APPENDIX B

SEQUENCE CORRELATION
Figure 1 - Finning upward sequence followed by a coarsening upward sequence in the Grace Lowery #1 core from 9,417-9,444 ft
Figure 2 - Coarsening upward sequence followed with a flooding surface into another coarsening upward sequence in the Grace Lowery #1 from 9,445-9,489 ft.
Figure 3 - Coarsening upward sequence in the Grace Lowery #1 from 9,469-9,486 ft.
Figure 4 - Finning upward sequence followed by a coarsening upward sequence in the Grace Lowery #1 core from 9,487-9,516 ft.
Figure 5 - Coarsening upward sequence in the Grace Lowery #1 from 9,517-9,537 ft

Fully marine

Highly diversified marine biota

Low angle and faint planar

Highly diversified marine biota

Ophiomorpha dominated

Highly diversified marine biota
Figure 6 - Coarsening upward sequence followed by a finning upward sequence followed by a coarsening upward sequence Grace Lowery core from 9,538-9,564 ft.
Figure 7 - Finning upward sequence followed by a finning upward sequence followed by a coarsening upward sequence in the Grace Lowery #1 core from 9,565-9,581 ft.

Highly diversified marine biota
Figure 8 - Coarsening upward sequence followed by a coarsening upward sequence in the Grace Lowery #1 core from 9,582-9,614 ft. Highly diversified marine biota.
Figure 9 - Four coarsening upward sequences in the Grace Lowery #1 core from 9,615-9,632 ft.
Figure 10 - Coarsening upward sequence followed by two finning upward sequence followed by a coarsening upward sequence in the Grace Lowery #1 core from 9,633-9,655.8 ft.
Appendix B Description

Appendix B contains detailed core descriptions for the Grace Lowry #1 core. Descriptions are separated and described into changes in the allocyclic system.

The Grace Lowry #1 wellbore is located Southeast of Woodlawn filed and Northwest of Waskom Field. The described section is from 9,417 to 9,656 ft (2870 to 2943 m). Whole core description can be viewed Appendix A.

9417 to 9424 ft (2870 to 2872 m) illustrates a fining upward sequence from fine grain sandstone at the base to a siltstone into a mudstone at the top of the section (Appendix B Figure 1). The fine grain sandstone lacks sedimentary structures and exhibits Ophiomorpha and Thalassinoides trace fossils. The siltstone displays exotic fill indicating a possible glossy surface and is littered with thin walled bivalves. The mudstone has a high diversity of trace fossils indicating a low marine stress environment.

9424 to 9454 ft (2870 to 2881 m) exhibits a coarsening upward sequence marked with a muddy siltstone at the base to a fine grain sandstone at the top. The fine grain sandstone displays hummocks, high angle, low angle to planar, and faint planar to massive sedimentary structures. High amount of cryptic bioturbation is present in the massive sections. Ophiomorpha, and rare Thalassinoides trace fossils were identified. Occasional mudclast and styolites were observed in the sandstones. The muddy siltstone is 6in thick and exhibits Planolites, Asterosoma, and biogenic muds (Appendix B Figure 1 and Figure 2).

9454 to 9,485 ft (2870 to 2891 m) displays a coarsening upward sequence from a mudstone to a fine grain sandstone with intermittent pebble size conglomerates. The mudstone is 4 in thick and marks a flooding surface. The silty mudstones exhibit thin walled bivalves, root grounds, mud cracks, and high terrestrial palynology. The siltstone is highly bioturbated with Asterosoma, Thalassinoides, Palaeophycus, Chondrites, Teichichnus, Terebellina, Planolites, Skolithos and Bivalves (Appendix B Figure 2 and Figure 3). Biogenic muds have been preserved in the siltstone. The very fine sands are dominated by low angle to faint planar
bedding with rare cross trough bed sets. The very fine sandstones are highly bioturbated with *Palaeophycus, Chondrites, Ophiomorpha, Thalassinoides, Planolites, Terebellina, Teichichnus* and *Bivalves*. Quartz clast, stylolites, root grounds, biogenic mud, and cryptic bioturbation are preserved in the very fine sandstones. The fine grain sandstone displays low angle to faint planar sedimentary structures. Root grounds, quartz clast and biogenic muds are common in the fine grain sandstone. *Ophiomorpha, Bivalves,* and the occasional *Teichichnus trace fossils* are identified. The Pebble conglomerate is 2 to 6 in. (5.08 to 15.24 cm.) thick and composed primarily of chert with occasional quartz clast.

9,485 to 9,493 ft (2891 to 2893 m) is a fining upward sequence from a fine grain sandstone to a siltstone. The trace fossils in the siltstone are thin walled bivalves. The very fine grain sandstone displays *Palaeophycus, Terebellina, Thalassinoides,* and *bivalves*. The very fine sands exhibit intermittent coarser grain sands lenses, mud clast, and cryptic bioturbation. Fine grain sands have low angle to planar bedding, quartz clasts in the top 3 in. (7.62 cm.) and cryptic bioturbation (Appendix B Figure 3 and Figure 4).

