

G.S.C. O.F. 1881 PALYNOLOGICAL BIOSTRATIGRAPHY OF
THE TRAVE E-87 WELL, GRAND BANKS

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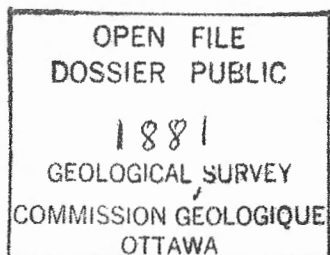
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**PALYNOLOGICAL BIOSTRATIGRAPHY
OF THE TRAVE E-87 WELL, GRAND BANKS**

**REPORT # 87-0066
SEPTEMBER, 1987**

CALGARY, ALBERTA



BIOSTRATIGRAPHIC SUMMARY: TRAVE E-87

- 740- 990m Deflandrea heterophlycta Zone (early Oligocene)
- 1040-1200m Diphyes colligerum Zone (late Eocene)
- 1220-1650m Adnatosphaeridium reticulense Zone (middle Eocene)
- 1670-1800m possible Areoligera senonensis Zone (possible early Eocene)
- 1820-2130m Areoligera senonensis Zone (early Eocene)
- 2150-2340m Ceratiopsis speciosa Zone (late Paleocene)/Cerebropollenites macroverrucosus Zone: Subzone 6A (late Berriasian)
- 2360-2490m: Ctenidodinium panneum Zone: Subzone 5A (Portlandian to early Berriasian)
- 2510-2520m Gonyaulacysta dualis Zone: Subzone 4A-B (late Kimmeridgian to Portlandian)
- 2540-2640m Subtilisphaera paeminosa Zone: Subzone 3C (Late Kimmeridgian)
- 2660-2730m Subtilisphaera paeminosa Zone: Subzone 3B (middle to late Kimmeridgian)

- 2750-2850m Pilosisorites sp. A Zone: Subzone 2B (early to middle
Kimmeridgian)
- 2870-3330m Pilosisorites sp. A Zone: Subzone 2A (early
Kimmeridgian)
- 3350-3390m Scriniodinium crystallinum Zone: Subzone 1A (early
Kimmeridgian)
- 3410-3570m possible Gonyaulacysta jurassica Zone: Subzone 0B (late
Oxfordian)
- 3590-3930m definite Gonyaulacysta jurassica Zone: Subzone 0B (late
Oxfordian)
- 3950-3985m Hystichogonyaulax #EA Zone: Subzone 0A (early Oxfordian)

SELECTED PALYNOMORPHS740-990m: Deflandrea heterophlycta Zone (early Oligocene)

- 740-750m Areosphaeridium arcuatum (large form)
 Areosphaeridium multicornutum (large form)
 Chiropteridium lobospinosum
 Chiropteridium mespilanum
 Dinopterygium cladoides
 Distatodinium paradoxum
 Homotryblium floripes
 Jusseaia sp., Piel 1971
 Quercoidites #LA
- 770-780m Glaphyrocysta intricata (large form)
 Deflandrea phosphoritica
- 830-840m Juglanspollenites nigripites
 Quercoidites #LG
 Wetzeliella articulata
- 860-870m Membranophoridium aspinatum
 Paralecaniella indentata
 Pentadinium laticinctum laticinctum
 Rhombodinium perforatum
 Tiliaepollenites vespipites
- 890-900m Camazonosporites #LA
 Carpinipites #LA
 Reticulatosphaera actinocoronata

920-930m Dapsilidinium simplex
 Deflandrea heterophlycta
 Pterocaryapollenites stellatus

950-960m Michrhystridium fragile

1040-1200m: Diphyes colligerum Zone (late Eocene)

1040-1050m Caryapollenites simplex
 Kisselovia crassiramosa
 Michrhystridium fragile (common)
 Momipites coryloides
 Palaeocystodinium golzowense
 Phthanoperidinium #LG

1100-1110m Wetzeliella ovalis

1130-1140m Achomosphaera alccicornu
 Cribroperidinium giuseppe
 Pentadinium lacticinctum granulatam

1160-1170m Impletosphaeridium insolitum
 Lentinia serrata

1190-1200m Adnatosphaeridium multispinosum
 Heteraulacacysta leptalea

1220-1650m: Adnatosphaeridium reticulense Zone (middle Eocene)

