore spill scenario.

    For nearshore / inland spills related to Shuttle Vessel operations near High Volume Ports, the planning volume caps remain 12,500 barrels per day for Tier 1, 25,000 barrels per day for Tier 2, and 50,000 barrels per day for Tier 3. It is anticipated that most of the terminals to be utilized will be defined as High Volume Ports. In such ports, the identified equipment must be capable of arriving at the nearshore / inland spill location (i.e. within 50 miles of the entrance to the High Volume Port) within 12 hours for Tier 1, 36 hours for Tier 2, and 60 hours for Tier 3. Although PAI will not be the owner of the Shuttle Vessels, PAI currently has the capability to respond to essentially all of the required nearshore / inland planning volumes for Tiers 1-3 through CGA spill response resources. The available CGA spill response resources and their respective response times for three geographic regions of the GoM that are representative of the potential terminals to be used by PAI are described in Appendices 8 (Houston, Texas), 9 (Mobile, Alabama), and 10 (Corpus Christi, Texas). With the exception of Tier 3 in the Corpus Christi region, the CGA spill response resources alone exceed the required caps (for which spill response resources must be contracted) as well as the incremental amounts (for which spill response equipment must be identified). Regarding Tier 3 in the Corpus Christi region, the CGA resources cover the required cap amount of 50,000 barrels within 60 hours. However, the CGA resources do not quite cover the required planning volume (i.e. twice the cap or 100,000 barrels) as the HOSS Barge (43,000 barrels) mobilizing from Houma, Louisiana does not accomplish the required 60 hour mobilization requirement by 10 hours, which requires an additional 31,000 barrels of recovery capability to be identified (but not contracted). If PAI mobilizes additional spill response resources from CCA (see Appendix 12), PAI would still need to identify (but not contract) an additional OSRO to cover a shortfall of approximately 13,000 barrels. Considering that the Shuttle Vessel owner and the terminal operator will also be required by regulations to provide OSRO coverage to cover the planning volumes associated with Shuttle Vessel offloading at terminals, the Tier 3 planning volumes shortfall in the Corpus Christi region will be easily covered. Note that PAI anticipates that the Shuttle Vessel owner will have an existing contract with MSRC as this OSRO provides resources for numerous major shipping companies. MSRC is a major OSRO recognized by the USCG. The Shuttle Vessel owner will describe its OSRO coverage in its vessel specific Oil Spill Response Plan (i.e. SOPEP). The Shuttle Vessel owner will provide OSRO coverage (over and above PAI's OSRO coverage) as required by the USCG.

(3) The USCG Maximum Most Probable Discharge is significantly greater than an oil spill associated with Shuttle Vessel loading at the FPSO or Shuttle Vessel offloading at terminals, which may be the highest exposures regarding oil spills associated with Shuttle Vessels. As described in section 1(f), PAI will utilize a number of industry proven safety and pollution prevention measures to mitigate against oil spills during Shuttle Vessel loading at the FPSO while terminal operators will utilize a number of industry proven safety and pollution prevention measures to mitigate against oil spills during Shuttle Vessel offloading at terminals. If multiple controls described in section 1(f) failed, the amount of oil spilled would likely be an order of magnitude lower (i.e. the amount of oil in the offloading hose) than the amount of the USCG Maximum Most Probable Discharge.

PAI and the USCG will require the FPSO and Shuttle Vessel providers to implement vessel specific Oil Spill Response Plans (i.e. SOPEPs) which will be approved by the USCG and which will be bridged into the PAI R-OSRP.

Comprehensive drills will be performed to verify readiness from all involved parties (PAI, FPSO provider, and Shuttle Vessel provider).

PAI will utilize a dedicated field support tug during FPSO operations. In addition to offloading support, the tug will be outfitted with equipment (e.g. spill booms) to support spill response. PAI will response to oils spills under USCG jurisdiction with an organizational structure and a response strategy consistent with that described in Section 9(b).

Attachment R9.2

Attachment 7

WCD Scenario for > 10 Miles From Shore – BASED ON MAJOR SPILL FROM FPSO or SHUTTLE VESSEL (USCG JURISDICATION) FOR NEPA EVALUATION – 166 miles from shore
Walker Ridge Blocks 205, 206, 249, 250, 425, 426, 469, 470
API Gravity 23°

CGA Equipment Response Time to: WR 205, 206, 249, 250, 425, 426, 469, 470

	EQUIPMENT TYPE	Derated Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/Location	Initial Staging	Hours To Staging Area	Total Time to Procure (1)	Time to Load Out (2)	Travel Time (Staging/Spill) (3)	Time to Deploy (4)	Total Estimated Response Time
A	DC 4 Spray Aircraft	–	–	1	ASI/HOUMA	HOUMA	0					
	DC 3 Spray Aircraft	–	–	1	ASI/HOUMA	HOUMA	0					
	Spotter Plane			1	ASI/HOUMA	HOUMA	0					
	Spotter Personnel			2	ASI/HOUMA	HOUMA	1					
	Dispersant				CGA/HOUMA	HOUMA	0	1	1	1.5	0	3.5
B	HOSS Barge	43,000	4,130	1	CGA/HOUMA	HOUMA	4					
	Operators			12	STARS	HOUMA	2					
	Tugs			3	Vessel of Opportunity	HOUMA	4	4	1	28	1	34
C	FRU/Expandi	10,200	600	3	CGA/HOUMA	FOURCHON	1					
	Operators			18	STARS*	FOURCHON	2					
	Utility Boat			3	Vessel of Opportunity	FOURCHON	2					
	Crew Boat			3	Vessel of Opportunity	FOURCHON	2	2	1	14.25	1	18.25
D	FRU/Expandi	7,170	200	2	CGA/VENICE	VENICE	1					
	Operators			12	STARS*	VENICE	2					
	Utility Boat			2	Vessel of Opportunity	VENICE	2					
	Crew Boat			2	Vessel of Opportunity	VENICE	2	2	1	13	1	17
E	FRU/Expandi	3,770	200	1	CGA/BELLE CHASSE	VENICE	1					
	Operators			6	STARS*	VENICE	2					
	Utility Boat			1	Vessel of Opportunity	VENICE	2					
	Crew Boat			1	Vessel of Opportunity	VENICE	2	2	1	14	1	18
F	FRU/Expandi	3,770	200	1	CGA/LAKE CHARLES	CAMERON	1					
	Operators			6	STARS*	CAMERON	2					
	Utility Boat			1	Vessel of Opportunity	CAMERON	2					
	Crew Boat			1	Vessel of Opportunity	CAMERON	2	2	1	19	1	23
G	FRU/Expandi	3,770	200	1	CGA/INGLESIDE	INGLESIDE	1					
	Operators			6	STARS*	INGLESIDE	2					
	Utility Boat			1	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			1	Vessel of Opportunity	INGLESIDE	2	2	1	26	1	30
H	FRU/Expandi	3,770	200	1	CGA/GALVESTON	GALVESTON	1					
	Operators			6	STARS*	GALVESTON	2					
	Utility Boat			1	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			1	Vessel of Opportunity	GALVESTON	2	2	1	22	1	26

Attachment 7

I	R/V Armstrong	5,000	65	1	CGA/HOUMA	FOURCHON	1					
	Operators			3	STARS*	FOURCHON	2	2	1	9	1	13
J	R/V Grand Bay	5,000	65	1	CGA/VENICE	VENICE	1					
	Operators			3	STARS*	VENICE	2	2	1	9.15	1	13.15
K	R/V Bastian Bay	5,000	65	1	CGA/LAKE CHARLES	CAMERON	1					
	Operators			3	STARS*	CAMERON	2	2	1	12.7	1	16.7
L	R/V Timbalier Bay	5,000	65	1	CGA/GALVESTON	GALVESTON	1					
	Operators			3	STARS*	GALVESTON	2	2	1	14.25	1	18.25
M	CGA 52 (Marco)	3,588	34	1	CGA/HOUMA	FOURCHON	1					
	Operators			3	STARS*	FOURCHON	2	2	1	9	1	13
N	CGA 53 (Marco)	3,588	34	1	CGA/VENICE	VENICE	1					
	Operators			3	STARS*	VENICE	2	2	1	9.15	1	13.15
O	CGA 51 (Marco)	3,588	34	1	CGA/LAKE CHARLES	CAMERON	1					
	Operators			3	STARS*	CAMERON	2	2	1	12.7	1	12.7
P	CGA 55 (Egmopol)	3,000	100	1	CGA/HOUMA	FOURCHON	1					
	Operators			3	STARS*	FOURCHON	2	2	1	9	1	13
Q	CGA 54 (Egmopol)	3,000	100	1	CGA/GALVESTON	GALVESTON	1					
	Operators			3	STARS*	GALVESTON	2	2	1	14.25	1	18.25
R	Rope Mop Skimmer	77	4.28	1	CGA/HOUMA	FOURCHON	1					
	Operators			3	STARS*	FOURCHON	2	2	1	9	1	13
S	INITIAL SUPPORT											
	Spotter Helo	–	–	1	PHI/HOUMA	SPILL SITE	1	1	–	1.75	–	2.75
	Surveillance Helo	–	–	1	PHI/HOUMA	SPILL SITE	1	1	–	1.75	–	2.75
	Hand Held Radios	–	–	25	STARS*	HOUMA	1.5	1.5	–	1.75	–	3.25
	Open Ocean Barge	–	25,000	1	CENAC/HOUMA	HOUMA	2	4	1	28	1	34
	Open Ocean Barge	–	24,000	1	CENAC/HOUMA	HOUMA	2	4	1	28	1	34
	Open Ocean Barge	–	23,000	1	CENAC/HOUMA	HOUMA	2	4	1	28	1	34
	Open Ocean Barge	–	11,000	1	CENAC/HOUMA	HOUMA	2	4	1	28	1	34
	Open Ocean Barge	–	9,500	1	CENAC/HOUMA	HOUMA	2	4	1	28	1	34
	Tugs	–	–	2	Vessel of Opportunity	HOUMA	2	4	1	28	1	34
	TOTAL	112,291	96,796.28									

* STARS contractor called out by MSRC

Attachment R9.3

Attachment 8

Response Times for CGA Equipment to Respond - Houston, Texas Region of GoM

	EQUIPMENT TYPE	Design Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/Location	Initial Staging	Hours To Staging Area	Total Time to Procure (1)	Time to Load Out (2)	Travel Time (Staging/ Spill) (3)	Time to Deploy (4)	Total Estimated Response Time
A	DC 4 Spray Aircraft	--	--	1	ASI/HOUMA	HOUMA	0					
	DC 3 Spray Aircraft	--	--	1	ASI/HOUMA	HOUMA	0					
	Spotter Plane			1	ASI/HOUMA	HOUMA	0					
	Spotter Personnel			2	ASI/HOUMA	HOUMA	1					
	Dispersant				CGA/HOUMA	HOUMA	0	1	1	2.5	0	4.5
B	HOSS Barge	43,000	4,130	1	CGA/HOUMA	HOUMA	4					
	Operators			12	STARS	HOUMA	2					
	Tugs			3	Vessel of Opportunity	HOUMA	4	4	1	39	1	45
C	FRU/Expandi	10,500	600	3	CGA/HOUMA	GALVESTON	7					
	Operators			18	STARS*	GALVESTON	2					
	Utility Boat			3	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			3	Vessel of Opportunity	GALVESTON	2	7	1	1	1	10
D	FRU/Expandi	7,170	200	2	CGA/VENICE	GALVESTON	9					
	Operators			12	STARS*	GALVESTON	2					
	Utility Boat			2	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			2	Vessel of Opportunity	GALVESTON	2	9	1	1	1	12
E	FRU/Expandi	3,770	200	1	CGA/BELLE CHASSE	GALVESTON	7					
	Operators			6	STARS*	GALVESTON	2					
	Utility Boat			1	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			1	Vessel of Opportunity	GALVESTON	2	7	1	1	1	10
F	FRU/Expandi	3,770	200	1	CGA/LAKE CHARLES	GALVESTON	4					
	Operators			6	STARS*	GALVESTON	2					
	Utility Boat			1	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			1	Vessel of Opportunity	GALVESTON	2	4	1	1	1	7
G	FRU/Expandi	3,770	200	1	CGA/INGLESIDE	GALVESTON	5					
	Operators			6	STARS*	GALVESTON	2					
	Utility Boat			1	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			1	Vessel of Opportunity	GALVESTON	2	5	1	1	1	8
H	FRU/Expandi	3,770	200	1	CGA/GALVESTON	GALVESTON	1					
	Operators			6	STARS*	GALVESTON	2					
	Utility Boat			1	Vessel of Opportunity	GALVESTON	2					
	Crew Boat			1	Vessel of Opportunity	GALVESTON	2	2	1	1	1	5
I	R/V Armstrong	5,000	65	1	CGA/HOUMA	FOURCHON	2					
	Operators			3	STARS*	FOURCHON	2	2	1	13	1	17

