H. B. Steward, Jr.
USC&GSS Explorer
Book III

Key West to
Yucatan Strait
and
return
and on to Norfolk, Va

3/29/60 — 4/18/60

50176

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Start

Key West

Gatun Lake in the Canal, and 2 in Lemon Bay at the Atlantic end of the Canal. The depth was only 26 feet. Mike was again on the BT winch. The new men aboard had their camera out, and we were again in business.

The first core got about 4 inches of very course coral sand and a few chunks of pebble size. This all went into a jar. The second core took 3 tries, and even then we only got a little sample - again of course coral sand - but adequate for the PHS requirement.

As soon as we were clear of harbor, there was quite a flurry of activity closing ports and checking the lashings on stored gear, for the wind was about 25 mph, and we started to roll a bit. By noon we had a good roll and pitch, and there were six or eight who headed for the rail -

833
6 | 5000

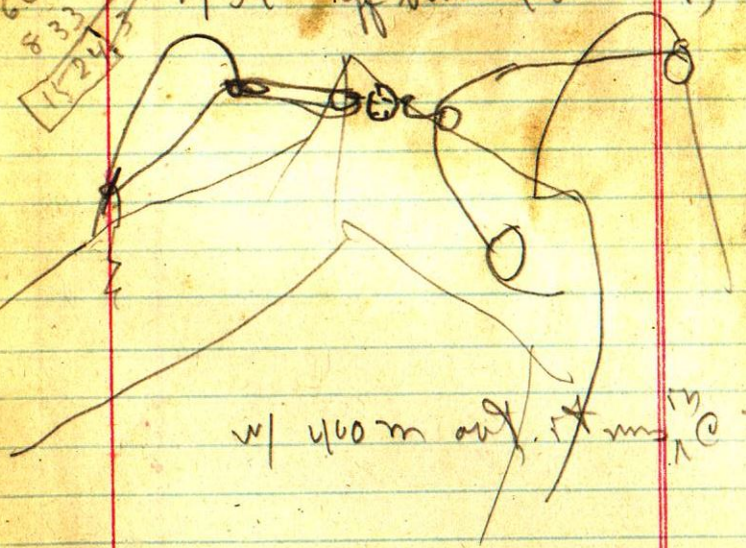
1.83
500
91500 m

3/29/60

Geol Dredge #2

1744 500 fms - dredge at surface
1748 Start down
1807 at 900m depth now 497 fms.
1828 at 1453m out.
Ship's roll puts ca 1500 lbs on dynamometer - cable is 12000# test
1835 Depth 490 fms.
1850 Start Pay out more line to 1479
1856 at 1479 ½ way through last tager to tighten up drum,
1902 Start in -
1934 - off bottom (850 m up) 476 fms.

833
1.83
2499
666
833
1524



w/ 400 m out. it runs in @ 35 m/mt

3/29/60

Geol Dredge #1

1427 Dredge over - 160 fms. Had drifted NE a good deal while mag. was coming in
1432 at 475 m - water now 153 fms.
1443 at 500m -
1449 - Btm 145 fms. - no tension indication on dynamometer - now 1450 slight bottom indications -
Lie to heading - 195°
Wind 090 @ 20 mph.
1455 Start in - 143 fms.
1615 In -
Hole in net - probably lost a good deal. Clinkers - coal & one calcareous chunk. -
Corals, bryozoans, shrimp, & a [illegible] Snails - all in formalin for BCF

183
160
10980
183
29280

3/30/60

Seal Dive #3

0132 slow for Mag pull-in
0155 Mag in-
0158 start down - Depth 200 ft = 366
0212 at 700 m Depth 190 m
No dynamometer pull at first - then as slack taken up by current drift, the dynamometer showed 0-700 # with roll
0233 bottom 180 fms - let out line to 800 m
0236 at 800 m
Line to heading 230°
0250 start in Dive to 2500 #
0318 - in

Gray fibrous coccoz mudstone
Climbers? - shells, 2 crabs, starfish, hermit crab, no coral, 1 shrimp

29 March 1960 Key West at

1645 - The Er pulled away from the dock at exactly 1000. Two of the men just never got there and we had to leave without them. There were two girls, though, my wife & Byron Hale's, that would have been happy enough to come in their stead. As the Navy tug was left astern I could still see Elise standing on the end of the pier. She had stopped waving and was just watching us swing into the channel and head out.

Zeller, Dinardi, and Cummins are aboard, and Ron Reed has been clueing them in on our ship-board procedures on dissolved oxygen titrations, BT's, drift bottles, and their various other duties.

I think we are all glad to

be underway again, to get on with the trip. This week, though, will be our busiest, and I don't expect to get too much sleep. There will be three dredge stations and an acco. station before sun-up tomorrow, a four or five hour break, and then the search for and sampling of the drowned barrier beach that the Hydro found and that Jordan and I described

30 March 0500

Have just finished bottling the samples from the 3rd geological dredge, and since the oceanographic station comes up in about 45 minutes there is a chance to get a bit caught up here.

Leaving Key West, we stopped briefly just off the breakwater at the Navy Base to collect the last two bottom samples for the Public Health Service. We collected 2 at Panama, 2 in

for bringing in the fish, and although the Puff sweeps buckets each time it comes in for fear of banging it against the hull, it is now done fairly smoothly. It does take several men, so we usually clear the bridge of all lookouts, recorders, and extraneous workers and all pitch in to get that fish ~~about~~ out of the water.

It was 1744 when the dredge with its new inner net cleared the rail and started the long trip down and back in 500 fathoms. We dredge the way the Russians do on the Vityaz and Michael Lomonosov, off the bow. The Ex has a ~~heavy duty~~ Marhey winch on the starboard side of the forward deck powered by a 10 hp motor. It Trey

one who headed for the windward rail; but I think the next time, he will go downwind even though it may be a bit farther.

As we were about 3 miles from the first dredge station at the top of the Fourtales ~~Escarpment~~ escarpment, we had to slow down, as there was a good deal of rigging that still had to be done up on the foredeck, and we were taking too much water up there at standard speed to work. Even at ½ ahead, Cmdrs Bull, Whipp, and I all got wet. - Just realized the present Exec. is Bull, his replacement is Whipp - what a fine combination of names to keep the crew hard at work.

The dynamometer that had come on loan from the Marine Laboratory of the University of

Miami was attached to the 3/8" cable with a snatch block. Its other end was hooked to a block & tackle which was secured to the port anchor davit, and the cable led out over a sheave at the peak of the starboard davit. It made a good and workable rig.

Nordahl has just come up from below to get ready for a balloon release but has called it off on learning we are only some 60 miles from Key West. He releases only when we are 100 miles away from another weather station, so he has lit up a cigarette and is having a cup of cocoa & his day looks pretty good - even at 0530.

omit [It is now 0750, I have just had a really monsterous breakfast - since I fully plan to be asleep at lunch time -

130 fm = 238 m

Sta #30

Surf-	(261)
14	249
16	240
31	230
2a	220
19	200
23b	175
5b	150
7	100
5a	50
Corer-	0

Start Down	Down	Mess Down	Start up	up	Wire $
0600	0626	0632	0634	0648	6°

1.63
167
183
109 8
183
294.63

B. Bk - 306 @ 0626
Back up to 261

Smelt from 110° 2'
Wind was 170° - 1'

(6)

omit

and will try to bring this up to our just-completed 30 fm oceanographic station.

As we were rigging up the dynamometer, we were buzzed by a couple of Navy helicopters we had been watching as they worked with a destroyer - like two flies buzzing around a dog. The DE started to blink at us, so the quartermaster went up to the signal light to answer him. It developed they were working with subs and asked us to stay clear to the east. "How far east?" we blinked, and they answered that we were even then clear of the area, so back to our rigging.

We would have liked to ~~have~~ put the dynamometer directly on the line at the tip of the starboard davit from

Dredge # 1 & 2

which the cable led overboard, but that would ~~have~~ have lowered the sheave so much that we would have been unable to raise the chain bag rock dredge over the rail. As it was, we had to man handle the chain bag part over the rail.

These two dredge hauls were planned at 150 and at 500 fms on the north-south line that includes the only described rock sample I know ~~of~~ of from this area. About 10 yrs ago a man dredging for sea shells ~~hung~~ hung up on a rock and rode out a storm using his dredge as an anchor. After the storm, he recovered his dredge, and instead of heaving over the rock that had been broken off, he turned it over to a geologist. It has been correlated with the Miocene

Chapalla formation of Florida and gave considerable information about the shallow back-reef environment in which it was deposited. That sample was from 375 fms, and I hoped that by dredging along the Pourtales ~~Escarpment~~ above and below that depth, we could add to the knowledge from that one sample.

The dredge went over at 1427. The day was warm and sunny with occasional clouds and a good 25 mph wind out of the east was whipping up whitecaps, and we were still rolling. The depth was 160 fms (293 m). We purposely made it a bit deeper than 150 fms, for we had drifted northeast (against the wind) while bringing in the magnetometer and hoped to be at about 150 fms when the

wasn't full, but neither was it completely empty. Once we had manhandled it over the rail and over the greasiest cable I have ever seen, we could see what was on it ("We" here is Cmdr. Bull, Hale, and the crew who helped — Ward, Woods, and Edmunds this trip).

The ~~biological~~ haul was considerably better biologically than geologically. There were rocks alright & several clinkers probably dumped from old coal burning ships, one clean lump of coal, and one — thank heavens — chunk of calcareous material. Biologically there were some lovely pink very fragile branching corals. Once below the limits of vigorous wave action, the more fragile corals can survive, and these I had never seen before. There

were also branched yellow organisms - not the gorgonian I am familiar with — up to a foot across, numerous small hydrozoans (?), several gastropods, and one fine shrimp. These have all been placed in formalin, a bit of Borax added as a buffer, and will go to the Bureau of Commercial Fisheries as a dividend and for identification. The rocks have been put in envelopes.

The net inside the chain bag had taken quite a beating. There were several large holes, and I am sure we lost some rocks - at least I prefer to think we did, for that justifies the couple of hours I put in aft cutting the heavier netting I had gotten in San Diego and making a new inner bag. Working with

light netting in a good wind on a rolling deck is a hair on the frustrating side. I finally anchored it all with bits of chain and was just seated cross-legged in the best tailor trade form and had just started using marlin to stitch up the bag when we took a good roll and the tailor shop was immediately under 6 inches of water, and the tailor wet and furious.

By the time the bag was finished - and my anchoring chains untangled from the netting, there was just time to have chow with the early watch before we hauled in the magnetometer as we stopped at the next dredge station - the one in 500 fms. They now use the after steam driven capstain

for bringing in the fish, and although the Ruff sweeps buckets each time it comes in for fear of banging it against the hull, it is now done fairly smoothly. It does take several men, so we usually clear the bridge of all lookouts, recorders, and extraneous workers and all pitch in to get that fish out of the water.

It was 1744 when the dredge with its new inner net cleared the rail and started the long trip down and back in 500 fathoms, we dredge the way the Russians do on the Vityaz and Michael Lomonosov, off the bow. The ex has a ~~heavy duty~~ Marhey winch on the starboard side of the forward deck powered by a 10 hp motor. At the

In Lab— O_2 Titration Equipment
Cl bottles

Philadelphia Frame—

~~Any Hn modules??~~

Bring down Cl. cases

the drum and to re-reel it under tension. Although it had been spooled on the winch with big Ernie hanging on to a 2x4 for a reel brake, it was still too loose under the ~~press~~ tension it now was getting.

