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# The A. & M. College of Texas

Department of  
OCEANOGRAPHY AND METEOROLOGY



## SUMMARY REPORT — CRUISE 62-H-9

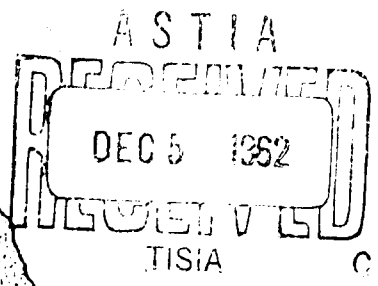
27 June — 12 July, 1962

Galveston, Texas — Campeche Bank

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## SUMMARY CRUISE REPORT

R. V. Hidalgo

Cruise 62-H-9, 27 June to 12 July, 1962

### Introduction

This is the final report on R. V. Hidalgo cruise 62-H-9, which was conducted in the southern Gulf of Mexico over the period 27 June to 12 July, 1962. The cruise was sponsored by the National Science Foundation Grant No. 24892 (A & M Project 323). Auxillary support was drawn from the American Petroleum Institute Project 63 program (A & M Project 287A), and the Office of Naval Research Contract Nonr 2119(04) Project NR 083-036 (A & M Project 286A). This research is being carried out in cooperation with the Institute of Geology, University of Mexico.

The research program to be carried out on this cruise was predominantly geological in emphasis with studies of coral reefs, carbonate bank sedimentation, and gravity measurements. There were three major tasks:

- 1) Construction of an instrument-carrying structure on the reef front at the Arcas reef group, Campeche Bank, Yucatan.
- 2) Geological studies of the Arcas reef group. A party of six scientists and technicians was to be landed on Cayo Arcas and a camp established for a 17 day period. This reef study group under the direction of Dr. L. S. Kornicker was to be responsible for geological studies of reef ecology and off-reef sediments in the area.
- 3) Sampling program on the shelf sediments of Campeche Bank. A series of sediment sample stations was to be occupied on the east Campeche Bank.

Participants

The following scientific personnel took part in cruise 62-H-9:

Chief Scientist: B. W. Logan	Dept. of Oceanography and Meteorology, A & M College of Texas
L. S. Kornicker	Ditto
J. O. Hill	"
J. D. Williams	"
R. G. Snead	"
Everadus Vos	"
J. S. Ford	"
P. P. Canjlose	"
B. R. Jones	Dept. of Geology and Geophysics, A & M College of Texas
D. H. Collins	Dept. of Geology, University of Iowa
R. J. Byrne	Dept. of Earth Sciences, University of Chicago
Ing. Renan Perez	Institute of Geology, University of Mexico
Max Pitcher	Dept. of Geology, Columbia University New York

Results

Most of the cruise objectives were achieved. An instrument structure was established in 20 feet of water on the southern flank of the Arcas reef. This operation was a feasibility study designed to examine techniques to be used in instrumenting the Arcas reef for physical oceanographic studies. The reef study group, together with about seven tons of supplies, was landed on Cayo del Centro in the Arcas group and a base camp was established. Geological studies of reef sediments and processes by Robert G. Snead and Dr. L. S. Kornicker

were well under way when the R. V. Hidalgo left Arcas on Thursday, 5 July. A total of 73 sediment sample stations were occupied on the Campeche Bank following the completion of the Arcas program. Station lists and lithological descriptions are given on later pages of this report.

In addition to the above programs, a number of routine shipboard measurements were obtained. These include:

- 1) Depth sounding; 1698 miles of sounding track were obtained with the Precision Depth Recorder. This data is a contribution to the detailed bathymetric chart of Campeche Bank presently in preparation and to our bathymetry of the Gulf of Mexico project

- 2) Continuous gravity profiles were run with the La Coste-Romburg Shipboard Gravity Meter. Gravity data was obtained over a distance of approximately 1000 miles of ship travel

- 3) Fifty-seven bathythermograph stations were occupied between Galveston and Campeche Bank.

