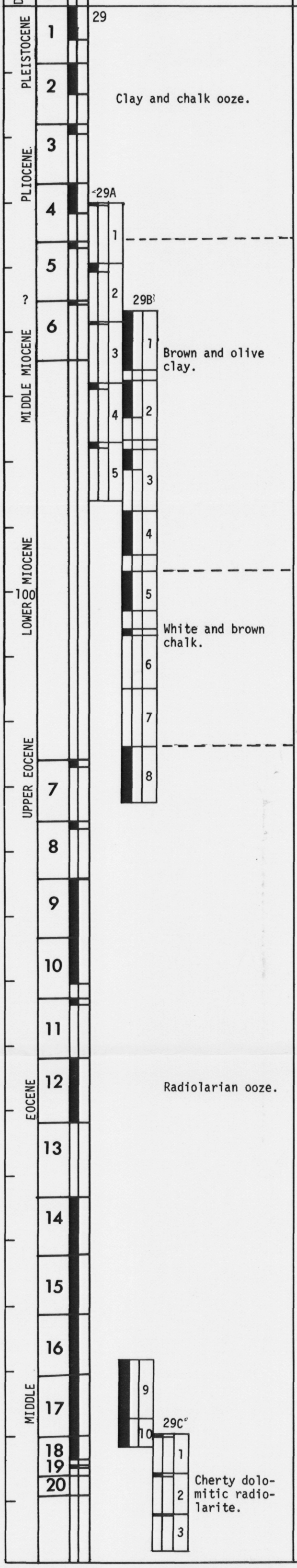

ZONE NANNO	ZONE FORAM	CHARACTERISTIC SPECIES
Cephyrocapsa oceanica	*Globoquadrina altispira*	Planktonic Foraminifers: *Cq. dehiscens* s.l., *Beella digitata, Candeina nitida, Gg. apertura* s.l., *Gg. bulloides* s.l., *Gg. calida* s.l., *Gg. juvenilis, Globigerinita* sp., *Ge. conglobatus* s.l., *Ge. ruber* s.l., *Ge. suleki, Ge. trilobus* cf. *fistulosus, Ge. trilobus sacculifer, Ge. trilobus* s.l., *Ge. trilobus* A, *Gr. acostaensis, Gr. crassaformis crassaformis, Gr. crassaformis* cf. *viola, Gr. crassaformis* A, *Gr. crassaformis* B, *Gr. dutertrei* high spired, *Gr. dutertrei pseudopima, Gr. dutertrei dutertrei* s.l., *Gr. inflata, Gr.* cf. *inflata, Gr. menardii cultrata, Gr. menardii menardii, Gr. scitula* s.l., *Gr. trunc. truncatulinoides, Gr. trunc./Gr. tosaensis* transition, *Gr. tumida flexuosa, Gr. tumida tumida, Gr.* cf. *tumida, Hastigerina siphonifera, Hastigerinella* sp., *Orbulina* sp., *Pu. obliquiloculata* s.l., *Sa. dehiscens.* Calcareous Nannofossils: *Gephyrocapsa oceanica, Gephyrocapsa aperta, Gephyrocapsa caribbeanica, Pseudoemiliania lacunosa, Coccolithus pelagicus, Cyclococcolithus leptoporus, Umbilicosphaera mirabilis, Helicopontosphaera kamptneri, Helicopontosphaera wallichi, Helicopontosphaera* cf. *seminulum, Pontosphaera scutellum, Pontosphaera discopora, "Discolithina" phasceola, Aspidorhabdus stylifer, Scapholithus fossilis, Ceratolithus cristatus.*
Cephyrocapsa caribbeanica		Planktonic Foraminifers: *Beella digitata, Candeina nitida, Gg. bulloides* s.l., *Gg. calida* s.l., *Gg. juvenilis, Globigerinita* sp., *Ge. conglobatus* s.l., *Ge. ruber* s.l., *Ge. suleki, Ge. trilobus* cf. *fistulosus, Ge. trilobus sacculifer, Ge. trilobus* s.l., *Gr. acostaensis, Gr. crassaformis crassaformis, Gr. crassaformis viola, Gr. crassaformis* cf. *viola, Gr. crassaformis* s.l., *Gr. crassaformis* A, *Gr. dutertrei* high spired, *Gr. dutertrei pseudopima, Gr. dutertrei dutertrei* s.l., *Gr. exilis, Gr. inflata, Gr.* cf. *inflata, Gr. menardii cultrata, Gr. menardii menardii, Gr. miocenica, Gr. scitula* s.l., *Gr. truncatulinoides toeaenis, Gr. truncatulinoides* cf. *toeaenis, Gr. trunc. truncatulinoides, Gr. trunc./Gr. tosaensis* transition, *Gr. tumida flexuosa, Gr. tumida tumida, Gr.* cf. *tumida, Hastigerina siphonifera, Hastigerinella* sp., *Orbulina* sp., *Pu. obliquiloculata* s.l., *Sa. dehiscens.* Calcareous Nannofossils: *Gephyrocapsa aperta, Gephyrocapsa caribbeanica, Pseudoemiliania lacunosa, Coccolithus pelagicus, Cyclococcolithus leptoporus, Umbilicosphaera mirabilis, Helicopontosphaera kamptneri, Helicopontosphaera wallichi, Helicopontosphaera* cf. *seminulum, Pontosphaera scutellum, Pontosphaera discopora, "Discolithina" phasceola, Aspidorhabdus stylifer, Ceratolithus cristatus, Discoaster brouweri rutellus, Discoaster pentaradiatus.*