By 1828, some 44 minutes after we started, we had 1453 of the 1500 meters on the drum out over the side. The dynamometer worked well. On each roll, the tension would go up about 1500 pounds and then back down, but from time to time it would jump up erratically, and we knew it was ploughing along over the bottom. As one final try to get out as much of the loosely-wound cable as possible, Cmdr Bull had Paul Wille run out an additional 26m to 1479m, and then at 1902 after

an hour of dredging and several good nibbles, she started in, and an hour later the dredge broke the surface. Again there was no great abundance of much of anything. There was one four shrimp and what appear to be clinkers that have been fused into a clinker conglomerate with calcium carbonate. The Exec thinks it's volcanic, and I nailed him with a bet that it isn't. One of us will have to buy me a drink when the Geological Survey has looked these over.

Once the samples were jugged, and the magnetometer back in the water, I went below, caught the last reel of Van Johnson as a Nazi who saw the light and became a "good-guy", and went to bed about ~~0~~ 2130 with a call for 0100 in the morning. In

A letter from the Key West Naval Base to the Coast Survey was routed via the Navy Hydrographic office. In it the Commander of Key West told of the USS C. K. Bronson (DD-665) making a sonar contact at 24° 20' 2" N, 82° 13' 9" W. Over a 5-hour period other destroyers, two ASW helicopters with sonar, and two "minecraft" with UQL (which he explains stands for underwater object locator) converged on the area and picked up the same contact, using sonar, fathometers, ~~and~~ UQL, and experienced ASW officers, their conclusion was that this was sea bottom, a NW-SE ridge some 150 yds long at 150 to 180 feet depths in a general area of 675 feet.

Capt. Munson, the Navy Hydrographer, wrote back (Code 1100-mf, serial 371) and I quote: "It is gratifying to note the high team work and tenacity ~~displa~~ displayed by this group of ships when, having detected this elusive shoal they maintained contact and contained it despite its evasive and tricky maneuvers."

Even though this all sounded like fun, sleep seemed more important to me at the time, so this I decided to forego.

omit

last

In between this dredge ~~station~~ and the next one, the ship was to make a pass over a spot southwest of Key West where the Navy reported a shoal of about 25 fms. ~~This~~ ~~I decided to forego for sleep.~~

(insert) I'm glad I did, for even with a visual bearing on Cosgrove Shoal light (014°T) and a depth of 114 fms. the ships track found not the slightest trace of a rise. We will plan, however, to go over the spot again on our way back from the Yucatan channel. Maybe they didn't have sea bottom after all.

omit

Trig - our Eskimo quartermaster who is a sharp boy but not too happy in this heat - woke me ~~at 0400~~ and the Exec at 0100 this morning and we fought our way up to get back to it again. At 0132 we slowed to pull in the fish again, and at 0155 we had the dredge over the

side again and had started to lower away to the bottom 200 fms (366 m) below us.

This dredge station was an especially important one to me and Fred Jordan back in Washington. This area in about 200 fms is a small area of undulating bottom. If bathymetric contour chart suggest valleys along the slope, but I believe them to be a set of small step faults related to the larger fault, the Pourtales escarp. If we could get some rock here it might help.

We let out 700m - about twice the depth and then held up to see if the dynamometer would show us to be on bottom. There was no pull at first, but as we drifted and took up the slack, the tension would

build up to about 700 pounds with each roll. After 20 minutes during which we had some good nibbles, we let it on out to 800m. It was now 0230 in the morning, and suddenly the two big searchlights we had trained on the winch and general area winked off. We had flashlights and kept on. The stars were clear and on a nice night like this even the little stars were out. The roll was considerably less than it had been, and as the dynamometer jerked away to show we were getting the bottom, life looked good.

At 0250 after nearly an hour since we started Grant Lewis started to reel in, and the dredge broke into the circle of light formed by our flashlights at 0318. Then the searchlights came back on as mysteriously — to me — as

they had gone off, and the bow and dredge were flooded in light.

This trip — yes, another clinker — but also several apparently fresh pieces of a gray fibrous calcareous ~~marly~~ marl-ish soft rock. It will take the Geological Survey to make more sense than that out of it, but at least we had a sample from that interesting area.

The others went off to help stream the "fish", while I finished canning the haul. Biologically we also got two pink and white paper-shell crabs — again showing that the more delicate sea creatures are deeper where they are not subjected to the rigors of the shallower waters. There was a whole jarful of empty mollusc shells, two hermit

crabs in gastropods, one small starfish, and one shrimp. These have since been pickled in buffered formalin and will also end up at the BCF.

end.

1400. I've worked at this on and off between stations, and had planned to be asleep now, but a 1300 fire drill routed me out ~~[illegible]~~ after a sound two hours sleep. We are due to core and dredge at the crest of the West Florida Escarpment before long, so there is little chance to return to Morpheus.

About 0600 this morning we arrived at Occo. station EX-30. The depth was only 161 fms (295m), so I put on one extra bottle to get the 200m sample and put the corer 50m below that. We thus had only one cast and the station went without a

hitch and we got a good core of medium calcareous sand.

This was the first station for the new crew, and it came on Tony Dinardi's 4 to 8 watch. I got Ron Reed up about 0500 to help with the oxygens and Tony did well. The cast started at 0607 and was all back aboard by 0648. On the PDR I heard a good ball-breaker — I could even hear the chain uncoiling as the corer was released. This was only 12 m extra cable (wire angle was 6°), so it went all the way down as a pretty straight line.

at 306m of wire out

Had a good breakfast at 0700 and came below to shower, shave and sleep. Our daily planning session with the Captain was to be at 1000, and after I had gotten out of my highly greasy ~~shirt~~ shorts and

shirts, even socks and once-white tennis shoes were greased up from the dredging ~~cable~~ cable, once I was clean, I felt so good I worked on this ersatz log until meeting time.

Then I did go to bed at 1100, Then came that dern firedrill at 1300!

There was no hope of getting back to sleep - a man's nerves are still jangling hours after he has been jarred into abrupt semi-consciousness by that general alarm. I have since bored up some corals from Swan Island, checked the Alert from station 30, gone over the next dredge area with the bridge, and talked with the Captain, Cmdr. Stone, and Art Raff on the planning of the two plus extra days of

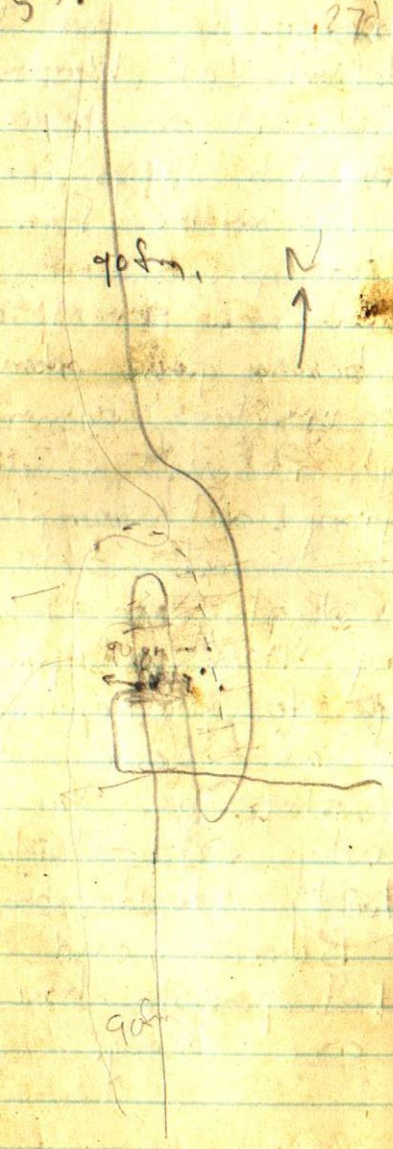
surveys

magnetometer, I requested from the Director, This would be a four or five-line survey with lines 100-miles long at 20-mile intervals in general depths of 2000 fms off Cape Hatteras. So far as Art Raff knows, this is a magnetic Terra Incognita, and it will make our magnetic results considerably better if we can learn something of the general magnetic structure off our East coast, see if it is at all like the magnetic topography he found off the west coast when the Pioneer towed a "fish" on her surveys a few years ago. This will be time well spend, and my Memo to the Director was answered saying OK up to 72 hours and also saying the EX would not stop at Norfolk but would proceed

up Chesapeake Bay and the Potomac to end the expedition at Washington. Personally I think it is fine. This means my favorite ship-meeter will be only two miles from home when we tie up, and the transfer of all the scientific equipment will be a good deal easier. With visitors coming aboard, though, it will mean our digging out samples of rocks, plants, insects, plots, charts, boat sheets, etc instead of having them all packed and ready to go. However, I would just as soon come to the ship as to the office, so why not? Certainly the publicity should be good for the Bureau, and we need to let people know what we are doing.

1.83
86
1098
1464
957.38

89
2
178
18
(160 m)
.27



160
16

Geol Dredge #4 3/30/60

1718 stop on Geol Dredge Sta # 4 to pull in mag.
1739 Start down after net repairs & shackle addings.

1742 - (160 m)
1747 - 300 m out
Ship laying on cable so no nibbles felt. slow ahead & hard right
1801 out to 350 m, line clear of hull.
87 fms
1805 start to put out to 450
Bottom 86 fms
1808 at 450 m
Ende praying for no hangup

1845 Start in — 86 fms.
1858 in

Coring run — in lagoon behind Howell Hook

#21 — Stop 2125 ϕ 25°51.0′ λ 84°14.6′
2128 on bottom
2131 in Depth — 87

#22 — Dn 2156 ϕ 25°47′ λ "
2158 on Btm.
2200 in Depth — 87

core had to be re-done, 1st are empty. 2nd was coarse sand, but liner had been pushed up & ca. 4" oozed out below core catcher. This held & then pushed back in. Hard rain —

#23 — Dn 2232 ϕ 25°43′ λ —
Btm 2233
up 2235 Depth 87 Fms

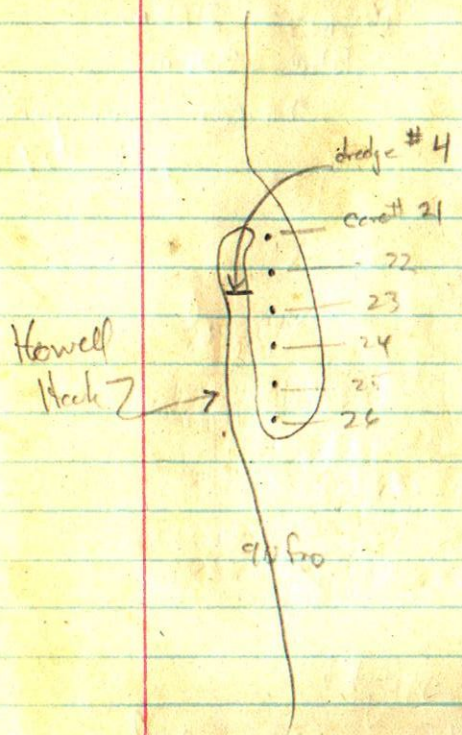
#24 — Dn — 2301 ϕ 25°39′ λ —
Btm — 2302
up — 2304 Depth — 88

#25 Dn — 2333 ϕ 25°35′ λ —
Btm — 2334
up — 2336 Depth — 88

#26 D 0001 ϕ 25°31′ λ —
B 0002 Depth 88
U 0005

Sta #31

1281°
183
311



0018 underway for sta #31.
Sleep on deck 0100-0200
Sta #31 — Pouring rain — 0220 — 0308
Ice fm 293m — Ball Bk @ 320 —
small birds, Cummings & Reed — write state
Only snd grains
— Core on barrier a bust — rocky —

Station # 31
0220 to 0308

	Mtr
Srf	(261)
14	249
16	240
3	230
2A	220
19	200
23B	175
5B	150
7	100
5A	50
Cover	0

160 fms = 293m
Bk @ 320m
no core - fur guard #27

on the wet board

Rain last night and buoy flooded

1825
183
5475
14600
1825
333 9.75 = 3340m

170 311m

wind 180° -
Sea 180° 3'
Swell confu

#32

	Start Dn	Dn	Ness Dn	Start up	up
1st	0643	0653	0659	0701	0706
2nd	0709	0735	0741	0746	0810
3rd	1034	1100	1109	1133	1208

2°
36° 25° est

200, 400, 500, 611, 715, 815

		mw
Srf	0	3311
3	1000	2300
2A	2000	1300
19	2500	800 794
23B	3000	300 294
Cover	3300	0

No B. Bk.