Attachment 8

J	R/V Grand Bay	5,000	65	1	CGA/VENICE	VENICE	1					
	Operators			3	STARS*	VENICE	2	2	1	13	1	19
K	R/V Barataria Bay	5,000	65	1	CGA/LAKE CHARLES	CAMERON	1					
	Operators			3	STARS*	CAMERON	2	2	1	4	1	8
L	R/V Timbalier Bay	5,000	65	1	CGA/GALVESTON	GALVESTON	1					
	Operators			3	STARS*	GALVESTON	2	2	1	1	1	5
M	CGA 52 (Marco)	3,588	34	1	CGA/HOUMA	GALVESTON	7					
	Operators			3	STARS*	GALVESTON	2	7	1	1	1	10
N	CGA 53 (Marco)	3,588	34	1	CGA/VENICE	GALVESTON	0					
	Operators			3	STARS*	GALVESTON	2	9	1	1	1	12
O	CGA 51 (Marco)	3,588	34	1	CGA/LAKE CHARLES	GALVESTON	4					
	Operators			3	STARS*	GALVESTON	2	4	1	1	1	7
P	CGA 55 (Egmopol)	3,000	109	1	CGA/HOUMA	GALVESTON	7					
	Operators			3	STARS*	GALVESTON	2	7	1	1	1	10
Q	CGA 54 (Egmopol)	3,000	100	1	CGA/GALVESTON	GALVESTON	1					
	Operators			3	STARS*	GALVESTON	2	2	1	1	1	5
R	Rope Mop Skimmer	77	4.23	1	CGA/HOUMA	GALVESTON	7					
	Operators			3	STARS*	GALVESTON	2	7	1	1	1	10
S	INITIAL SUPPORT											
	Spotter Helo	--	--	1	PHI/VENICE	SPILL SITE	1	1	--	-	--	1
	Surveillance Helo	--	--	1	PHI/VENICE	SPILL SITE	1	1	--	-	--	1
	Hand Held Radios	--	--	25	STARS*	HOUMA	2	1	--	1	--	4
	Open Ocean Barge	--	25,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5
	Open Ocean Barge	--	24,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5
	Open Ocean Barge	--	23,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5
	Open Ocean Barge	--	11,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5
	Open Ocean Barge	--	9,500	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5
	Tugs	--	--	2	Vessel of Opportunity	HOUMA	4	4	1	31.5	1	37.5
	TOTAL	112,291	98,796.28									

* STARS contractor called out by MSRC

Attachment R9.4

Attachment 9

Response Times for CGA Equipment to Respond - Mobile, Alabama Region of GoM

	EQUIPMENT TYPE	Demsted Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/Location	Initial Staging	Hours To Staging Area	Total Time to Procure (1)	Time to Load Out (2)	Travel Time (Staging/ Spill) (3)	Time to Deploy (4)	Total Estimated Response Time
A	DC 4 Spray Aircraft	--	--	1	ASI/HOUMA	HOUMA	0					
	DC 3 Spray Aircraft	--	--	1	ASI/HOUMA	HOUMA	0					
	Spotter Plane			1	ASI/HOUMA	HOUMA	0					
	Spotter Personnel			2	ASI/HOUMA	HOUMA	1					
	Dispersant				CGA/HOUMA	HOUMA	0	1	1	2.0	0	4.0
B	HOSS Barge	43,000	4,130	1	CGA/HOUMA	HOUMA	4					
	Operators			12	STARS	HOUMA	2					
	Tugs			3	Vessel of Opportunity	HOUMA	4	4	1	31.5	1	37.5
C	FRU/Expandi	10,200	600	3	CGA/HOUMA	MOBILE	5					
	Operators			18	STARS*	MOBILE	4					
	Utility Boat			3	Vessel of Opportunity	MOBILE	2					
	Crew Boat			3	Vessel of Opportunity	MOBILE	2	5	1	1	1	8.0
D	FRU/Expandi	7,170	200	2	CGA/VENICE	VENICE	1					
	Operators			12	STARS*	VENICE	2					
	Utility Boat			2	Vessel of Opportunity	VENICE	2					
	Crew Boat			2	Vessel of Opportunity	VENICE	2	2	1	7	1	11
E	FRU/Expandi	3,770	200	1	CGA/BELLE CHASSE	MOBILE	5					
	Operators			6	STARS*	MOBILE	3					
	Utility Boat			1	Vessel of Opportunity	MOBILE	2					
	Crew Boat			1	Vessel of Opportunity	MOBILE	2	5	1	1	1	8
F	FRU/Expandi	3,770	200	1	CGA/LAKE CHARLES	MOBILE	7					
	Operators			6	STARS*	MOBILE	5					
	Utility Boat			1	Vessel of Opportunity	MOBILE	2					
	Crew Boat			1	Vessel of Opportunity	MOBILE	2	7	1	1	1	10
G	FRU/Expandi	3,770	200	1	CGA/INGLESIDE	MOBILE	13					
	Operators			6	STARS*	MOBILE	5					
	Utility Boat			1	Vessel of Opportunity	MOBILE	2					
	Crew Boat			1	Vessel of Opportunity	MOBILE	2	13	1	1	1	16
H	FRU/Expandi	3,770	200	1	CGA/GALVESTON	MOBILE	10					
	Operators			6	STARS*	MOBILE	5					
	Utility Boat			1	Vessel of Opportunity	MOBILE	2					
	Crew Boat			1	Vessel of Opportunity	MOBILE	2	10	1	1	1	13
I	R/V Armstrong	5,000	65	1	CGA/HOUMA	FOURCHON	1					
	Operators			3	STARS*	FOURCHON	2	2	1	8.25	1	12.25

Attachment 9

J	R/V Grand Bay	5,000	65	1	CGA/VENICE	VENICE	1						
	Operators			3	STARS*	VENICE	2	2	1	4.5	1	8.5	
K	R/V Bastian Bay	5,000	65	1	CGA/LAKE CHARLES	CAMERON	1						
	Operators			3	STARS*	CAMERON	2	2	1	18	1	22	
L	R/V Timbalier Bay	5,000	65	1	CGA/GALVESTON	GALVESTON	1						
	Operators			3	STARS*	GALVESTON	2	2	1	21	1	25	
M	CGA 52 (Marco)	3,588	34	1	CGA/HOUMA	MOBILE	3						
	Operators			3	STARS*	MOBILE	4	3	1	1	1	5	
N	CGA 53 (Marco)	3,588	34	1	CGA/VENICE	MOBILE	5.5						
	Operators			3	STARS*	MOBILE	4	5.5	1	1	1	8.5	
O	CGA 51 (Marco)	3,588	34	1	CGA/LAKE CHARLES	MOBILE	7						
	Operators			3	STARS*	MOBILE	5	7	1	1	1	10	
P	CGA 55 (Egmopol)	3,000	100	1	CGA/HOUMA	MOBILE	5						
	Operators			3	STARS*	MOBILE	4	5	1	1	1	8	
Q	CGA 54 (Egmopol)	3,000	100	1	CGA/GALVESTON	MOBILE	10						
	Operators			3	STARS*	MOBILE	5	10	1	1	1	13	
R	Rope Mop Skimmer	77	4.28	1	CGA/HOUMA	MOBILE	5						
	Operators			3	STARS*	MOBILE	4	5	1	1	1	8	
S	INITIAL SUPPORT												
	Spotter Helo	--	--	1	PHI/VENICE	SPILL SITE	2	2	--	-	--	2	
	Surveillance Helo	--	--	1	PHI/VENICE	SPILL SITE	2	1	--	-	--	2	
	Hand Held Radios	--	--	25	STARS*	HOUMA	5	5	--	1	--	6	
	Open Ocean Barge	--	25,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5	
	Open Ocean Barge	--	24,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5	
	Open Ocean Barge	--	23,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5	
	Open Ocean Barge	--	11,000	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5	
	Open Ocean Barge	--	9,500	1	CENAC/HOUMA	HOUMA	4	4	1	31.5	1	37.5	
	Tugs	--	--	2	Vessel of Opportunity	HOUMA	4	4	1	31.5	1	37.5	
	TOTAL	112,291	98,796.28										

* STARS contractor called out by MSRC

Attachment R9.5

Attachment 10

Response Times for CGA Equipment to Respond - Corpus Christi, Texas Region of GoM

	EQUIPMENT TYPE	Demisel Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/Location	Initial Staging	Hours To Staging Area	Total Time to Procure (1)	Time to Load Out (2)	Travel Time (Staging/ Spill) (3)	Time to Deploy (4)	Total Estimated Response Time
A	DC 4 Spray Aircraft	–	–	1	ASI/HOUMA	HOUMA	0					
	DC 3 Spray Aircraft	–	–	1	ASI/HOUMA	HOUMA	0					
	Spotter Plane			1	ASI/HOUMA	HOUMA	0					
	Spotter Personnel			2	ASI/HOUMA	HOUMA	1					
	Dispersant				CGA/HOUMA	HOUMA	0	1	1	4.0	0	6.0
B	HOSS Barge	43,000	4,130	1	CGA/HOUMA	HOUMA	4					
	Operators			12	STARS	HOUMA	2					
	Tugs			3	Vessel of Opportunity	HOUMA	4	4	1	64	1	70
C	FRU/Expandi	10,200	600	1	CGA/HOUMA	INGLESIDE	11					
	Operators			18	STARS*	INGLESIDE	4					
	Utility Boat			1	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			3	Vessel of Opportunity	INGLESIDE	2	11	1	1	1	14
D	FRU/Expandi	7,170	200	2	CGA/VENICE	INGLESIDE	13					
	Operators			12	STARS*	INGLESIDE	4					
	Utility Boat			2	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			2	Vessel of Opportunity	INGLESIDE	2	13	1	1	1	16
E	FRU/Expandi	3,770	200	1	CGA/BELLE CHASSE	INGLESIDE	11					
	Operators			6	STARS*	INGLESIDE	4					
	Utility Boat			1	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			1	Vessel of Opportunity	INGLESIDE	2	11	1	1	1	14
F	FRU/Expandi	3,770	200	1	CGA/LAKE CHARLES	INGLESIDE	7					
	Operators			6	STARS*	INGLESIDE	4					
	Utility Boat			1	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			1	Vessel of Opportunity	INGLESIDE	2	7	1	1	1	10
G	FRU/Expandi	3,770	200	1	CGA/INGLESIDE	INGLESIDE	1					
	Operators			6	STARS*	INGLESIDE	1					
	Utility Boat			1	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			1	Vessel of Opportunity	INGLESIDE	2	2	1	1	1	5
H	FRU/Expandi	3,770	200	1	CGA/GALVESTON	INGLESIDE	6					
	Operators			6	STARS*	INGLESIDE	2					
	Utility Boat			1	Vessel of Opportunity	INGLESIDE	2					
	Crew Boat			1	Vessel of Opportunity	INGLESIDE	2	6	1	1	1	9
I	R/V Armstrong	5,000	65	1	CGA/HOUMA	DULAC	1					
	Operators			3	STARS*	DULAC	1	1	1	20	1	23

Attachment 10

J	R/V Grand Bay	5,000	65	1	CGA/VENICE	VENICE	1					
	Operators			3	STARS*	VENICE	2	2	1	24	1	28
K	R/V Barataria Bay	5,000	65	1	CGA/LAKE CHARLES	CAMERON	1					
	Operators			3	STARS*	CAMERON	2	2	1	13	1	17
L	R/V Timbalier Bay	5,000	65	1	CGA/GALVESTON	GALVESTON	1					
	Operators			3	STARS*	GALVESTON	2	2	1	9	1	13
M	CGA 52 (Marco)	3,588	34	1	CGA/HOUMA	INGLESIDE	11					
	Operators			3	STARS*	INGLESIDE	4	11	1	1	1	14
N	CGA 53 (Marco)	3,588	34	1	CGA/VENICE	INGLESIDE	13					
	Operators			3	STARS*	INGLESIDE	4	13	1	1	1	16
O	CGA 51 (Marco)	3,588	34	1	CGA/LAKE CHARLES	INGLESIDE	7					
	Operators			3	STARS*	INGLESIDE	5	7	1	1	1	10
P	CGA 55 (Egmopol)	3,000	100	1	CGA/HOUMA	INGLESIDE	11					
	Operators			3	STARS*	INGLESIDE	4	11	1	1	1	14
Q	CGA 54 (Egmopol)	3,000	100	1	CGA/GALVESTON	INGLESIDE	6					
	Operators			3	STARS*	INGLESIDE	5	6	1	1	1	9
R	Rope Mop Skimmer	77	4.28	1	CGA/HOUMA	INGLESIDE	11					
	Operators			3	STARS*	INGLESIDE	4	11	1	1	1	14
S	**INITIAL SUPPORT**											
	Spotter Helo	–	–	1	PHI/CORPUS	SPILL SITE	1	1	–	–	–	1
	Surveillance Helo	–	–	1	PHI/CORPUS	SPILL SITE	1	1	–	–	–	1
	Hand Held Radios	–	–	25	STARS*	INGLESIDE	2	2	–	1	–	3
	Open Ocean Barge	–	25,000	1	CENAC/HOUMA	HOUMA	4	4	1	64	1	70
	Open Ocean Barge	–	24,000	1	CENAC/HOUMA	HOUMA	4	4	1	64	1	70
	Open Ocean Barge	–	23,000	1	CENAC/HOUMA	HOUMA	4	4	1	64	1	70
	Open Ocean Barge	–	11,000	1	CENAC/HOUMA	HOUMA	4	4	1	64	1	70
	Open Ocean Barge	–	9,500	1	CENAC/HOUMA	HOUMA	4	4	1	64	1	70
	Tugs	–	–	2	Vessel of Opportunity	HOUMA	4	4	1	64	1	70
	TOTAL	112,291	98,796.28									