Discoaster surculus		Planktonic Foraminifers: *Beella digitata, Candeina nitida, Gg. bulloides* s.l., *Gg. calida* s.l., *Gg. juvenilis, Globigerinita* sp., *Ge. conglobatus* s.l., *Ge. ruber* s.l., *Ge. suleki, Ge. trilobus* cf. *fistulosus, Ge. trilobus sacculifer, Ge. trilobus* s.l., *Gr. crassaformis crassaformis, Gr. crassaformis viola, Gr. crassaformis* cf. *viola, Gr. crassaformis* s.l., *Gr. dutertrei* high spired, *Gr. dutertrei pseudopima, Gr. dutertrei dutertrei* s.l., *Gr. exilis, Gr.* cf. *inflata, Gr. miocenica, Gr. scitula* s.l., *Gr.* cf. *tumida, Hastigerina siphonifera, Orbulina* sp., *Pu. obliquiloculata* s.l., *Sa. dehiscens.* Calcareous Nannofossils: *Pseudoemiliana lacunosa, Cyclococcolithus leptoporus, Umbilicosphaera mirabilis, Helicopontosphaera kamptneri, Helicopontosphaera* cf. *seminulum, "Discolithina" phasceola, Ceratolithus cristatus, Discoaster brouweri rutellus, Discoaster pentaradiatus.*
Discoaster hamatus		Planktonic Foraminifers: *Beella digitata, Candeina nitida, Gg. apertura* s.l., *Gg. bulloides* s.l., *Gg. calida* s.l., *Gg. juvenilis, Gg. venezuelana, Ge. conglobatus* s.l., *Ge. obliquus extremus, Ge. ruber* s.l., *Ge. suleki, Ge. trilobus fistulosus, Ge. trilobus* cf. *fistulosus, Ge. trilobus sacculifer, Ge. trilobus* s.l., *Gq. altispira* s.l., *Gr. acostaensis, Gr. crassaformis crassaformis, Gr. crassaformis* cf. *viola, Gr. crassaformis* s.l., *Gr. dutertrei pseudopima, Gr. dutertrei dutertrei* s.l., *Gr. exilis, Gr. exilis* A, *Gr. inflata, Gr. margaritae, Gr. miocenica, Gr. multicamerata, Gr. pseudomiocenica, Gr. scitula* s.l., *Gr. truncatulinoides* cf. *ronda, Gr.* cf. *tumida, Hastigerina siphonifera, Orbulina* sp., *Sa. dehiscens, Se. seminulina* s.l., *Se. seminulina* A. Calcareous Nannofossils: *Pseudoemiliana lacunosa, Coccolithus pelagicus, Cyclococcolithus leptoporus, Umbilicosphaera mirabilis, Umbilicosphaera sibogae, Umbilicosphaera foliosa, Helicopontosphaera kamptneri, Helicopontosphaera* cf. *seminulum, "Discolithina" phasceola, Ceratolithus rugosus, Discoaster brouweri rutellus, Discoaster brouweri tridenus, Discoaster brouweri tamalis, Discoaster pentaradiatus, Discoaster surculus.*
		Planktonic Foraminifers: *Ge. ruber* s.l., *Ge. trilobus* s.l., *Gr. acostaensis, Gr. dutertrei dutertrei* s.l., *Orbulina* sp.