Btm - 3340
3450 slow
3500 - 50 -
3600 - 50
3700 50
3800 50

0718 cast to 500m - ship on cable, no wind, slow & hrd rt. then hrd lft to get it away
Lie to - 280° - switched to 110
Swell 220° @ 2'
wind was - confused
Mag fouled on rudder - worked mag cable amidships stbd. - goes under ship - pulled in cast & cable on it. Mag cable lifted up to A frame & cast brought in un-tripped,

3
2A
19
23B

with may cable up fwd fish
stbd - hung on rolling chock.
Snagged it w/ grapnel - released
loop - now 0926.
0945 - fish now has been
manhandled aft, cable is along
stbd deck - lots of kinks.
Dirty - Dirty - Dirty -
Fwd winch grease
Occo " " & cable
May cable red -
1100 - Cast finally down - wind puts us
broadside, but current puts us upwind,
so cable runs under hull. We have
to kick it ahead and hard left
to get wire away.

Final heading 085° is good -
Cast aboard 1215 - c/w for #33

After finishing A sheet for 32,
I set up 33 sheet & had a late
lunch & checked w/ stone on
Nutlay & no in-between BT's
on 36-41. Helped Cummings on
watch & slept for 1hr on deck. At
1450 we stopped for #33.

3/31/60

Sta # 33

#1		#2	
(161) -	Srf.	(1031) -	srf.
149 -	14	815 -	5A
140 -	16	715 -	25
130 -	3	611 -	2B
120 -	2A	508 -	8
100 -	19	405 -	23A
75 -	23B	202 -	24
50	5B	0 -	13
0	7		

	#3	Dn	up
	Srf -	3211	
3	1000	2200	
2A	2000	1200	
19	2500	700	
23B	3000	200	
Cover	3200	0	
	3130m		

BBK - 3302 @ 1651

	Start Dn	Dn	Mess Dn	Start up	up	Wire ∡
Cast #1	1510	1519	1525	1526	1530	5°
Cast #2	1531	1538	1549	1555	1605	13°
Cast #3	1608	1630	1633	Lower = 1648 Start up 1651	1725	12°

25 fm

183
1710
183
1281
183
3129.3
3250

No problems at all here with the wire angle. Just lay to with wind broad on the port beam & it worked like a charm. Currents have evidently much less.

Swell from 180° @ 2'
Wind waves 200° @ 1/2'
Ly to heading 280°

Chow 1730 - 1800. Worked up core 28 from 33 & got set for #34, & wound up 33 - Sack 1930 - 2020. Awakened 2020 for #34

Start 0600 - 29° Sleep - 3:30 (2130 - 0100 29-30)
2 (1100-1300 - 30th)
1 (0100-0200 - 31st)
3 (0330-0630 - 31st)
1 (1930-2030 - 31st)
1:45 (0030 - 0215 - 1 April)
1:30 (0600 - 0730 1 April)

3/31/63

Sta #34

(Srf)	(161)	
14	149	
16	140	
3	130	
2A	120	
19	100	
23B	75	
5B	50	
7	0	
(Srf)	0	2250
19	200	2050
5A	300	1950
25	400	1850
2B	500	1750
8	600	1650
23A	800	1450
24	1000	1250
13	2000	250
cover	2250	0

	Start Dn	Dn	Mess DN	Start up	up	Wire ∡
1	2100	2110	2116	2119	2121	5°
2	2126	2152	2157	Start down 2207	2234	20°

Start up 2211

Ball break at

1220
183
3660
9760
1220
2232.60

285° Lie to hdng varies only

Burlap bag with 4 balls put on top of ball bkr we lowered a whole junkyard on the end of that cable.

2350
2400
2700

B.Bk 2491 @ 2211

Wind 155° @ 18mph
Lie to heading — 290

After station - I filled in sta sheet & fixed up the ore for sta 35 B2 & I switched thermoms (left protected) ~~from~~ in 3 & 14 as 3 had been ~~of~~ consistently not breaking. This way it will be paired with a 2nd ore and at the surface.

BT winch not registering properly - will try to calibrate with a stop-watch and slide. Getting depth vs. time & we can use the time to get the depth.

0030 to the sack - sta 35 about 0230 unshipped 0215 -

#35 H/1/60

S.f	(161)		
14	149		
16	140		
3	130		
2a	120		
19	100		
23b	75		
5b	50		
7	0		
S.f	(0)	2211	
19	200	2000	2000
5a	300	1900	1900
25	400	1800	1799
2b	500	1700	1699
8	600	1600	1598
23a	800	1400	1398
24	1000	1200	1198
13	2000	200	198
Cover	2200	0	
Bottom	(2214)		

1.23
1210
183
366
183
221
4.3

2250

Start Dn	Dn	Mess	Stat up	up	use ∠
0300	0308	0813	0816	0825	9°
0328	0344	0350	0400	0423	16°

Ball Bk at 2329 @ 0403
Core #30

575 600 109800 700 1286

Back up after 1 hr 45 min sleep found that BT had run out 51 secs and was more than 450. Then 40 secs. went to 440m - perfect.

0240 BT started on Sta Beck to haul in mag. Guessed it at 1 1/2 minute for 900 ft stopped s.

Fms or meters to Mike - will try football fields -
1 fbf = 100 yds = 50 fms.
1 Wash Mnt = 555' = 92.5 fms.

This is the last one prior to the straits of Kweaton -

575	36
940	37
1150	38
1125	39
690	40
25	41

#36

1st of the Speedy Set -

(Srf)	(161)		
14	149		
16	140	wind	135° @ 18 mph
3	130	1 seas	2'
2a	120	Swell -	110° @ 3'
19	100	Lin. to Hdg -	235°
23b	75		
5b 7	50		
Srf	0 (1031)	1231	
5A	815	1015	
25	715	915	
2B	611	811	
8	508	708	
23a	405	605	
24	202	402	
13	0	200	
Cover	(1231)	0	

Bottom 1464 m (800 frs)

	Start Dn	Dn	Mess Dn	Start Up	Up	Wire ∡
1st Cast	0854	0904	0910	0912	0915	10°
2nd Cast	0918	0935	0941	0946	—	4°

BG - 1524 @ 0950

183
795
915
1647
1281
1454.85

1464 (800)

After Stalin - fixed up A-sheet for 35 & 36, winch sheet, and wire ready to roll.

Talked a while with Max Weisgerber about the interview we are to have at 1800 today w/ ~~the~~ AMPC - LA - will have to get capt to send message for him to use Miami, as New Orleans too faint.

0600 - 1 April - to bed with a call for 0730.

Up 0730 - chow, 1st Sta on Straitrun was at 0840 - Since water comes out of core bbl - will catch it for Cl & C_2 - Only grains - no smpl.

1045 - Switched thermoms on battles #16 and 24 (left ones) so that thermom #6986 that had not been breaking would be paired with another protected at the surface rather than with an unprotected at depth.

#37

750
1.83
225°
6000
750
1372.5°

(Sil)	(161)				
14	149		940		
16	140		1.83		
3	130		2820		
2A	120		7520		
19	100		940		
23B	75		1720.20		Line out at trip.
5B	50			(Down meter)	(+89)
7	0				
(Sil)	(+216)	1031	~~2771~~	1401	(1479)
19	+100	815	~~2555~~	1185	294
5A	+104	715	~~2455~~	1085	394
25	+103	611	~~2351~~	981	498
2B	+103	505	~~2248~~	878	601
8	+203	405	~~2145~~	775	704
23A	+202	202	~~1942~~	572	907
24	+340	0	~~1740~~	370	1109
13	+30		~~1400~~	-30	1449
Cover	0		1370	0	1479

Desired Depths: 0, 200, 300, 400, 500, 600, 800, 1000, 1340, 1370

Bottom 1370

	Start Dn	Dn	Mess Dn	Start up	up	Wind 14°
Cast 1)	1146	1155	1201	1203	1206	
Cast 2)	1211	1230	1236	1247	1304	22°

wind - 146° 26 mph

Sea - 135° @ 3'

Swell 110° ? 2'

1130 stop - on sta # 37

B4m 137

1400

50

Line out 1500

Ball break @ 1229 - 1504

Back to 1490 m @ ~~1505~~ 1230 so all values must be adjusted accordingly - line out is 1490 minus 1401 or 89 m more than figured.

3 echoes, so probably hard bottom - It was indeed, we had planned to get btm. water from cover and had bucket ready - most of the core was already gone - a fairly crs. snd. was still sliding from the cover and was caught in the bucket - labeled as sample # 32. The water that came out with it was decanted off and put in Cl bottle # 588 for a salinity determination.

1150
915
183
1994.7

	(Sf)	(161)
	14	149
	16	140
	3	130
	2a	120
	19	100
	23b	75
	5b	50
	7	0

Desired Depth	Bottle	Add	Meter Wheel
0	(Sf	(+216)	(2126) ←
200	19	+100	1910
300	23b	+104	1810
400	5a	+103	1706
500	25	+103	1603
600	2b	+203	1500
800	8	+202	1297
1000	23a	0	1095
1500	24	(+100)	595
1975	13	+	20
1995	Cover		0

	Start Dn	Dn	Ness Dn	Start up	up	Wire ∠
1	1456	1502	1509	1511	1514	22°
2	1520	1558	1604	1614	1632	18°

This trip to keep life interesting and to try for a water sample close to the bottom, a bottle was put on 20m above cover. Cast set up assuming 2126 is ball break point.

1537 hold off lowering to come left slow in an attempt to reduce 45° wire angle.

Cast took longer than usual as chief checked the current at each lowering speed.

1950
2000 ✓
50
2100

Ball Bks @ 2130 – @ 1558
Had set up for 2126 & it hit at 2130 – Wow! If they handed out oceanographic medals, that would rate at least a bronze star
I sweated out each bottle &

they all had trapped - one that hadn't reversed would have ~~[illegible]~~ megged up the whole thing.

Corer came up & wouldn't you know the one time I wanted a short core with lots of clear water on top, I got a tubefull with only a little murky water on top. Couldn't run an O_2 on that, so it was bottled as a salinity sample. Core (#33) had inches of buff $CaCO_3$ ooze over inches of much coarser $CaCO_3$ mtl. One pocket made up ~~solely~~ of sponge spicules, forams etc.

Angie's velocity meter did not function properly. He says it would take too long to fix to justify waiting for it when the stations are this close.

Since we had 9 bottles on this, it is taking longer to read

#39

(Srf)	(161)	Wind 145°	@ 26 mph
14	149	Seas 145'	4'
16	140	Swell obscured	
3	130		
2a	120	Ball Bk 1961 @ 1919	
19	100	Back to 1955	
23b	75		
5b	50		
7	0		

	Desired depth	Add	Planned Meter wheel	up Reading	Wire length
(Srf)	0	(+216)	(1979)	(1955)	(1944)
19	200	+100	1763	1762	182
23b	300	+104	1663	1662	282
5a	400	+103	1559	1558	386
25	500	+103	1456	1455	489
2b	600	+203	1353	1352	592
8	800	+202	1150	1149	795
23a	1000	0	948	947	997
24	1500	(+100)	448	447	1497
13	1828	—	20	18	1926
Corer	1848	—	0	-2	1954

Bottom 1848m

	Strt Dn	Dn	Mess Dn	Strt up	up	Wire ∡
1)	1812	1819	1826	1827	1830	20°
2)	1857	1924	1931	1941	1959	8°

Strong →

183
1010
1834
183
18483

Since this close-to-the-bottom bit worked so well. I'll stretch my luck & try again. With the bottom at 1848m, I rigged for a ball break at 1979 and got it at 1961m. Pretty lucky! only 16m off this trip. Pulled the string up 6m to get the corer out of the bottom, so surface meter reading is now 1955.