## CRUISE 62-H-9

Station List

Station No.	Latitude ° ' "	Longitude ° ' "	Depth Fms.	Depth Feet	Van Veen Grab	Core	Core Recovery
1370	22 13 48	91 12 42	36.0	217	x	-	-
1371	22 13 00	91 02 00	33.0	198	x	-	-
1372	22 11 36	91 03 36	29.0	175	x	-	-
1373	22 05 30	91 14 30	27.5	165	x	-	-
1374	21 58 00	91 14 30	26.0	157	x	-	-
1375	21 50 00	91 16 12	25.5	153	x	-	-
1376	21 42 48	91 17 48	25.0	150	x	-	-
1377	21 35 24	91 19 06	24.0	145	x	-	-
1378	21 27 48	91 20 48	20.8	125	x	-	-
1379	21 20 12	91 20 48	17.0	103	x	-	-
1380	21 10 30	91 17 00	15.5	93	x	-	-
1381	21 01 00	91 13 24	16.5	100	x	-	-
1382	20 54 18	91 19 06	16.5	100	x	-	-
1383	20 10 24	91 50 24	21.5	130	x	-	-
1384	20 12 00	91 39 48	18.5	110	x	-	-
1385	20 12 00	91 31 30	16.5	98	x	-	-
1386	20 12 00	91 23 36	13.0	78	x	-	-
1387	20 12 00	91 15 54	10.5	64	x	-	-
1388	20 12 00	91 07 48	8.5	52	x	-	-
1389	20 12 00	91 00 00	7.5	44	x	-	-
1390	20 12 00	90 52 00	4.0	25	x	-	-

Station No.	Latitude ° ' "	Longitude ° ' "	Depth Fms.	Depth Feet	Van Veen Grab	Core	Core Recovery
1391	21 26 00	89 19 12	5.5	32	x	-	-
1392	21 36 24	89 20 06	11.0	66	x	-	-
1393	21 48 00	89 21 00	16.0	97	x	-	-
1393A	21 48 00	89 21 00	16.0	97	x	-	-
1394	21 59 00	89 22 00	20.5	125	x	-	-
1395	22 10 00	89 22 00	25.0	150	x	-	-
1396	22 20 00	89 21 00	28.0	169	x	-	-
1397	22 31 00	89 20 30	30.0	180	x	-	-
1398	22 40 48	89 19 24	26.5	158	x	-	-
1399	22 51 00	89 19 00	47.5	285	x	x	6 in.
1400	23 01 00	89 19 48	62.0	372	x	-	-
1401	23 10 48	89 19 54	84	504	x	x	6 in.
1402	23 30 00	89 10 12	110	660	x	x	3 ft.
1403	23 20 30	89 09 54	80	480	x	x	2.5 ft.
1404	23 10 00	89 07 54	61	366	x	x	4 ft.
1405	22 58 30	89 07 18	49.0	294	x	x	1 ft.
1406	22 47 06	89 08 00	32.5	194	x	-	-
1407	22 35 30	89 09 00	30.5	183	x	-	-
1408	22 25 12	89 08 36	27.5	167	x	-	-
1409	22 15 42	89 07 18	26.0	155	x	-	-
1410	22 06 00	89 06 12	22.0	132	x	-	-
1411	21 54 48	89 06 42	15.0	90	x	-	-
1412	21 42 00	89 08 12	10.8	65	x	-	-
1413	21 32 48	89 08 12	6.6	40	x	-	-

Station No.	Latitude ° ' "	Longitude ° ' "	Depth Fms.	Depth Feet	Van Veen Grab	Core	Core Recovery
1414	21 34 00	88 48 48	5.0	30	x	-	-
1415	21 45 12	88 49 48	10.8	65	x	-	-
1416	21 55 30	88 49 54	13.3	80	x	-	-
1417	22 06 00	88 49 54	17.9	107	x	-	-
1418	22 15 18	88 49 54	23.6	142	x	-	-
1419	22 25 18	88 49 18	26.9	161	x	-	-
1420	22 35 00	88 50 12	27.9	167	x	-	-
1421	22 45 00	88 50 54	20.8	125	x	-	-
1422	22 54 48	88 51 42	28.3	170	x	-	-
1423	23 04 30	88 52 06	43.9	263	x	x	6 in.
1424	23 14 00	88 53 00	43.9	262	x	-	-
1425	23 25 54	88 52 00	15.9-20	95-120	x	-	-
1426	23 28 42	88 52 00	27.6	166	x	-	-
1427	23 36 00	88 50 00	42.9	257	x	-	-
1428	23 45 00	88 50 00			x	x	1 ft.
1429	23 56 48	88 48 06			x	x	no rec.
1430	23 56 30	88 33 30	95	570	x	x	no rec.
1431	23 46 12	88 24 30	124	744	x	x	no rec.
1432	23 40 48	88 15 12	77	462	x	-	-
1433	23 34 00	88 06 30	40	240	x	-	-
1434	23 28 00	87 57 48			x	-	-
1435	23 21 30	87 49 48	51	306	x	-	-
1436	23 15 12	87 42 00	42	252	x	-	-

