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AIRBORNE EXPENDABLE BATHYTHERMOGRAPH (AXBT)
OBSERVATIONS IMMEDIATELY BEFORE AND AFTER
PASSAGE OF TYPHOON PHYLLIS IN AUGUST OF 1975

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Naval Environmental Prediction Research Facility

AUGUST 1979



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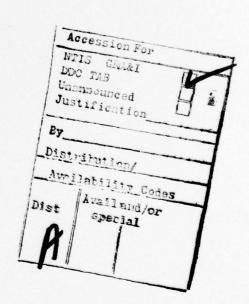
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FOREWORD

The work described in this technical report was conducted as part of my doctoral studies at the Naval Postgraduate School and the material contained herein is part of the dissertation.

This experiment required the interaction of a number of different Navy commands and activities. As such it was a good example of how the operational experience of a Naval Officer can be a major factor in the successful planning and execution of a scientific study.

I would like to acknowledge the support and cooperation I received from the following:

Office of Naval Research (ONR Code 480) for the financial support and assistance in obtaining the AXBTs.

Commander, U.S. Seventh Fleet, and Commander, Patrol Forces,
U.S. Seventh Fleet for providing the P3 aircraft assets.

The officers and men of $\underline{Patrol\ Squadron\ Sixty\ Five\ (VP65)}$ for doing such an outstanding and professional job of flying the missions.

<u>Fleet Numerical Weather Central</u> for the computer processing of the data.

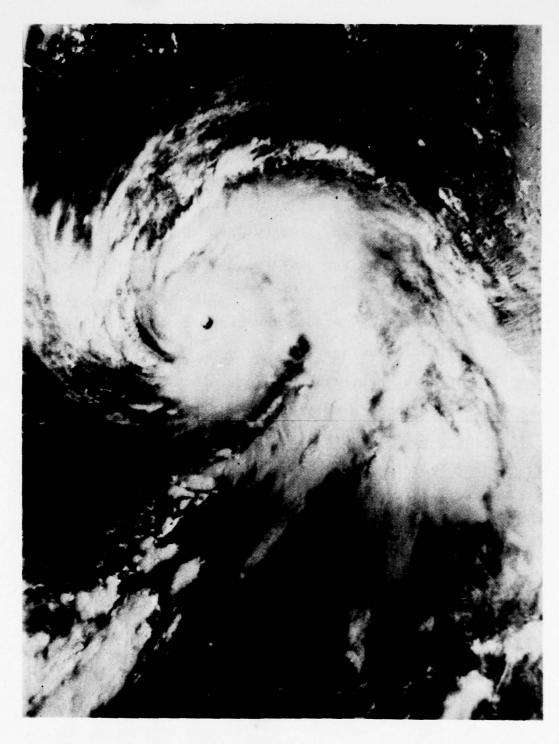
Naval Environmental Prediction Research Facility for the preparation of this technical report.

Finally and most importantly of all I would like to thank

Dr. Dale Leipper, the chairman of the Oceanography Department at

NPS and my doctoral advisor, for both his scientific insight and

his patience and understanding.



TYPHOON PHYLLIS, 2302Z, 14 AUGUST 1975

1. INTRODUCTION

Tropical cyclones, whether typhoons or hurricanes, are creatures of the sea. We know, from years of observations, that these warm-core storms are born over the warm waters of the tropical oceans and rapidly dissipate over land. It is generally accepted that the energy that fuels these storms comes from the heat content of the sea. Little is known, however, of the magnitude of the heat flow from the ocean to the atmosphere, or of the residual effect of this heat loss on the ocean.

Because of the large amounts of precipitation associated with a tropical cyclone, it can be assumed that evaporation and the associated latent heat transfer are factors in the air-ocean interaction. Sensible heat transfer is a factor that is dependent on the difference in air and sea temperatures. Heat transfer due to radiation can be assumed to be negligible due to the heavy cloud cover. The net result of these processes, however, is a significant heat loss from the sea surface.