- 1220-1230m Glaphyrocysta laciniiforme
 Hystrichokolpoma salacium
 Hystrichosphaeridium patulum
 Phthanoperidinium multispinosum
- 1250-1260m Areoligera sentosa
 Areosphaeridium multicornutum (small form)
 Phthanoperidinium levimurum
- 1280-1290m Impletosphaeridium scalenfurcatum
 Lentinia wetzelii
- 1340-1350m Areoligera undulata
 Spiniferites monilis
- 1370-1380m Glaphyrocysta intricata (small form)
 Hystrichokolpoma unispinum
 Palaeoperidinium pyrophorum (reworked)
- 1400-1410m Cordosphaeridium fibrospinosum
 Eocladopyxis peniculatum
 Spongodinium delitiense (reworked)

1670-1800m: possible Areoligera senonensis Zone (possible early Eocene)

- 1670-1680m Glaphyrocysta exuberans
 Systematophora #LE
- 1730-1740m Homotryblum pallidum

1820-2130m: Areoligera senonensis Zone (early Eocene)

1820-1830m	<u>Areoligera senonensis</u> <u>Distatodinium craterum</u> <u>Kisselovia edwardsii</u>
1940-1950m	<u>Azolla</u> spp. <u>Gochtodinium spinulum</u>
1970-1980m	<u>Isabelidinium</u> #LP <u>Systematophora</u> #LC
2000-2010m	<u>Areoligera senonensis</u> (common)
2060-2070m	<u>Apectodinium homomorphum</u> (abundant) <u>Apectodinium hyperacanthum</u> <u>Areosphaeridium diktyoplokus</u> <u>Cicatricosporites auritus</u> <u>Dracodinium condylos</u> <u>Thalassiphora pelagica</u> <u>Wetzeliella meckelfeldensis</u>
2090-2100m	<u>Hafniasphaera cryptovesiculata</u> <u>Hystriochokolpoma cinctum</u>
2120-2140m	<u>Areoligera senonensis</u> (abundant) <u>Thalassiphora patula</u>

2150-2340m: Ceratiopsis speciosa Zone (late Paleocene)/Cerebropollenites macroverrucosus Zone: Subzone 6A (late Berriasian)

2150-2160m	<u>Deflandrea denticulata</u> <u>Podocarpidites potomacensis</u> <u>Cicatricosisporites undatus</u> <u>Costatoperforosporites</u> #ECF <u>Parvisaccites amplus</u> <u>Meiourogoniaulax</u> sp. indet
2180-2190m	<u>Cerebropollenites macroverrucosus</u> <u>Corollina itunensis</u> <u>Muderongia simplex</u> <u>Podocarpidites tricocca</u>
2210-2220m	<u>Cicatricosisporites</u> #EAE <u>Meiourogoniaulax pertusa</u> <u>Plicatella matesovae</u> <u>Pseudoceratium pelliferum</u>
2240-2250m	<u>Callialalosporites infrapunctatus</u>
2270-2280m	<u>Pilosporites crassangularis</u> <u>Schizosporis reticulatus</u>
2300-2310m	<u>Callialalosporites monoalosporus</u> <u>Pseudoceratium pelliferum</u> (common)

2360-2490m: Ctenidodinium panneum Zone: Subzone 5A (Portlandian to early Berriasian)

2360-2370m Araucariacites punctatus
 Cicatricosisporites magnus
 Corollina vignollensis
 Hystrichodinium lanceatum
 Pityosporites #EA
 Rotverrusporites obsurilaesuratus
 Systematophora fasciculigera
 Triangulopsis discoidalis

2390-2400m Millioudodinium jubaris
 Muderongia simplex perforata
 Sentusidinium cuculliformis

2450-2460m Achomosphaera neptunii
 Cribroperidinium granuligerum
 Endoscrinium pharo
 Lanterna sportula
 Muderongia sp. A

2480-2490m Amphorula #EA

2510-2520m: Gonyaulacysta dualis Zone: Subzone 4A-B (late Kimmeridgian to Portlandian)

2510-2520m Cribroperidinium globatum
 Ctenidodinium culmulum
 Lanterna bulgaria
 Lanterna sportula

2540-2640m: Subtilisphaera paeminosa Zone: Subzone 3C (Late
Kimmeridgian)