* STARS contractor called out by MSRC

Attachment R9.6

Attachment 11

CCA Equipment Response to WR 205, 206, 249, 250, 425, 426, 469, 470

	EQUIPMENT TYPE	Derated Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/ Location	Staging Area	Hours To Staging Area	TOTAL Time to Procure (1)	Time to Load Out (2)	Travel Time (Spill Site) (3)	Time to Deploy (4)	TOTAL Estimated Response Time
A	Foilex TDS 200 RDSS Skimmer	10,500	0	4 @ 2625 barrels	CCA, Fort Lauderdale, FL	Fourchon, LA	24	24	1	16.5	1	42.5
B	Lamor LWS 70 w/brush adapter Skimmer	1509	0	1 @ 1509 barrels	CCA, Fort Lauderdale, FL	Fourchon, LA	24	24	1	16.5	1	42.5
C	Ro-Clean 4090 vertical Ropemop	6336	0	6 @ 1056 barrels	CCA, Fort Lauderdale, FL	Fourchon, LA	24	24	1	16.5	1	42.5
D	Canflex Sea Slug Floating Bladder	0	300	8	CCA, Fort Lauderdale, FL	Fourchon, LA	24	24	1	16.5	1	42.5
E	Offshore Containment Boom	0	0	10,500 feet	CCA, Fort Lauderdale, FL	Fourchon, LA	24	24	1	16.5	1	42.5
F	Spray Aircraft (C130)	0	0	1	Lynden Air Cargo, Anchorage, AK	Fourchon, LA (via New Orleans, LA)	26	26	0	1.5	0	27.5
	Dispersant	0	0	20,000 gallons	CCA, Fort Lauderdale, FL							
	TOTAL	18,345	300									

Notes :

1. Mechanical recovery equipment shown represents 25% of specific type of equipment in CCA inventory for an Out of Area response in accordance with CCA By-Laws.
2. 20,000 out of inventory of 30,000 gallons of dispersant are available for an Out of Area response in accordance with CCA By-Laws.
3. 24 Hours to Staging Area for mechanical recovery equipment is the CCA Planning Standard to deliver equipment from time of notification by a CCA Member Company to a specified Staging Area; depending on charter aircraft availability the time could be shorter.
4. 26 Hours to Staging Area for Spray Aircraft and Dispersant includes 20 hours to acquire aircraft, 3 hours to pickup the CCA Airborne Dispersant Delivery System (ADDS) and load dispersant, and 3 hours to arrive in New Orleans. The time can be shorter depending on the location of available Spray Aircraft & spray qualified crews at the time of activation by PAI.
5. Travel Time to Spill Site is based upon 10 knots per hour for supply boat(s) which are vessels of opportunity.

Attachment R9.7

Attachment 12

CCA Equipment Response to Corpus Christi Region of the GoM

	EQUIPMENT TYPE	Derated Capacity (BBLS)	Storage (BBLS)	No. of Units	Owner/ Location	Staging Area	Hours To Staging Area	TOTAL Time to Procure (1)	Time to Load Out (2)	Travel Time (Spill Site) (3)	Time to Deploy (4)	TOTAL Estimated Response Time
A	Foilex TDS 200 RDSS Skimmer	10,800	0	4 @ 2625 barrels	CCA, Fort Lauderdale, FL	Corpus Christi, TX	24	24	1	5	1	31
B	Lamor LWS 70 wbrush adapter Skimmer	1509	0	1 @ 1509 barrels	CCA, Fort Lauderdale, FL	Corpus Christi, TX	24	24	1	5	1	31
C	Ro-Clean 4090 vertical Ropemop	6336	0	6 @ 1056 barrels	CCA, Fort Lauderdale, FL	Corpus Christi, TX	24	24	1	5	1	31
D	Canflex Sea Slug Floating Bladder	0	300	6	CCA, Fort Lauderdale, FL	Corpus Christi, TX	24	24	1	5	1	31
E	Offshore Containment Boom	0	0	10,800 feet	CCA, Fort Lauderdale, FL	Corpus Christi, TX	24	24	1	5	1	31
	TOTAL	18,345	300									

Notes :

1. Mechanical recovery equipment shown represents 25% of specific type of equipment in CCA inventory for an Out of Area response in accordance with CCA By-Laws.
2. 24 Hours to Staging Area for mechanical recovery equipment is the CCA Planning Standard to deliver equipment from time of notification by a CCA Member Company to a specified Staging Area; depending on charter aircraft availability the time could be shorter.
3. Travel Time to Spill Site is based upon 10 knots per hour for supply boat(s) which are vessels of opportunity. Assume spill is located 50 miles from the terminal (i.e. furthest location inside of High Volume Port).
4. It is assumed that dispersant use would not be approved for a proximity so close to shore.

MEMBERSHIP AGREEMENT
BY AND BETWEEN
THE CLEAN CARIBBEAN CORPORATION (CCC)
AND
PETROLEO BRASILEIRO S.A. (PETROBRAS)
AND
PETROBRAS AUTHORIZATION FOR MOBILIZATION OF
CCC STAFF, EQUIPMENT & MATERIALS

I. MEMBERSHIP AGREEMENT

PURSUANT TO Article 3.3 of the ByLaws of the Clean Caribbean Corporation ("CCC"), this acknowledges that Petroleo Brasileiro S.A., ("Petrobras") has agreed to join the Clean Caribbean Corporation effective June 1, 2000, for a period of not less than two (2) years.

Further, that as a Member of the Corporation, Petrobras shall have all rights, privileges, duties and responsibilities commensurate with Membership and THAT BY SIGNATURE BELOW, Petrobras hereby accepts

1. and agrees to subscribe to and abide by the Bylaws of the Corporation, and any subsequent amendments or revisions to the Bylaws;
2. that unless otherwise mutually agreed by the CCC and Petrobras, the calculated Membership Interest for Petrobras shall be based on an annual Reported Volume of 800,000, 000 barrels;
3. that Petrobras, in fulfilment of all financial requirements of Article 8.2 of the Bylaws of the Corporation, shall remit via wire transfer to the CCC's bank within seven (7) days of this agreement, the sum OF NINETY THOUSAND THREE HUNDRED AND TWENTY DOLLARS ($90,320), for Associate Membership, [redacted]
4. that Petrobras shall execute and submit a current Safe Agreement for Members as required by Article 3.3 of the Bylaws of the Corporation;

[redacted]

5. that Petrobras shall submit the written designation of the Petrobras' named Representative and any alternates as required by Article 3.3 of the Bylaws of the Corporation.

II. MOBILIZATION AUTHORIZATION

PURSUANT TO Article IX of the CCC Bylaws, on July 18, 2000, Petrobras notified the CCC that Petrobras requires the mobilization of some CCC staff, equipment or materials, and contractors, and has requested that the CCC take all necessary actions to ensure the rapid mobilization of said staff, equipment and materials, and contractors.

Furthermore, that Petrobras authorizes, and agrees to reimburse the CCC in accordance with the terms and conditions of the CCC Bylaws and Gate Agreement, all expenses incurred for preparing for and/or mobilizing CCC staff, equipment, materials, and contractors, regardless of actual shipment of equipment and materials.

IN WITNESS WHEREOF, the undersigned have executed this Membership Agreement effective as of the date set forth below.

CLEAN CARIBBEAN CORPORATION

By: Paul A. Schuler

Name (Print): PAUL A. Schuler

Title: President

Date: July 17, 2000

PETROLEO BRASILEIRO S.A.

By: _____

Name (Print): _____

Title: Industrial Safety Manager Corp.

Date: July 17, 2000

on behalf of

Paulo Carlos Vicente

HSE manager - Corp.

CONTRACT AMENDMENT

It is hereby agreed between the Clean Caribbean Corporation d/b/a Clean Caribbean & Americas ("CCCA") and Petroleo Brasileiro S.A., ("Purchaser") that the provisions of the Clean Caribbean Corporation Sale Agreement, Contract No. C04-13, dated to be effective as of June 1, 2001, be amended as follows:

Article II, Paragraph 2.1 – Term – is hereby replaced with the following:

2. Term. Subject to Section 9.13 hereof, this Agreement shall be effective as of September 1, 2006 and shall terminate on August 31, 2010 (the "Term"), unless earlier terminated pursuant to Sections 2.2 and/or 2.3 hereof.

Except as modified hereinabove, all other terms and conditions of Contract No. C04-13 shall remain in full force and effect.

Clean Caribbean Corporation

By: Paul A. Schuler

Name: Paul A. Schuler

Title: President

Date: February 21, 2007

Petroleo Brasileiro S.A.

By:

Name: TOYAS DE SOTO FILHO

Title: COMMERCIAL MANAGER

Date: March 02, 2007

Duplicate Original
CCC Copy

Rev. 3a | 10/23/00

CCC Contract No.: C01-012
(effective from 06/01/01 through 05/31/03)
This Contract supersedes CCC Contract No. C00-004 effective from 01/01/00 to 12/31/04

CLEAN CARIBBEAN CORPORATION

SALE AGREEMENT

THIS AGREEMENT is made as of June 1, 2001 by and between **PETROLEO BRASILEIRO S.A.**, a Brasil corporation ("Purchaser") and **CLEAN CARIBBEAN CORPORATION**, a Texas nonprofit corporation ("CCC").

RECITALS

WHEREAS, CCC acquires and stores Inventory for the purpose of containment and clean-up of oil spills in the Area of Interest; and

WHEREAS, Purchaser desires to purchase certain requested segments, elements or pieces of such Inventory on the terms and conditions set forth herein; and

WHEREAS, CCC desires to sell to Purchaser the Purchased Inventory on the terms and conditions set forth herein;

NOW, THEREFORE, for and in consideration of the premises and the mutual covenants, conditions, representations and undertakings hereinafter contained, and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto do hereby agree as follows:

ARTICLE I

Definitions

As used in this Agreement, the following terms shall have the following respective meanings:

1.1 "Area of Interest" shall have the meaning ascribed thereto in the Bylaws, which meaning, as may be amended from time to time in accordance with the Bylaws, is hereby incorporated by reference herein for all purposes.

1.2 "Bylaws" shall mean the Bylaws of CCC as in effect from time to time.

1.3 "Designated Spill" shall mean any actual or potential emission (other than natural seepage) of Oil, intentional or unintentional, and includes, but is not limited to, spilling, leaking, pumping, pouring, emitting, emptying or dumping of Oil upon land or water within the Area of Interest as designated by Purchaser to CCC and for which Inventory is sought to be purchased hereunder and utilized by Purchaser, or its agents, to mitigate, remediate and/or eliminate Oil from the land or water where it was emitted.

1.4 "Guarantee" shall have the meaning ascribed thereto in Section 3.2.

1.5 "Impositions" shall have the meaning ascribed thereto in Section 6.2.

1.6 "Indemnified Parties" shall have the meaning ascribed thereto in Section 8.1.

1.7 "Inventory" shall mean the stockpile of oil spill response equipment, materials and supplies owned, leased, maintained and mobilized by CCC for the purpose of containment and clean-up of a Designated Spill within the Area of Interest.

1.8 "Member" shall mean an entity that is admitted as a Member of CCC pursuant to its Bylaws, and for whom a certificate of membership has been issued by CCC.

1.9 "Nonmember" shall mean an entity that is not a Member.

1.10 "Oil" shall mean petroleum oil of any kind or in any form, including but not limited to crude oil or petroleum, fuel oil or sludge, oil refuse, and oil mixed with wastes other than dredged spoil, and in specific those compounds, oils and materials listed on Attachment B to the Bylaws, which list, as may be amended from time to time in accordance with the Bylaws, is hereby incorporated by reference herein for all purposes; however such definition does not and shall not include any of those petroleum compounds, including (if applicable) crude oil or its fractions, which are specifically listed or designated as hazardous substances under subparagraphs (A) through (F) of Section 101(14) of the Comprehensive Environmental Response Compensation and Liability Act, as amended (42 USC 9601) (the "Act") and which are or may become subject to the provisions of that Act.

ARTICLE II

Term; Termination

2.1 Term. Subject to Section 9.13 hereof, this Agreement shall begin on the effective date hereof and shall terminate on August 31, 2006 (the "Term"), unless earlier terminated pursuant to Sections 2.2 and/or 2.3 hereof.

2.2 Termination by CCC or Purchaser. This Agreement may be terminated upon ten (10) days notice by CCC or by Purchaser at any time without cause, subject to Section 9.13 hereof.

2.3 Termination Upon Dissolution of CCC. This Agreement shall terminate without notice, automatically and concurrently, upon the dissolution of CCC.

ARTICLE III

Purchase

3.1 General. (a) In the event of a Designated Spill and subject to the provisions of this Agreement, CCC shall sell to Purchaser the segments, elements or pieces of the Inventory (the "Purchased Inventory") listed on a Sales Order executed by CCC and Purchaser in the form attached hereto as Exhibit A (the "Sales Order"), for the purchase price set forth on such Sales Order and subject to the terms and conditions set forth therein. CCC and Purchaser shall execute a new Sales Order and shall pay an additional purchase price upon each additional sale of Purchased Inventory during the Term of this Agreement, which Sales Orders shall be subject to the terms and conditions of this Agreement. Unless otherwise mutually agreed in writing by the parties to this Agreement, Purchaser shall be deemed to have acquired legal title to the Purchased Inventory and shall assume and bear the entire risk of loss, theft, destruction of or damage to the Purchased Inventory, whether or not insured, from any cause whatsoever, at CCC's warehouse in the State of Florida, and no such event of loss, theft, destruction of or damage to the Purchased Inventory shall relieve Purchaser of any of its obligations hereunder.