At the same time as the surface is being cooled, it may be assumed that the high winds of the tropical cyclone are causing mechanical mixing of the upper layer of the ocean. Both the surface heat loss, with its associated convective overturning, and the mechanical mixing could be expected to deepen the mixed layer. Scattered observations through the years, however, have indicated that this was not always the case. Leipper has pointed out that the additional processes of upwelling may take place under the path of the tropical cyclone, bringing colder water up towards the surface and in fact displacing the thermocline upward.

Other researchers, such as Black, have theorized that the upward movement of the thermocline under the path of these storms is due in part to internal waves created by the tropical cyclones themselves.

The major problem in identifying the effects of the various air-sea interaction processes and their resultant effects on the oceans has been the sparse, scattered nature of the available observations. This has been the case for a very good reason. Tropical cyclones are very dangerous storms and responsible ship captains stay well clear. Since most oceanographic observations are taken from ships, the result has been that most of the few reports we do have were taken days after the storms had passed and allowed the ships to visit the areas of interest. The study of the effects of Hurricane Hilda by Leipper is generally considered the most authoritative analysis of post-hurricane oceanographic data, and yet these observations were taken several days after the passage of Hilda. There are three possible shortcomings in this type of data:

- (1) Air-sea interactions unrelated to the tropical cyclone may take place during the time lag between the passage of the storm and the arrival of a ship on station.
- (2) Advection due to major ocean circulations unrelated to the tropical cyclone may shift layers of water into different relationships relative to the storm and to other layers.
- (3) Unstable conditions created by the storm will tend to return to a stable condition with the passage of time.

Another problem in determining the effects of the various air-sea interaction processes is the lack of reliable data to establish the initial conditions prior to the passage of the tropical cyclone. Previous studies have depended on random observations or climatology to establish the initial conditions. As far as this author could determine, prior to 1975 there had been no planned study of the ocean's response to a major tropical cyclone that had included detailed observations prior to the storm's passage along with near real time post-storm observations at the same locations.

2. THE EXPERIMENT

Over the past several years, the Office of Naval Research (ONR) has sponsored research projects at the Naval Postgraduate School (NPS) in Monterey, California, in the field of air/sea interaction. One of these projects has been the Oceans and Severe Tropical Cyclones (OSTROC) project. The work described in this report was part of that project and is designated Operation OSTROC 75.

The objective of the operation was to obtain detailed oceanographic observations prior to and immediately after the passage of a major tropical cyclone.

2.1 LOCATION

The Philippine Sea was chosen as the site for the data collection for three reasons:

- (1) It is an area with a high incidence rate of tropical cyclones.
- (2) Ocean advection is minimal compared to regions like the Gulf of Mexico with its loop current.
- (3) It is close to the island of Guam, which is both the site of the Joint Typhoon Warning Center (JTWC) and an operational base for Navy P3 patrol planes.

2.2 INSTRUMENTATION

The SSQ-36, airborne expendable bathythermograph (AXBT), was chosen to obtain the desired thermal structure measurements. The AXBT is dropped from an aircraft; once it is in the water, a thermistor deploys and measures temperatures down to 1000 ft. As the thermistor descends, the AXBT telemeters the temperature

back to the aircraft, where the signal is displayed on a recorder.

Depth is determined by elapsed time and the sink rate of the thermistor.

2.3 PLATFORM

Navy P-3 patrol planes were chosen as the measurement platform. Very early in the planning, it was decided that the measurements would have to be taken from an aircraft in order to obtain the near-real-time observations needed. The P-3 then became the logical choice because they are equipped to use the AXBT as part of their normal ASW mission and the Navy deploys these planes to several bases near the Philippine Sea including Guam. The only question was, would fleet P-3's be available?

Preparations started in the spring of 1974. The first action was to obtain a commitment to use Navy P-3 aircraft during the experiment. In May, I traveled to the Western Pacific to present the OSTROC operational plan to the appropriate fleet personnel.