2540-2550m	<u>Cantulodinium #EA</u>
	<u>Ctenidodinium schizoblastum</u>
	<u>Dingodinium jurassicum</u>
	<u>Hystiocysta ornata</u>
	<u>Leptodinium mamilliferum</u>
	<u>Meiourugonyaulax deflandrei</u>
	<u>Pityosporites dividius</u>
	<u>Systematophora areolata</u>
	<u>Gonyaulacysta dualis</u>
2630-2640m	<u>Hystrihogonyaulax cladophora</u>
	<u>Plicatella #ES</u>

2660-2730m: Subtilisphaera paeminosa Zone: Subzone 3B (middle to late
Kimmeridgian)

2660-2670m	<u>Alisporites thomasi</u>
	<u>Cribroperidinium #EZ</u>
2690-2700m	<u>Leptodinium mamilliferum</u>

2750-2850m: Pilosporites sp. A Zone: Subzone 2B (early to middle
Kimmeridgian)

2750-2760m	<u>Acanthaulax senta cf.</u>
	<u>Amphorula #ED</u>
	<u>Hystrihodinium #DA</u>
	<u>Klukisporites variegatus</u>

Meiouruguayaulax dicryptaSystematophora ovata

2780-2790m

Exesipollenites scabratusMeiouruguayaulax callomonii

2810-2820m

Breodoxiella #EACorollina #EV

2840-2850m

Breodoxiella #EB (common)Ctenidodinium chondrum (questionable identification)Epiplosphaera reticulospinosa2870-3330m: Pilosporites sp. A Zone: Subzone 2A (early Kimmeridgian)

2870-2880m

Ctenidodinium chondrumEndoscrinium galeritumProlixosphaeridium mixtispinosum

2930-2940m

Inaperturopollenites #EA

2990-3000m

Saxosporites #EB

3080-3090m

Contignisporites major

3170-3180m

Varirugosisporites #EA

3200-3210m

Ischyosporites amplireticus (questionable
identification.)Pityosporites #ER

3260-3270m

Cicatricosisporites #EO

3350-3360m Saxosporis tenerirugosus
Tuberositriletes #EK

3410-3420m Ctenidodinium pachydermum (questionable
identification)

3470-3480m Vastisporites sp. indet.

3500-3510m *Acanthaulax senta* cf.

3530-3540m Callialasporites obrutus
Systematophora #EA

3560-3570m Lithodinia jurassica
Systematophora #EE

3590-3600m *Gonyaulacysta jurassica*

3710-3720m *Vastisporites vastiformis*

3740-3750m Reticulatisporites #EC

3770-3780m *Uvaesporites glomeratus*

3800-3810m Ctenidodinium pachydermum

3830-3840m Convolutispora klukiforma

3920-3930m Polystephanophorus #EA

3950-3985m: Hystrichogonyaulax #EA Zone: Subzone OA (early Oxfordian)

3950-3960m Hystrichogonyaulax #EA

3975-3985m Aldorfia scarburgensis (questionable identification)

APPENDIX AAlphabetical Listing of Species Shown on Occurrence Chart:Marine Dinoflagellates