Station No.	Latitude ° ' "	Longitude ° ' "	Depth Fms.	Depth Feet	Van Veen Grab	Core	Core Recovery
1437	23 09 00	87 33 54	36.5	219	x	-	-
1438	23 02 48	87 34 00	34.5	207	x	-	-
1439	23 15 00	87 50 00	42.5	255	x	-	-
1440	23 21 54	88 00 00	50	300	x	-	-
1441	23 30 12	88 07 24	38	228	x	-	-
1442	23 36 06	88 24 30	128	768	x	-	-

Station No.

Binocular Description

- 1370 Pale yellowish gray, fine to medium grained, oolitic, lithic skeletal calcarenite; sand fraction about 80% angular fragments of benthonic mollusca and foraminifera, frequent grains of gray, fine grained limestone, frequent polished ovoid to rounded grains - ooids or pellets.
- 1371 Pale yellowish gray, moderately sorted, medium grained, ?oolitic, skeletal calcarenite; dominantly angular skeletal fragments of benthonic mollusca and foraminifera, 20% polished, ovoid to rounded grains - ooids or pellets, frequent lithic grains.
- 1372 Pale yellowish gray, poorly sorted, very coarse to coarse grained, ?oolitic, skeletal calcarenite; 60% angular to rounded fragments of mollusca, Lithothamnion and foraminifera; 30% polished ovoid grains - ooids or pellets, 10% lithic grains of gray, crypto-crystalline limestone.
- 1373 White, well-sorted, fine to medium grained, ?oolitic, skeletal calcarenite; dominantly angular to subrounded fragments of benthonic mollusca, foraminifera and Halimeda, frequent sub-rounded grains of gray and brown, fine grained limestone.
- 1374 Pale yellowish brown, poorly sorted, coarse grained, ?oolitic, skeletal calcarenite; sand fraction 60 to 70% angular to sub-angular grains of benthonic mollusca and foraminifera; 30% white to gray, ovoid to rounded grains - ooids or pellets, frequent grains of gray limestone.
- 1376 Pale yellowish gray, moderately sorted, coarse to very coarse grained, lithic, skeletal calcarenite; sand fraction about 60% angular fragments of benthonic mollusca and foraminifera; 30% angular to sub-rounded grains of black, gray, and brown limestone.
- 1377 Speckled black and white, well sorted, medium to coarse grained, lithic, skeletal calcarenite; 70 to 80% angular skeletal fragments of benthonic mollusca and foraminifera, 20% sub-rounded fragments of gray to black, fine grained limestone.
- 1378 Light gray, coarse grained, skeletal calcarenite; sand fraction dominantly angular to sub-rounded skeletal fragments of benthonic mollusca and foraminifera.

Station No.Binocular Description

- 1380 Speckled grayish white, well sorted, fine grained, ?lithic, skeletal calcarenite; dominantly angular skeletal grains of benthonic mollusca and foraminifera; 20% gray to black fragments of cryptocrystalline limestone.
- 1381 Pale grayish white, very well-sorted, very fine grained to fine grained, skeletal calcarenite; dominantly angular to sub-rounded grains of benthonic mollusca and foraminifera, frequent black grains.
- 1382 Pale grayish white, very well sorted, very fine grained to fine grained, skeletal calcarenite; dominantly angular to sub-rounded grains of benthonic mollusca and foraminifera, frequent black grains.
- 1383 Medium gray, silty, fine grained, skeletal calcarenite, dominantly angular to sub-angular fragments of benthonic mollusca and foraminifera.
- 1384 Medium gray, silty, very fine grained, skeletal calcarenite; composed dominantly of angular skeletal fragments of benthonic mollusca and foraminifera.
- 1385 Medium gray, silty, very fine grained, skeletal calcarenite; composed dominantly of angular skeletal fragments of benthonic mollusca and foraminifera.
- 1386 Pale gray, moderately sorted, very fine grained, skeletal calcarenite, sand fraction chiefly angular to sub-rounded skeletal fragments frequent gray and black lithic grains.
- 1387 White, moderately sorted, fine to very fine grained, skeletal calcarenite; sand fraction dominantly angular to sub-angular skeletal grains, frequent gray to black lithic grains.
- 1388 Speckled white and black, moderately sorted, skeletal, lithic calcarenite; sand fraction dominantly angular to sub-rounded fragments of black and gray, sugary limestone, 30 to 40% angular to sub-angular skeletal fragments.
- 1389 White, moderately sorted, very fine to fine grained, skeletal calcarenite; sand fraction dominantly angular to sub-rounded skeletal grains, 5% black to gray, rounded to sub-angular grains of gray limestone.