The ocean thermal structure has a strong influence on underwater acoustics and thus on the performance of sonars. Because of the possible application of the planned research to ASW tactics and strategy, the Commander, U.S. Seventh Fleet agreed to support the operation. His subordinate commander for Patrol Forces, U.S. Seventh Fleet (CTF-72) in turn tasked the P-3 detachment in Guam to provide three P-3 flights on a not-to-interfere basis relative to operational flights.

The initial plan called for the experiment to take place during the 1974 typhoon season, but it had to be postponed one year when a problem with the procurement of AXBTs restricted their use to operational missions.

By the spring of 1975, the procurement situation had been corrected and 96 SSQ-36 AXBTs were obtained for OSTROC.

Arrangements were made for the instruments to be shipped to the National Oceanographic Instrumentation Center (NOIC) in San Diego, where they were calibrated using the technique developed by Sessions and Barnett for NORPAX experiments. Eleven of the buoys failed the calibration test and the remaining 85 were marked, numbered, and shipped to Guam where they were stockpiled.

Arrangements had also been made in 1974 with the Fleet Weather Central/Joint Typhoon Warning Center to provide early warning of a suitable typhoon (defined as a typhoon with sustained winds of over 100 kt) and to coordinate activities with the patrol wing detachment in Guam.

With the arrival of the 1975 typhoon season, all the preplanning was complete. The AXBTs were stockpiled and ready, the patrol plane crews had been briefed on the general nature of the experiment, the buoy pattern for the initial flight was prepared and JTWC watchstanders had been briefed on their role. All that remained was for me to wait in Monterey for the "right" storm to occur.

2.5 OPERATIONS

The 1975 typhoon season got off to a slow start, but finally in mid-August events started to happen. At 0242Z* on the 12th, JTWC issued warning #1 for tropical depression #7, with 30 kt winds located at 12.7°N, 137.9°E. At 0304Z on the 12th, JTWC issued a prognostic reasoning message that stated that TD 07 was expected to reach typhoon intensity within 72 hours. LCDR Ralph Miller, Oceanography Officer at the Fleet Weather Central, was alerted. At 0540 on the 12th, JTWC upgraded TD 07 to Tropical Storm PHYLLIS based on aircraft observations.

By 1224Z on the 12th, JTWC had revised their estimate and now stated PHYLLIS would be a typhoon within 48 hours. Movement was expected to the northwest at about 8 kt. At this time, LCDR Miller called me and also alerted the P-3 detachment that this might be the storm to be examined for the experiment. It was determined that there were no conflicts with operational missions. By 0824Z on the 13th, PHYLLIS had increased to 65 kt and was now at 14.5°N, 135.1°E. At 1734Z on the 13th, JTWC upgraded PHYLLIS to a typhoon with sustained winds of 85 kt and predicted further intensification. Based on this information, I made the decision to go ahead, and VP-65 was alerted for a flight the next morning.

At 0040Z on the 14th, I departed Monterey for Guam and at 0200Z the same day, the first OSTROC P-3 took off from NAS Agana, Guam. LCDR Miller was on board with the latest satellite fix

^{*}Because of the time difference between Guam and the mainland, all times are referenced to Greenwich mean time (GMT).

on the storm to help orient the buoy pattern to be dropped ahead of the storm. By 0600Z on the 14th, PHYLLIS had increased to 100 kt of sustained wind and was moving north at 15 kt toward the area where, at that time, our P-3 was obtaining the critical observations of initial conditions. By the time the first flight (AA141) had returned at 141330Z, after an 11 1/2 hour flight, PHYLLIS had increased to 110 kt and was located at 21.6°N, 137.0°E and continuing north at 18 kt.

The pattern of AXBTs dropped by AA141 consisted of 25 buoys starting at 23°-20°N, 138°-50°E and curving counterclockwise to the southwest. Thirty-four of the SSQ-36's were dropped, and 25 worked properly. I arrived in Guam three hours after the return of AA141, just in time to learn that PHYLLIS had indeed crossed over the pattern with sustained winds of 115 kt and gusts to 140 kt. The radius of the 100 kt winds was 25 n mi; the radius of the 50 kt winds was 125 n mi to the east and northeast, and 75 n mi elsewhere. Sea level pressure was estimated at 920 mb.