Index number	Taxon names	Index number	Taxon names
157	Acanthaulax senta cf.	117	Cribroperidinium globatum
137	Acanthaulax spp.	132	Cribroperidinium granulatatum
87	Achilleodinium bifurmoides	107	Cribroperidinium granuligerum
32	Achomosphaera alaicornu	93	Cribroperidinium spp.
106	Achomosphaera neptuni	147	Ctenidodinium chondrum
37	Achomosphaera ramulifera	118	Ctenidodinium culmulum
38	Adnatosphaeridium multispinosum	156	Ctenidodinium pachydermum
172	Aldorfia scarburgense	123	Ctenidodinium schizoblattum
158	Alisporites #EG	6	Dapsilidinium pastielsii
113	Amphorula #EA	24	Dapsilidinium simplex
138	Amphorula #ED	88	Deflandrea denticulata
139	Amphorula metaelliptica	81	Deflandrea eocenica
66	Apectodinium homomorphum	26	Deflandrea heterophlycta
59	Apectodinium hyperacanthum	15	Deflandrea phosphoritica
71	Araneosphaera araneosa	40	Deflandrea spinulosa
64	Areoligera senonensis	163	Diacanthum spp.
45	Areoligera sentosa	108	Dingodinium jurassicum
51	Areoligera undulata	7	Dinoptyrgium cladoides
1	Areosphaeridium arcuatum (large form)	89	Diphyes colligerum
77	Areosphaeridium diktyoplokus	68	Distatodinium craterum
2	Areosphaeridium multicornutum (large)	8	Distatodinium paradoxum
46	Areosphaeridium multicornutum (small)	79	Dracodinium condylos
145	Breodoxiella #EA	148	Endoscrinium galeritum
146	Breodoxiella #EB	109	Endoscrinium pharos
166	Breodoxiella #ER	57	Eocladopyxis peniculatum
114	Caddosphaera halosa	140	Epiplosphaera reticulospinosa
136	Caddosphaera halosa	129	Escharisphaeridia peacockii
122	Cantulodinium #EA	130	Escharisphaeridia rudis
78	Ceratiopsis depressa	63	Glaphyrocysta exuberans
61	Ceratiopsis pannucea	14	Glaphyrocysta intricata (large form)
97	Chatangiella tripartita	53	Glaphyrocysta intricata (small form)
3	Chiropteridium lobospinosum	41	Glaphyrocysta laciniiforme
4	Chiropteridium mespilanum	30	Glaphyrocysta ordinata
135	Cometodinium spp.	27	Glaphyrocysta semitecta
5	Cordosphaeridium cantharellum	164	Glossodinium dimorphum
56	Cordosphaeridium fibrospinosum	60	Gochtodinium simplex
72	Cordosphaeridium gracile	73	Gochtodinium spinulum
84	Cordosphaeridium inodes inodes	131	Gonyaulacysta dualis
85	Cordosphaeridium inodes longipes	165	Gonyaulacysta jurassica
98	Corrundinium #EA	133	Gonyaulacysta spp.
115	Cribroperidinium #EZ	82	Hafniasphaera cryptovesiculata
151	Cribroperidinium ehrenbergii	39	Heteraulacysta leptalea
20	Cribroperidinium giuseppi	9	Homotryblum floripes

APPENDIX A (cont'd)Alphabetical Listing of Species Shown on Occurrence Chart:Marine Dinoflagellates

Index number	Taxon names	Index number	Taxon names
65	Homotryblum pallidum	116	Pareodinia ceratophora
124	Hystiocysta ornata	167	Pareodinia sp. C
141	Hystrichodinium #DA	33	Pentadinium laticinctum granulatum
99	Hystrichodinium lanceatum	22	Pentadinium laticinctum laticinctum
171	Hystrichogonyaulax #EA	100	Perisseiasphaeridium spp.
134	Hystrichogonyaulax cladophora	127	Phoberocysta neocomica pteridia
83	Hystrichokolpoma cinctum	29	Phthanoperidinium #LG
10	Hystrichokolpoma rigaudiae	50	Phthanoperidinium comatum
42	Hystrichokolpoma salacium	47	Phthanoperidinium levimurum
54	Hystrichokolpoma unispinum	44	Phthanoperidinium multispinosum
43	Hystrichosphaeridium patulum	55	Polysphaeridium subtile
74	Hystrichosphaeridium tubiferum	170	Polystephanophorus #EA
34	Impletosphaeridium insolitum	149	Prolisosphaeridium mixtispinosum
48	Impletosphaeridium scalenfurcatum	95	Pseudoceratium pelliiferum
75	Isabelidinium #LP	25	Reticulosphaera actinocoronata
96	Isabelidinium sp. indet.	23	Rhombodinium perforatum
28	Kisselovia crassiramosa	104	Sentusidinium cuculliformis
69	Kisselovia edwardsii	150	Sentusidinium erythrocomum
119	Lanterna bulgarica	162	Sentusidinium ricultii
110	Lanterna sportula	159	Sentusidinium spp.
90	Lejeunecysta hyalina	168	Sentusidinium verrucosus
35	Lentinia serrata	52	Spiniferites monilis
49	Lentinia wetzelii	18	Spiniferites pseudofurcatus
120	Leptodinium spp.	12	Spiniferites ramosus
16	Lingulodinium machaerophorum	105	Spiniferites spp.
161	Lithodinia jurassica	152	Subtilisphaera inaffecta
144	Meiourugonyaulax callomonii	160	Systematophora #EA
126	Meiourugonyaulax deflandrei	163	Systematophora #EE : low process-groups
142	Meiourugonyaulax dicrypta	76	Systematophora #LC
94	Meiourugonyaulax pertusa	58	Systematophora #LE
91	Meiourugonyaulax spp.	13	Systematophora ancyrea
21	Membranophoridium aspinatum	128	Systematophora areolata
102	Millioudodinium jubaris	101	Systematophora fasciculigera
111	Muderongia mcwhaei	143	Systematophora ovata
92	Muderongia simplex	36	Systematophora placacantha
103	Muderongia simplex perforata	154	Systematophora spp.
112	Muderongia sp. A	62	Tectatodinium pellitum
121	Occisucysta distincta	86	Thalassiphora patula
153	Occisucysta spp.	70	Thalassiphora pelagica
67	Oligosphaeridium complex	155	Valensiella spp.
17	Operculodinium centrocarpum	19	Wetzeliiella articulata
11	Palaeocystodinium golzowense	80	Wetzeliiella meckelfeldensis
		31	Wetzeliiella ovalis

