

Attachment A

KNOWN CHEMOSYNTHETIC COMMUNITY SITES IN THE GULF OF MEXICO

AREA/ BLOCK	LAT. (NORTH)	LONG. (WEST)	WATER DEPTH (meters)	TYPE FAUNA ¹	OBSERVATION METHOD ²	DATA SOURCE ³
AC 645	26°21.20'	94°29.80'	2200	VM	SUB	1
EB 339	27°39.15'	94°24.30'	780	C	TRL	2
EB 375	27°36.60'	94°47.35'	773	VC	TRL	2
EB 376	27°36.00'	94°46.00'	776	VC	SUB	3
EB 380	27°36.15'	94°35.40'	793	PG	TRL	2
EB 602	27°23.50'	94°29.45'	1111	M	TRL	2
EW 1001	27°58.70'	90°23.40'	430	V	SUB, TRL	2, 3
EW 1010	27°57.25'	89°57.50'	597	V	SUB, TRL	2, 3
GB 297	27°40.50'	92°18.00'	589	VC	TRL	2
GB 300	27°42.65'	92°10.45'	719	VC	TRL	2
GB 342	27°38.00'	92°17.50'	425	VC	TRL	2
GB 382	27°36.50'	92°28.94'	570	MC	SUB	3
GB 386	27°36.82'	92°15.25'	585	VC	SUB, TRL	2, 3
GB 387	27°37.15'	92°14.40'	781	VC	SUB, TRL	2, 3
GB 416	27°34.50'	92°55.95'	580	VC	SUB	3
GB 424	27°33.40'	92°32.40'	570	MC	SUB	3
GB 425	27°35.00'	92°30.00'	600	V	SUB	3
GB 458	27°30.05'	93°02.01'	757	VC	TRL	2
GB 476	27°31.50'	92°10.50'	750	M	SUB	3
GB 500	27°27.55'	93°08.60'	734	PG	TRL	2
GB 535	27°26.21'	93°35.64'	573	C	SUB	12
GC 30	27°55.50'	90°27.50'	504	VM	SUB	3
GC 40	27°56.65'	89°58.05'	685	VPG	TRL	2
GC 79	27°54.40'	90°11.90'	685	VC	TRL	2
GC 81	27°53.56'	90°07.07'	682	VM	PHOTOSL	10
GC 121	27°50.00'	90°19.00'	767	V	SUB	3

AREA/ BLOCK	LAT. (NORTH)	LONG. (WEST)	WATER DEPTH (meters)	TYPE FAUNA ¹	OBSERVATION METHOD ²	DATA SOURCE ³
GC 140	27°49.16'	91°31.95'	348	VM	SUB	9
GC 166	27°46.75'	90°14.70'	767	VM	SUB, TRL	2, 3
GC 184/185	27°46.65'	91°30.35'	580	VM	SUB, TRL	2, 3, 8
GC 210	27°45.00'	90°16.31'	715	VC	SUB	3
GC 210	27°46.33'	90°15.00'	796	VMC	SUB	3
GC 216	27°45.50'	89°58.30'	963	C	SUB, PHOTOSL	7, 2
GC 229	27°43.10'	91°30.15'	825	V	TRL	2
GC 232	27°44.30'	91°19.10'	807	VM	SUB	3
GC 233	27°43.30'	91°16.30'	650	VM	SUB	5
GC 233	27°43.70'	91°17.55'	813	VMC	TRL	2
GC 234	27°44.08'	91°15.27'	600	VM	SUB	3, 5
GC 234	27°44.80'	91°13.30'	550	VM	SUB	3, 6
GC 272	27°40.88'	91°32.10'	720	VMC	SUB, TRL	2, 3, 4
GC 287	27°39.60'	90°48.90'	994	VC	SUB, TRL	2
GC 293	27°40.45'	90°29.10'	1042	C	TRL	2
GC 310	27°37.75'	91°49.15'	780	V	TRL	2
GC 354	27°35.91'	91°49.55'	549	VCOG	SUB	12
MC 969	27°57.10'	89°54.30'	658	C	TRL	2
VK 826	29°11.00'	88°00.00'	545	VC	SUB, ROV, TRL	3, 4, 11