Later, PHYLLIS continued on to Japan, striking the islands of Honshu and Shikoku and killing 19 persons. Figure 2.1 shows the path of PHYLLIS with each dot equating to a synoptic fix. The area enclosed by the dashed line represents the area covered by the horizontal analyses discussed later in this report.

Section A-B represents that line along which the vertical cross-sections, also discussed later, were analyzed. As shown in Figure 2.1, PHYLLIS crossed the AXBT pattern about 780 n mi northwest of Guam.

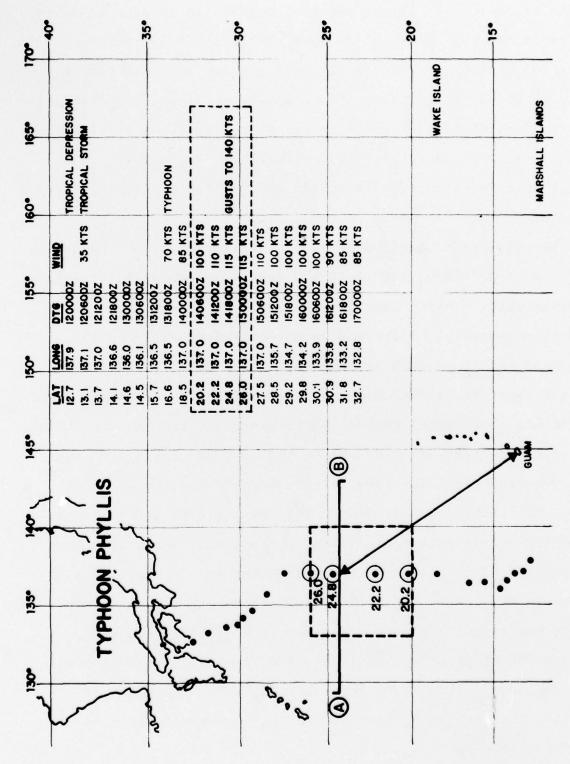


Figure 2.1. Track of Typhoon PHYLLIS.

So far, the operation had gone as planned. The JTWC fore-casts for PHYLLIS had been outstanding and the instruments had functioned as well as could be expected. Now came the most critical phase of the operation: the second flight had to revisit the area as soon as possible after PHYLLIS cleared the area.

After worrying over all the things that could go wrong, but didn't, the second flight (AA151) took off at 0415Z on the 15th. We headed to that point northwest of Guam where PHYLLIS had crossed our pattern. Enroute, we passed through the major feeder band south of PHYLLIS. The cloud patterns resembled a well-developed mid-latitude cold front.

We arrived on station just 10 hours after the eye of the storm had passed by. The timing was close to perfect. The surface wind varied between 45 and 20 kt during the flight and there was a broken layer of cumulus clouds between 2000 and 5000 ft. We dropped 27 AXBTs, including 10 at points measured during the earlier flight. These were the 10 points nearest the track of PHYLLIS. An additional 14 observations were made along the lines both parallel to and perpendicular to the storm track, and there were three failures. This flight was 10.1 hours in duration.

Two days later the third flight (AA171) revisited the same area, taking 23 observations. The same 10 points visited on the first flight and revisited on AA151 were visited once again. Three AXBTs were bad on this flight.

In total, 85 SSQ-36's had been dropped on the three flights; of these, 72 were good and 13 were failures. Of the 72, 67 were

correctly recorded and 5 were lost because of recording problems. All of the data had been recorded on two in-flight recorders and also on tape. The tapes were later processed using a Fast-Time Analyzer at the Tactical Support Center on Guam. All the recording and analysis equipment was of high quality and used by the Navy for frequency analysis purposes.

