

ROSE ATOLL NOTES

George = Turtle

Sightings highlighted in yellow.

John NAUGHTON

1993

ROSE ATOLL SURVEY

October 31, 1993

1730 Depart Honolulu via Hawaiian #465.

On board for survey work:

FWS: Mike Mullin, Beth Flint
NMFS: George Balazs and I
NOAA: Kevin Harbison
Contract Biologist: Andy Kendrick

Actually three objectives planned for this trip: 1) The majority of us will be conducting a damage assessment of the marine resources and habitats at Rose Atoll from the grounding and fuel spill from F/V Tui Shiang FA
2) Balazs to place satellite tags on nesting green turtles.
3) Harbison to place bench mark at Rose Island.

2130 (Simon Time) Arrive Popoia.



ATTENTION

LIVE RUFF

MAZDA TAZARA

200 TOG

5

submarine plot

submarine plot

plot

Meeting with Chip Dawson and John Culbert at airport 2200-2300. Briefed us on overnight of work on Oct 30.

To Penn under water for night.

Nov 1

after breakfast meeting at DMWR and CG (LTCM) Nick Kaser) re trip. Wind earlier overflight. Slick seen 9 am south on way, west to NW. Talk to ship agent re other fuels aboard FV. Erik:

1. Ammonia 2,000 lbs
2. Lub oil 500 gallons
3. Diesel 80,000 "
4. No point of any quantities. Do repairs in port.

Viewed videos through hunt warning. Some of lighter shots showed can I seeably in inside reef. Arrive bus transport to and from meetings - improved buses dramatically. Lunch at hotel.

1400 Bryan looking Manua'ulu, our charter vessel. Vessel is gulf mud" boat, LOA of 110'. Looks good.

1540 Depart Pago Pago Harbor. Wind 25-30 kts ESE Sea 10-12'. Duck & roll but basically not bad riding vessel. 1645 Pass south of Aunu'u Island. Bird flock (white terns and noddy) working.

On Board:
Captain Alama and 11 crew
Scientists:

1. Beth Flint FWS
2. Mike Malina "
3. John Navekton NMFS
4. George Bulnes "
5. Kevin Horbison NOAA
6. Andy Kinding Peak Consultant
7. Peter Craig DMWR
8. Peter Tridick "
9. Fale Tuilagi "
10. Jerry Russb SPC

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11. John McCaughey DMR
12. Gil Grant "

Scientists crashed in ship's lounge.
Hamburgers for dinner - not making
takers. Two groups cooking
separately. Galley catch-up!

NOV 2

Up at 0630 - rough night's sleep.
Rehearsal tough and overcast.
Coffee only.

No radio contact at 0800
Schubert. Single-side band not working
only receiving. Arrived when C-130
over-flown us at 0900. Mantua
(KMF5, ENF) aboard. Had conversations
with VHF. Will pass word to Pogo.

Had port engine problems last
night as well but ok now.

Scientists meeting in galley.
Everyone introduced and stated role
in various (3) objectives.

Island and wreck in sight at 0900.
Approach wreck at 0930
Scattered birds in area.

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0940 At wreck. Small slick
moving to NW just off NW.

Baskets of 66 gear no longer in
stern bins. Floats off also.
Several white terns around vessel.
(many sing).

0952 Second pass off vessel -
closer ~ 200 meters. Debris
small down wind. Sooty terns
flying over slick.

1007 Dropped anchor in north
pass. Good lee but strong current
coming out pass. Lost anchor.

Drifted and landed whaler
for shore party

1055 First boat land ashore to
Pasa Island. I accompanied
to help off load. Looked like

mantua very feeding in pass.

Pasa Island beach looked clean.
Two recent turtle hauls (crawls).

Lots of sooties and noddis on eggs.