(b) CCC shall have no responsibility for the management of, or participation in, any oil spill cleanup effort. Purchaser hereby represents and warrants to CCC that it will use the Purchased Inventory solely for the purposes of containing and cleaning up Oil within the Area of Interest. If the Designated Spill originates within the Area of Interest but the containment and cleanup requires the use of the Purchased Inventory outside of the Area of Interest, Purchaser may continue to use the Purchased Inventory as reasonably required, subject to meeting requirements of applicable law (domestic or foreign), and such use shall not be deemed to be a breach of this Agreement. Notwithstanding anything to the contrary in this Agreement or otherwise, complete possession and control of the Purchased Inventory shall be maintained by Purchaser from and after the time and place of agreed delivery by CCC. During such time, no Member (other than Purchaser, if Purchaser is a Member) shall have any responsibility or liability therefor, regardless of such Member's negligence.

(c) Except as set forth in this Section 3.1(c) and in Section 3.7 hereof, it is not anticipated that CCC will supply personnel to provide response, training or maintenance services to Purchaser. Notwithstanding anything to the contrary set forth herein, in the event that CCC determines in its reasonable discretion that trained contractor personnel under current contract to CCC or participants in the CCC contractor and resource network are required to accompany the Purchased Inventory in order to provide proper operation for the Purchased Inventory or for purposes of maintaining the Purchased Inventory for Purchaser, Purchaser shall enter into separate agreements with such parties designated by CCC.

3.2 Guarantee of Funds. Unless otherwise mutually agreed in writing by the parties to this Agreement, Purchaser shall post a non-refundable and irrevocable Letter of Credit for the benefit of CCC substantially in the form of Attachment 1 to the Sales

Order, issued from a financial institution acceptable to CCC in an amount determined appropriate by CCC, and/or provide such other security or financial arrangements, including without limitation, the Promissory Note and Guaranty substantially in the forms of Attachments 2 and 3 to the Sales Order, as deemed necessary or appropriate by CCC in its sole discretion (the "Guarantee"). The actual posting of such Guarantee shall be accomplished prior to the delivery of any Purchased Inventory by CCC to Purchaser. The amount of the Guarantee shall include but not be limited to the purchase price of the Purchased Inventory that is requested, applicable taxes, and any reasonable costs of transportation, shipping, packing, crating and marking, maintenance, integration, estimated expenses due hereunder related to liability coverage, insurance and reasonable costs of stocking/restocking, administration and overhead. As security for all payment obligations of Purchaser in connection with this Agreement, Purchaser hereby grants to CCC a first priority security interest in the Purchased Inventory, together with all instruments, documents, chattel papers and general intangibles relating thereto or arising therefrom, whether now existing or hereafter created or acquired by Purchaser, and all cash and non-cash proceeds and products thereof (the "Collateral"). Purchaser hereby covenants and agrees to keep the Collateral free and clear of all attachments, levies, taxes, liens and encumbrances of every kind and nature (other than those granted to CCC) until CCC has received all amounts payable to it in connection with this Agreement. Purchaser covenants and agrees to execute such financing statements, security agreements or other instruments with respect to any of the Collateral as CCC may reasonably request, and hereby irrevocably appoints CCC as Purchaser's attorney-in-fact and irrevocably authorizes CCC to execute and file at any time such financing statements without Purchaser's signature and, if upon request Purchaser fails to do so, to execute such security agreements or other instruments on Purchaser's behalf.

3.3 Notice/Request. If Purchaser desires to acquire Inventory with respect to a Designated Spill, then Purchaser shall promptly notify CCC of its order for such Inventory. The notification and order shall include the location, nature and size of the Designated Spill, if known, the specific Inventory being ordered and the method of transportation that Purchaser is arranging for the Inventory to the site of the Designated Spill or other location where Inventory is to be deployed. The initial notification may be oral but it shall be confirmed in writing as soon as practicable. Upon receipt of the notification and order, the Guarantee and evidence of contracts with transporters, CCC shall release the identified Inventory from its stockpile, subject to the conditions of Section 3.4 below.

3.4 Priority for Member Orders. It is mutually agreed and acknowledged that CCC will respond to orders for Inventory on a "first come, first serve" basis; provided, however, that CCC shall first respond to orders from Members in the order that requests are received from individual Members. After fulfilling all orders from Members, CCC may, at its discretion, respond to Nonmember orders for Inventory to the extent permitted by CCC's Articles of Incorporation and the Bylaws.

3.5 Status Reports. Purchaser shall provide at CCC's request status reports on the Purchased Inventory, including its use, condition, location, and maintenance

accomplished and any other information requested by CCC relative to the Purchased Inventory, its use, condition and its usefulness.

3.6 Repurchase of Purchased Inventory. Purchaser will have the right to propose a resale by Purchaser to CCC of any Purchased Inventory ordered within sixty (60) days from when said Purchased Inventory was removed from CCC's warehouse(s); such repurchase to be at the discretion of CCC and on terms, price and conditions to be mutually agreed upon.

3.7 CCC Forward Sales Representative and Technical Advisor. Unless otherwise mutually agreed in writing by the parties to this Agreement, a CCC Staff Forward Sales Representative and/or Technical Advisor will accompany the Purchased Inventory, subject to CCC operational and other considerations, to provide assistance and advice on the documentation, operation, maintenance, logistics support, and deployment of equipment or materials purchased from CCC. Prior to dispatch of a CCC Forward Sales Representative and/or Technical Advisor, Purchaser and CCC shall execute the "CCC Staff Assistance Agreement" in the form attached hereto as Exhibit B.

ARTICLE IV

Disclaimer of Warranties

4.1 Disclaimers. Notwithstanding anything to the contrary in this Agreement or otherwise, Purchaser shall be deemed to have accepted delivery, and the quantity and quality, of the Purchased Inventory under this Agreement **"AS IS, WHERE IS"** in whatever condition it may be without any agreement, representation or warranty, express or implied, by CCC. **CCC IS NOT A MANUFACTURER OF THE PURCHASED INVENTORY. CCC HAS NOT MADE AND DOES NOT MAKE BY VIRTUE OF HAVING SOLD THE PURCHASED INVENTORY UNDER THIS AGREEMENT OR BY VIRTUE OF ANY DISCUSSIONS, DISCLOSURES OR NEGOTIATIONS IN RESPECT OF THIS AGREEMENT, ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, AS TO CONDITIONS, COMPLIANCE WITH SPECIFICATIONS, REGULATIONS OR LAWS, QUALITY, VALUE, DURABILITY, SUITABILITY, WORKMANSHIP, PERFORMANCE, CAPACITY, MERCHANTABILITY, OR FITNESS OR USE OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE PURCHASED INVENTORY;** it being agreed and understood that all risks arising as a result of any such matters, as between CCC and Purchaser, are to be borne solely and exclusively by Purchaser, without recourse.

4.2 Support. Purchaser acknowledges and agrees that it is responsible for, and shall provide, at its sole cost and expense, all transportation, maintenance support, subcontractor support, and any other support and/or assistance necessary for the Purchased Inventory to be used and/or operated for Purchaser's intended use.

ARTICLE V

Purchaser's Covenants and Warranties

Purchaser represents, warrants and covenants to CCC as follows:

5.1 Use of Purchased Inventory. Purchaser: (a) shall not use or employ any item of Purchased Inventory in any manner contrary to applicable law, (b) shall be solely responsible for obtaining, and shall obtain, all governmental and other approvals necessary for the ownership and use of the Purchased Inventory, and (c) shall not use, store, trade or operate any item of Purchased Inventory in any way so as to suspend or endanger any insurance coverage applicable thereto.

5.2 Due Authority. The execution, delivery and performance of this Agreement and all Exhibits and Addenda hereto and the transactions contemplated hereby by Purchaser have been duly and effectively authorized by all necessary corporate action by Purchaser. This Agreement and all Exhibits and Addenda hereto constitute the valid and binding obligation of Purchaser and is enforceable against it in accordance with its terms. The execution, delivery and performance of this Agreement and all Exhibits and Addenda hereto by Purchaser do not, and the consummation of the transactions contemplated hereby will not, conflict with or cause a default under any contract or agreement to which Purchaser is a party or by which Purchaser is bound, and will not conflict with or result in any violation of the constituent documents of Purchaser.

5.3 No Consents. No consent or approval of any third party is necessary for the execution and delivery of this Agreement and all Exhibits and Addenda hereto by Purchaser and the consummation by Purchaser of the transactions contemplated hereby. Neither the execution, delivery nor performance of this Agreement or the other agreements, Exhibits and Addenda referred to herein will, with or without the giving of notice or the passage of time, or both, conflict with, result in default or loss of rights under, or adversely affect the Purchased Inventory, or result in the creation of any lien, charge or encumbrance on the Purchased Inventory pursuant to any law, rule or regulation applicable to Purchaser, any provision of Purchaser's constituent documents as currently in effect, or any mortgage, lease, license, understanding, order, judgment, decree or agreement to which Purchaser is a party, and the execution, delivery and performance of this Agreement, all Exhibits and Addenda hereto and other agreements referred to herein does not violate any provision of law applicable to Purchaser.

ARTICLE VI
Costs

6.1 Purchase Price. The purchase price and payment terms for the Purchased Inventory are set forth on each applicable Sales Order. Unless otherwise mutually agreed to by the parties to this Agreement in an executed Sales Order, payment for the Purchased Inventory shall be made by Purchaser to CCC via wire transfer of funds prior to shipment of such Purchased Inventory. CCC shall have the right to amend each Sales Order from time to time without the consent of Purchaser. Upon receipt of

payment in full of the purchase price for the Purchased Inventory, CCC shall deliver to Purchaser a bill of sale in substantially the form attached hereto as Exhibit C for said Purchased Inventory. Wire transfer of funds shall be made in accordance with the following instructions:

BANK ROUTING NUMBER:	066000604
BANK NAME AND ADDRESS:	Suntrust Bank, Miami, N.A. Ponce de Alhambra Office 201 Alhambra Circle Coral Gables, FL 33134
FOR CREDIT TO THE ACCOUNT OF:	Classic Caribbean Corporation
ACCOUNT NUMBER:	[illegible]

6.2 Impositions. All payments to be made by Purchaser hereunder will be free of expense to CCC with respect to the amount of any local, state, federal, national, foreign or international taxes or license fees, assessments, charges, fines or penalties (all such taxes, license fees, assessments, charges, fines and penalties being hereinafter called "Impositions") hereinafter levied or imposed upon or in connection with or measured by this Agreement or the payments hereunder, or any purchase, sale, use, payment, shipment, delivery or transfer of title under the terms hereof, all of which Impositions as applicable to the purchase of the Purchased Inventory, Purchaser assumes and agrees to pay on demand by CCC in addition to all other payments to be made by Purchaser hereunder. Without limiting the generality of the foregoing, Purchaser will also pay promptly Impositions which may be imposed upon any Purchased Inventory or for the use or operation thereof. If any Impositions shall have been charged or levied against CCC directly and paid by CCC, Purchaser shall reimburse CCC within ten (10) days of presentation by CCC of an invoice for said Impositions. If said payment is not received by CCC within thirty (30) days of CCC's demand, Purchaser shall pay to CCC interest on such unpaid amount from its due date to the date of payment in accordance with Section 6.4 hereof.

6.3 Operating Costs. Purchaser shall reimburse CCC within ten (10) days of written demand for all costs incurred by CCC in mobilizing and deploying Purchased Inventory to the port of embarkation as designated by Purchaser in the order.

6.4 Payment. Purchaser shall pay all amounts payable under this Agreement in such coin or currency of the United States of America as at the time of payment shall be the legal tender for the payment of public or private debt by cashier's check or bank wire transfer within ten (10) days of demand by CCC. If said payment is not received by CCC within thirty (30) days of CCC's demand, Purchaser shall pay to CCC interest on such unpaid amount from its due date to the date of payment at a rate equal to two percent (2%) over the floating prime or base rate charged by Citibank, N.A. (New York, New York), as adjusted from time to time, per annum. All amounts payable by Purchaser in connection with this Agreement shall be payable at the office of CCC, at the address set forth in Section 9.5 hereinbelow.

6.5 Insurance. (a) Unless otherwise mutually agreed to in writing by the parties to this Agreement, until CCC has been paid in full for the Purchased Inventory, Purchaser, at its own expense, shall obtain, furnish from time to time to CCC true and complete copies of, and maintain with respect to each item of the Purchased Inventory ordered hereunder: (i) all risk physical loss insurance on such item of the Purchased Inventory for an amount at least equal to the purchase price set out on the applicable Sales Order; (ii) general and comprehensive public liability and property damage insurance in amounts of at least $1,000,000 for bodily injury per person, $1,000,000 for bodily injury per occurrence, and $1,000,000 for property damage per occurrence; and (iii) all other forms of insurance coverage required pursuant to applicable laws, rules and regulations with respect to the Purchased Inventory. CCC shall have no obligation to maintain insurance on the Purchased Inventory once Purchaser has acquired title thereto and risk of loss has passed to Purchaser pursuant to the terms of this Agreement.