#40. 4/1/60

(Srf)	(161)
14	149
16	140
3	130
2a	120
19	100
23b	75
5b	50
7	0

Bottle	Desired	add	Meter wheel
Srf -	0	216	742
5a -	200	100	526
25 -	300	104	426
2b -	400	103	322
8 -	500	103	219
23a -	600	(+50)	116
24 -	640	~~20~~	20
cover	660	~~0~~	0

Bottom 622 m (340 fms)

	Start		Mess	start		Line
	Dn	Dn	Dn	up	up	∡
1)	2210	2219	2225	2227	2234	26°
2)	2236	2240	2317	2321	2334	40° +

1.83
450
915
732
823.5

375
183
1125
3000
375
686.25
18.3
662.95

1.83
340
732
349
622.2

1.83
300
549.00

Wind 36 mph from 135°
Lie-to 230°
~~Bott break at~~ more to 800 m!

Bottom shoaling rapidly was 680 at start, 622 m at msngn
Angles variable & high.
290 fms at upposit.
A truely weird station - we evidently crossed what must have been a real shear zone. Wire angle was high and wind top increased to 36 mph. Bottom was 450 fms at start - 2nd cast had to be modified twice as bottom shoaled. It was finally 290 fms at the ap position. Wire angle was very large

and no amount of steaming and changing course towed decent. Wire was under the ship, then would slip off and stream wide again

0430 - 2 April - Since 0630 last Thursday (it is now Saturday) I have had 4 hrs & 15 mts sleep and No more than 1 hr 45 mts at a time.

2045 - 2 April - Slept from 4130 to 1130 & feel a bit better. Have done odds & ends today - labelling dredge hauls, planning the next leg. Now for the sack & we dredge on Arrowsmith Bank at 0200 tomorrow -

Box of BT slides, brochures on a roll all plotted, hmmm

1.83
25
91.5
366
45.7.5

#41

4/2/60

		Meter	(L)
0	(Srf)	(51)	0
1	14	39	1
10	16	30	10
20	3	20	20
30	24	10	30
40	19	0	40

~~Start~~	Dn	Mess	Up	Dn	[illegible]
~~0121~~		Dn			0
0126	0132	0138	0139	0140.	160

Case 25 fms
Dn 0140
Up

1.83
26
109.8

1.85
26
1110
370
48.10

1.83
26
109.8
366
47.58

Way North

BCF- Sta 2

Stop on Sta @ 0250

1-a- depth 103
Time start 0303
At 370m 0313
Depth now 92 fms,
Start in 0318
Depth 90 fms

In @

Start over - no bottom
Strong winds & currents
may mean this operation
impractical -

0400 2 April

Cmdr Whipp, Cummings & Dinardi
all told how to do it. I'm
dead on my feet - !

This is the first operation I
haven't done since Panama & I
don't feel guilty - just tired.

Don't know when
I've been so
dirty!

Driffing

Biological dredgings

~~BCF Dredging~~

No.	Date	(fm) Depth	(m) Line out	Dredge Time	Total Time	Bot. Temp.	°C	Lat N	Long W	
1a	3/11	100-183	400	07	24	19.7		16° 35.4' N	82° 47.2' W	
1b	"	150-274	550	05	30	14.7		~~16° 38' N 32~~	~~32° 52' W~~	— 1900 fix —
1c	"	200-366	597	05	30	12.3		16° 39.4' N	82° 50.2' W	
1d	"	250-458	750	05	33	11.3		16° 40.0' N	82° 51.6' W	
1e	"	300-549	850	06	35	9.7		16° 41.0' N	82° 53.6' W	
								16° 41.6' N	82° 54.5' W	(replicate)
2a	4/2	100-90	581	05	72	21.5°		(no sample on 2 trips)		polishing dredge showed was on bottom
2b	"	150-152	540	05	45	20.7°		22° 09' N	86° 31' W	(ship fix)
2c	"	187-190	720	10	53	16.8		22° 09' N	86° 29' W	
2d	"	280-290	1000	06	80	12.75		22° 09.5' N,	86° 25' W	
2e	"	300-315	1300	09	87	12.1°		22° 11' N,	85° 25' W	
		~~Additional samples from geological dredging~~								
3a	4/8-9	105-105	570	05	44	15.1°		25.00'	80.13'	
3b	"	152-154	700	06	34	13.0°		24° 54'	80° 09'	
3c	"	203-215	800	07	67	6.99°		24° 53'	80° 04'	
3d	"	258-318	900	07	67	8.04°		25° 12'	~~80° 00'~~ 79° 59'	
3e	"	300-318	1200	05	67	7.1°		25° 06'	80° 00'	

— Very strong currents on this station —

4/3/66 Geol. Dredge #5

Dredge raw through hawse

Crest of Arrowsmith Bank -

0730 over the side in 13 fms,
0734 at 100 m of cable out.
0750 start in 15 fms.
0755 up but had hung up & weak link broken
0815 on deck -
- Algal balls - more sea weeds than in any other dredges. Some corals -

38,041 m

48430
26350
(124,810 ft Balloon)

Sta	O_2	Cl.	Sed. Smpl.
~~27~~	~~15~~	~~15~~	~~#18~~
~~28~~	~~20~~	~~20~~	~~—~~
~~29~~	~~13~~	~~13~~	~~#19~~
30	9	9	#20
31	9	9	#27
32	19	19	—
33	19	19	#28
34	16	16	#29
35	16	16	#30
36	15	15	#31
37	16	17	#32
38	17	18	#33
39	17	18	#34
40	14	14	—
41	5	5	#35
	182	185	16

Since TWI

As of 31st
Get Trackline Hydro through the 31st
Dredge sta - Biol & Geol →
~~Jam air~~
New bag for dredge
Fix dredge
Set up for diving

Miles of hydro –

March		
	29	72
	30	221
	31	148
April	1	-184
	2	-137
	3	255
	4	283
	5	20.5 (Mag absorb 0022 4/5/60 so only 4 mi here)
		1320.5 Hydro
		16.5
		1304.0 mag

BT's every ½ hr. across channel drift bottles every hours

• Jamming air –
Planning diving Mon PM & Tues AM
Dredging Pourtales Seascamp Mon night

BT winch counter out again. Again using timing – 40-45 secs

Sun PM. Angus & Joe Kelly fowl shaft from gear to counter was rubbing. now OK

BT's on our easterly course with wind from SE were going back along the hull & coming in they slid along hull too. Starting at 1200 4/3/60 we are turning right 45° for the 5" it takes to take a BT since our set is to the north anyway, this went fowl up track too badly, but the bridge 30' above the water is still no place for a

BT wrech! I find I am becoming a full-fledged field man and am oursing the Wash office - completely oblivious of the fact that that's me.

Stalk of bananas swinging ~~up on the~~ from the awning support on the boat deck. The least green ones each time I go by are still too hard to eat, yet the stalk gets smaller & smaller. Somebody must really like green bananas.

Since leaving Key West, we have had high seas with winds always above 20 mph & more often above 30. Ship has pitched & rolled a good deal. Now as I watch the dial on the air compressor the view out from under the awning is alternately sea & then sky & the stalk of bananas ~~gyr~~ swings crazily.

Bernie Zetler with his bum leg has found maneuvering aboard this lurching world of ours pretty difficult going. Today 3 April, the Capt wired washington asking that he return in place of Ron Reed who would like to remain aboard.

4 April, 1960

1100 - A target of opportunity showed up last night in the form of an uncharted rise in the Florida Straits ~~some~~ at 23°16' N, 84°38' W ~~miles~~ north of Cuba. In general depths of over 1000 fms, the bottom rose to 586 fms. Deep bank is about 13 miles long and 7 miles wide inside the 1000 fm line. Development of this has thrown our diving plans for today into the proverbial cocked hat. We would get to Casgrove Shoal too late tonight to have any light left for photography.

It is now set up for tomorrow at 0800. Ron Reed is jamming air in that last

tank up on the boat deck. Zetler is doing BT's and drift bottles, Dinardi is asleep after his night watch & Bob Cummings is just about to relieve B2 for lunch. The boys have caught on fast and are doing a good job.

Mike is rigging the Phleger Corer, release mechanism, and ball breaker on the 3/16" cable, and I hope Ron and I can photograph this in action tomorrow. Then they will put on the cast weight and 3 Nansen bottles at 5 m intervals. These will be tripped and – we hope – photographed. Then its the biological and geological dredge, and if any time is left, I'd like to take a look at the so-called "Twelve-mile Reef" It ~~was~~ is this reef that the glass-bottomed boats ran to out of Key West and that the movie "Beneath the 12-mile reef was filmed. Any good footage we get there could be cranked ~~in~~ unobtrusively into our Swan Island footage –

Cmdr. Whipp just came in with the weather report, and small craft warnings are up with winds above 25 kts expected – great!

23° 16.2' N – Shoal @ 586 frs
84° 38.2' W in general depth of over 1000 frs –
13 x 7 miles inside 1000 frs.

Shoal

~~To bed at 10 PM April 4th~~
after a Grade 2 [illegible] and

April 4th - meeting at 1400

Imperative Ex Arrive Washington not later than 21 April. Arrange departure Key West earliest possible curtail activities enroute as required to meet deadline. Capt. Cresby arriving Key West 5 April. Zetter to return to Washington. Read to remain aboard.

Flora

0800

Now lung April 8th from Key West - & still doing all that was planned Arrive mouth of ~~[illegible]~~ Potomac river at dawn 21 April.

To bed at 22.00 the 4th & called 0015 the 5th. Worked up plot of Biol Dredge #1 & got from 413 dane on the dredge hauls to be picked up by BCF 0025 stopped to bring in mag. on Sta # 6 dredge.

Light effects

Dredge #6 4/5/60

Bottom of Scarp

0052 Start down 270 fms
heading 145° –
0115 257 fms – 1000 m out.
0122 No bell – letting out to 1500
at 1500
0132 1305 stop
0140 and down depth 255
0147 at 1500 260 fms

0235 start in – 280 fms
0305 at 700 m
0348 on deck – No Smpl. 1.76
evidence of Sth

Breaks lips, #7
0421 in water – 150 fms – top of scarp
at 800 m. –
0436 Bottom now at 175 fms
0443 867 m bottom now @ 190 fms.
0505 Start in – Depth 240 fms
0554 Aboard – 1 clinker + phosphorite (?)
many sponges, one starfish, one
echinoid

As the wind rises, our hopes
for diving diminish

BT – 85
DB's 990

238 cases
–2 to DC
236 cases
24
944
472
5664 bottles abroad
3986 over
1678 left –
120
13
120) 1678

250
1.83
750
2000
250
457.50

6) 5000 ft
833
833
1666
166
1500

Seal Dredge #7

- Stat # 42 - 4/8/60

(Srt)		(161)
14	1	149
16	10	140
3	20	130
2A	30	120
19	50	100
23B	75	75
5B	100	50
7	150	0

→ 0

Srt (0) 430 [463]
5A - 200 280
25 - 300 130
2B - 400 30

39m

Cover - 430 0
Bottom 428

	Start	D	Mess Dn	Stat up	up	Wire
Cast 1 -	1309	1317	1323	1324	1332	3°
Cast 2 -	1335	1343	1350	1405	1436	40°

Bull bh. @ 459m @ 1340

245
1.83
735
1960
245
448.35

235
1.83
705
1860
235
428.05

Wire trended under ship after cover hit. Got messenger past bilge keel by pushing cable away from ship. Had to pull in way.