Footnotes:

(1) Type Fauna:

V = Vestimentiferan Tube Worms
M = Seep Mytilids
C = Vesicomid or Lucinid Clams
PG = Pogonophoran Tube Worms
CO = Coral
G = Gorgonian

(2) Observation Methods:

TRL = Trawl beginning location; indicator organisms retrieved in trawl at some distance from this point
SUB = Submarine
ROV = Remotely Operated Vehicle
PHOTOSL = Photosled

(3) Data sources (See MMS Publication 95-0022 for references):

- 1-Brooks et al. (1989)
- 2-Kennicutt et al. (1988a,b)
- 3-GERG unpublished data
- 4-Callender et al. (1990)
- 5-MacDonald et al. (1990b)
- 6-MacDonald et al. (1990a)
- 7-Rosman et al. (1987)
- 8-MacDonald et al. (1989)
- 9-Roberts et al. (1990)
- 10-Boland (1986)
- 11-Boss (1968), Gallaway et al. (1990), Volkes (1963)
- 12-Boland (2000), personal communication

Attachment B

CHEMOSYNTHETIC INFORMATION FOR OCS PLANS

Include the following in your EP or DOCD if you propose activities that could disturb seafloor areas in water depths 400 meters (1,312 feet) or greater:

(A) Map(s). A map or separate maps prepared using high-resolution seismic information at a scale of 1 inch = 1,000 feet, oriented to true north, and depicting bathymetry and the following, at a minimum, if applicable:

(1) Seafloor and shallow geological features and areas that could be disturbed by the proposed activities, including those located outside your lease or unit. The seafloor and shallow geologic features you depict should include, as a minimum, those that could support high-density chemosynthetic communities such as:

- (a) hydrocarbon-charged sediments associated with surface faulting;
- (b) acoustic void zones associated with surface faulting;
- (c) mounds or knolls; and
- (d) gas or oil seeps.

(2) The surface location of each proposed well and platform.

(3) The positions of anchors and chains relative to the surface location of each proposed well and platform (bearing, the Lambert x-y coordinates, length to anchor, length of chain on bottom, etc.). If the positions of anchors and chains are not known, delineate the *maximum* area that the anchors and chains may disturb.

(4) A circle with a radius of 1,500 feet drawn around the surface location of each proposed well and platform.

Be advised that your EP or DOCD may reference a map(s) previously submitted with your Shallow Hazards Survey (see NTL No. 98-20) for display of Items (A)(1) through (A)(4) above. However, we encourage you to submit a copy of the map(s) with your EP or DOCD. You may also use transparency overlays to other maps for the display of Items (A)(2) through (A)(4) above, provided they are at a scale of 1 inch = 1,000 feet and are oriented to true north.

On a case-by-case basis, the MMS GOMR may allow you to use 3-D seismic information in lieu of high-resolution seismic information to produce the required map. On a case-by-case basis, the MMS GOMR may also allow you to present interpreted 3-D seismic information in a meeting with MMS GOMR personnel in lieu of or in addition to providing the required map. You should note, however, that 3-D surface anomaly data alone do *not* depict the subsurface acoustic characteristics necessary for adequate chemosynthetic community analysis, and the presence of a strong reflector revealed in 3-D surface anomaly depiction is not a prerequisite for the existence of a chemosynthetic community.

(B) Analysis. Using high-resolution seismic information, or 3-D seismic information (as allowed on a case-by-case basis by the MMS GOMR), and any other pertinent information available, identify all seafloor features and areas, including those located outside your lease, that

could be disturbed by your proposed activities. Discuss the likelihood of your proposed activities disturbing these seafloor and shallow geologic features. For *each* proposed well and platform surface location and associated anchor pattern, if applicable, provide one of the following summary statements:

(1) NO ASSOCIATED ANCHORS -- NO DISTURBANCES WITHIN 1,500 FEET OF CHEMOSYNTHETIC COMMUNITIES

Well/Platform Location __:

- Features or areas that could support high-density chemosynthetic communities are **not** located within 1,500 feet of each proposed muds and cuttings discharge location.