(b) Such insurance shall be on terms and with companies reasonably acceptable to CCC, shall contain such endorsements as may be requested by CCC, shall be primary insurance up to and including the stated policy limits and shall include a waiver of subrogation in favor of CCC. Such insurance shall also (i) with respect to liability insurance, name CCC as an additional insured, and include the following coverages: premises/operations, independent contractors, broad form contractual in support of the indemnity sections of this Agreement, and personal injury liability; and (ii) with respect to all physical loss insurance, name CCC as loss payee and additional insured.

(c) All insurance required to be maintained by Purchaser hereunder shall provide that coverage may not be altered or cancelled by the insurer without at least thirty (30) days prior written notice to CCC. Such insurance shall not be invalidated, as against CCC, by any action or inaction of Purchaser or any person and shall insure CCC regardless of any breach or violation by Purchaser or any other person of any warranties, declarations or conditions contained in the policies evidencing such insurance. Purchaser hereby appoints CCC as Purchaser's attorney-in-fact to make claims for, receive payment of, and execute and endorse all documents, checks or drafts for loss or damages or return premium under any insurance policy issued on the Inventory as long as this Agreement remains in effect or any amounts due to CCC in connection with this Agreement remain outstanding, whichever is later.

ARTICLE VII
Independent Cleanup Operations

7.1 Independent Cleanup Operations. Nothing in this Agreement shall require or be construed as requiring Purchaser to solely purchase Inventory in connection with oil spill cleanup or containment activities from CCC, and Purchaser may, if it so desires, purchase or contract with CCC or with other parties for similar equipment or materials.

ARTICLE VIII

Indemnification

8.1 Indemnification. (a) Purchaser shall hold harmless and indemnify CCC, each current and future Member, and the agents, directors, officers and employees of each of them, (collectively, "Indemnified Parties") against all claims, obligations, losses, actions, suits, liabilities, damages (including, but not limited to, strict liabilities imposed upon an owner, operator or holder of any item of the Purchased Inventory), and costs incurred, including, but not limited to, attorneys' fees, expenses, penalties, fines (including penalties or other charges or costs imposed by any international, foreign, national, federal, state or local authority), which the Indemnified Parties suffer, sustain or become liable for by reason of any (i) breach of this Agreement by or on behalf of Purchaser, and/or (ii) accidents, damages or injuries, either to the person (including any employee or agent thereof) or property (including any equipment or material provided by a Member or CCC, and any natural resources) of the Indemnified Parties or to the person and/or property (including any natural resources) of any third party, including, but not limited to federal, state and foreign governments and agencies thereof, in any matter arising out of or connected with (A) oil spill cleanup or containment activities in which the Purchased Inventory is utilized or acquired hereunder and the furnishing of Purchased Inventory hereunder and to Purchaser, and/or (B) any act or omission of Purchaser, its agents, directors, officers and/or employees where such liability is asserted against any Indemnified Party. **THE FOREGOING INDEMNITY AND HOLD HARMLESS PROVISIONS BY PURCHASER SHALL BE APPLICABLE TO THE INDEMNIFIED PARTIES REGARDLESS OF WHETHER SUCH ACCIDENT, DAMAGES OR INJURIES ARE THE RESULT OF NEGLIGENCE (SOLE, GROSS OR OTHERWISE) OF AN INDEMNIFIED PARTY.** Purchaser further agrees that the parties to whom this indemnification and hold harmless provision extends shall have the right, but not the obligation, to tender the defense to Purchaser of any and all lawsuits arising out of or in any way connected with matters which are the subject of this indemnification and hold harmless provision, but that failure to tender any such lawsuit for defense shall in no way release or relieve Purchaser of its obligations hereunder. Purchaser also covenants and agrees that the indemnification and hold harmless provision granted hereunder shall not be limited, restricted or in any way affected by the amount of insurance carried by Purchaser or any Indemnified Party.

(b) Purchaser agrees that CCC and the Indemnified Parties shall not be liable to Purchaser for, and Purchaser hereby waives and releases any present or future claim in favor of Purchaser against any Indemnified Parties, on account of all costs, expenses, damages, claims, judgments or causes of action in any way connected with or relating to this Agreement and the Purchased Inventory including without limitation, the injury to or death of personnel of Purchaser or of any third person, the loss or damage to property of Purchaser or any third person, or the loss or use of any such property, which relates to or is attributable in whole or in part to any actions or inactions of any Indemnified Parties, regardless of the extent of Purchaser's exercise of the discretion and control over CCC's personnel or any other Indemnified Parties.

ARTICLE IX

Miscellaneous

9.1 Amendments. Except as set forth in Section 8.1this Agreement may not be amended, modified, supplemented or otherwise altered except pursuant to and in accordance with a written modification or agreement between CCC and Purchaser.

9.2 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, U.S.A., excluding those laws which would transfer the interpretation of the Agreement to another jurisdiction.

9.3 Jurisdiction and Venue. The parties acknowledge that a substantial portion of negotiations and anticipated performance and execution of this Agreement occurred or shall occur in Broward County, Florida, and that, therefore, each of the parties irrevocably and unconditionally (a) agrees that any suit, action or legal proceeding arising out of or relating to this Agreement shall be brought in the courts of record of the State of Florida in Broward County or the court of the United States, Southern District of Florida; (b) consents to the jurisdiction of each such court in any suit, action or proceeding; (c) waives any objection which it may have to the laying of venue of any such suit, action or proceeding in any of such courts; and (d) agrees that service of any court paper may be effected on such party by mail, as provided in this Agreement, or in such other manner as may be provided under applicable laws or court rules in said state.

9.4 Enforcement Costs. If any legal action or other proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default or misrepresentation in connection with any provision of this Agreement, the successful or prevailing party or parties shall be entitled to recover reasonable attorneys' fees, sales and use taxes, court costs and all expenses even if not taxable as court costs (including, without limitation, all such fees, taxes, costs and expenses incident to arbitration, appellate, bankruptcy and post-judgment proceedings), incurred in that action or proceeding, in addition to any other relief to which such party or parties may be entitled. Attorneys' fees shall include, without limitation, paralegal fees, investigative fees, administrative costs, sales and use taxes and all other charges billed by the attorney to the prevailing party.

9.5 Notices. Except for initial oral notices relating to requests for inventory in connection with Designated Spills, any notice provided for by this Agreement and any other notice, demand or communication which any party may wish to send to another shall be in writing and either delivered to such party in person, sent via a nationally recognized express mail service, sent via facsimile transmission with receipt confirmed or sent by first-class U.S. mail, postage prepaid, return receipt requested, and addressed to the party at such party's address as set forth below or, if to CCC:

Clean Caribbean Corporation
2381 Stirling Road
Fort Lauderdale, FL 33312
Attn: Paul Schuler, President

Phone: 954-983-9880
Fax: 954-987-3001

or to such other address as any party shall specify by written notice so given. Any notice, demand or other communication shall be deemed given and effective as of the date of delivery in person or by facsimile, the day after the date of deposit with a nationally-recognized express mail service, or upon receipt as set forth on the return receipt if sent through the U.S. mail. The inability to deliver because of changed address of which no notice was given, or the rejection or other refusal to accept any notice, demand or other communication shall be deemed to be the receipt of the notice, demand or other communication as of the date of such inability to deliver or the rejection or refusal to accept.

9.6 Severability. If any provision of this Agreement or portion thereof should be declared invalid for any reason, the invalid provision or portion thereof shall be deemed omitted and the remaining terms shall nevertheless be carried into effect. If any transfer of any interest or control of any Purchased Inventory contemplated hereunder would require the approval of any governmental authority in order to be lawful, obtaining such approval is a condition precedent to the effectiveness of any agreement to so transfer, and any actual such transfer.

9.7 Waiver. The waiver of a breach of any term or condition of this Agreement shall not be deemed to constitute the waiver of any other breach of the same or any other term or condition hereof.

9.8 Enforcement by Creditors. Neither the provisions requiring payments of costs nor any other provision of this Agreement shall be for the benefit of or enforceable by any creditor of Purchaser or of CCC.

9.9 Number and Gender. Whenever required by the context, the singular number shall include the plural, and the masculine or neuter gender shall include all genders.

9.10 Entire Agreement. This Agreement, together with all exhibits and addenda hereto, contains the entire understanding between the parties and supersedes any prior written or oral agreements between them respecting the subject matter contained herein. This Agreement can only be altered, changed or amended by written Addendum, attached hereto and executed by the duly authorized representatives of both parties.

9.11 Assignment; Binding Effect. Purchaser may not assign its rights and obligations under this Agreement. Subject to and without affecting the prohibitions herein with respect to assignment, this Agreement shall be binding on the parties and their respective successors and assigns.

9.12 Counterparts. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original, and such counterparts together shall constitute and be one and the same instrument.

9.13 Survival. All covenants, agreements, representations and warranties made herein or otherwise made in writing by any party pursuant hereto shall survive the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby. Without limiting the generality of the foregoing, the provisions of Sections 3.2, 3.4, 3.6, 4.1, 5.1, 5.2, 5.3, 6.1, 6.2, 6.3, 6.4, 6.5, 8.1 and Article IX shall survive the expiration and/or termination of the term of this Agreement.

9.14 Further Assurances. The parties hereby agree from time to time to execute and deliver such further and other transfers, assignments and documents and do all matters and things which may be convenient or necessary to more effectively and completely carry out the intentions of this Agreement.

9.15 Relationship of Parties. The parties acknowledge that Purchaser is not and shall not be considered an agent or Member of CCC as a result of the execution or performance of the parties of this Agreement, and that this Agreement shall not be construed, expressly or by implication, as creating a partnership, joint venture, agency or other similar relationship between CCC and Purchaser or any other parties.

IN WITNESS WHEREOF, the parties have executed this Sale Agreement as of the date first above written, to remain effective for the Term, as specified herein.

CCC:

CLEAN CARIBBEAN CORPORATION

By: _____
Name: _____
Title: _____

Tax ID: 65-0270083

Resale Certificate No:
16-03-246150-58

Purchaser:

PETROLEO BRASILEIRO S.A.

By: _____
Name: _____
Title: _____

Address: _____

Phone: _____
Fax: _____
Telex: _____

TRANSFER OF TITLE AND RISK OF LOSS ADDENDUM

This Addendum made and effective as of June 1, 2001, by and between PETROLEO BRASILEIRO S.A., a Brasil corporation ("Purchaser") and CLEAN CARIBBEAN CORPORATION, a Texas nonprofit corporation ("CCC").

This is an Addendum to that certain Sale Agreement by and between Purchaser and CCC dated and effective as of June 1, 2001 (the "Sale Agreement").

1. The last sentence of Section 3.1(a) of the Sale Agreement is hereby deleted and there is inserted in lieu thereof the following:

> "Purchaser shall be deemed to have acquired legal title to the Purchased Inventory and shall assume and bear the entire risk of a loss, theft, destruction of or damage to the Purchased Inventory, whether or not insured, from any cause whatsoever, at a point one (1) mile outside of the United States' territorial limit in or above international waters (the "Delivery Location"); and no such event of loss, theft, destruction of or damage to the Purchased Inventory shall relieve Purchaser of any of its obligations hereunder. Upon direction of Purchaser, CCC will deliver the Purchased Inventory ordered by Purchaser to a licensed exporter or carrier for export outside of the United States of America from the nearest available airport or seaport and shall provide CCC with a shipper's export declaration. Purchaser shall be responsible for making all on-going transportation arrangements, at its expense, for the transportation of such inventory from and beyond such ports. Any and all costs resulting from the deployment of the Purchased Inventory, including, but not limited to, additional insurance coverage, transportation, freight and forwarding costs and any fees and taxes related to the deployment or mobilization of Purchased Inventory, are to be borne by Purchaser."

2. As amended hereby, the Sale Agreement shall remain in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, the parties have executed this Transfer of Title and Risk of Loss Addendum to the Sale Agreement as of the date first above written.

CCC:

CLEAN CARIBBEAN CORPORATION

By: _____
Name: _____
Title: President

Tax ID: 65-0270083

Resale Certificate No:
16-03-246150-58

Purchaser:

PETROLEO BRASILEIRO S.A.

By: _____
Name: _____
Title: _____

Address: _____

Phone: _____
Fax: _____

WAIVER OF FUNDS GUARANTEE ADDENDUM

This Addendum made and effective as of June 1, 2001, by and between PETROLEO BRASILEIRO S.A., a Brasil corporation ("Purchaser") and CLEAN CARIBBEAN CORPORATION, a Texas nonprofit corporation ("CCC").

This is an Addendum to that certain Sale Agreement by and between Purchaser and CCC dated and effective as of June 1, 2001 (the "Sale Agreement").

1. The Security required by Section 3.2 of the Sale Agreement has been previously provided to the satisfaction of the CCC, and Purchaser has thereby complied with all provisions of such Section. No further "Guarantee" shall be required by CCC from Purchaser in connection with any sale consummated under this Sale Agreement.

2. As amended hereby, the Sale Agreement shall remain in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, the parties have executed this Waiver of Funds Guarantee Addendum to the Sale Agreement as of the date first above written.

CCC:

CLEAN CARIBBEAN CORPORATION

By: _____
Name: Paul A. Schuler
Title: President

Tax ID: 65-0270063

Resale Certificate No:
16-03-246150-58

Purchaser:

PETROLEO BRASILEIRO S.A.