Smpl is a few chips of rock only - Smpl # 36

8-9 April 8/4

Biol Dredge #3

1.83
105
915
183
19215

Lat 25°00' Long 80°13'

3a - 105 fms

Pink sunset -
calm sea, current toward 045 ly to 135°

1849 Start down
1906 @ 570
192 1911 start in Bot. Temp 15.1°C
3 1933 in - still 105
576 1 8" fish, shrimp, crab or 2
seaweed, - not really much.

3b 2014 @ 152 fms
2016 start down Bot. Temp
Lat 24°54' 2033 at 700m 153 fms 13.0°C
Long 80°09' 2039 start in - 154 fms
? - 2050 in - Brittle stars - ½ gal full

3c
2123 - start out 203 fms (371 m)
Lat 24°53' 2143 - at 700m
Long 80°04' 2144 - no bottom indication out 100 m
2146 - at 800m. Bot Temp 6.99°C
2153 - start in
2230 in - black tube
215 fms Hdng 180°

255

1.83
152
36.6
915
183
278.16

1.83
203
549
366
371.49

1.83
260
1098
366
475.8

Lat 25°06'
Long 80°00'

3e ~~3d~~ ~~255 fms~~ 260 fms. (476 m)
2306 Start down hdng 155
2321 - depth now 280 fms.
2331 1014 m out - depth now 300 fms.
Will call this 3e
letting on out to 1200m
2340 at 1200m
2345 start up - Depth - 318 fms -
2434 aboard Bottom Temp 7.1°C

Haul in small (8-02) jar -

Long 79°54
Lat 25°12

3 d 9 APR 60

Start down - 0105 258 Fms
900m down - 0126 307
Start up - 0133 318
Bot temp - 8.0°C

afterward - 0212

1.83
250
915°
366
457.50

4.6
40
184°

9 Apr

		wire ∡
1712 - 1m - h.dng 186°		0
1717 - 10m	" "	0
1721 - 20m		0
1808 - 50m		2°
1812 Now turning 10 RPM		
1831 - 100m + stopped		
1849 150m		
1913 250m		

Angles closing on beach hotels - 265 to 258 in 1hr - at 250 fms, this is 1 knot bot to our 300m - will pick up buoy

With 300 m of Tyrex moored to 3/16" occ. cable, we were getting current to 186, so ship drifting faster & pulling meter along with it.

Will add 200# dan forth & another wgt. + more cable .063in - sounding wire

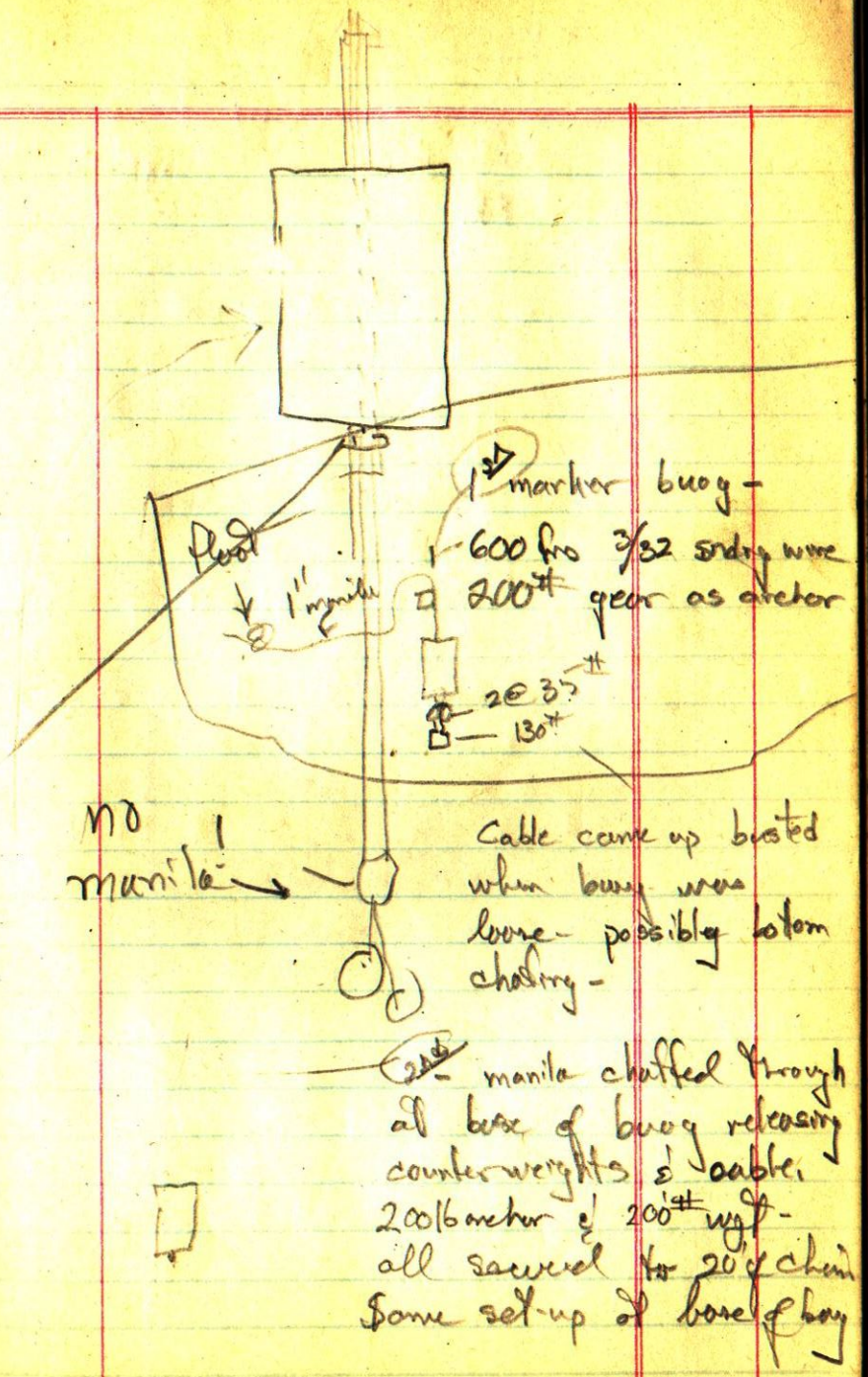
By 2300 we were still putting 3/32" cable on anchor windlass niggerhead - Had wanted to do it on the ~~[illegible]~~ dredging winch but Whipp said it was no faster; so at 0800 the 10th we were still paying out cable from the windlass.

Will try to reanchor - the buoy & try again.

0825 Buoy tipped way over as we drift N. Dropping anchor in 190 fms - will hope counter-current still here. Towing to deeper water would pull it under!

0833 anchor over - 195 fms.

0910 - Came up to buoy & it was not attached to anything!! Evidently wgts & cable chaffed through the manila loop.



Winches Aboard

Dredging winch - 5000' 3/8
was 16,500' of 1/4

BS

BT winch 3000' 3/32 aircraft - 920 lbs

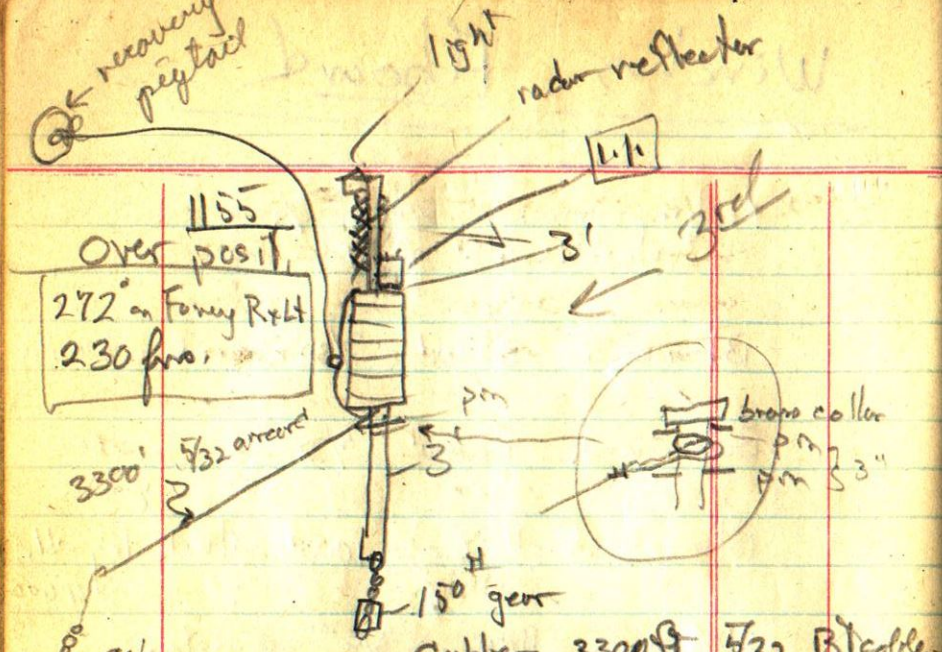
Balloon winch 15,000' 5/32 2600

Blimp winch (Mod 6z) 1000' oilwell log cbl, 4000

Weflow 40m x 3/8" - capstan

S10 - 25275' 3/16 improv.
gatran. plough steel
3x19 43-4500

Mag. - 500' 1 1/1" steam hose
7 conductor 1-3/32 stainless - 3000



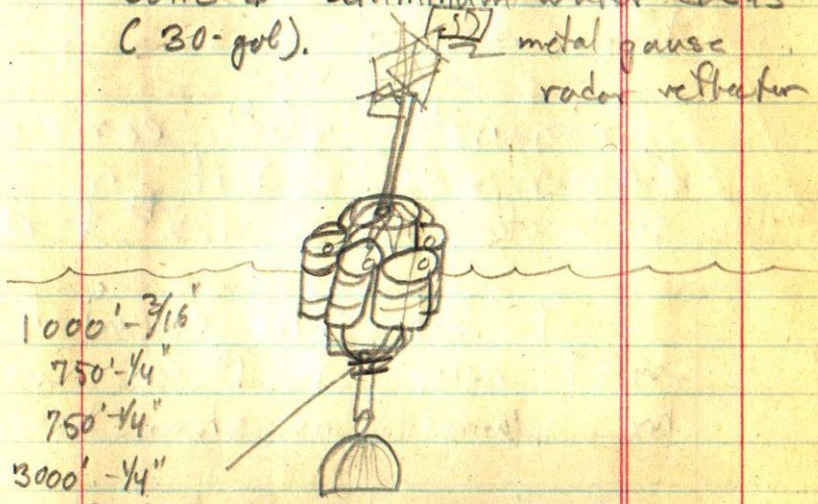
Cable - 3300ft 5/32 BB cable

1235 - This buoy dropped on the spot - Drifted W until Fowey Rx (?) light was 270° & cut her loose. This looks better.

1330 - Lost visually
1425 - Still lost

1445 Yes, it really is lost! We have gone over and over the area where we dropped it. The wind has come up, and the seas are 4-6 ft with whitecaps, and it is nowhere

1700 - We are now building a forth buoy !! We have 12 more polyurethane wafers & some 6 aluminum water casks (30-gal).