Station No.

Binocular Description

- 1390 White moderately sorted, fine grained, skeletal calcarenite; sand fraction dominantly angular to sub-rounded skeletal grains, 5% black to gray, rounded to sub-angular limestone fragments.
- 1391 Coquina of Arca umbonata.
- 1392 Pale whitish brown, moderately sorted, fine to medium grained, skeletal calcarenite; dominantly angular to sub-rounded skeletal grains of benthonic mollusca and foraminifera, echinoids, etc., rare sub-rounded to rounded fragments of gray, fine grained limestone.
- 1393 Pale grayish white, poorly sorted, very coarse grained, lithic skeletal calcarenite; dominantly angular to sub-angular fragments of benthonic mollusca, foraminifera and coralline algae; 10 to 20% sub-rounded grains of gray brown, fine-grained limestone.
- 1393A Pale grayish white, well sorted, fine grained, skeletal calcarenite; chiefly composed of sub-rounded to angular fragments of benthonic mollusca and foraminifera, rare sub-rounded fragments of gray, cryptocrystalline limestone.
- 1394 Pale yellowish white, moderately sorted, medium to coarse grained, skeletal calcarenite; dominantly angular skeletal fragments of benthonic mollusca and foraminifera; frequent gray fragments of very fine-grained limestone.
- 1395 Pale yellowish gray, moderately sorted, medium grained, skeletal calcarenite; dominantly angular to sub-angular fragments of benthonic mollusca and foraminifera, etc.
- 1396 Pale yellowish gray, lithic, skeletal calcarenite; dominantly angular to sub-rounded skeletal fragments of benthonic mollusca and foraminifera; frequent sub-rounded grains of yellow to gray limestone.
- 1397 Pale yellowish brown, poorly sorted, coarse to very coarse grained, lithic, skeletal calcarenite; dominantly angular skeletal fragments of benthonic mollusca and foraminifera; 30% sub-rounded to rounded fragments of gray, cryptocrystalline limestone.
- 1398 Algal nodules and yellowish white, very coarse grained, algal skeletal calcarenite; sand fraction dominantly sub-rounded to rounded fragments of free finely-branched coralline algae, 20% angular fragments of benthonic mollusca, foraminifera, etc.

Station No.Binocular Description

- 1399 Pale yellow brown, silty, poorly sorted, medium grained, oolitic calcarenite; dominantly polished, ovoid to rounded grains - ooids or pellets; 10% ovoid grain aggregates; 10 to 20% angular fragments of benthonic mollusca, foraminifera; rare lithic grains.
- 1400 Pale yellowish brown, ?oolitic, calcilutite; sand fraction of polished ovoid grains (ooids and pellets); angular skeletal fragments extending from fine sand into silt grade.
- 1401 Pale yellow gray, ?oolitic calcilutite; appears to be composed dominantly of fine angular shell fragments, 20% ovoid grains - ooids or pellets; planktonic shells and tests frequent.
- 1402 Pale yellow gray, ?oolitic calcilutite; appears to be composed dominantly of fine angular shell fragments, 20% ovoid grains - ooids or pellets; planktonic shells and tests frequent.
- 1403 Pale yellow gray, ?oolitic calcilutite; appears to be composed dominantly of fine angular shell fragments, 20% ovoid grains - ooids or pellets; planktonic shells and tests frequent.
- 1404 Pale yellowish gray, silty, fine grained, ?oolitic calcarenite; dominantly rounded to ovoid, polished grains - ooids or pellets; matrix about 50% of very fine to silt size angular shell fragments; planktonic skeletons rare.
- 1405 Pale yellowish brown, well sorted, fine to medium grained skeletal calcarenite; dominantly angular fragments of benthonic mollusca and foraminifera; rare rounded to sub-rounded grains of gray limestone.
- 1406 Pale yellow brown, moderately sorted, fine grained to very fine grained, ?oolitic calcarenite; dominantly polished ovoid grains - ooids or pellets; 20% angular fragments of benthonic mollusca and foraminifera.
- 1407 Pale yellow brown, well sorted, fine grained, skeletal calcarenite; dominantly angular fragments of mollusca and foraminifera; rare polished ovoid grains (ovoids or pellets); rare sub-rounded fragments of gray cryptocrystalline limestone.
- 1408 Pale yellowish brown, well sorted, fine to medium grained, skeletal calcarenite; dominantly angular fragments of benthonic mollusca and foraminifera; rare rounded to sub-rounded grains of gray limestone.