		Planktonic Foraminifers: *Gg. apertura* s.l., *Gg. bulloides* s.l., *Gg. juvenilis, Globigerinita* sp., *Ge. conglobatus* s.l., *Ge. obliquus extremus, Ge. ruber* s.l., *Ge. trilobus* s.l., *Gq. altispira* s.l., *Gr. acostaensis, Gr. dutertrei dutertrei* s.l., *Se. seminulina* s.l.
		Calcareous Nannofossils: *Reticulofenestra pseudoumbilica, Cyclococcolithus leptoporus, Umbilicosphaera sibogae, Helicopontosphaera kamptneri, Discoaster brouweri rutellus, Discoaster brouweri tridenus, Discoaster brouweri triradiatus, Discoaster pentaradiatus, Discoaster quinqueramus, Discoaster extensus, Discoaster variabilis, Discoaster hamatus* (six rayed), *Triquetrorhabdulus rugosus.*
		Calcareous Nannofossils: *Coccolithus pelagicus, Reticulofenestra pseudoumbilica, Discoaster brouweri rutellus, Discoaster brouweri triradiatus, Discoaster quinqueramus, Discoaster extensus, Discoaster hamatus* (six rayed).
Helicopontosphaera ampliaperta	*Globigerinatella insueta*	Planktonic Foraminifers: *Gg. falconensis, Gg. venezuelana, Globigerinatella insueta, Globigerinita* sp., *Ge. bisphérica, Ge. ruber* s.l., *Ge. transitorius, Ge. trilobus sacculifer, Ge. trilobus* s.l., *Gq. altispira* s.l., *Gq. dehiscens* s.l., *Gr. fohsi fohsi, Gr. fohsi peripheroronda, Gr. mayeri* s.l., *Praeorbulina glomerosa* s.l., *Se. seminulina* s.l. Calcareous Nannofossils: *Coccolithus pelagicus, Coccolithus eopelagicus, Reticulofenestra pseudoumbilica, Reticulofenestra laevis, Cyclococcolithus leptoporus, Helicopontosphaera ampliaperta, Helicopontosphaera kamptneri, Discoaster brouweri rutellus, Discoaster extensus, Discoaster variabilis, Discoaster exilis, Discoaster bollii, Discoaster aulakos, Sphenolithus heteromorphus.*
Sphenolithus heteromorphus		Planktonic Foraminifers: *Gg. falconensis, Gg. foliata, Gg. rohri, Gg. venezuelana, Globigerinatella insueta, Globigerinita* sp., *Ge. bisphérica, Ge. diminutus, Ge. obliquus obliquus, Ge. ruber* s.l., *Ge. trilobus sacculifer, Ge. trilobus* s.l., *Gq. altispira* s.l., *Gq. dehiscens* s.l., *Gr. archeomenardii, Gr. fohsi peripheroronda, Gr. mayeri* s.l., *Gr. subcretacea, Praeorbulina glomerosa* s.l. Calcareous Nannofossils: *Coccolithus pelagicus, Coccolithus eopelagicus, Reticulofenestra pseudoumbilica, Reticulofenestra laevis, Coronocyclus nitescens, Helicopontosphaera ampliaperta, Helicopontosphaera kamptneri, Discoaster variabilis, Discoaster perplexus, Discoaster obtusus, Discoaster aulakos, Discoaster deflandrei, Discoaster trinidadensis, Discoaster saundersi, Sphenolithus heteromorphus.*
		Planktonic Foraminifers: *Gg. falconensis, Gg. foliata, Gg. rohri, Gg. venezuelana, Globigerinatella insueta, Globigerinita* sp., *Ge. bisphérica, Ge. diminutus, Ge. ruber* s.l., *Ge. trilobus* s.l., *Gq. altispira* s.l., *Gq. dehiscens* s.l., *Gr. fohsi peripheroronda, Gr. mayeri* s.l.