Figure 2.2 shows the area of the investigation. The dots represent the points at which AXBTs were dropped and the numbers 1, 2, and 3 refer to the particular flight on which the drops were made. Additional drops were made to the southwest on flight AA141 (the first flight), but they were too far removed from the typhoon track to be of value. The typhoon was moving due north along 137°E longitude during the time it passed over this area.

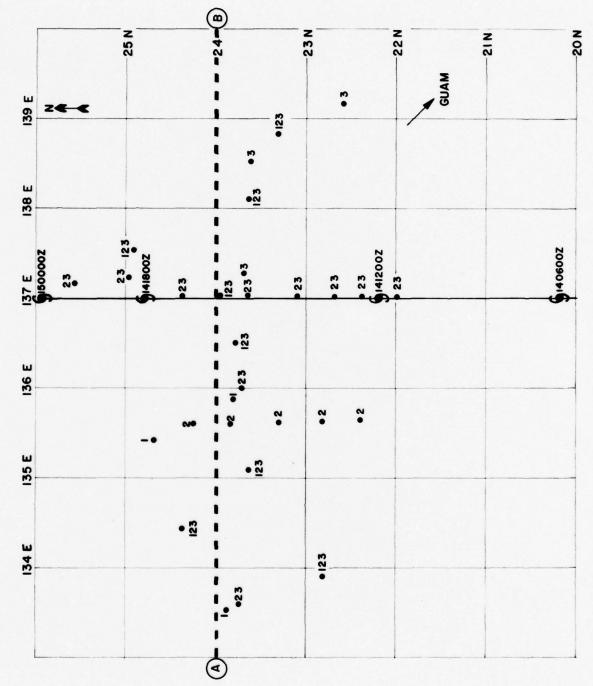


Figure 2.2. Locations of AXBT observations: 1 - observations on 14th; 2 - observations on 15th; and 3 - observations on 17th.

3. THE DATA

Without question, the data collected during Operation OSTROC 75 represents a unique data set. Several factors contribute to the unique and valuable nature of this data:

- (1) Initial conditions were observed just prior to the passage of the typhoon.
- (2) Reaction observations were taken just hours after the passage of the typhoon and just 24 hours after the initial conditions were observed. This factor, combined with the fact that the investigation took place in the Philippine Sea, away from land and major currents, meant that the measured differences were in fact due to the typhoon.
- (3) The third set of observations gave some measure of the rate at which the ocean returns towards its normal state after a typhoon passage.
- (4) A number of the observations were actually taken at the same points.
 - (5) The typhoon was intense.
- (6) The AXBTs were calibrated. This last factor cannot be overstressed because the AXBT is not factory calibrated as a scientific instrument.

As noted in Section 2, the AXBT data were recorded on magnetic tape recorders in the aircraft, later processed through a frequency analyzer, and the results plotted as analog traces. These traces were then digitized at the Fleet Numerical Weather Central using a CALMA 408 digitizer.

Appendix A provides a listing of each of the AXBT observations as produced from the file of digitized records. The first line in each observation consists of the appropriate station data. The ship name VO26 was assigned at FLENUMWEACEN to keep these records separate from other AXBT reports. YYMMDD refers to the last two digits of the year, two digits for the month, and two digits for the day. HHMM refers to the hour and minute of the observation. No. Pr is the number of depth-temperature pairs in the particular observation. Surf. Temp is the surface temperature. Max Depth is the maximum depth for the particular observations and Temp is the temperature at that depth. Print Count is the sequential number assigned to each observation in the series. Following the station data line are one or more lines of depth-temperature pairs as determined during the digitization process.

In addition to the listings of depth-temperature pairs, each observation was plotted using a Varian plotter. Figures 3.1 through 3.5 are examples of this type of plot. In these particular figures there are three observations overplotted, representing measurements at a given point, made on each of the three flights.