By: _____
Name: _____
Title: _____

Address: _____

Phone: _____
Fax: _____
Telex: _____

SELF INSURANCE ADDENDUM

This Addendum made and effective as of June 1, 2001, by and between PETROLEO BRASILEIRO S.A., a Brasil corporation ("Purchaser") and CLEAN CARIBBEAN CORPORATION, a Texas nonprofit corporation ("CCC").

This is an Addendum to that certain Sale Agreement by and between Purchaser and CCC dated and effective as of June 1, 2001 (the "Sale Agreement").

1. Notwithstanding Section 6.5(a), Purchaser may meet its obligations thereunder by means of self-insurance. Accordingly, Sections 6.5 (b) and (c) are hereby deleted.

2. As amended hereby, the Sale Agreement shall remain in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, the parties have executed this Self Insurance Addendum to the Sale Agreement as of the date first above written.

CCC:

CLEAN CARIBBEAN CORPORATION

By: _____
Name: _____
Title: _____

Tax ID: 66-0270083

Resale Certificate No:
16-03-246150-56

Purchaser:

PETROLEO BRASILEIRO S.A.

By: _____
Name: _____
Title: _____

Address: _____

Phone: _____
Fax: _____
Telex: _____

Clean Caribbean & Americas Report of Volumes and Declared Affiliates

Please submit by May 1, 2007 to: Clean Caribbean & Americas
Fax Number: (954) 987-3001
E-Mail: psaldon@cleancaribbean.org

PETRÓLEO BRASILEIRO S/A - PETROBRAS
Member Company

VOLUMES - In accordance with Article VIII, paragraph 8.1 and Attachment C.1.d of the CCA Bylaws, our **volumes for the calendar year ending Dec. 31, 2006** (for the Member Company and all Declared Affiliates) are hereby reported as follows:

I.	Tilled Volumes	500,000,000	Barrels
II.	Shipping Volumes	600,000,000	Barrels
III.	Facility Related Volumes	600,000,000	Barrels
TOTAL VOLUMES REPORTED		**600,000,000**	**Barrels**

(To be used for 2008 Membership and Cash Call Percentages)

DECLARED AFFILIATES - In accordance with Article 1 and Attachment C.4 of the CCA Bylaws, our Declared Affiliates are hereby reported as follows:

(Check the appropriate box)

☐ We have No Declared Affiliates

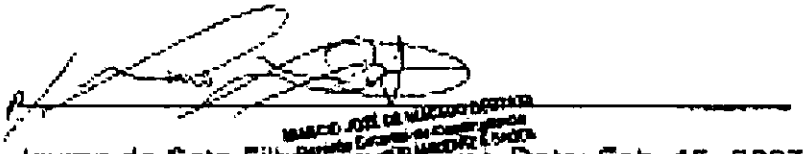
☒ We designate the below named entities as Declared Affiliates to be included under our CCA membership, and hereby affirm that all oil volumes attributable to each Declared Affiliate have been accounted for in the volumes reported above. (List each Declared Affiliate. Attach additional pages if needed.)

Declared Affiliates:

1- Petrobras America Inc.
10777 Westheimer Road , Suite 1200, Houston, Texas, 77042
Phone: +1 713 809 2000
Fax: +1 713 808 2307
Contacts:
Alberto Guimarães – President
Sergio Baron – Commercial Department Manager
João Carlos Barros - Commercial Department
Renato Goutart - Commercial Department
José Antonio Pinheiro Pires – Development and Production Department Manager
Dalmo Barros - Development and Production Department
Teofanes Elias – QHSE Department Manager

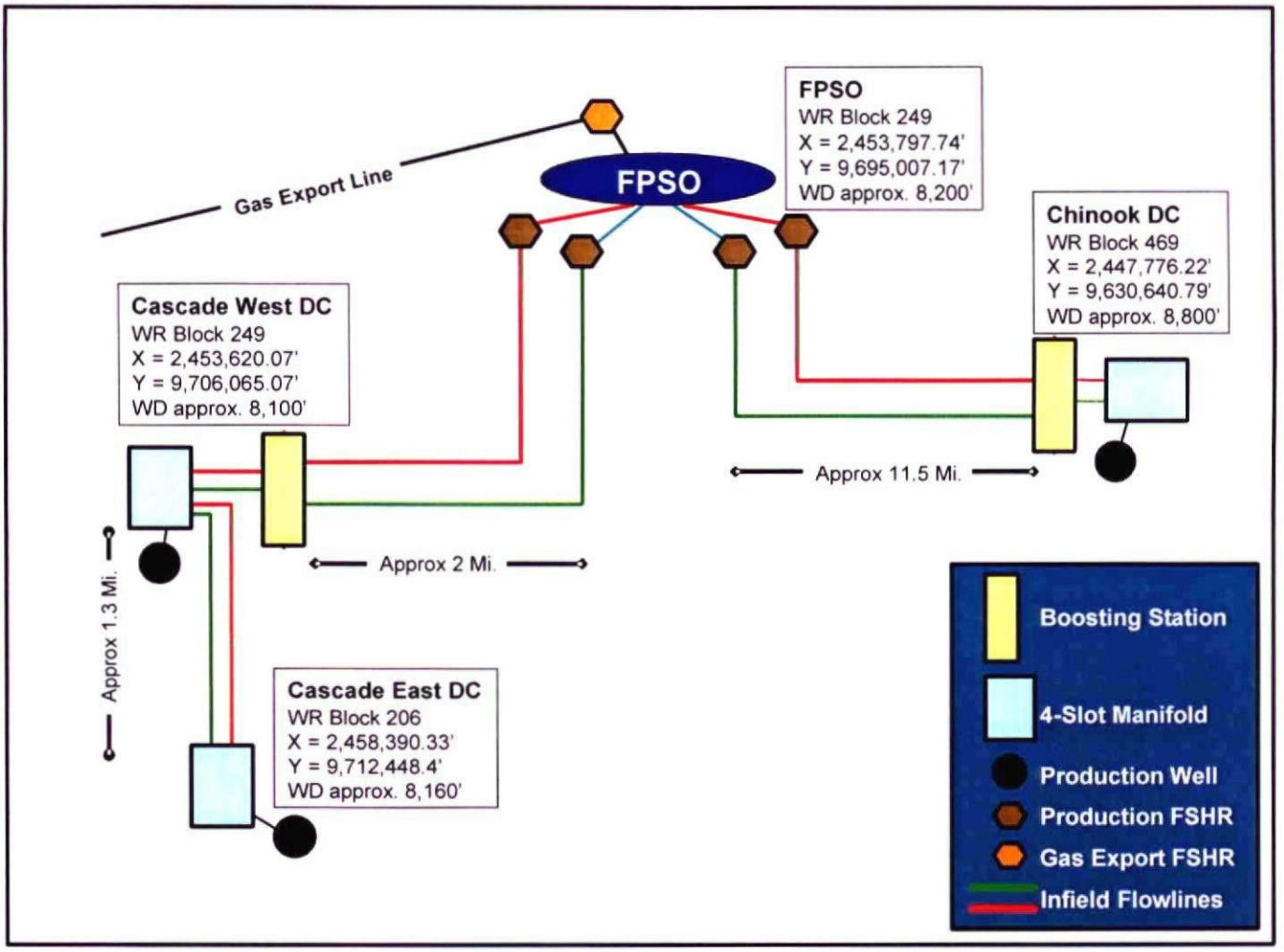
Thiea Vieira - OHSE Department

2- Petrobras International Finance Company - PIFCO
4th Floor Harbour Place
103 South Church Street
Georgetown – Grand Cayman
Phone: +1 713 808 2000
Fax: +1 713 808 2007
Contacts: Same as Petrobras America Inc.

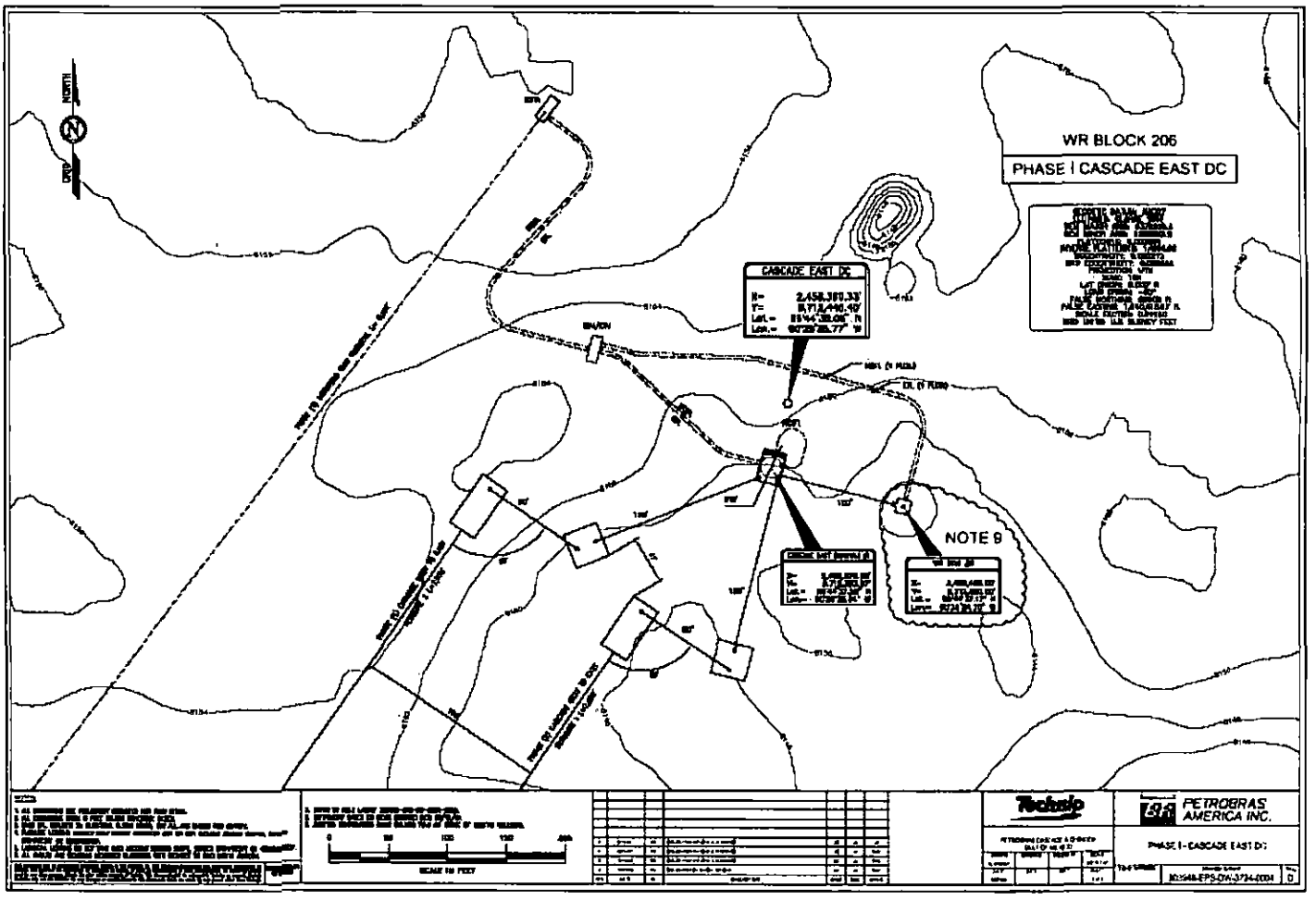
Signature: 