Back to vessel. Zodiac passed
us with another run.

back on board, Paid John McLaughlin
for food (\$75)

Decided to dive for anchor -
Fale took Peter and I into pass
in whaler. Current stacked a bit
now. Dropped us off up current,
covered surface channel out to 100'.
No anchor. Saw several other huge
ones. Bunched dice with one short
surface interrupted by short pass again.
Many Carangids; huge school of
Caranx sexfasciatus followed us most
of dice. School of C. melanogyrus
and several Carangoides orthogrammus.
Several Elegatis and one huge C.
ignobilis (~50 volts) big dog tooth
thru. Jumpers not as common as
one would think, few Lufjanus below.
Several Macular, major and Ayurion
viridescens. Several very big L. mini -
stigmus. Species who expect at
passes with the exception of sharks
of which we saw none. Big
school of Pacific herring (Sphyrna
foisteri) within in tight group from
surface to bottom. Also one big

subtle made green thru the sea.
Very interesting dice despite no
sign of our anchor. One
anchor found with only one fluke
exposed. Cooked like fish old sailing
ship. Max depth 84', BT 38 min.

Fale and others went back to
work. No luck but found another
big anchor and took us off - 50
meters. Maurisfeld is anchored up.
(Saw 5 adult turtles in pass).

Low tide at 1415 so Peter Craig,
Wiles Mubira, Andy Kindig and I
went over to wide third pass
and across lagoon. Tied 2 dice
off to reef side at edge of lagoon
and worked large section of reef.

Debris from wreck - lines, shoes,
clothing, plastic, much wire, etc
on reef flat. Almost all soaked
in oil. Just opposite where a
sand and rubble zone has formed.
Dug into and strong H₂S smell. Some
dead coral and mollusks found here. Also
Kodan RDF (K5-541). End of zone

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approx 150 meters from vessel, SFC
60 m. x 15 m. wide. Effect like rock
in stream with vessel being rock.

Reef flat immediately opposite
wreck has serious damage. Also
many urchin (*Echinostoma*) holes
but no urchins. As we moved
south less apparent damage.
Urchins appear in holes. Slotta
urchins evident. ~~It is~~ probably not
as bleached at tips. *Pocillopora* had
greater color. Especially important
were healthy *Echinostoma* burrowing
astoriae south of wreck.

Back to wreck area. Some corals
obviously dead or partially dead,
mostly *Flavia*, some *Pocillopora* and
Acropora. However, that reef flat
has extremely low coral coverage of
less than 20%.

Headed up north of wreck along
under edge. Tide begins to come
in. Notice an algal bank or slime
brownish in color over much of this
area. Appears to be epiphytic on much
of biota weakened or dead. At approx.

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350 meters brown algal slime begins
to fade away to firm nodular reef

at 1610 walked straight in
to investigate slits or sheer seen
inside. Beyond in vicinity nearby
dead *Tridacna maxima*. Found
four dead with some weak shells in
shells; 6", 7 1/2", 5 1/2", 5 1/4" across
shell. Strong dorsal smelt.

One debris found heavily oiled.
rainbow shown when pulled out.
Turned over rocks and sheer appears.
Kick up rubble and some - all the
way into lagoon edge and back
to Zodiac. Very much surprised -
all four of us.

Completed survey at 1650.



10

Back to Manua'ele. Crew catching papia (*C. lugubris*, *C. ortho*.) off after-dune which stripped.

One for dinner.

Work up field notes - transcripts. Meet with Mike, Andy to discuss days findings.

Crash 2130. Hard to sleep with crew watching movies all night.

NOV 3

Up at 0630. Weather heavy overcast with rain but no wind. However wind came up at 0730. Miserable day. Cold - in wet suit.

Meeting with marine team (Mike Molina, John McLaughy, Andy Kindig, Nampton). Discuss surveys needed based on yesterday's screening.

John reports 6L gear attached to hut by Sand Island. Therefore decided to look at pinnacle tops in lagoon as well.

Baker's and company (Gil, Peter, Leffer) got two turtles last night. Heavy rain so could not put on transmitters, but will.