APPENDIX A (cont'd)Alphabetical Listing of Species Shown on Occurrence Chart:Pollen and Spores

Index number	Taxon names	Index number	Taxon names
92	Aequitriradites spinulosus	73	Klukisporites variegatus
34	Alisporites bilateralis	107	Kraeuselisporites linearis
71	Alisporites thomasi	13	Laevigatosporites ovatus
11	Alnipollenites verus	104	Leiotriletes equexinus
82	Araucariacites australis	53	Leiotriletes meckelburgensis
48	Araucariacites punctatus	17	Lycopodiumsporites annotinioides
28	Azolla spp.	25	Momipites coryloides
24	Betulaceipollenites betuloides	14	Osmundacidites claytonites
42	Callialasporites dampieri	27	Osmundacidites wellmannii
40	Callialasporites infrapunctatus	32	Parvisaccites amplus
43	Callialasporites monoalaporus	60	Parvisaccites radiatus
101	Callialasporites obrutus	54	Perinopollenites elatoides
68	Callialasporites trilobatus	6	Piceapollenites spp.
108	Callialasporites turbatus	41	Pilosporites crassangularis
20	Camerozonosporites #LA	94	Pilosporites trichopapillosus
45	Camerozonosporites insignis	7	Pinuspollenites spp.
21	Carpinipites #LA	47	Pityosporites #EA
1	Caryapollenites simplex	90	Pityosporites #ER
57	Cedripites canadensis	64	Pityosporites dividius
35	Cerebropollenites macroverrucosus	66	Platysaccus megasaccus
49	Cerebropollenites mesozoicus	69	Plicatella #ES
44	Cicatricosisporites #EAE	39	Plicatella matesovae
91	Cicatricosisporites #EO	75	Podocarpidites epistriatus
93	Cicatricosisporites abacus	67	Podocarpidites granulatus
50	Cicatricosisporites magnus	33	Podocarpidites potomacensis
51	Cicatricosisporites mohrioides	37	Podocarpidites tricoeca
30	Cicatricosisporites undatus	18	Pterocaryapollenites stellatus
29	Cicatricosisporites auritus	8	Quercoidites #LA
109	Clavitriletes spp.	15	Quercoidites #LG
62	Concavissimisporites punctatus	98	Reticulatisporites #EA
87	Concavissimisporites verrucatus	102	Reticulatisporites #EC
76	Contiginisporites dorsostratus	55	Rotverrusporites obsurilaesuratus
85	Contiginisporites major	99	Rotverrusporites spp.
106	Convolutispora klukiforma	26	Rouseisporites #LA
83	Corollina #EG	97	Rugutriletes #EA
77	Corollina #EV	81	Saxosporis #EB
65	Corollina chateauvillii	72	Saxosporis spp.
36	Corollina itunensis	95	Saxosporis tenerirugosus
52	Corollina vignollensis	22	Sequoiapollenites spp.
2	Corylus #LA	84	Spheripollenites scabratus
31	Costatoperforosporites #ECF	16	Stereisporites antiquasporites
46	Cyathidites australis	9	Taxodiaceapollenites hiatus
3	Cyathidites spp.	19	Tiliaepollenites vespites
63	Deltoidospora hallii	86	Todisporites major
61	Densosporites microrugulatus	56	Triangulopsis discoidalis
4	Ericipites compactipolleniatus	70	Trilobosporites aornatus
74	Exesipollenites scabratus	10	Tsugaepollenites igniculus
78	Exesipollenites tumulus	23	Tsugaepollenites viridifluminipites
38	Gleicheneidites senonicus	96	Tuberositriletes #EK
79	Inaperturopollenites #EA	105	Uvaesporites glomeratus
59	Ischyosporites #EA	88	Varirugosisporites #EA
89	Ischyosporites amplireticosus	100	Vastisporites spp.
12	Juglanspollenites nigripites	103	Vastisporites vastiformis
5	Jusseia sp., Piel 1971	80	Vitreisporites pallidus
58	Klukisporites foveolatus		