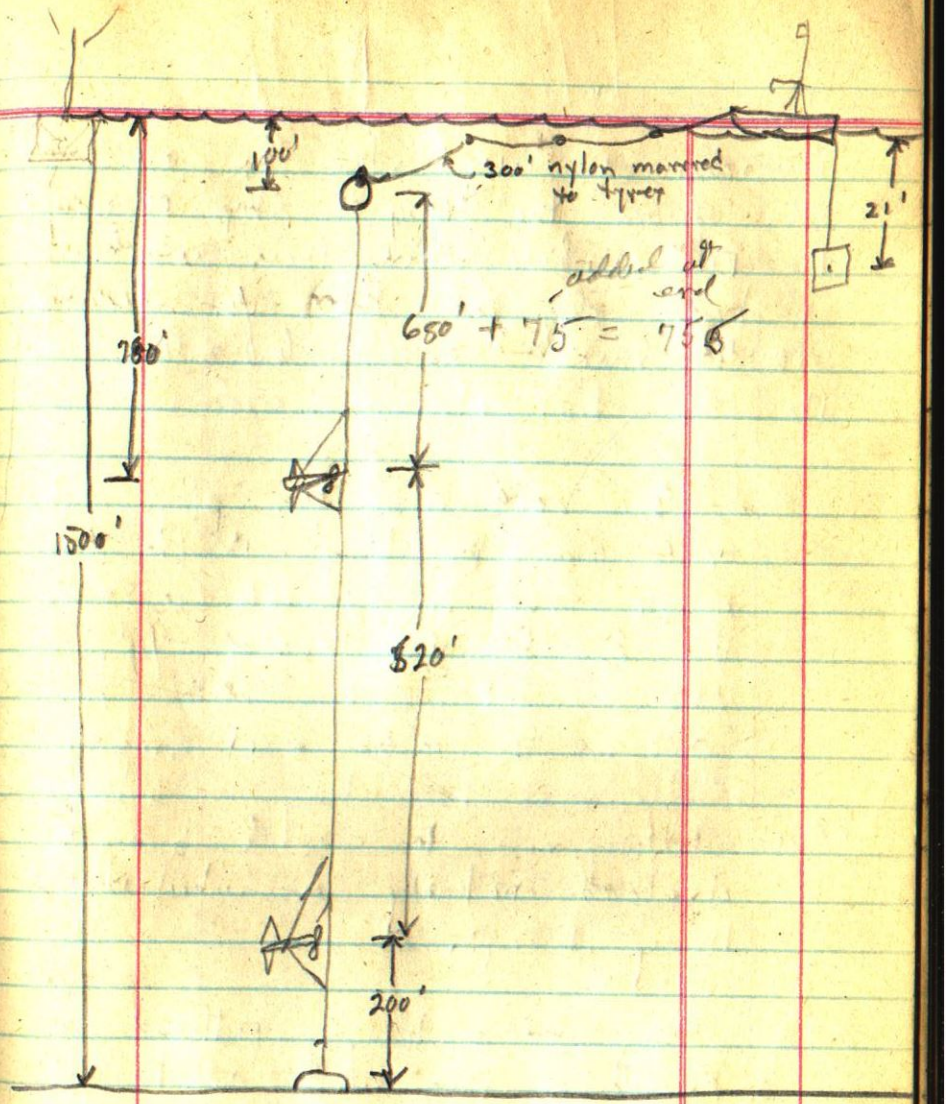
The water casks are secured around the stock of wafers with cable & Crosby clamps. Chips cut 2 wooden discs to fit top & bottom to prevent the cable chewing up the wafers. Brass sleeves with allen head set screws were made to fit over the 1" water pipe use as center pole. Will wait (1930) & plant

it all at first light tomorrow. We also plan to have one of Nordahl's balloons above it for location. Better luck this trip, we hope.

Underwater stills came out damn well - shot on Kodacolor, 120, @ 125th f 10

Just before the current buoy went over - the 1st one - we had planned it as shown here →

With the sphere at the side & the buoy at the rail with the top meter in the water, we were getting 030° at surface, 260° at the mid-meter (then at 680') and the bottom meter (then at 1200 ft) gave 185° current, so we were getting a reversal, the one at depth was moving equally strong as the one at the surface. This is a great thing, but we have no tapes to groove it. We had the



speaker on as we lowered, & we did roll through a slack area at depth on the way down. It is essential that we get in that reference buoy & make some measurements down there! Fritz Koczy, Rinkle & 2 others were here

Thursday & they plan to collect me from the U of M ship Thursday the 12th while doing their work - I have to get back for hearings. Would much prefer to stay with the ex - but orders is orders.

0800 - Since 0600 we've been playing out cable from the buoy - 1st the 1000' of 3/16 then the 2 reels (@ 75) of 1/4 & then the 3000' of 1/4". We snubbed up the cable to put on the anchor & it snapped. Cable must have hung on bottom.

0820 Checking now to see if buoy is anchored naturally on whatever hung it up.

0930 Buoy seems hung - Talked to Gerda & they will call again at 1000 - starting to lower meter.

1045 Line trending too aft - headed for screw - stop - lay to to rig it over magnetometer block. out to 70m

Rigged it on Magnetometer boom

1315 - Marker buoy carried away! Just before this meter was inoperative - brought up with Typex pulled out - redone with new meter.

1425 New meter on - starting down in 5m chunks - keeping position by bearings - no more buoys -

1455 at 120m Wire ∡ 70° (>

1500 at 160m

1505 at 175m - cable jumped roller & jammed in side of sheave

1542 at 260 - wire ∡ 78° -

1552 at ?? " " 74° -

1556 at 360 72° -

1614 " " 74° -

1626 " " 78° -

- Cable moving away 5m -

It's long & slow but we're getting there

1632 at 540m - 74° -

1640 74° -

1658 @ 620m 80°

1740 - 800m out & we are out of Tyrex cable!

Discussions on drifting vs. steering for recovery - waited for all to come to equilib

1850 Started the long pull in - Tyrex badly coiled around the 3/16" & cutting tips on both bridges & tentail -

1925 Rimco counter went out 418m

1935 Back in - loose plug -

1950 meter up, Cables badly twisted - how we are not too sure - took a long time to get is all squared away

Then get set up for occ. stn

Current (SOB!) Station

Sta #43

Srf		(161)
14	1	149
16	10	140
3	20	130
2A	30	120
19	50	100
23B	75	75
5B	100	50
7	150	0
(srf)		(525)
5A	200	325
25	300	225
2B	409	110
~~Corer~~	521	0 521
~~B1~~		
~~B4~~		

	Start Dn	Dn	Mess Dn	Start up	up	wire ∡
2171	2053	2101	2107	2111	2119	12°
2053	2125	2134	2140	~~2145~~	~~2152~~	
1:18				2152	2211	4°

$\boxed{\text{B4 at 657m}}$

1.83
250
915
366
457.5

285
1.83
855
2280
285
$\boxed{521.55}$

600
650

Wind 060 - swell sure 6'

Current (SOB!) Station

Sta #43

Srf		(161)
14	1	149
16	10	140
3	20	130
2A	30	120
19	50	100
23B	75	75
5B	100	50
7	150	0
(srf)		(525)
5A	200	325
25	300	225
2B	409	110
~~Cover~~	521	0 521
~~B1~~		
~~B4~~		

	Start Dn	Dn	Mess Dn	Start up	up	wind ∡
2171	2053	2101	2107	2111	2119	12°
2053	2125	2134	2140	~~2145~~	~~2152~~	
1:18				2152	2211	4°

$\boxed{\text{B4 at 657m}}$

1.83
250
915
366
457.5

285
1.83
855
2280
285
$\boxed{521.55}$

600
650

Wind 060 - swell sure 6'

Sta #44

	(160)		
14	149		
16	140		
3			
2A			
19			
23B			
5B			
7			
Sed	370		
5A	200	170	170
25	250	120	122
2B	300	70	
Cor	360	0	

Start		Mess	start		wind	
Dn	Dn	Dn	up	up	∡	6°
0703	0715	0723	0726	0733		
0737	0743	0749	0754	0801	∡	24°

Ball bk at - 449 m cwt

1.83
200
366

Wind 10 mph -

190
1.83
37°
1520
190
347.7°

Sediment Sample is # 37
gray coarse Sandy silt or
fine Sand.
Took Top Cm for Phlger

#45 Get turns/min at 5 posits up & down -
- Check level wind -

14		
16		
3		
2A		
19		
23B		
5B		
7	150	
	↕	760 →
5A	200	560
25	300	460
2B	400	360
8	500	260
23A	600	160
24	700	60
Cover	760	0

Time

	Start Dn	Dn	Mess	Start up	up	Wind
1st	1529	1538	1544	1559	1603	5°
2nd	1606	1618	1634	1641	1703	3°

Bottom bottle on 1st Cast did not trip - reset to 161m @ 1552
Mess. hung up on tape from yesterday
Mess @ 1558

45 - 400
46 - 180
47 - 230
48 - 140
49 - 160
50 - 550

1.83
400
732.00

1.83
550
915
915
1065

33 00

1.83
415
915
183
732
7594.5

Ball Bk - 840m @ 164

#46 Dinardi $5

Lower wgt to bottom at 4 speed up at 4 m

	Srf	(161)	(381)	282	-261 on 3rd
14	1		369	276	12
16	10	420	360	-261	No Smpl.
3	20	410	350	-251	OT
2A	30	400	340	-240½	— No Trip
19	23B	50	370	320	-220½
23B	5B	75	345	295	-195
5B	7	100	320	270	-170 -168
7	5A	150	220	220	-120
5A		290	170	170	-79
25		300	70	70	-38
Corer		370	0	0 58 m	0 3 -99865

	Start	Dn	Mess	Start up	up	wire ∠
1st	0124	0137	~~0233~~			
		0240	0248	0250		11°

Cable at start jumped one of the sheaves in the counter - lots of fussing to get it back

Low ∠ at first, so started Angle's velocity meter - then angle increased, but we had to wait steaming until

- Bull. bk at 411m -

183
200
366.00
366

Time Dn

0 — 370
1 — 369

10 #13 put on & cast to re-lowered

~~Whether zero of srf or zero of platform, you must still lower the extra 11m to get the string to the proper depth~~

Better check all wire depths on previous stations — After all last cast bottles are lowered to surface reading - that 11m must still be subtracted from top meter reading to give proper line depth (L).

370 — 0

Msngr on 2nd Bot hung, released at Srf - all put back fast to proper depth

Whole cast re-done with Bottle #13 substituted for # 2A which did not trip

Then last 2 didn't trip -

S-put back at 0255 - 1103 - 0304

Final lowering - Bottom 2 bottles -
0258 Dn
0304 Mess wire ∅ 14°
0306 Start up up - 0315

Recapitulation — after firing cable on counter

At 0124 we started down with the 1st bottle of a 10-bottle cast. By the time 3 were down, wire angle still good, so we told Argie to go ahead with his velocity meter lowering as we did not expect to steam - got all 10 bottles on and then wire scooted under hull. We couldn't steam then as velocity meter was down. One hr later the wire through & mess was down, it took more maneuvering & we lowered for ball break & core.

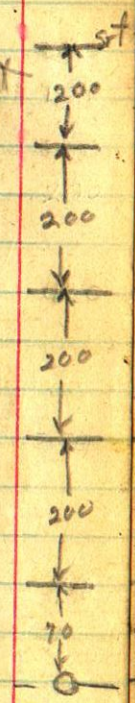
Top bottle only had tripped & on way up from water, 2nd bottle released, we quickly lowered in hopes of saving them. After 4 min we started in, but 4th bottle had not tripped. Got mess before it dropped and replaced bottle P.A with bottle 13 and re-lowered at 0240. and sent messenger

Interval

On recovering third bottle up from bottom had a snagged messenger, so last 2 had not tripped. Then put back, and whole cast back at 0302 to 381m. This time it was on.