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1025 Wind down a bit to ~15 kts. Fale, John Mac Mito, Andy and I headed out to check pinnacles in lagoon straddling wreck.

Sloppy as hell at first and south of wreck - wind ESE and full fetch across lagoon.

This pinnacle double with saddle between about 20' deep. Counted 83 *T. maxima* in saddle. Pinnacles easily had over 200 *Tridacna* on it. No sign of oil impact on this pinnacle (or sb).

Moved north to next pinnacle. Again no damage from oil, but much debris on bottom of 30'-35' around pinnacle. Sides of this pinnacle covered with colonies of *Favia* sp. Area with old *Tridacna* shells all over - obvious swarms was harvesting. Fish biomass around pinnacles not great. No big squarish sponges. Big alien and other very good size fish.

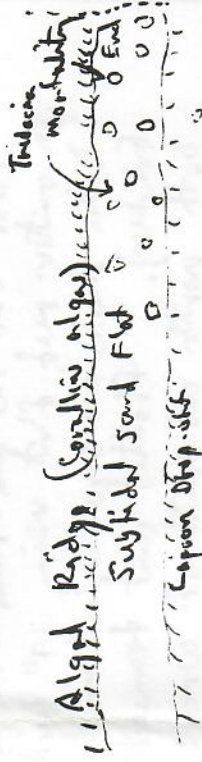
12

Fail fish pressure must be a factor. High density + large stature. Worked into subtidal reef flat to check it out. Swam from best pinnacle straight toward wreck. Much debris on bottom. Old water soaked cardboard pieces covering bottom of lagoon here. Also bags, back packs, clothing up on sand, bushes by OF lagoon immediately found dead sea urchin remains. First work out crop had 8 *Thidacna*, 2 recently dead with some molt still attached. Kept working north and found numerous dead *Thidacna* - obviously cut killed. Moved on with all but crops until *Montastrea* stopped. Doubtful I estimated distance from wreck at ~500 meters. Saw outcrops totally dead others only on of so - no dead pattern. Saw weechin tests contained by you. Last spotted *Thidacna* water quality. Load of reef fish very noticeable. Small so dried strong mist of way. All debris heavily oiled - much debris.

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Intertidal Reef Flat



saddle



Double Pinnacles



Pinnacles
in 30-55

Get team worked across lagoon to Rose Island. Bath gave us tour around island. Visited *Budaxes* and group *Pteroglossus satalata* pocket on back of huge *Agave* (107 cm). Another slightly smaller in shade water its turn. Many Sooty Terns and wedgies on eggs or chicks. All three booby species and both Frigate on island. Fourteen species of seabirdy nest on Rose. Long-tailed cormorant from New Zealand also winter here (June - Aug). Beautiful *Pisonia* forest but beat up by last hurricane. Brought dead red-foot Tropic bird back - no oil signs but will save.

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Back to vessel in North Pass at 1300.

At 1420 headed out to work reef flat at low tide. Team of Mike, Andy, Fale, Ruth, John Mc and I.

First did the sea urchin hole count on outer reef flat using 19" quadrats. (Data sheets are separate) and in deep (Fishes). Plotted and transect

both north and south of wreck for 200 meters. Determinate and impact on this urchins (*Echinostroma*).

Transects: South 1505-1536
North 1542-1557. No urchins at least 50 meters either side of wreck. Most holes ground out or filled with sand.

Noticed algal ridges has lost red color (purple-brown) near wreck. Color yellow-brown.

Moved inside and did "oil" transects to the south. Ran 5 transects on inner 200 meters of reef flat. Spacing 50 meters apart and sample every 10 meters for 200 meters.

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Data again on syonote sheets. However plots indicate real discrepancies under rocks & in rubble at about 150-160 meters south.

Back to vessel at 1630. Weather turned quite nice. Clouds cleared and wind down to 15 kts.