Station No.

Binocular Description

- 1409 Pale yellow brown, well sorted, fine to medium grained, skeletal calcarenite; dominantly angular skeletal fragments of benthonic mollusca and foraminifera; rare rounded fragments of gray fine-grained limestone.
- 1410 Pale yellowish brown, well sorted, fine to medium grained, skeletal calcarenite; dominantly angular to sub-rounded grains of benthonic mollusca and foraminifera; frequent sub-rounded fragments of gray limestone.
- 1411 Pale yellowish gray, well sorted, medium to fine grained, skeletal calcarenite; chiefly angular to sub-rounded fragments of benthonic mollusca and foraminifera; peneroplids frequent; rare lithic grains.
- 1412 Yellowish white, poorly sorted, coarse grained, skeletal calcarenite; dominantly angular to sub-rounded fragments of benthonic mollusca, foraminifera, Halimeda etc.; frequent sub-rounded grains of gray and brown, fine grained limestone.
- 1413 Pale brownish white, well sorted, fine to medium grained, skeletal calcarenite; dominantly angular to sub-rounded fragments of benthonic foraminifera and mollusca, frequent pereroplids, rare lithic grains, brown, fine grained limestone.
- 1414 Pale yellow brown, moderately sorted, coarse grained, skeletal calcarenite; dominantly angular fragments of benthonic mollusca, foraminifera, Halimeda, etc.; rare lithic grains.
- 1415 Pale yellow brown, well-sorted, medium-grained, skeletal calcarenite; chiefly angular fragments of benthonic mollusca and foraminifera, Halimeda, etc.
- 1416 Pale yellowish white, coarse to very coarse grained, skeletal calcarenite; dominantly angular to sub-rounded fragments of benthonic mollusca and foraminifera.
- 1417 Pale yellow brown, well sorted, fine to medium grained, skeletal calcarenite; dominantly angular skeletal fragments of benthonic mollusca and foraminifera; rare rounded fragments of gray limestone.
- 1418 Pale yellow brown, well sorted, fine to medium grained, skeletal calcarenite; dominantly angular skeletal fragments of benthonic mollusca and foraminifera; rare rounded fragments of gray limestone.

Station No.

Binocular Description

- 1419 Pale yellow brown, moderately sorted, medium grained, skeletal calcarenite; dominantly angular fragments of benthonic mollusca and foraminifera; rare sub-rounded fragments of gray brown limestone.
- 1420 Pale yellowish white, well sorted, fine grained, ?oolitic skeletal calcarenite; 70% angular fragments of benthonic mollusca and foraminifera; 20% polished, ovoid to rounded grains - ooids or pellets;; rare lithic grains.
- 1421 Pale yellowish white, well sorted, fine grained, oolitic, skeletal calcarenite; 70% angular fragments of benthonic mollusca and foraminifera; 20% polished, ovoid to rounded grains - ooids or pellets; rare lithic grains.
- 1422 Yellowish white, very coarse to coarse grained, skeletal calcarenite; dominantly angular to sub-rounded grains of coralline algae, (Lithothamnion), benthonic mollusca and foraminifera, Halimeda and echinoids, rare sub-rounded fragments of gray cryptocrystalline limestone; algal nodules with Gypsina plana.
- 1423 Gray brown, silty, medium to fine grained, skeletal, ?oolitic calcarenite; sand fraction 70 to 80% polished, ovoid to rounded grains - ooids or pellets, 20% angular fragments of benthonic mollusca and foraminifera.
- 1424 Pale yellowish brown, silty, well sorted, medium grained, ?oolitic calcarenite; composed dominantly of polished, ovoid to rounded grains - ooids or pellets, 10 to 20% angular to sub-rounded fragments of benthonic mollusca and foraminifera.
- 1425 Algal nodules with live coatings of Lithothamnion and Gypsina plana occurring in channels incised into the rocky prominence of the northern shelves. Also coarse grained skeletal calcarenite composed of angular to sub-rounded skeletal fragments of benthonic mollusca, foraminifera, and Lithothamnion, occasional lithic grains.
- 1426 Pale yellowish white, coarse to medium grained, skeletal calcarenite; chiefly angular to sub-rounded fragments of benthonic mollusca, Halimeda, and foraminifera; Amphistegina frequent.