— 3.34 ts @ 010° —

A few sand grains - but black - Smpl #39



— 2nd Cast Numbers —

	Desired Depths	Intrvl	Meter Rdngs (0' at Srf)	Wire Depth (L)	Meter (Zeroed at Srf)
Surface	—	200	(+11) 1100	(1089	870
—	200		889	200	659
		100			
—	300		789	300	459
		100			
—	400		689	400	259
		100			
—	500		589	500	59
		100			
—	600		489	600	(+11) 0
		200			
—	800		289	800	
		200			
—	1000		89	1000	
		"100" (-11)			
— Cover	"1100"		0	1100	

#47 4/13/60

1st - Standard -

2nd	(Sit)	475
200	5a	264
300	25	164
400	2B	64
Cover 475	0	0

	Start	Dn	Mess	Start	up	wind
1st	0905	0914	0929	0931	0938	090
2nd	0941	0948	1013	1021	1030	500

Lots of steaming to clear wire pre-mess -

1016 Start Dn.
1017 at 500
1018 at 550
1021 at 750

1.83
230
549

1.83
260
10980

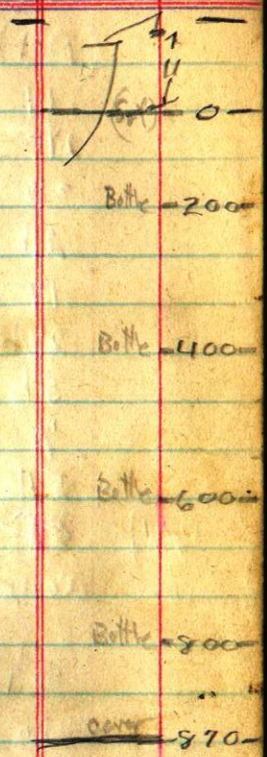
366
4 3 Rur

366
475.50

Rimco 42 Rur

50 -	47	- 99994 Sit
75 -	71	Rimco - Counters
100 -	96	64 - 162 24
120 -	115	164 - 148 - 126
130 -	125	264 - 243
140 -	135	475 - 446
149 -	144	750 - 726
161 -	156	

Waitted



#48 April 13/60

		want		old		
	(Srf)		(256)		(223 ⊕ Bot)	
	14	1	244	198		
	16	10	235	189		
	3	20	225	179		
	2A	30	215	169		
	19	50	195	149		
	23b	75	170	124		
	5b	100	145	99		
	7	150	95	50		
	5A	200	45	000 99995		
24	~~2B~~	225	20			
	Cover	256	31 D-11 0			

Start		Meas	Start		Wire
Dn	Dn	Dn	up	up	∡
1951	2006	2012	2014	2022	4°

Ball @ 268m

2nd Ball Bk @ 268m

Winch counter @ 254m

Dn-2035 Start up 2041 up 2046

Winch counter on up read 99978

In 5th Notch Rimco read 99996

up & Dn

1.83

140

732

183 26

256.

256m

Depth (L)

(Srf)(85

200

400

600

800

870

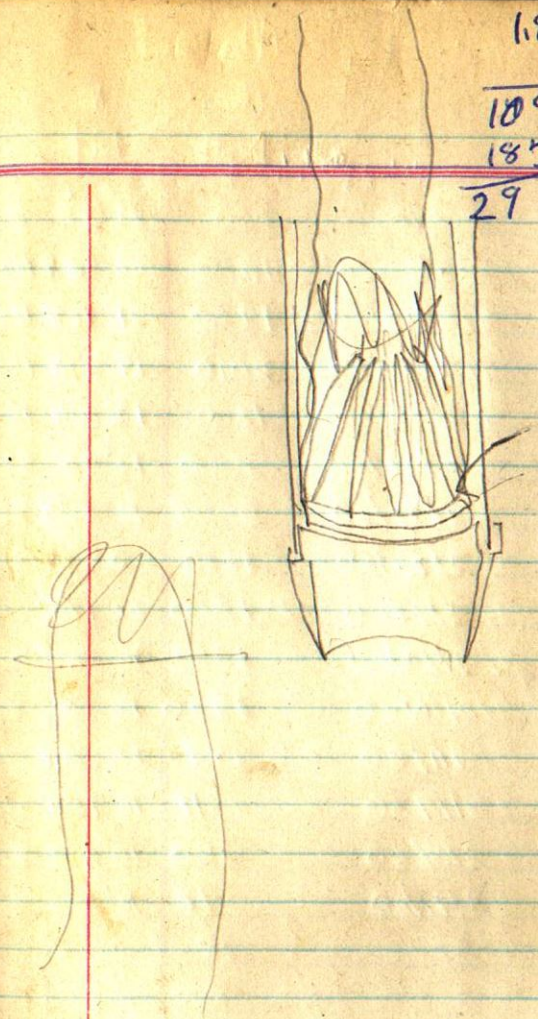
#49 4/14/60

old one

(Srf)	—	(291)			
14	1	279	245	34	
16	10	270	235	35	
3	20	260	225	35	
2A	30	250	215		
19	50	230	194 -		
23B	75	205	~~194~~ -		
5b	100	180	144	-36	
7	150	130	94	-36	
5A	200	80	55	-25	- up -
24	250	30	27	-3	99954
		-11	Spring		
292m Cover		0	on		4
173					

Start		Mess	Start		wire
Dn	Dn	Dn	up	up	∠
0540	0603	0609	0613		0°

Condum on car catcher to keep sands in
Ball B4 @ 330m



1.83
160
1098°
183
292.8°

— Core Sample Log Abstract —

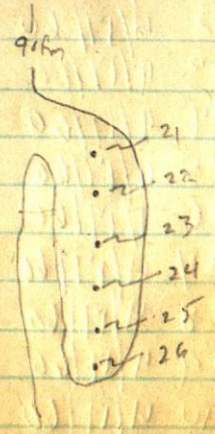
Sample #	Station	Date	(m)	(fms) Depth	(N) Lat	(W) Long	Bull Break (m)
1.	EX-12	2/18/60	2124	1150	31°00'	116°56'	none
2.	EX-13	2/19/60	3587	1960	26°35'N	115°06'W	4061
3.	EX-14	2/20/60	3623	1980	21°46'N	115°01'W	none to 4100
4.	EX-16	2/23/60	3678	2010	14°28'N	107°48'W	none to 3950
5.	EX-17	2/25/60	2928	1600	12°30'N	102°52'W	none at 3300
6.	EX-18	2/26/60	3660	2000	12°30'	97°36'	4003
7.	EX-19	2/27/60	3725	2035	10°53'N	92°28'W	3883
8.	EX-20	2/28/60	2964	1620	08°57'	88°26'	3151
9.	EX-21	3/1/60	3221	1760	07°17'N	82°31'W	3600
10.	EX-22	3/10/60	3389	1852	10°27.3'	80°21.5'	3508
11.	EX-23	3/10/60	2599	1420	12°00'	81°00'	2710
12.	EX-24	3/11/60	814	445	13°37'N	81°37'W	934
13.	EX-25	3/11/60	20	11	15°12'N	81°47'W	on BT winch
14.	EX-26	3/11/60	512	280	16°46'N	83°01'W	561
15.	EXP. BANK	3/11/60	31	17	16°52.3	83°15.0	on BT winch
16.	Great Swan I.	3/16/60	37	20 ft.			Smpls. obtained
17.	"	3/18/60		15 ft.			by Diving
18.	EX-27	3/20/60	4465	2440	18°18'N	84°33'W	none 4965 m out
19.	EX-29	3/21/60	1211	662	20°48'N	86°21'W	none 1600 m out
20.	EX-30	3/30/60	295	161	24°18'N	82°48'W	306
21.	—	3/30/60		87	25°51.0'N	84°14.6'W	Drowned lagoon
22.	—	3/30/60		87	25°47'N	"	all
23.	—	3/30/60		87	25°43'N	"	on
24.	—	3/30/60		88	25°39'N	"	BT
25.	—	3/30/60		88	25°35'N	"	winch
26.	—	3/31/60		88	25°31'N	"	

1.83
20
36.60

1.83
15
91.5

183
27.45

57
98.00 Change



CORE SAMPLE LOG ABSTRACT

SAMPLE #	Station	Date	(m) Depth	(fms) Depth	(N) Lat.	(N) Long.	Ball Break (m) Remarks	change
✓ 27.	EX-31	3/31/60	293	160	25°22'N	84°23'W	320	← 25°22'
✓ 28.	EX-33	3/31/60	3129	1710	23°55'N	84°36'W	3302	
✓ 29.	EX-34	4/1/60	2233	1220	23°19'N	84°50'W	2491	
✓ 30.	EX-35	4/1/60	2214	1210	22°33'N	84°56'W	2329	
✓ 31.	EX-36	4/1/60	1455	795	21°49'N	85°04'W	1524	
✓ 32.	EX-37	4/1/60	1372	750	21°47'N	85°21'W	1504	
✓ 33.	EX-38	4/1/60	1995	1090	21°43'N	85°39'W	2130	
✓ 34.	EX-39	4/2/60	1848	1010	21°45'N	85°57'N	1961	
✓ 35.	EX-41	4/2/60	48	26	21°37'N	86°14'W	(on BT winch)	
✓ 36.	EX-42	4/8/60	428	235	24°14'N	80°57'W	459	
✓ 37.	EX-44	4/12/60	348	190	27°15'N	79°46'W	~~[illegible]~~ 444	top Cm Sent to Phleger
✓ 38.	EX-45	4/12/60	759	415	28°45'N	79°40'W	840	
✓ 39.	EX-46	4/13/60	362	198	30°30'N	79°58'W	411	
✓ 40.	EX-47	4/13/60	476	260	31°44'N	79°16'W	none to 800	
✓ 41.	EX-48	4/14/60	256	140	32°34'N	78°07'W	268	
✓ 42.	EX-49	4/14/60	316	173	33°29.3'N	76°39.4'W	330	#43-53 Sent to Phleger —
43.	Core Sta #1	4/17/60	1760	962	36°00'N	74°34'W	1907	mud - top Cm preserved
44	Core Sta #2	4/17/60	1318	720	35°59.4'N	74°40'W	1435	top cm preserved
45	" " #3	4/17/60	631	345	36°00'N	74°46'W	BT winch	
46	" " #4	4/17/60	98	54	35°59.5'N	74°52.2'W	BT winch	
47	" " #5	4/17/60	55	30	35°59'N	74°59'W	BT & S10 winch	5 attempts - consolidated sample in formalin - no core
48	" " #6	4/17/60	33	18	35°59.5'N	75°05'W	S10 winch	Sample is ors, snd from grab sampler —
49	" " #7	4/17/60	37	20	36°00'N	75°11'W	"	Snapper Sample —
50	" " #8	4/17/60	35	19	36°00'N	75°17.6'	"	Snapper
51	" " #9	4/17/60	20	11	35°59'N	75°19'W	"	Snapper
52	" " #10	4/17/60	21	11.5	35°59'N	75°25.5'	"	"
53	" " #11	4/17/60	20	11	35°59.5'N	75°31.5'	"	"

1.83
54
73.2
91.5
98.82

1.83
11.5
91.5
183
183
21.045

11.5
21
11.5
230
24.15

– Geological Dredgings

Dredge No.	Date	From Depth	Line out (m)	Time Down	Total time at depth	Time up	Lat. N	Long. W
1	3/29/60	160-143	500	1427	23	1615	24°-16.5'	81° 25.5'
2	3/29/60	500-476	1479	1744	34	1934	24°-02.5'	81° 30'0
3	3/30/60	200-180	800	0158	38	0318	24°- 17'0	82° 22'.5
4	3/30/60	87-86	450	1739	58	18.58	25° 41.0	84° 20.0'
5	4/3/60	13-15	100	0730	16	0815	21 - 02'.0	86° 26'0
6	4/5/60	270-280	1500	0052	80	0348	24° 15	82° 00'
7	4/5/60	150-240	867	0424	11	0554	24° 15'.5	82° 00'

Notes

#5 Weak link broke when cable hung up, bag dipped, but some mtl. left.

no

On drowned barrier spit. Crest of Arrowsmith Bnk. Base of scarp – no sample

no

#50 4/14/60

Sif		
14	1	
16	10	
3	20	
2A	30	
19	50	
23B	75	
5B	100	
7	150	
5A	200	(1191)
3	200	980
25	300	880 – Bad Mumm- Mumms from Bottle 19 put on
2B	400	780
8	500	680
23A	600	580
24	800	380
5A	1000	180
Cover	1189	0

	Start Dn	Dn	Mess Dn	Start up	up	Wire ∡
#1	1450	1500	1506	1508	1512	10°
#2	1517	1537	1556	1607	1619	40°

wind trouble

Start Dn 1600 –

1.83
550
915
915
1006.5

1.83
650
915.5
1098
1189.5

Rimco Mod. 1
S10 – Specel Devel. Div.
Model – E-353R, S10# 2523

Motor: BuOrd Synchro Receiver Mod 4C
Type 1F Mark 8
110/90 volts AC. 60cycle
Bendix Aviation Corp. Eclipse Pioneer Div.
Ordinance Drawing # 950510
Serial No 428

1607 – out to 1500 – no ball bl
start in, ~~Don't believe the top bottle tripped~~

Start down for core only 1628
1640 – at 1700 start in –
Winch counter 345 m off
read 0 when rimco said 345
Back aboard 1653 –

— 1215-1315 —
Plane to D.C.