(2) ASSOCIATED ANCHORS -- NO ANCHOR DISTURBANCES WITHIN 500 FEET OF CHEMOSYNTHETIC COMMUNITIES

Well/Platform Location __ and the associated anchor pattern:

- Features or areas that could support high-density chemosynthetic communities are **not** located within 1,500 feet of each proposed muds and cuttings discharge location.
- Features or areas that could support high-density chemosynthetic communities are **not** located within 500 feet of any seafloor disturbances resulting from our use of anchors (including those caused by anchors, anchor chains, and wire ropes).

(3) ASSOCIATED ANCHORS -- ANCHOR DISTURBANCES BETWEEN 250 AND 500 FEET FROM CHEMOSYNTHETIC COMMUNITIES

Well/Platform Location __ and the associated anchor pattern:

- Features or areas that could support high-density chemosynthetic communities are **not** located within 1,500 feet of each proposed muds and cuttings discharge location.
- Features or areas that could support high-density chemosynthetic communities are **not** located within 250 feet of any seafloor disturbances resulting from our use of anchors (including those caused by anchors, anchor chains, and wire ropes).
- Features or areas that could support high-density chemosynthetic communities **are** located between 250 and 500 feet from seafloor disturbances resulting from our use of anchors (including those caused by anchors, anchor chains, and wire ropes). Therefore, we will use a state-of-the-art positioning system (e.g., differential global positioning system) on our anchor-handling vessel(s) to ensure that any such seafloor disturbances do not occur within 250 feet of such areas (see the enclosed map, which depicts the areas). Additionally, we will submit plats, at a scale of 1 inch = 1,000 feet with DGPS accuracy, to the MMS within 60 days after completion of operations that depict the "as-placed" location of all anchors, anchor chains, and wire ropes and demonstrate that the features or areas were not physically impacted by these anchoring activities.

(4) ASSOCIATED ANCHORS -- UNDETERMINED ANCHOR PATTERN WITH POSSIBLE ANCHOR DISTURBANCES BETWEEN 250 AND 500 FEET FROM CHEMOSYNTHETIC COMMUNITIES

Well/Platform Location __ and the associated anchor pattern:

- Features or areas that could support high-density chemosynthetic communities are **not** located within 1,500 feet of each proposed muds and cuttings discharge location.

- Although we do not know the exact anchor pattern to be used, features or areas that could support high-density chemosynthetic communities will **not** be located within 250 feet of any seafloor disturbances resulting from our use of anchors (including those caused by anchors, anchor chains, and wire ropes).
- However, features or areas that could support high-density chemosynthetic communities are located within the **maximum** area that such proposed disturbances to the seafloor may disturb. Therefore, we will use a state-of-the-art positioning system (e.g., differential global positioning system) on our anchor-handling vessel(s) to ensure that any such seafloor disturbances do not occur within 250 feet of such areas (see the enclosed map, which depicts the areas). Additionally, we will submit plats, at a scale of 1 inch = 1,000 feet with DGPS accuracy, to the MMS within 60 days after completion of operations which depict the “as-placed” location of all anchors, anchor chains, and wire ropes and demonstrate that the features or areas were not physically impacted by these anchoring activities.

Attachment C

CHEMOSYNTHETIC INFORMATION FOR PIPELINE APPLICATIONS

Include the following in your pipeline application if you propose pipeline activities that could disturb seafloor areas in water depths 400 meters (1,312 feet) or greater:

(A) Map(s). A map or separate maps prepared using high-resolution seismic information at a scale of 1 inch = 1,000 feet, oriented to true north, and depicting bathymetry and the following, at a minimum, if applicable:

(1) Seafloor and shallow geological features and areas that could be disturbed by the proposed pipeline activities, including anchors, anchor chains and wire ropes. The seafloor and shallow geologic features you depict should include, as a minimum, those that could support high-density chemosynthetic communities such as:

- (a) hydrocarbon-charged sediments associated with surface faulting;
- (b) acoustic void zones associated with surface faulting;
- (c) mounds or knolls; and
- (d) gas or oil seeps.

(2) The route of the proposed pipeline.