9,493 to 9,546 ft (2929 to 2946 m) is a coarsening upward sequence from a mudstone to a fine grain sandstone. The mudstone is 5 in. (12.7 cm) thick and marks a flooding surface. The overlying siltstone exhibits high amounts of bioturbation. Observed trace fossils are *Chondrites, Bivalves, Asterosoma,* and *Thalassinoides*. Fine grain sands lenses are dispersed intermittently throughout the siltstone (fig. 69). The very fine sandstone is highly bioturbated. *Palaeophycus, Asterosoma, Chondrites, Bivalves, Helminthopsis, Planolites, Skolithos* and *Thalassinoides* were identified. The fine grain sandstone has a high diversity of marine biota. Trace fossil assemblage include *Palaeophycus, Asterosoma, Chondrites, Bivalves, Helminthopsis, Planolites, Skolithos, Teichichnus, Terebellina, Ophiomorpha* and *Thalsasinoides*. Quartz clast and low angle to trough cross beds were observed. A 3.5 in (8.89 cm) conglomerate was recorded interbedded in the fine grain sands. The conglomerate was composed of pebble size quartz clast and occasional chert clast (Appendix B Figure 4, Figure 5, and Figure 6).
9,546 to 9,550 ft (2946 to 2947) is a fining upward sequence from a very fine grain sandstone to a mudstone. The very fine sandstone displays thin wall Bivalves and no distinct bedding. The siltstone exhibits Chondrites and Bivalves (Appendix B Figure 6).

9,550 to 9,564 ft (2947 to 2951 m) is a coarsening upward sequence from a mudstone to a very fine grain sandstone. Observed trace fossils in the mudstone are Helminthopsis, Chondrites, and Bivalves. The very fine sandstone displays Bivalves, Helminthopsis, and cryptic bioturbation (Appendix B Figure 6).

9,564 to 9,572.5 ft (2951 to 2954 m) is a fining upward sequence from a very fine grain sandstone to a mudstone. The very fine grain sandstone from 9,564.8 to 9,572.5 ft (2952-2954 m) displays Ophiomorpha, Bivalves, Chondrites, Asterosoma, and Planolites. A 3.5 in. (8.89 cm) lens of very fine to fine grain sandstone was observed in the siltstone at 9,571.5. A 2 in (6.28cm) siltstone with the trace fossil Chondrites was recorded at 9,568.7 ft (2953.3 m) (Appendix B Figure 7).

9,572.5 to 9,582 ft (2954 to 2951 m) is a coarsening upward sequence from a siltstone to a fine grain sandstone. The siltstone is 1.8 ft thick (50.8 cm) from 9,580 to 9,582. The siltstone displays well preserved thick walled Bivalves. The very fine sandstone is 1.4 ft thick (.4 m) from 9,579 to 9,580 has no recorded bedding features. Observed trace fossils were Terebellina, Planolites, Chondrites, Teichichnus, and Bivalves. The fine grained sandstone is 6.5 ft (2 m) from 9,572.5 to 9,579 ft (2954 to 2956.5 m) (fig 74). Low angle bedding was recorded in the upper 8 in. (20.32 cm) of the sandstone. Thalassinoides, Chondrites, Asterosoma, Bivalves, and Ophiomorpha were preserved trace fossils in the fine grain sandstone (Appendix B Figure 7).

9,582 to 9,597 ft (2951 to 2962 m) is a coarsening upward sequence from a silty sandstone to a fine grain sandstone. The silty sandstone is 5.8 ft thick (1.79 m) from 9,590 to 9,697 ft (2959 to 2962 m) and displays thick wall Bivalves, Chondrites, Asterosoma, Terebellina, Planolites, Palaeophycus, and Thalassinoides. Intermittent fine grain sandstone and mudstones were observed in the silty sandstone from 9,593 to 9595 ft (2960 to 2961 m). The sandstone
exhibited hummocky bedding and *Bivalves, Thalassinoides, Palaeophycus,* and *Planolites.* The mudstones range from 1 to 4 in. (2.54 to 10.16 cm). The fine grain sandstones from 9,582 to 9,590 (2951 to 2959.8 m) displays low angle to faint planar bedding, occasional mud drapes, and mud clast. The trace fossils identified in the sandstone were *Bivalves, Thalassinoides,* and *Asterosoma* (Appendix B Figure 8).

9,597 to 9,618.4 ft (2962 to 2968.4 m) is a coarsening upward sequence from a siltstone to a fine grain sandstone. The siltstone is 9 ft (2.7m) thick from 9,610.5 to 9,618.5 ft (2966 to 2968.6 m). The siltstone displays *Chondrites, Palaeophycus, Asterosoma,* and thick and thin wall *bivalves.* Fine grain sands lenses were preserved in the siltstone at 9,614 (2967.2 m). The very fine grain sandstone exhibited *Bivalves, Palaeophycus, Thalassinoides, Chondrites,* and *Asterosoma.* Biogenic muds were well preserved in the very fine sandstone. The fine grain sandstone has low angle to faint planar bedding, occasion quart clasts and rare sedimentary mud drapes. Trace fossils observed in the sand were *bivalves, Thalassinoides,* and cryptic bioturbation (Appendix B Figure 9 and Figure 8).