Great fishing tonight in pass. Catch *C. lugubris*, *Aphareus furca*, *Holocentrus* (*Calappa* & *v. m. berndti*), *Lutjanus* *bobus*, *L. gibbus*, *L. caeruleus*, *Chelodactylus* *grammus* and *Cyphocephalus* *urodactylus*. All smallish and not numerous except *Carenum* *lugubris*. Fish abandoned and size not at all impressive at base of hole. Real fishing pressure is occurring.

Nov 4

Up to beautiful weather, clear with 15 kt SE winds. Lost night captain Atlanta had to kick vessel ahead to get stern away from reef. In process picked up heavy fishing line in prop. Fale and John Mc

16
dive this morning to cut line
and stop prop. Also checked new
(old) anchor. Slack tied.
At 0750 Fale took Kexin into
Rose Is. At 0835 Storm party returned.
Boilers got 3rd bundle last night
to place satellite transmitter on. Will
do so today and release animal.

0855 Tied off Mammulate analyzer
on big floats and moved vessel around
by wreck so we can do ocean side
survey. Wind blew out of SE
so Fale in gear - hairy leechy dive
gear and people into wheelbar.

0933 - 1015:

Made dives on and around wreck
with Mills, John We, Fale and I.
Andy and Jerry in wheelbarrow.

First job was to measure bag.
Scars on reef a lot of vessel. Shy
obviously but reef almost parallel
and compound along for at least a
block length before going around. Two
major scars 40 meters long, east

17
on ending at stern. Depth of
scars cut 8-12'. East one actually
rounded concrete bulkheads. Algal
barf colonization and many jarabide
fish grazing (particularly Acanthans
olivaceus - very yellow).

Much debris on bottom, par-
ticularly around aft section. Mostly
line spall in baskets (coiled). Two
big sand/rubble zones spread seaward
from aft and midship. Must be
from vessel pulverizing mud and
what we saw from video, and thought
was product. Much line and
other debris buried in sand.

I cut several long sections of
line going down and over slope.
Sand areas extend from ship down
slope to about 30-35'.

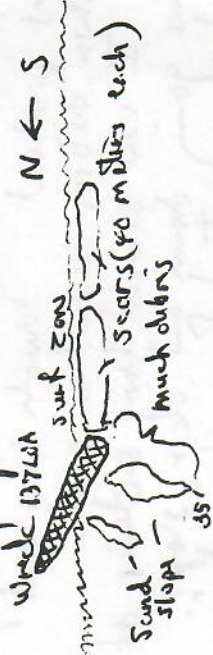
Oil still coming off stern section
could leak up and seal slick. Some
mixing into water column by wave
action next to wreck. Some rainbow.

Wreck making much noise when surf
hits it, much debris hanging off, especially
aft sections.

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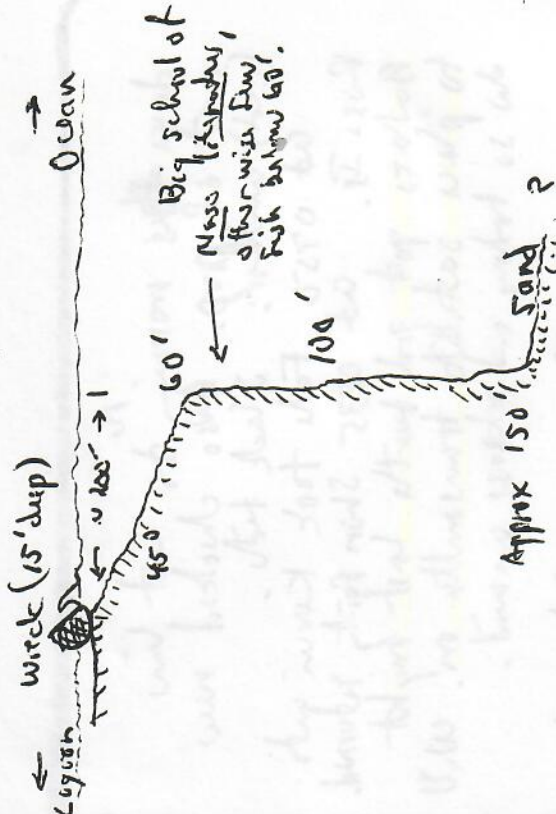
Fish again not particularly abundant or large. Surprising for ocean reef. Curatigids mostly *C. melanopygus* and *C. carangoides* or the genus (both in us). Many smallish *Cyathophagus* or *gus*. *Halimurichthys* abundant in holes. Not one stone amazingly and only few *L. bebor* and *L. gibber*. Schools of a beautiful bright purple little serranid (*Pseudanthias pascabes*)