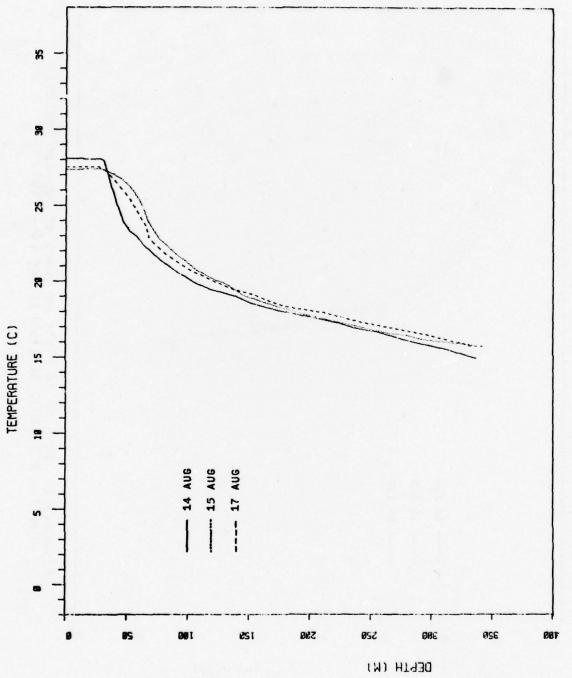


Figure 3.1. 110 n mi to right of track of Typhoon PHYLLIS: profiles 1 (14th), 33 (15th), and 66 (17th).

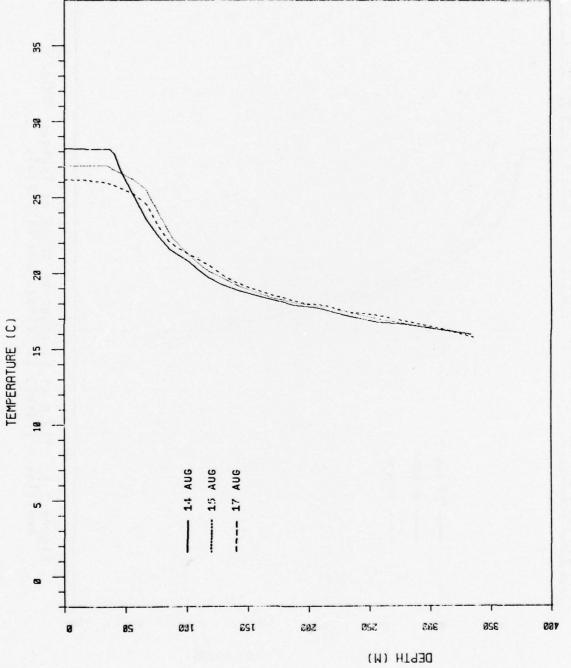


Figure 3.2. 60 n mi to right of track of Typhoon PHYLLIS: Profiles 2 (14th), 34 (15th), and 64 (17th).

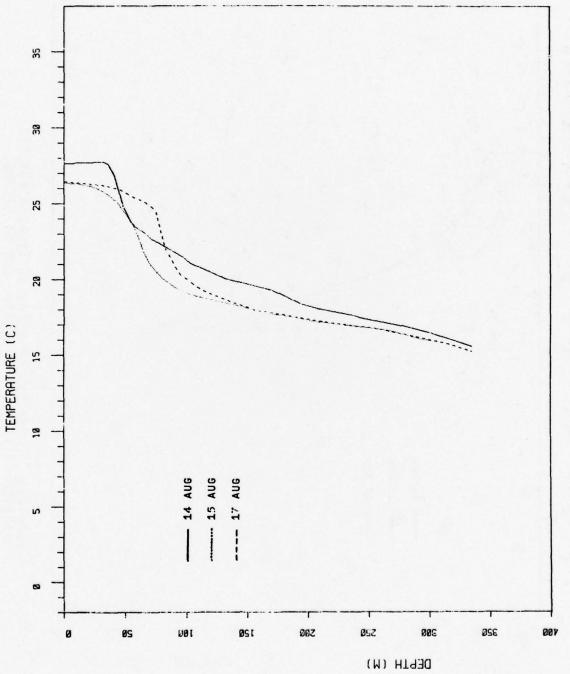


Figure 3.3. 30 n mi to right of track of Typhoon PHYLLIS: Profiles 22 (14th), 32 (15th), and 53 (17th).