9,618.4 to 9,639 ft (2968.4 to 2975 m) is a coarsening upward sequence from a mudstone to a fine grain sandstone. The mudstone from 9630.8 to 9632 ft (2972.4 to 2972.8 m) exhibits *Terebellina, Palaeophycus,* and *Chondrites.* The mudstone from 9,627 to 9,628 (2971.2 to 2971.6 m) does not have any identified trace fossils. The mudstone from 9,639 to 9,638 (2974.6 to 2975 m) displays *Terebellina* in the top two inches (5.08 cm). The siltstone from 9,628 to 9630.8 (2971.2 to 2972.4 m) displays *bivalves, Thalassinoides, Planolites, Phobicnus, Asterosoma, Terebellina,* and *Chondrites.* The siltstone from 9,633 to 9,638 exhibits *Thalassinoides, Terebellina, Chondrites, Helminthopsis, Planolites, Phobicnus, Asterosoma,* and thick walled *bivalves.* Sands lenses are intermittent in the siltstone from 9,635 to 9,636 (2973.6 to 2974 m) and a .5 in. (1.27 cm) fine grain sandstone was recorded with sedimentary mud drapes at 9,634.5 ft. The fine grain sandstone from 9,618.4 to 9,627 ft (2988.4 to 2971.2 m) displays low angle faint planar to hummocky bedding with occasional mud clast and mud drapes. Hummocks range from 2 to 6 in (5.08 cm to 15.24 cm) and mark periodic storm events.
Intermittent mudstones .25 to 1 in (.6 to 2.54 cm) in the fine grain sandstone mark changes in
environment. *Bivalves* and cryptic bioturbation are the only identifiable trace fossils in the
section (Appendix B Figure 10 and Figure 9).

9,639 to 9640.5 ft is a fining upward sequence from a fine grain sandstone to a
siltstone (Appendix B Figure 10). The fine grain sandstone from 9,640 to 9,640.5 ft (2975.3 to
2975.4 m) displays faint planar to massive bedding and no distinguishable trace fossils. The
siltstone exhibits *Planolites, Thalassinoides, Chondrites, Terebellina*, and *Asterosoma*.

9,640.5 to 9,641.6 ft. (2975.4 to 2975.8) is a coarsening upward sequence from a
mudstone to a fine grain sandstone (Appendix B Figure 10). The mudstone is 3 in. (7.62 cm.)
The overlying siltstone is 4 in. (10.16 cm.) thick and displays *Palaeophycus, Thalassinoides,
Planolites, Asterosoma*, and *Chondrites*. The fine grain sandstone is 1 ft. thick (30.48 cm) and
exhibits faint planar to massive bedding.

9,641.6 to 9,643.3 (2975.8 to 2976.2 m) is a fining upward sequence from a fine grain
sandstone to a mudstone (Appendix B Figure 10). The fine grain sandstone from 9,643 to
9,643.3 (2976.1 to 2976.2 m) is 3 in (7.62 cm) thick and displays *Palaeophycus, Ophiomorpha,
and Thalassinoides*, and mud clast. The overlying mudstone is 1.5 in. (3.81 cm) and displays
*Chondrites*. The overlying siltstone is 1 in (2.54 cm) and exhibits *Thalassinoides, Teichichnus,
and Chondrites*. The fine grain sandstone from 9,642.3 to 9,642.6 ft (2976 to 2976.1 m) displays
no recorded bedding or trace fossils. The overlying very fine sandstone is 2.5 in (6.35 cm) and
displays *Helminthopsis, Chondrites, Palaeophycus, Asterosoma*, and *Thalassinoides*. The
siltstone overlying the very fine sandstone is 1.2 in (3.048 cm) thick and exhibits Chondrites.
The fine grain sandstone from 9641.6 to 9,641.9 (2975.8 to 2975.9 m) displays trough cross
bedding.

9,643.3 to 9655.8 ft (2976.2 to 2980 m) is a coarsening upward sequence from a
siltstone to a fine grain sandstone. The siltstone from 9,655 to 9,655.6 ft. (2979.9 to 2980 m)
recorded *Asterosoma, Chondrites* and a potential *Glossifungites* surface. Exotic sand fill was
identified in the siltstone in horizontal tubes. The very fine grained sandstone from 9,643.3 to
9,653.3 ft (2976.2 to 2979.4 m) exhibits *Chondrites, Bivalves, Thalassinoides, Phobicnus, Planolites, Helminthopsis*, and *Asterosoma*. A fine grain sand lens was recorded in the very fine grain sandstones from 9,648.6 to 9,648.9 ft (2977.9 to 2978) with *Bivalves*. The highly bioturbated very fine sandstone marks a potential lobe switch in the system. The fine grain sandstone from 9,651 to 9,655 ft (2978.7 to 2979.9 m) exhibits *Bivalves*. The fine grain sandstone from 9,643 to 9,643.3 exhibits *Thalassinoides, Phobicnus, Planolites*, and *Ophiomorpha*. Mud clasts were also recorded from the sand (Appendix B Figure10).