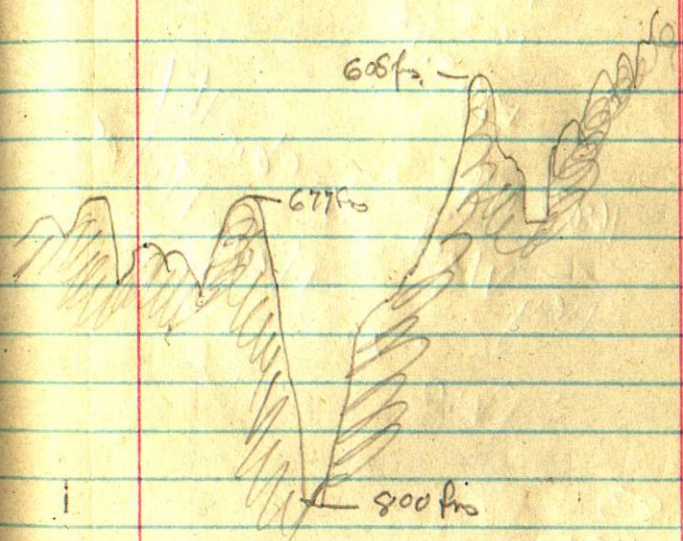
0400 on the 15th magnetometer went out. Bearing on selsen motor wore out, and gears jammed. Pulled in fish, Raff and Bottum replaced motor & we were back in business about 0900.

Totaling up winch work - exclusive of corrected stations, currents & cores — just bottle casts

50 Shallow casts for 7,621m avg. 152m
38 Mid" 36,593m " 937m
19 Deep" 63,781m " 3,357m

Totals—
107 bottle casts
Total cable run out 107,995m
or (at 3.28 ft/m) 354,223.6 feet
or 67 miles of cable let out.
Deepest was 5000m (Sta #24 in Bottled Deep)

At 1257, - 35°44'N, 74°44'W just as we came off the sleft on crs. 030°T, the PDR showed pretty rugged topography - 60 fm peaks within 1-3 minutes. Very rugged. One "canyon"



This is 41 miles offshore opposite Oregon Inlet at the north end of Pamlico Sound.

No time now to sweep it.

The 1230 BT showed that we had crossed the cold wall

962
1.83
2886
7696
962
1760.46

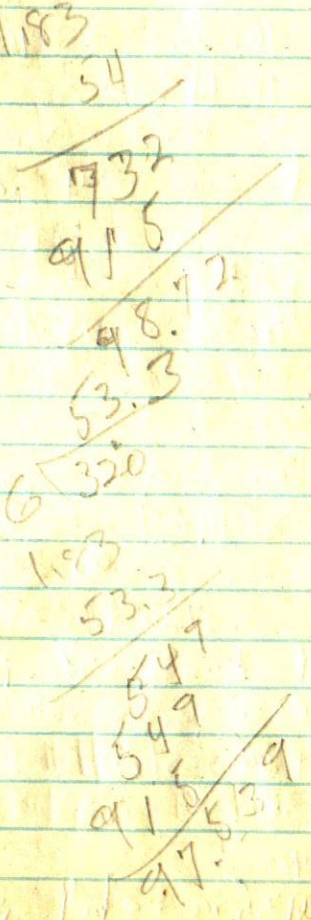
1683 NM
Key West to Core #1
This is May Miles

1.83
720
366
1281
1317.6

4/17/60 452015
40 - 700

with a temperature drop from
to F. Many slicks
and abundant fish but our
damn deadlines mean we can't
stop to sroop.

Core Sta #1 962 frms = 1760m
#43
1420 Stop to haul in mag - Core Sta #1
1435 Start down in 4 position on winch -
both meters zeroed at srf.
In 4 posit its 101 m/min.
1445 at 1000m (Rimco) Olympic read 1009
at 1400 - Olympic is 18m ahead -
1452 at 1800m
Bottom irregular - probably rocky -
1455 stop @ 1907 - Wire angle 32°
1508 - Surface
Core Sta #2 720 frms = 1318 #44
1552 Start down in 5 position
180m per minute in 5 posit.
1550 at 1300 slow -
1600 at 1350
1600 1/2 1400
1601 1435m start in wire 17°
1611 surface



1183
54
732
915
98.72
53.3
6 320
1183
53.3
549
549
915
97.53

Smpl # 45

Core Sta # 3 Depth —
FATH. RDING WAS 345

Start Down — 1710
Down — 1713 AT 2300" (BT winch)
Start up — 1714
UP AT — 1720

46

Core Sta # 4 Depth. 54 fms (98m)
~~Stop 52~~ -

Start Down — ~~1831~~ 1753 ~~[illegible]~~ 7
Down ~~1831½~~ 1754 325 = 98m
Start up ~~1831½~~ 1
up at ~~1833~~ 1755
#27

Core Sta #5 30 fms re-close
Start Dn at — 1833 1840
Dn at — 1834 200 ft 1840½
up at — 1835 1841
re 4 times [illegible]
Re-close on big winch
1854 1183
1857 30
1859 — 54.9 m

1.83
11.5
915
183
183
20.2215
183
183
20.13

35° 59' N
75° 25½' W

Core Sta #11 Smpl #53
Dn - 2249 Depth 11.3 fath 20 M
Bot - 56
Up - 51
last one - end trip →

1.83
18
1464
183
32.94

Core Sta #6 Smpl 48

Dn - 1927
Btm - 1928
1929
Depth 18 fms (33 m)
2 trys with cover and 3 with snapper cup. Sample is a small composite

1.83
Core Sta #7 - Smpl. 49 - 20 fms -
Dn 2022 36.6
Btm 2024 - 39 m out
Up 2025

1.83
Core Sta #8 - Smpl. 50 19
19 fms 35 m 1647
Dn 2104 183
Bt 2105 36 m 34.77
Up 2106

Core Sta #9 - Sample 51
Dn 2140 Depth 11 fath 20 M
Bot 2141 21 m out
Up 2142

Core Sta #10 - Sample 52
Dn 2221 Depth 11.5 Fath 20 M
Bot 2222 (3 trys)
Up 2223

59 balloons
72 synop. obs.

— PHS Cores —

PHS-1	Depth	Date	Lat	Long
1-a	39 ft	2 Mar '60	08° 52' ~~38~~ .55' N	79° 30' ~~28~~ 47' W
1-b	"	"	"	"
2a	80 ft	9 Mar	09° 15. ~~18~~ .18' N	79° 55.27 W
2b	"	"	"	"
3a	36'	9 Mar	09° 23.52' N	79° 55.93' W
3b	"	"		
4a	26'	29 Mar	24° 33.3' N	81° 48.8' W
4b	"	"	"	

Notes

Ship in planned posit.

Top 4" in jar

.55
60 ⟌3300
300
30

.30
60 ⟌18.00

.47
60 ⟌28.0
240
400
360
400

Biol. Specimens fm. Geol. Dredges

Posityruns

Geological

Dredge No.	No. of cans or jars	Depth (fms.)	Line out (m)	Time down	Total time at depth (min.)	Time up	Lat	Long	date
1	1 can	~~150~~ 153-143	500	1427	23	1615	24° 16.5'	81° 25.5'	29 mar 60
2	1 Jar	500-476	1479	1744	34	1934	24° 02.5'	81° 30.0'	29 mar 60
3	1 Jar	200-180	800	0158	38	0318	24° 17.0'	82° 22.5'	30 mar 60
4	1 can & 2 Jars	87-86	450	1739	58	1858	25° 41.0'	84° 20.0'	30 mar 60
5	1 Jar	13-15	100	0730	16	0815	21° 02.0'	86° 26.0'	3 APR 60
7	1 Can	240-150	867	0424	11	0554	24° 15.5'	82° 00'	5 APR 60

Get drift bottles set up
1) Case full } from Hess
2) cards
3) form - (HBJ has it)

Recd Diving -
Compressor on top of its box
Tank attached
3 Tank w/ regulators
Movie camera on case

HBJ. Swan I - Rx & insects, reptiles

Get Cl cases down -

— To Do —

- Make final geol. map of Swan —
→ ~~Captain for Stanley~~ -
write BCF that no Norfolk.
MW - Get 3 new 50 ml pipettes
- ~~Red Sample for Trans~~ -
~~Dredge Sample to BCF~~ -
- ~~Put C&GS Labels on cores~~ -
~~Totals on work done~~
~~Jam air 3 April~~ -
~~Chips to make compressor box~~
~~$210 to "Doc" Milsten~~ -
~~Jam last bottle~~
~~New net for dredge~~
- ~~Prepare BCF report~~ -
~~Diving gear out for 4 April~~ -
Prepare PHS report -
~~Mike to fix bottle #16 part~~
~~Get cores & dredges set up.~~
~~for u/w movies~~
~~Rack for cores - design for~~
- ~~List to Exec.~~ -
- Plastic for leaves -
~~Mark to get Crut Ray signs~~ -
~~Laundry to go out~~ -

— Wash —

Clean copy of sheets —
Sta. 17 — A sheet
O_2 sheet
BT sheets —
Drift Bottle Sheet
Check Corner casts on A Sheets
from 41, 39 & seq.

What Van Line —
Man to come down to
look it over →

Copy BCF Data —

Bring down Cl Cases

Current Tapes & Meters & buoy —
Thermal dome record —
Drift bottles with cards & data sheet
Corer w/ ball-breaker — and core rack
Diving gear w/ compressor — Photos?
Geol. Dredge
Biol. Dredge
Van Veen Smplr.
Nansen Bottles
BT's —

Swan Island — Rocks
Beach rock —
Reef limestone —

Plants —

Insects — Butterflies, jarred ones

Reptiles — (Iguanas,) lizards legless lizard

Geol. Dredge Hauls —
Ancient beachrock from drowned barrier spit
~~Anim~~ Sponges, starfish, echinoid from #17, 240 fms
— on boat deck Mtl. From biological dredge south of Tiny Inset
Corals from Caribbean near Panama Canal

In Lab – O_2 Titration Equipment
Cl bottles

Philadelphia Frame –

~~Any Mn nodules??~~

Bring down Cl. cases