		Planktonic Foraminifers: *Catapsydrax dissimilis* s.l., *Catapsydrax stainforthi, Gg. falconensis, Gg. rohri, Gg. venezuelana, Globigerinatella insueta, Globigerinita* sp., *Ge. bisphérica, Ge. ruber* s.l., *Ge. trilobus primordius, Ge. trilobus* s.l., *Gq. altispira* s.l., *Gq. dehiscens* s.l., *Gr. archeomenardii, Gr. fohsi peripheroronda, Gr. mayeri* s.l.
		Radiolaria: *Lithocampium* sp., *Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Lithocyclia ocellus* group, *Lithochytris vespertilio, Theocampe mongolfieri, Thyreocyrtis triacantha, Eusyringium fistuligerum, Podocyrtis mitra, Sethochytris triconiscus*(?), *Podocyrtis chalara.*
		Calcareous Nannofossils: *Reticulofenestra umbilica, Coccolithus eopelagicus, Chiasmolithus* sp. (rim only), *Discoaster barbadiensis, Discoaster saipanensis.* Radiolaria: *Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Lithocyclia ocellus* group, *Triactis tripyramis triangula, Lithochytris vespertilio, Lithapium*(?) *plegmacantha, Theocampe mongolfieri, Thyreocyrtis rhizodon, Thyreocyrtis triacantha, Eusyringium fistuligerum, Podocyrtis mitra, Podocyrtis trachodes, Sethochytris triconiscus*(?), *Lithapium*(?) *mitra*(?).
		Radiolaria: *Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Lithocyclia ocellus* group, *Lithochytris vespertilio, Lithapium*(?) *plegmacantha, Theocampe mongolfieri, Thyreocyrtis rhizodon, Thyreocyrtis triacantha, Lithapium*(?) *anoectum, Podocyrtis ampla, Eusyringium fistuligerum, Podocyrtis mitra, Sethochytris triconiscus*(?).
		Calcareous Nannofossils: *Coccolithus pelagicus, Coccolithus eopelagicus, Chiasmolithus* sp. (rim only), *Chiasmolithus grandis, Sphenolithus moroformis, Discoaster barbadiensis, Discoaster ornatus, Discoaster tani tani.* Radiolaria: *Phormocyrtis striata, Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Lithocyclia ocellus* group, *Triactis tripyramis triangula, Lithochytris vespertilio, Theocorys anapographa, Lithapium*(?) *plegmacantha, Theocampe mongolfieri, Thyreocyrtis rhizodon, Eusyringium lagena*(?), *Thyreocyrtis triacantha, Lithapium*(?) *anoectum, Podocyrtis ampla, Eusyringium fistuligerum, Podocyrtis mitra.*
		Radiolaria: *Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?). *Lithocyclia ocellus* group, *Triactis tripyramis triangula, Theocorys anapographa, Lithapium*(?) *plegmacantha, Theocampe mongolfieri, Thyreocyrtis rhizodon, Podocyrtis diamesa, Eusyringium lagena*(?), *Thyrsocyrtis triacantha, Lithapium*(?) *anoectum, Podocyrtis ampla, Eusyringium fistuligerum.*
		Calcareous Nannofossils: *Coccolithus pelagicus, Coccolithus eopelagicus, Discoaster barbadiensis, Discoaster ornatus.* Radiolaria: *Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Triactis tripyramis triangula, Lithochytris vespertilio, Theocorys anapographa, Lithapium*(?) *plegmacantha, Theocotyle venezuelensis, Theocampe mongolfieri, Thyreocyrtis rhizodon, Podocyrtis diamesa, Eusyringium lagena*(?), *Thyreocyrtis triacantha, Lithapium*(?) *anoectum.*