APPENDIX A (cont'd)Alphabetical Listing of Species Shown on Occurrence Chart:Algae, Fungi and Miscellaneous

Index number	Taxon names
6	extruded hydrocarbons
1	foraminiferal liners
4	Microhystridium fragile
2	Paralecaniella indentata
3	Pediastrum boryanum
5	Pluricellaesporites spp.
7	Schizosporis reticulatus

Reworked Palynomorphs

Index number	Taxon names
1	*Apectodinium homomorphum
6	*Aquilapollenites spp.
5	*Chatangiella spp.
9	*Chichacuadinium vestitum
15	*Cicatricosisporites spp.
2	*Densosporites spp.
13	*Impardecispora spp.
4	*Isabelidinium spp.
11	*Klukisporites spp.
10	*Laciniadinium spp.
12	*Oligosphaeridium spp.
14	*Ovoidinium verrucosum
7	*Palaeoperidinium pyrophorum
8	*Spongodinium delitiense
3	*Triancoraesporites spp.

APPENDIX BExamined Samples: Trave E-87

740.00 : cuttings	1850.00 : cuttings	2900.00 : cuttings
770.00 : cuttings	1880.00 : cuttings	2930.00 : cuttings
830.00 : cuttings	1910.00 : cuttings	2960.00 : cuttings
860.00 : cuttings	1940.00 : cuttings	2990.00 : cuttings
890.00 : cuttings	1970.00 : cuttings	3020.00 : cuttings
920.00 : cuttings	2000.00 : cuttings	3050.00 : cuttings
950.00 : cuttings	2030.00 : cuttings	3080.00 : cuttings
980.00 : cuttings	2060.00 : cuttings	3110.00 : cuttings
1040.00 : cuttings	2090.00 : cuttings	3140.00 : cuttings
1070.00 : cuttings	2120.00 : cuttings	3170.00 : cuttings
1100.00 : cuttings	2150.00 : cuttings	3200.00 : cuttings
1130.00 : cuttings	2180.00 : cuttings	3230.00 : cuttings
1160.00 : cuttings	2210.00 : cuttings	3260.00 : cuttings
1190.00 : cuttings	2240.00 : cuttings	3290.00 : cuttings
1220.00 : cuttings	2270.00 : cuttings	3320.00 : cuttings
1250.00 : cuttings	2300.00 : cuttings	3350.00 : cuttings
1280.00 : cuttings	2330.00 : cuttings	3380.00 : cuttings
1310.00 : cuttings	2360.00 : cuttings	3410.00 : cuttings
1340.00 : cuttings	2390.00 : cuttings	3440.00 : cuttings
1370.00 : cuttings	2420.00 : cuttings	3470.00 : cuttings
1400.00 : cuttings	2450.00 : cuttings	3500.00 : cuttings
1430.00 : cuttings	2480.00 : cuttings	3530.00 : cuttings
1460.00 : cuttings	2510.00 : cuttings	3560.00 : cuttings
1490.00 : cuttings	2540.00 : cuttings	3590.00 : cuttings
1520.00 : cuttings	2570.00 : cuttings	3650.00 : cuttings
1550.00 : cuttings	2600.00 : cuttings	3680.00 : cuttings
1580.00 : cuttings	2630.00 : cuttings	3710.00 : cuttings
1610.00 : cuttings	2660.00 : cuttings	3740.00 : cuttings
1640.00 : cuttings	2690.00 : cuttings	3770.00 : cuttings
1670.00 : cuttings	2720.00 : cuttings	3800.00 : cuttings
1700.00 : cuttings	2750.00 : cuttings	3830.00 : cuttings
1730.00 : cuttings	2780.00 : cuttings	3860.00 : cuttings
1760.00 : cuttings	2810.00 : cuttings	3890.00 : cuttings
1790.00 : cuttings	2840.00 : cuttings	3920.00 : cuttings
1820.00 : cuttings	2870.00 : cuttings	3950.00 : cuttings
		3975.00 : cuttings