(3) The positions of anchors and chains relative to the pipelaying activity (bearing, Lambert x-y coordinates, length to anchor, length of chain on bottom, etc.). If the positions of anchors and chains are not known, delineate the *maximum* area that the pipeline-lay barge anchors and chains may disturb.

Be advised that your pipeline application may reference a map(s) previously submitted with your Shallow Hazards Survey (see NTL No. 98-20) for display of Items (A)(1) through (A)(3) outlined above. However, we encourage you to submit a copy of the map(s) with your pipeline application. You may also use transparency overlays to other maps for the display of Items (A)(2) and (A)(3) above, provided they are at a scale of 1 inch = 1,000 feet and are oriented to true north.

On a case-by-case basis, the MMS GOMR may allow you to use 3-D seismic information in lieu of high-resolution seismic information to produce the required map. On a case-by-case basis, the MMS GOMR may also allow you to present interpreted 3-D seismic information in a meeting with MMS GOMR personnel in lieu of or in addition to providing the required map. You should note, however, that 3-D surface anomaly data alone do *not* depict the subsurface acoustic characteristics necessary for adequate chemosynthetic community analysis, and the presence of a strong reflector revealed in 3-D surface anomaly depiction is not a prerequisite for the existence of a chemosynthetic community.

(B) Analysis. Using high-resolution seismic information, or 3-D seismic information (as allowed on a case-by-case basis by the MMS GOMR), and any other pertinent information available, identify all seafloor features and areas that could be disturbed by your proposed pipeline activities. Discuss the likelihood of your proposed pipeline activities disturbing these seafloor and shallow geologic features. For *each* proposed pipeline segment, provide one of the following summary statements:

(1) NO DISTURBANCES WITHIN 500 FEET OF CHEMOSYNTHETIC COMMUNITIES

Pipeline Segment Number ____:

- Features or areas that could support high-density chemosynthetic communities are **not** located within 500 feet of any seafloor disturbances resulting from our proposed pipeline construction activities (including those caused by anchors, anchor chains, and wire ropes, if applicable).

(2) NO ASSOCIATED ANCHORS -- DISTURBANCES BETWEEN 250 AND 500 FEET FROM CHEMOSYNTHETIC COMMUNITIES

Pipeline Segment Number ____:

- Features or areas that could support high-density chemosynthetic communities are **not** located within 250 feet of any seafloor disturbances resulting from our proposed pipeline construction activities.
- Features or areas that could support high-density chemosynthetic communities **are** located between 250 and 500 feet from seafloor disturbances resulting from our proposed pipeline construction activities. Therefore, please be advised that we will use a state-of-the-art positioning system (e.g., differential global positioning system) on our dynamically-positioned pipeline-laying vessel to ensure that any seafloor disturbance resulting from our pipeline construction activities does not occur within 250 feet of such areas (see the enclosed map, which depicts the areas).

(3) ASSOCIATED ANCHORS -- UNDETERMINED ANCHOR PATTERN WITH POSSIBLE ANCHOR DISTURBANCES BETWEEN 250 AND 500 FEET FROM CHEMOSYNTHETIC COMMUNITIES

Pipeline Segment Number ____:

- Although we do not know the exact anchor pattern to be used, features or areas that could support high-density chemosynthetic communities will **not** be located within 250 feet of any seafloor disturbances resulting from our proposed pipeline construction activities (including those caused by anchors, anchor chains, and wire ropes).
- However, features or areas that could support high-density chemosynthetic communities **are** located within the maximum area that such proposed disturbances to the seafloor may disturb. Therefore, we will use a state-of-the-art positioning system (e.g., differential global positioning system) on our pipeline-laying vessel and our anchor-handling vessels to ensure that any such seafloor disturbances do not occur within 250 feet of such areas (see the enclosed map, which depicts the areas). Additionally, we will include pipeline-laying vessel anchor position plats, at a scale of 1 inch = 1,000 feet with DGPS accuracy, with our pipeline construction report required by 30 CFR 250.1008(b), which depict the "as-placed" location of all anchors, anchor chains, and wire ropes and demonstrate that the features were not physically impacted by the construction activities.