Station No.

Binocular Description

- 1427 Pale yellow brown, silty, well sorted, fine to medium grained, oolitic calcarenite; sand fraction dominantly polished ovoid to rounded grains - ooids and pellets, 10 to 20% angular skeletal fragments, frequent grains of gray, cryptocrystalline limestone; occasional globigerine foraminifera.
- 1428 Light gray, silty, well sorted, very fine-grained, skeletal calcarenite; chiefly angular skeletal grains, frequent planktonic shells and tests; rare polished ovoid grains.
- 1429 Brownish gray, silty, poorly sorted, very coarse to coarse-grained, skeletal calcarenite; chiefly angular to sub-rounded fragments of benthonic mollusca, foraminifera and branching coralline algae (Lithothamnion), agglutinate foraminifera abundant; 40% of sand fraction consists of planktonic foraminiferal tests with Globorotalia, Globigerina, and Orbulina; many of the skeletal grains are heavily abraded with orange staining on the outer surface; some foraminiferal tests have green fillings which may be glauconite; Amphistegina frequent; occasional ?lithic grains.
- 1430 Pale brownish gray, silty, poorly sorted, very coarse to coarse grained, skeletal calcarenite; about 60% of orange, angular grains of benthonic mollusca, foraminifera, coralline algae and bryozoa, 30 to 40% whole shells and tests and angular fragments of planktonic foraminifera - including Orbulina, Globigerina, and Globorotalia. Some tests are filled with a green substance possibly glauconite; frequent agglutinate foraminifera.
- 1431 Brownish gray, silty, well sorted, fine to medium grained, skeletal calcarenite; composed of angular grains of benthonic mollusca and foraminifera, frequent fillings of glauconitic substance, frequent soft pellets, occasional grains of gray, sugary limestone.
- 1432 Yellow brown, oolitic, calcilutite; sand fraction of polished ovoid grains, angular skeletal fragments, frequent planktonic foraminifera.
- 1433 Fragments of Agaricia agaricities heavily encrusted with Lithothamnion and Gypsina plana.

Station No.

Binocular Description

- 1434 Gray brown, poorly sorted, very coarse to coarse grained, skeletal calcarenite; chiefly composed of angular to sub-rounded fragments of benthonic foraminifera, mollusca and benching coralline algae (Lithothamnion), Amphistegina, and agglutinate foraminifera abundant; 10 to 20% whole tests of planktonic foraminifera.
- 1435 Gray brown, well sorted, silty, medium grained, skeletal, ?oolitic calcarenite; about 70% white polished, ovoid to rounded grains - ooids or pellets, 20 to 30% angular fragments of benthonic mollusca and foraminifera; rare flakes of well-cemented oolitic limestone, occasional aggregates, pereroplids abundant, frequent globigerine foraminifera.
- 1436 Pale yellowish brown, well sorted, fine to very fine grained, skeletal calcarenite; chiefly composed of angular fragments of benthonic mollusca, foraminifera, etc., occasional rare oolites, occasional planktonic foraminifera.
- 1437 Yellow brown, well sorted, medium to coarse grained, skeletal calcarenite; dominantly angular fragments of benthonic mollusca, foraminifera, Halimeda, and Lithothamnion; Amphistegina abundant, frequent Globigerina, rare lithic grains.
- 1438 Yellow, well sorted, medium grained, skeletal calcarenite; composed of angular to sub-angular fragments of ?benthonic mollusca, and foraminifera.
- 1439A Dark yellow brown, calcilutite.
- 1439B Pale yellow brown, silty, poorly sorted, coarse to medium-grained, ?oolitic, skeletal calcarenite; sand fraction about 60% angular to sub-rounded fragments of Lithothamnion, benthonic mollusca and foraminifera and Halimeda, 30% polished ovoid to rounded grains, - ooids or pellets.
- 1440 Yellowish gray, silty, well sorted, skeletal, oolitic calcarenite; 80% polished, ovoid to rounded grains - ooids or pellets; 20% angular skeletal grains of benthonic mollusca and foraminifera; occasional flakes of cemented oolitic limestone.
- 1442 Greenish yellow brown, silty, well sorted, very fine to fine grained skeletal calcarenite; sand fraction mainly angular skeletal grains, frequent ooids or pellets, frequent planktonic foraminifera.