Printed Name: Jaymo de Seta Filh[illegible] Date: Feb. 15, 2007

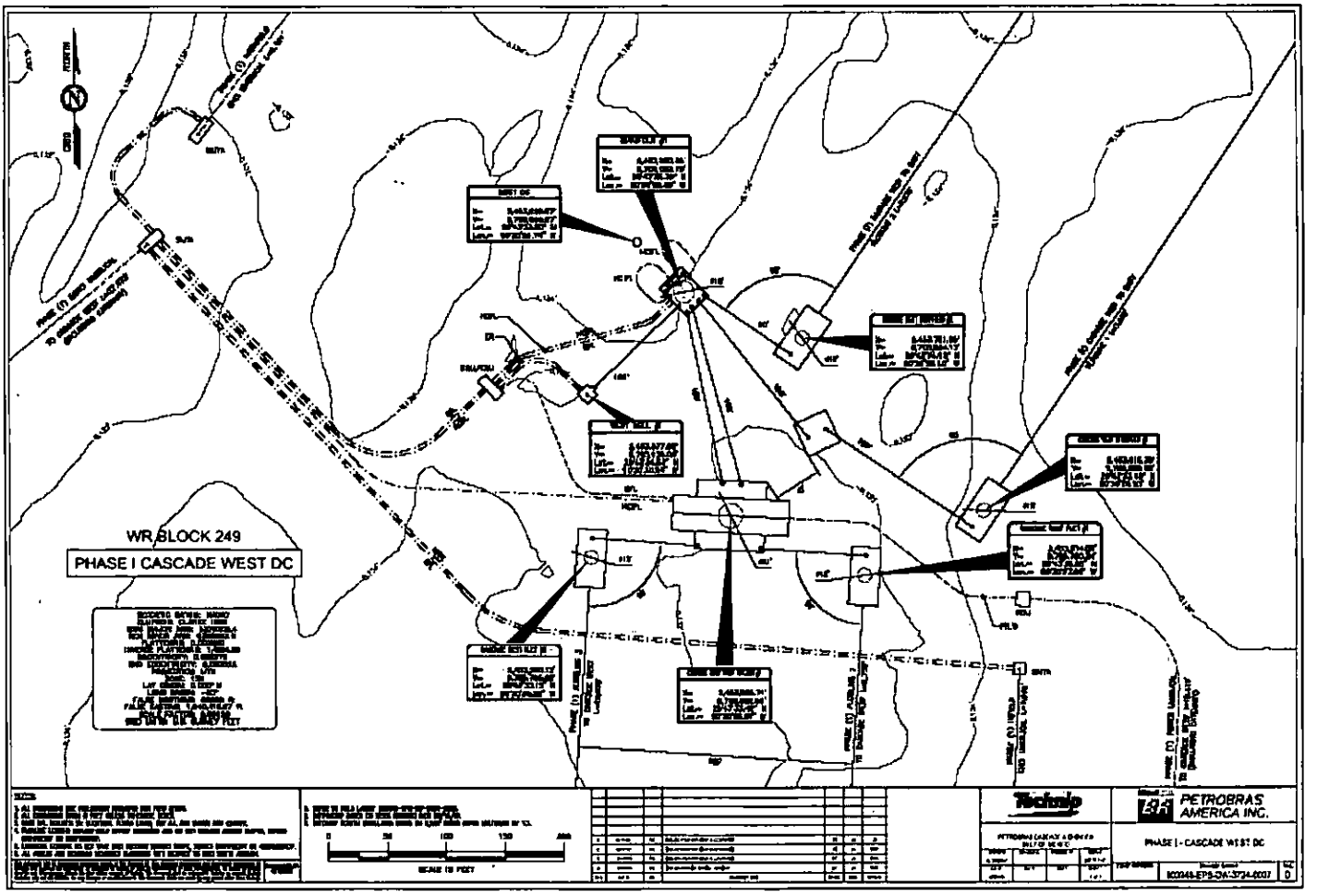
Attachment R14.1



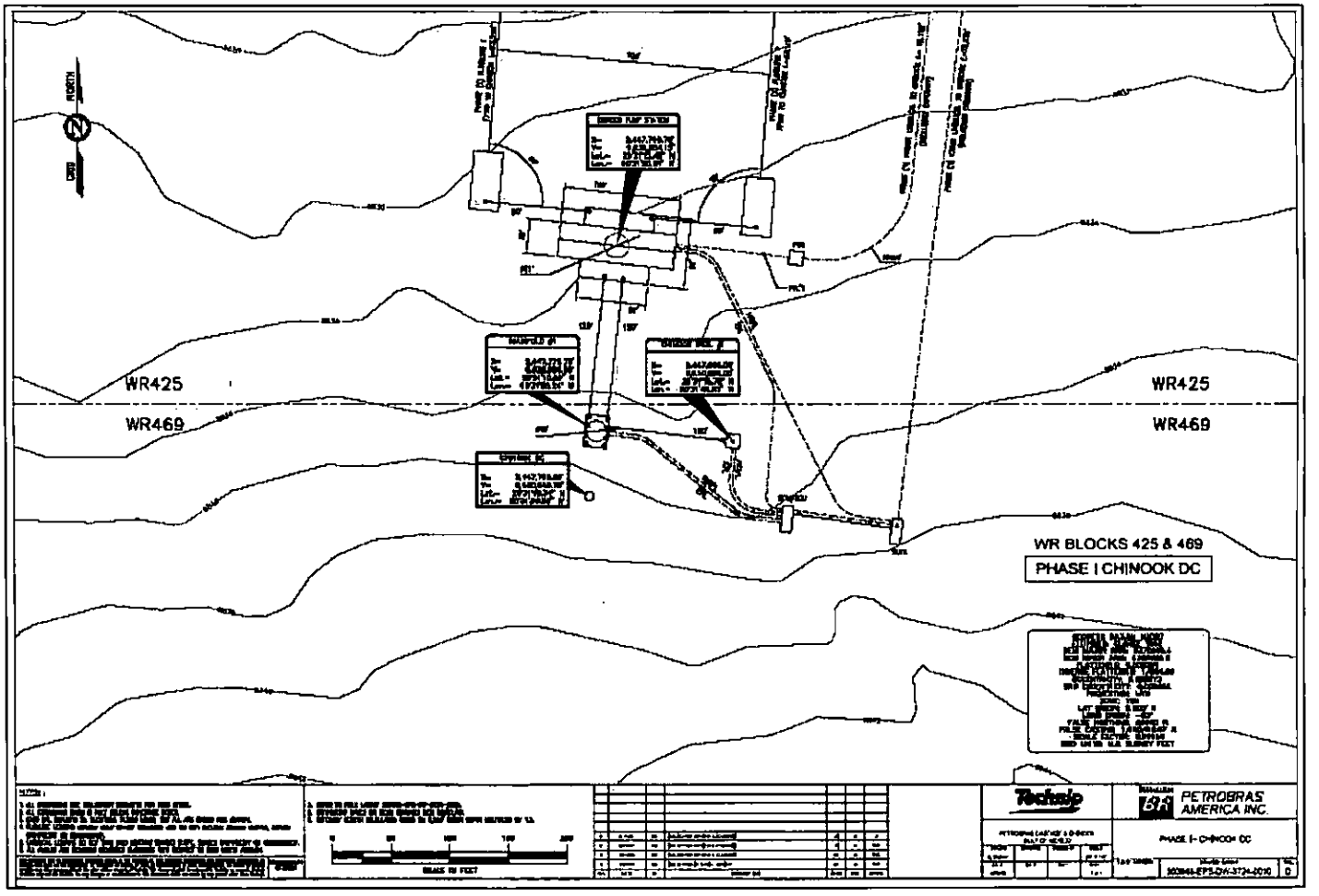
Attachment R14.2



Attachment R14.3



Attachment R14.4



Attachment R16.1

PAI clarifies that all wastes to be disposed of onshore will be disposed of at permitted waste facilities. PAI clarifies that existing onshore waste facilities will be utilized and that no expansions or modifications will be required to accommodate the needs of Phase 1 of the development plan. Physical locations of onshore waste facilities have been added to Tables 16-2 and 16-3. Physical locations of onshore waste facilities to be used in associated with the Shuttle Vessel are not currently known as PAI has not yet determined which terminals will be utilized.

Table 16-2 – Disposal of Solid and Liquid Wastes (Drilling and Completion Operations)

Name of Facility	Location of Facility	Type of Waste	Amount	Rate	Disposal Method
US Liquids or Newpark Services or CCS Waste	Fourchon, Louisiana Fourchon, Louisiana Golden Meadow, Louisiana	Synthetic drilling based fluids	2,250 barrels	750 barrels per well	Recycled
Solid Waste Disposal or Galliano Waste	Fourchon, Louisiana Galliano, Louisiana	Non-hazardous garbage, trash, and debris which can't be recycled	4 standard containers per month	1 standard container per week	Land farmed
L & L	Golden Meadow, Louisiana	Waste oil	1-3 barrels per month	0-1 barrels per week	Recycled

Table 16-3 - Disposal of Solid and Liquid Wastes (FPSO Production Operations)

Name of Facility	Location of Facility	Type of Waste	Amount	Rate	Disposal Method
US Liquids or Newpark Services or CCS Waste	Fourchon, Louisiana Fourchon, Louisiana Golden Meadow, Louisiana	Non-hazardous garbage, trash, and debris which can't be recycled	4 standard containers per month	1 standard container per week	Land farmed
L & L	Golden Meadow, Louisiana	Waste oil	10 barrels per month	2-3 barrels per week	Recycled

Table 16-4 - Disposal of Solid and Liquid Wastes (Shuttle Vessel Operations)

Name of Facility	Location of Facility	Type of Waste	Amount	Rate	Disposal Method
To Be Determined (1)	To Be Determined (1)	Non-hazardous garbage, trash, and debris which can't be recycled	4 standard containers per month	1 standard container per week	Land farmed
To Be Determined (1)	To Be Determined (1)	Waste oil	1 barrels per month	0-1 barrels per week	Recycled

(1) Existing facilities located near terminals of choice in Texas, Louisiana, Mississippi, or Alabama

Marine Mammals

Air breathing animals such as sea turtles and marine mammals are vulnerable to ship strikes because they must surface to breath and while basking, mating, and resting.

Marine mammals are known to have been injured or killed from collisions with the hulls and propellers of both large and small vessels but there is insufficient evidence to determine how frequently this may happen. Estimates of serious injury due to ship strikes are considered to be underestimated because the whale may be impacted far offshore and its fate not known unless there is a direct sighting or a stranding that indicates impact from a ship.

The only cetacean species that is known to be significantly impacted from ship strikes is the right whale (*Eubalaena glacialis*), which is typically found along the East coast of the U.S. It is believed that the mortality and injury to right whales due to ship strikes in U.S. waters is 0.8 whales per year (Waring *et al.* 2007). Right whales seem particularly susceptible to vessel collisions since they swim slowly, spend considerable time at the surface, and apparently take little or no evasive action when ships approach (Swingle *et al.* 2006).

It believed that humpback whales (*Megaptera novaeangliae*) may also be impacted more significantly by ship strikes than is reported (Wiley *et al.* 1995). Between 1985 and 1992, approximately 30% (6 of 20) of humpback whales stranded along the U.S. Atlantic coast (most near Chesapeake Bay) had injuries caused by ships. However, neither the right whale nor the humpback whale is likely to occur in the GoM. Sightings of these species are considered rare and of accidental occurrence (refer to Table 19-3).

There have been 292 confirmed or possible ship strikes on large whales worldwide from 1975 to 2002 (Jensen and Silber 2003). Records indicate that collisions between vessels and whales in U.S. waters are most common along the east coast, followed by the west coast and Alaska/Hawaii. Collisions were least common in the GoM (Jensen and Silber 2003). Between 1975 and 1996, there have been 31 dead whale strandings involving four species along the U.S. GoM coast from Texas to Monroe County, Florida. These included 2 sei whales, 4 Minke whales, 8 Bryde's whales, and 17 sperm whales (Laist 2001). Only one stranding, a sperm whale found in Louisiana in 1990, was identified as a possible ship strike. The report noted that their search of databases worldwide included evidence of at least two other species struck by ships in the GoM. One was a northern right whale calf that was found dead in Texas in 1972 and the other was a live humpback whale seen swimming off Naples, Florida in 1994 that had fresh propeller wounds.

Sea Turtles

The direct and indirect effects of boating activity on sea turtle populations are largely unknown. Despite the specialized capability of marine turtles to hear low frequency sounds, the time available between a turtle detecting an oncoming boat and diving to escape being struck by the hull or propeller may not be sufficient. This problem may be exacerbated if the turtle is in shallow water and unable to dive deep enough to avoid collision with an oncoming boat motor. Boat propeller strikes may result in lacerations, fractures, paralysis, buoyancy problems, breathing difficulties, and mortality.

For turtles in coastal waters, the most significant human associated source of mortality is incidental capture in shrimp trawls, which accounts for more deaths than all other human related causes combined (National Research Council 1990). Mortality from shrimping is estimated to kill between 5,000-50,000 loggerheads and 500-5,000 Kemp's ridleys each year. Collectively, other trawl fisheries; fisheries that use passive gear, such as traps, gill nets, and long lines; and entanglement in lost or discarded fishing gear and debris are responsible for an additional 500-5,000 loggerhead deaths and 50-500 Kemp's ridley deaths a year (National Research Council 1990). It is estimated that a maximum of 400 turtles per year are killed by collisions offshore (National Research Council 1990).

An estimate of the number of boat collisions with turtles can be derived from injuries seen on turtles that strand themselves. One study analyzed sea turtles that had been entrained in the intake canal at the St. Lucie Nuclear Power Plant (SLNPP) located on Hutchinson Island, a barrier island offshore St. Lucie County on the east coast of Florida (Noren 2005). Since 1976, an estimated 10,500 sea turtles, including those captured multiple times, have become entrained in the facility. Although five species (*Coretta caretta*, *Coretta mydas*, *Dermochelys coriacea*, *Eretmochelys imbricata*, and *Lepidochelys kempii*) have been captured, the most common were small juvenile green turtles and large juvenile and adult loggerhead turtles (Noren 2005).

Signs of injuries on turtles were quantified and statistically compared from the study period of May 2000 through July 2005. There was a significant age-related difference, with a total of 4.6% (n=16) of the 351 adults, 3.5% (n=13) of the 371 transitional-stage turtles, and only 1.06% (n=20) of the 1881 juveniles that were found with boat propeller strikes (Noren 2005).

Impacts

PAI will likely utilize one Shuttle Vessel to perform one offloading every two weeks in the first year of production operations (i.e. during production ramp-up). PAI will likely utilize two Shuttle Vessels (on a staggered schedule) to perform one offloading every week in subsequent years of production operations for Phase 1 of the development plan. The frequency of offloading will evolve over time as the frequency is driven by the size / speed / number of the Shuttle Vessels relative to the production profile of the reservoirs.

A number of Support Vessels will also be used over the life of Phase 1, which will vary depending on the drilling and completion or production activities. Refer to Section 15 of the DOCD for specific details.