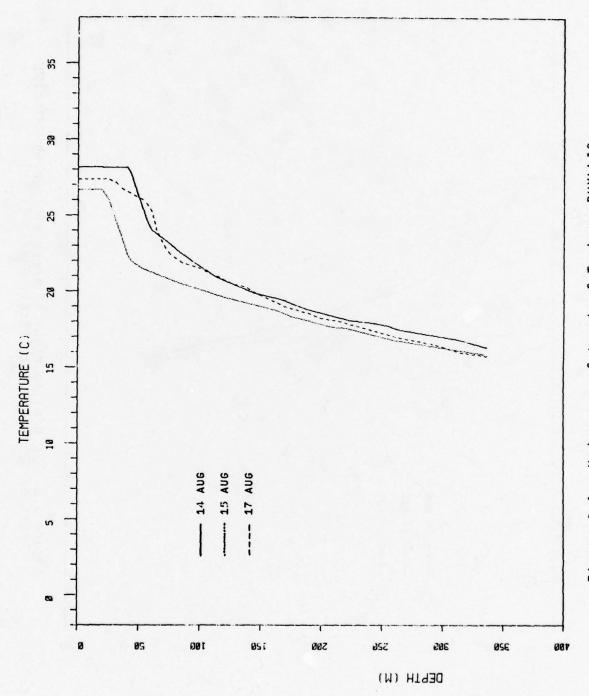


Figure 3.4. Under eye of track of Typhoon PHYLLIS: Profiles 3 (14th), 35 (15th), and 51 (17th).

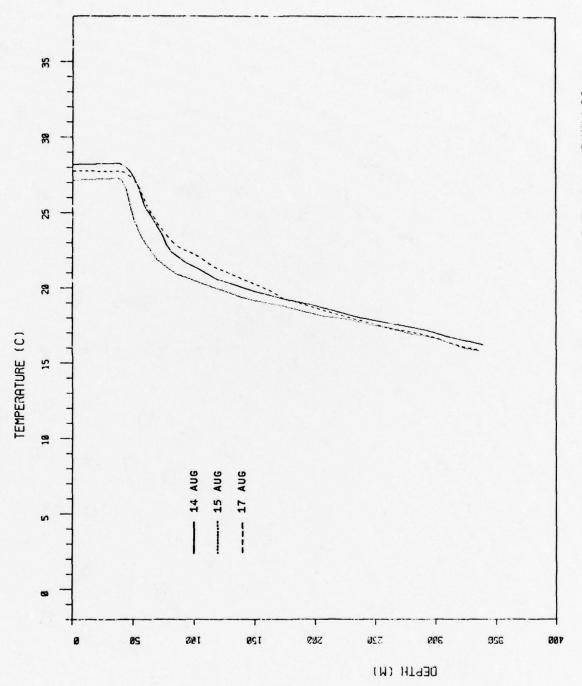


Figure 3.5. 30 n mi to left of track of Typhoon PHYLLIS: Profiles 4 (14th), 36 (15th), and 60 (17th).

4. THE ANALYSIS

The first phase in the analysis was to compare individual BATHY traces taken on the before and after flights. To facilitate this comparison those BATHY observations that were made common points on each of the three flights were identified and the traces overplotted. Figures 3.1 through 3.5 represent six such cases. Table 1 shows the relationship of each of these sets of observations to the track of the eye of PHYLLIS. In each of the plots the solid line represents the initial condition, the dotted line the condition right after the typhoon passage, and the dashed line the condition two days later.

Table 1. AXBT positions relative to track of PHYLLIS.