Collected two complete baskets of longline gear. Other debris on bottom consisted of hull anchors, metal plates, clothing, metal stoves, but by far fishing gear dominant.



Large adult turtles seen out in blue off southernmost reef scar. Bounded down to 106' to check for ledges off adult drop. See profile. Surprisingly amount of algae on reef and lack of coral cover.

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Max depth 106', BT 42" using dive computer. Most BT in > 40'.

Went back to Mamiatale drifting off wreck. Off loaded gear then walked back around to North loss anchorage. After lunch and work on field logs.

1255 Headed into pass to look at second pinnacle in (Saddle Pinnacle) as control site. Top in 2', bottom at ~40'. Incredible numbers of *Tridacna maxima*. Counted 500+ live ones here. Note many fish again other than school

20

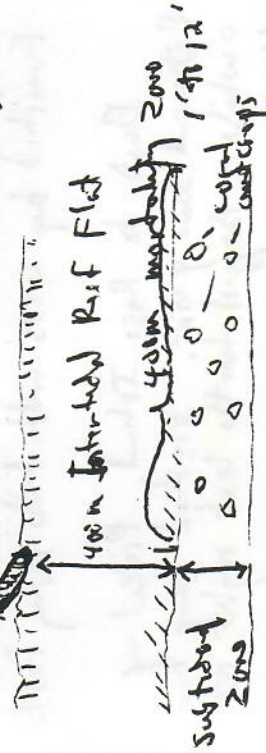
of black water (*C. lugubris*) which live in a tunnel at base of *Pinus*. An immediate spore beneath of ~ 65 cm. was swimming at base and stayed under it.

Out at 1314

Moved across lagoon to begin the rest of the subtidal *T. maxima* mortality survey.

At 1325 started swimming in a line to the south (upwind). No dead *Tridacna* found, all found looked healthy. Therefore at in-water meeting, decided to walk this zone back to the north (downwind). Beg in counting dead clams and got idea of number alive.

Left dead *Tridacna* found at ~ 400 meters north of wreck. Mortality in heavy bubbles area also. (with food?)



① Lagoon

② Pinnacles

Transsects	Person	Tridacna	
		Dead	Alive
1	MM	20	6
2	BF	15	1
3	AF	32	13
4	JM	34	29
5	JN	61	Subst 23/7

Calculated 75% of *T. maxima* were killed by oil in this zone.

Much of corals were bleached. Relatively easy to assess better in this zone because of relatively few coral outcrops which provide only hard substrate. The rest sand and rubble. End survey at 1505.

Big mystery of how *Tridacna* and corals are killed at 5-10' depth by diesel in calm lagoon waters. Only thing we can figure is that oil soaked bubbles takes diesel to bottom.

Worked in the catch low tide and complete north intertidal transects. Began at 1540 same line up as yesterday

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but moving north. Very interesting, the transverse component of and going north as compared to south. I was still getting rainbow color (forming rock + rubble) on entire transect at 290 meters. Had to stop and dig rocks at 400 meters because of total light (1735). (Data on individual sheets which we will consolidate).

Back to whether changing pumpling moray eels (*Sideria picta*). Full day and good to watch sleep, shower on deck and cold Steinlager.

Nov 5

Up at 0600. After breakfast headed into Rasi Island first to drop few people off. Got 2 more bag female turtles last night but only pinned conventional tags since 3 *Scolecoba* tags and already. Group fully delayed nesting like this year - all females (recently) mated.