		Radiolaria: *Lithocampium* sp., *Phormocyrtis striata, Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Lithocyclia ocellus* group, *Triactis tripyramis triangula, Theocorys anapographa, Lithapium*(?) *plegmacantha, Thyreocyrtis hirsuta robusta, Theocotyle venezuelensis, Theocampe mongolfieri, Thyreocyrtis rhizodon, Podocyrtis diamesa, Eusyringium lagena*(?), *Thyrsocyrtis triacantha, Lithapium*(?) *anoectum.*
		Radiolaria: *Triactis tripyramis tripyramis, Lamptonium*(?) *fabaeforme*(?) *constrictum, Thyreocyrtis hirsuta hirsuta, Phormocyrtis striata, Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Lithocyclia ocellus* group, *Lamptonium*(?) *fabaeforme*(?) *chaunothorax, Triactis tripyramis triangula, Lithochytris vespertilio, Theocorys anaclasta, Theocotyle cryptocephala cryptocephala*(?), *Theocorys anapographa, Lithapium*(?) *plegmacantha, Thyreocyrtis hirsuta robusta, Theocotyle venezuelensis, Theocampe mongolfieri, Thyreocyrtis rhizodon, Podocyrtis diamesa*
		Radiolaria: *Lithocampium* sp., *Thyreocyrtis hirsuta hirsuta, Phormocyrtis striata, Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Triactis tripyramis triangula, Lithochytris vespertilio, Theocotyle cryptocephala cryptocephala*(?), *Theocorys anapographa, Lithapium*(?) *plegmacantha, Theocotyle venezuelensis, Theocampe mongolfieri, Thyreocyrtis rhizodon, Podocyrtis diamesa, Eusyringium lagena*(?), *Thyreocyrtis triacantha.*
		Radiolaria: *Podocyrtis aphorma, Theocotyle cryptocephala*(?) *nigrinae, Lithochytris archaea, Lamptonium*(?) *fabaeforme fabaeforme*(?), *Triactis tripyramis tripyramis, Lamptonium*(?) *fabaeforme*(?) *constrictum, Thyreocyrtis hirsuta hirsuta, Phormocyrtis striata, Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Lithocyclia ocellus* group, *Lamptonium*(?) *fabaeforme*(?) *chaunothorax, Triactis tripyramis triangula, Lithochytris vespertilio, Theocorys anaclasta, Theocotyle cryptocephala cryptocephala*(?), *Theocorys anapographa, Lithapium*(?) *plegmacantha, Thyreocyrtis hirsuta robusta, Theocotyle venezuelensis, Theocampe mongolfieri, Thyreocyrtis rhizodon.*
		Radiolaria: *Lithocampium* sp., *Lamptonium*(?) *fabaeforme*(?) *constrictum, Thyreocyrtis hirsuta hirsuta, Phormocyrtis striata, Sethochytris babylonis* group, *Theocotyle*(?) *ficus, Podocyrtis papalis, Podocyrtis sinuosa*(?), *Lithocyclia ocellus* group, *Triactis tripyramis triangula, Lithochytris vespertilio, Theocorys anaclasta, Theocotyle cryptocephala*(?), *Theocotyle venezuelensis, Theocampe mongolfieri, Thyreocyrtis rhizodon, Podocyrtis diamesa, Eusyringium lagena*(?), *Thyreocyrtis triacantha.*
		Calcareous Nannofossils: *Coccolithus eopelagicus, Discoaster barbadiensis, Discoaster ornatus.*

Stratigraphic summary chart—Leg 4, Site 29.