It is expected that impacts to sea turtles and cetaceans due to collisions from marine vessels associated with the Cascade / Chinook Development Project would be rare events. The magnitude of marine vessel use supporting construction, drilling, and production operations for the project is consistent with that of other deepwater developments in the GoM. The incremental marine vessel utilization for the project relative to other deepwater developments in the GoM is associated with the use of Shuttle Vessels (in lieu of an oil transportation pipeline) and a dedicated field vessel to support FPSO offloading to Shuttle Vessels. Given the overall volume of marine vessel traffic in the GoM, marine vessels utilized for the project should not represent a significant increase in the risk associated with impacts to sea turtles and marine mammals.

References

Jensen, A.S. and G.K. Silber, 2003, Large Whale Ship Strike Database, U.S. Department of Commerce, NOAA Technical Memorandum, NMFS-OPR-25, Silver Spring, MD.

Laist, D.W., A.R. Knowlton, J.G. Mead, A.S. Collet and M. Podesta, 2001, Collisions between ships and whales. Marine Mammal Science, 17(1):35-75.

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Swingle, W.M., Trapani, C.M., Barco, S.G., and Lockhart, G.G., 2007, Marine mammal and sea turtle stranding response 2006 grant report, Final Report to the Virginia Coastal Zone Management Program, NOAA CZM Grant #NA05NOS4191180, Virginia Beach, VA.

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Waring, G.T., Palka D.L., Clapham, P.J., Swartz S., Rossman1, M.C., Cole, T.V.N., Hansen, L.J., Bisacki K.D., Mullin K.D., Wells, R.S., Odello D.K., Barros, N.B., U.S. Atlantic and Gulf of Mexico Marine Mammal Stock assessments – 1990, NOAA TECHNICAL MEMORANDUM NMFS-NE-153, The U.S. Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service, Woods Hole, MA.

Wiley, D. N., R. A. Asmutis, T. D. Pitchford, and D. P. Gannon, 1995, Stranding and mortality of humpback whales, Megaptera novaeangliae, in the mid-Atlantic and southeast United States, 1985-1992, Fisheries Bulletin, 93: 196-205.

Contacts

Zoodsma, B., 2007, Fisheries Biologist, National Ocean and Atmospheric Administration (NOAA) Fisheries, telephone conversation on July 24, 2007, regarding the reporting of ship strikes on marine mammals and turtles, with Andrew Mackey, Ecology and Environment, Inc., Arlington, VA.

Protected Fish Species

The gulf sturgeon (*Acipenser oxyrinchus desotoi*) is listed as threatened in the GoM. The sturgeon is anadromous, inhabiting coastal rivers from Louisiana to Florida during the warmer months and overwintering in estuaries, bays, and the GoM (United States Fish and Wildlife Service [USFWS] 1995). The sturgeon is primarily threatened by habitat loss and the damming of rivers, but also by modifications to habitat associated with dredged material disposal, de-snagging (removal of trees and their roots), and other navigation maintenance activities; incidental take by commercial fishermen; poor water quality associated with contamination by pesticides, heavy metals, and industrial contaminants; aquaculture and incidental or accidental introductions; and the gulf sturgeon's slow growth and late maturation.

The gulf sturgeon currently ranges from Lake Pontchartrain and the Pearl River (in the Louisiana and Mississippi river systems) to the Suwannee River in Florida. It inhabits coastal waters up to 2 miles offshore, and can be found up to 10 miles offshore only near the Suwannee River where the Continental Shelf is shallow.

In March 2003, fourteen areas were designated along rivers and tributaries of the GoM as critical habitat necessary for spawning, resting, migration, and feeding of gulf sturgeon. Within Louisiana, Mississippi, and Alabama, the units include Borgne Lake, Little Lake, Lake Pontchartrain, Lake St. Catherine, the Rigolets, Mississippi Sound, and Mississippi nearshore Gulf (NOAA 2003). The Endangered Species Act (ESA) requires consultation for any action that may jeopardize the existence of the gulf sturgeon or that may destroy or adversely modify its critical habitat. "Adverse modification" of critical habitat is considered to be any direct or indirect alteration that appreciably diminishes the value of critical habitat for conservation of a listed species.

Boats and other vessels may also impact the gulf sturgeon. The most common instances involve sturgeon jumping out of the water and colliding with boats. Jumping typically occurs in shallow water where the concentration of sturgeon is relatively high but its exact causes are unknown. Such incidents have only been recorded by the Florida Fish and Wildlife Commission in the Suwannee River and have not been observed on the coast or in deeper waters.

Impacts

An oil spill from a Shuttle Vessel close to shore could affect sturgeon habitat but this risk is considered low given the safety and pollution prevention controls described in 1(e) and 1(f). In general, the use of Shuttle Vessels (in lieu of an oil transportation pipeline) to transport produced oil from the FPSO to terminals along the GoM coast does not provide any incremental oil spill exposure at terminals or otherwise near shore. The rationale is that the terminals are generally operating at full capacity; if a Shuttle Vessel associated with the Phase 1 development plan would not transport oil to a terminal that has available capacity, the available capacity will likely be filled by a "traditional" tanker loaded with oil from another source (US or foreign). There is an estimated 2% probability that an oil spill at the site of the FPSO would impact the shoreline of Louisiana within 30 days of the release (Ji *et al.* 2007; refer to Section 9 of the DOCD for more information regarding oil spill response and the potential worst case discharges.)

The gulf sturgeon is not known to migrate into deeper waters of the GoM, and is not known to occur in or near the Cascade / Chinook site. As the Cascade / Chinook blocks and associated offshore vessel traffic are not near areas where gulf sturgeon collisions have occurred or are expected to occur, the risk of such collisions is considered to be very low. The risk of gulf sturgeon collisions caused by Shuttle Vessel traffic near the coast of Alabama and Mississippi (if terminals in such areas would be utilized from time to time) is also expected to be very low.

References

National Oceanic and Atmospheric Administration (NOAA), 2003, Designation of Critical Habitat for the Gulf Sturgeon, *Federal Register*, Vol. 68, No. 53, pp. 13370-13418, March 19, 2003.

U.S. Fish and Wildlife Service, Gulf Sturgeon Recovery/Management Plan, 1995, Prepared by the Gulf Sturgeon Recovery/Management Task Team for the U.S. Fish and Wildlife Service, Atlanta, GA, the Gulf States Marine Fisheries Commission, Ocean Springs, MS, and the National Marine Fisheries Service, Washington, DC.

Contacts

Parker, K., 2007, Public Information Coordinator, Florida Fish and Wildlife Conservation Commission, telephone conversation on July 19, 2007, regarding the impacts to Gulf sturgeon from collisions with boats, with Andrew Mackey, Ecology and Environment, Inc., Arlington, VA.

Paruka, F., 2007, Biologist, U.S. Fish and Wildlife Service, Gulf Sturgeon Recovery Team, telephone conversation on July 19, 2007, regarding the range of the Gulf sturgeon and impacts due to collisions with boats, with Andrew Mackey, Ecology and Environment, Inc., Arlington, VA.

Barrier Islands

The beaches along the northern Gulf coast are typically of the barrier island and barrier beach type. These beaches all occur in conjunction with various other habitats, including tidal flats, bays, sounds, and lagoons (Mitsch and Gosselink 1993).

The formation of barrier islands is complex and not completely understood. The current theory is the GoM barrier islands were formed about 18,000 years ago when the last Ice Age ended. As the glaciers melted and receded, the sea levels began to rise and flooded areas behind the beach ridges. The rising waters carried sediments from those beach ridges and deposited them along shallow areas just off the new coastlines. Waves and currents continued to bring in sediments that built up, forming the barrier islands. These barrier islands are long, narrow, and parallel to the coastline. In addition, rivers washed sediments from the mainland that settled behind the islands and helped build them up (Carter 1991). Within the resource area, barrier islands form in chains along the low lying sandy coasts, separated by tidal inlets, located just offshore from the mainland (Scott 1992).

Predominant currents occurring in the northern GoM are greatly affecting coastal beaches. These currents typically run from east to west along the Northern Gulf. The direction causes the beaches to migrate westward. The predominant current erodes beach material from the eastern point of the beach and, over time, deposits that material along the western point, thus migrating the beach westward. Many beaches within the region have implemented engineering controls to slow this westward progress; however, dredging of tidal inlets continues to adversely affect beach material migration across tidal channels (Scott 1992).

Barrier islands in Alabama and Mississippi get most of their sand from the adjacent Continental Shelf but Texas islands are nurtured by rivers such as the Rio Grande and the Brazos, which supply sand directly to the shoreline during every flood. If the sand supply is stopped by dams, the beaches will "starve" and retreat more rapidly (Canis *et al.* 1985). The Mississippi-Alabama barrier islands are also undergoing rapid land loss due to loss of sand in the alongshore sediment transport system (Morton 2007). Overall, barrier island chains from Mobile Bay, Alabama to Atchafalya Bay, Louisiana are disintegrating rapidly as a result of combined physical processes involving sediment availability, sediment transport, and sea level (Morton 2007).

Primary threats to barrier islands include dredging, erosion, and damage from construction. The islands of the northern Gulf provide habitat for a variety of plants and animals, including economically valuable species, such as sport fish. They also aid in coastal stabilization, shelter coastal communities from storms, and are a recreational destination for tourists and residents.

Impacts

An oil spill from a Shuttle Vessel close to shore could have a significant impact on barrier islands but this risk is considered low given the safety and pollution prevention controls described in 1(e) and 1(f). In general, the use of Shuttle Vessels (in lieu of an oil transportation pipeline) to transport produced oil from the FPSO to terminals along the GoM coast does not provide any incremental oil spill exposure at terminals or otherwise near shore. The rationale is that the terminals are generally operating at full capacity; if a Shuttle Vessel associated with the Phase 1 development plan would not transport oil to a terminal that has available capacity, the available capacity will likely be filled by a "traditional" tanker loaded with oil from another source (US or foreign).

Of the total potential FPSO-unique spills, it is estimated that if a spill were to occur, approximately 94% of the volume would likely occur during oil transfers from the FPSO to the Shuttle Vessel and from the Shuttle Vessel's transit to shore. The MMS Oil Spill Response Risk Analysis Model (OSRAM) identified a 2% probability of impact to the shorelines of Galveston County, Texas; and/or Cameron Parish, Louisiana within 30 days (Ji *et al.* 2007; refer to Section 9 of the DOCD for more information regarding oil spill response and the potential worst case discharges.) A spill offshore near the FPSO is not likely to significantly impact barrier islands due to the distance from shore, weathering, and the cleanup efforts that would occur.

If a spill were to go unabated, shoreline impact in coastal environments would depend upon existing environmental conditions. Onshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom in vegetated areas. Strategies for oil spill response would be based upon surveillance and real time trajectories that depict areas of potential impact given actual sea and weather conditions. Strategies from the One Plan Gulf of Mexico Area Contingency Plan (ACP) and Unified Command would be consulted to ensure that environmental and special economic resources would be correctly identified and prioritized to ensure optimal protection. ACPs depict the protection response modes applicable for oil spill cleanup operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Supervisory personnel have the option to modify the deployment and operation of equipment allowing a more effective response to site specific circumstances.

References

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Carter, R.W.G., 1991, *Coastal Environments*, Second Edition, Academic Press Limited, London, U.K.

Ji, Zhen-Gang, Walter R. Johnson, Charles F. Marshall, and Eileen M. Lear (Editor), 2007, Oil-Spill Risk Analysis: Contingency Planning Statistics for Gulf of Mexico OCS Activities, U.S. Department of the Interior Minerals Management Service, Environmental Division, Herndon, VA.

Mitsch, W. J. and J.G. Gosselink, 1993, *Wetlands*, Second Edition, Van Nostrand Rienhold, New York City, NY.

Morton, R.A., 2007, Historical changes in the Mississippi-Alabama barrier islands and the roles of extreme storms, sea level, and human activities, Open File Report 2007-1161, U.S. Department of the Interior, U.S. Geological Survey, Coastal and Marine Geology Program, St. Petersburg, FL.

Scott, R.C., 1992, Physical Geography: Second Edition, West Publishing, St. Paul, MI.

Attachment R19.4

PAI clarifies the following paragraph which is included in Appendix 2(b) - Summary of Environmental Considerations for Cascade and Chinook.

"The (Gas Export Pipeline routing option #2) route is planned to cross the Sigsbee Escarpment. It is difficult to distinguish, in the side-scan data areas of potential chemosynthetic communities from outcrops of older, firmer strata as both will display a darker texture in the mosaic. Previous ROV studies, in other areas, have observed very local, small, dense chemosynthetic communities on the steep slopes of the Escarpment. When necessary to place subsea architecture on the Escarpment, operators in the past have selected to perform site specific ROV investigations to confirm the sites are clear. PAI will perform an ROV survey of the areas if this routing option is chosen."

For clarity, PAI has verified with GEMS that no evidence of chemosynthetic communities has been identified on the Sigsbee Escarpment in the development areas of Cascade and Chinook. However, GEMS has suggested that PAI perform an ROV survey of the area in question to confirm that no chemosynthetic communities exist. GEMS has indicated that the rationale for suggesting an ROV survey is due to 1) the technical limitations of side-scan sonar when utilized near the firm strata of the Sigsbee Escarpment and 2.) the fact that other operators have identified chemosynthetic communities on the Sigsbee Escarpment in other development areas. PAI will perform an ROV survey will be performed if Gas Export Pipeline routing option #2 is chosen.

See Attachment R1.4 for additional information regarding PAI's decision to alter the preliminary anchor locations of the MODU anchor patterns for the Cascade East and West drill centers due to the potential for chemosynthetic communities on the Sigsbee Escarpment.