0820-0918: Started porolithography color survey near SW corner of atoll.

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Starting today to use morning low tide. Moved to vessel conducting stations every 100 meters (using tape) and 50 meters on either side of vessel. Andy, Mike and I conducting - shooting with Andy photographing along ridge (using quadrats) for color changes.

Reef healthy from 650m south to 200m south where broke red color - changed to yellow-brown. Reef fish (jacks, carangids) up on reef with incoming tide in healthy area, but noticeably absent in night zone. Beyond stations to north but tide too high so stopped at 400 meters.

Measured sand depositional zone; 50 meters from lagoon side toward vessel when disappears in 5-10m zone to wreck. Sand also spilling laterally into grasses and holes in the reef. Finished by 0935 with tide rising fast.

Back to Rasi Island. Picked up Peter and Sam 9 AM. Visited camp for a while. Biggest turtle last night at 116 cm.

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Decided to make a dive off the north reef to check biomass of large carnivores - why so few and small so far.

Jerry dove as in whether to over New point. Fale, Peter, Mike and I made dive - drift dice with current going around New point and half way to wreck off west side. Bottom slope much more gradual here than by wreck, reaching off at ~100'. In some areas ridges run out from bottom.

Bottom and slope very unimpressive - few corals with vast majority of coverage a green, crumbly algae which looks like *Dictyota* here. It is becoming apparent that Rose Atoll was heavily slammed by soft hurricanes (Val in 1991) and much of coral cover destroyed with algae *Halimnaria* large about block tumbled to bottom in many places here. Fish also sparse and small. *Acanthurus* common, especially *A. achilles* and *Naso lituratus*. Two large *Chromis* (wavy swim by), big ulcer followed as most of dice, several smaller and one *L. bohar*. Big black wrasse (*Coris ocellata*). Groupers

25

small and consisted of *C. argus*, *Amogon*, *Perodon leucogrammicus*, and *gracilis albomarginata*. Pair of *Siganids*.

Two large mako further seen. On followed the far awhile - about photos. Also an *omulua* hung right under on. Arrived again in shorts seen.

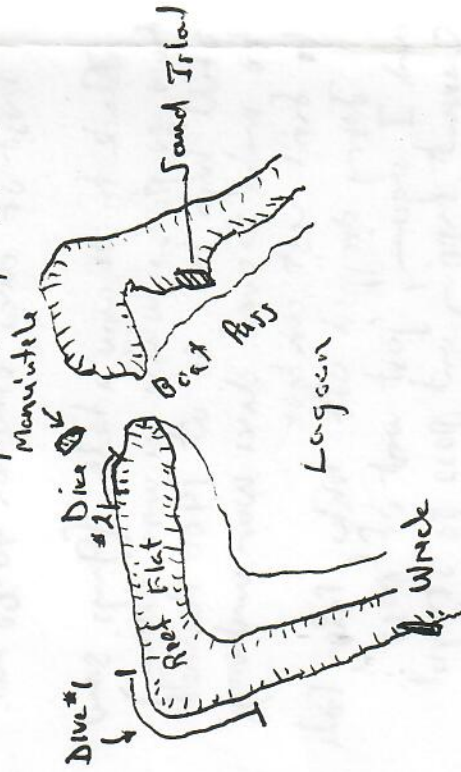
No debris from wreck except one spoon which we picked up. Max depth 106', BT 44 min. Most of dice between 40-60 feet.

Back to Miami's table. Guys saw two porpoise while we were diving. Still high tide so at 1400 decided to make second dive near ambulance to find last anchor.

Jerry dropped off Mike, Peter, Fale and I again, just west of pass. Current flipping out pass so stayed clear of it. Found old anchor fluke sticking out of sand, then Fale found our anchor in 83' not far away. Marked it and continued to west along reef front. Much more fish here. Big school of *Caranx*

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Saxofractus and Pacific bar-roccuda (Sphyraena fortis) in huge column up off bottom with the way to surface. Reef much healthier along this section. More coral lived feet with some areas totally protected and consequently beautiful coral growth. Big colonies of yellow plate coral, Tubinaria reniformis in a valley at ~ 90'.
 Another very large mesh green furth seen - was resting in a cave - Max depth 92', BT 32 min.



1513 Departed vessel for Rosa Is.
 Picked up John, me and Beth and dropped off Peter and supplies.
 1600 Dropped off Kevin and Sigim on

27

SW tip of atoll to get survey reading on reef. Big burth in j-thanks, W.M.

1605 At wreck. Andy, Mike and I continued Porolithon color survey to north. Color not back to total normal, brick red until 450 meters north of wreck (200 meters to south). Finished at 1643

We then all gathered at flagged rocks 450 meters north of wreck on water-bird reef flat when we left transects late yesterday. On my transect (#5) and stopped at 420 meters out. (own data being plotted by team on tables and graphs).

1715 Finished transects. Kevin and Sigim met us at wreck (walked west flat from SW tip). Back to Maniatale by 1800.

Nov 6

At 0200 the anchor line parted and a squall. Fortunately the vessel blew away from the reef but the captain sounded the alarm which is always nearest at that hour. Crew brought the wheel aboard and we drifted for rest of night.

Much discussion in morning about days activities. Big problem is only 1 1/2 gallons gas left for both small boats. Decided to leave the wheel aboard and only use zodiac with smaller engine to break camp.

We decided to do a survey of the northern lagoon reef flat of this area could have been injected based on direction of debris and fuel drift. (Had captain take Wanda's tale chase in aft pass and at 0815 (black water) Mike, Andy and I went in and swam for the reef.

0815-1040: We swam entire length of lagoon subdivided zone

until bend on NW tip. Noted debris and dead *Tridacna* (immensely) as well as concentration of the reef and ground fish populations.

Reef appeared healthy with many *Tridacna*. Estimated over 500 live *Tridacna* sighted on survey down. Only seven dead in one area a little less than half way.

Doubt if we caused. (found at bend (NW sector) found total of five West dead (with scars war by an several underings which were probably not caused. Debris (cardboard and nothing in bend area as well.

Checked three complexes of pinnacles right of lagoon drop. First (east) had seven dead. Second had turtle remains (collected) on bottom next to it. Third was in turbid, cold water zone. All for the most part had weathered *Tridacna* and corals.

Found green turtle (approx 90 cm.) seen near overtop 1/2 way down. Made green turtle seen or leap at NW corner. Approx 85 cm. No tags on either.

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great riding with the wind and seas
steering waves. Could barely see Tau
off to north right at sunset, west
of us up in upper deck watching birds,
rain squalls in horizon, at sunset.
Really beautiful!

Nov 7

I got up at 0200. Went up on
bridge as we were passing south of
Aunua Island. Could see lights
from villages along south coast of
Tutuila.

Ship pulled into Pago Pago Harbor
and tied up at the Commercial Port
at 0340.

We went back to sleep until 0600.
Off loaded our gear and took cabs
to Rainmaker Hotel. Got rooms
for the day (\$60). Felt great with
shower! Breakfast at hotel.

At 0800 walked over to DMWR
and met Peter and Fale. Used copy
machine to copy 12 tables, figures,
charts, etc of our field data for
everyone (DAWR, FWS, PRC, NMEs).

33

Walked back to hotel. Church
services going on all over as it is
Sunday morning.

Informed team meeting at breakfast,
Rainmaker Hotel. At noon

group of us drove out to Tisa's
in Alega. Cdr. Rick Kasir
then had lengthy discussion with
him about early FV Jim Strong's
Fa strand need. CG claims 0400
from W, we contend almost due
north by scars in reef.

Checked out of hotel. To airport
for flight via taxi at 2000.

Depart Pago Pago International at
2335.

Arrive Honolulu 0540 (Nov 8)