Figure	AXBT Seque	ential Numbers	Distance
3.1	1,	33, 66	110 n mi east
3.2	2,	34, 64	65 n mi east
3.3	22,	32, 53	30 n mi east
3.4	3,	35, 51	0
3.5	4,	36, 60	30 n mi west

Observations 3, 35, 51 (Figure 3.4) were taken directly under the track of the eye of the typhoon. As would be expected this was the set of observations that showed the most change. The SST at this point decreased 1.49°C, which was the largest change noted on the second flight. The most surprising change, however, was the upward movement of the thermocline from 40 m to

18 m. This shallowing of the mixed layer took place in the presence of winds over 115 kt. Note also the upward displacement of the isotherms at all depths down to 330 m. This movement appears to be fairly uniform, and on the order of 50 m. Two days later there has been a slight increase in SST and a general return of the profile towards the initial conditions.

Thirty n mi to the west of the track of the eye the same pattern of changes took place, but to a lesser degree. The SST decreased 1.28°C and the mixed layer stayed at about 39 m. There was a definite upward displacement of the isotherms, but this time only on the order of 20-30 m. Once again the observation taken on the 17th indicated a warming at the surface and a return of the isotherms to their original levels.

Sixty n mi to the west there was relatively little change. Note in Figures 3.4 and 3.5 how well mixed the upper layer is, and how sharp a break exists at the top of the thermocline as observed right after storm passage.

East (or right) of the track of PHYLLIS is where the maximum winds would be expected, and here the changes were different from those noted to the west. Thirty n mi to the east the surface cooled 1.28°C and once again there was a generally upward movement of the isotherm. Sixty n mi to the east there was only a 1.15°C decrease, but by the 17th the decrease in SST had reached 2.04°C. Moving farther away from the storm track a change of just 0.58°C was observed 110 n mi to the east. Table 2 lists the SST changes for each of the points under consideration.

Table 2. Sea surface temperatures.

	Positio	n Relati	ve to Ti	rack of	Typhoon	PHYLLIS
		East			West	
Distance (n mi)	110	65_	30	0	30	60_
SST on 14th	28.09	28.22	27.64	28.18	28.20	28.00
SST on 15th	27.38	27.07	26.36	26.69	27.16	28.00
Change (15th-14th)	-0.71	-1.15	-1.28	-1.49	-1.04	0.0
SST on 17th	27.51	26.18	26.44	27.48	27.76	28.04
Change (17th-14th)	-0.58	-2.04	-1.20	-0.80	-0.44	+0.04

Of particular note in those profiles obtained east of the track, is the ill-defined nature of the bottom of the mixed layer. This characteristic was common to all those observations taken east of the storm track and is in sharp contrast to the observations taken to the west where the mixed layer was well mixed.

Several observations may be made relative to the analysis of the data:

- (1) A pronounced upward displacement of the subsurface isotherms took place. This displacement was at a maximum under the track of the eye and decreased both to the left and right of that track.
- (2) There was a pronounced decrease of SST between the 14th and 15th with the maximum loss under the path of eye and with a lesser decrease in SST both to the left and right.
- (3) By the 17th the SST had started to increase again to the west, but not to the east.

(4) After the passage of the typhoon the mixed layer was sharply defined to the left (west) but ill-defined to the right (east).

In reflecting on the latter two observations, two characteristics of the typhoon should be considered. First, the winds were stronger to the right (east) and second, the major feeder band for PHYLLIS was to the east and it persisted with winds over 50 kt for several days as PHYLLIS moved north.

The second phase of the analysis consisted of preparing analysis charts. Figure 4.1 is the SST as analyzed for the 14th, Figure 4.2 represents the SST on the 15th, and Figure 4.3 is the difference in the previous two. The zone of maximum change was oriented north-south between 137°E and 138°E, while the best track for the eye of the typhoon was due north along 137°E.

Vertical cross-sections of temperature were analyzed along section A-B, which was roughly 34°N. Figure 4.4 is the cross-section analysis for the 14th and it is evident that the initial conditions were those that could be considered as normal.

Figure 4.5 is the cross-section analysis for the 15th and is probably the most dramatic depiction of the changes caused by PHYLLIS. The most obvious change was the upward bulge in the isotherms under the path of the eye or slightly to the right of that track. At 137°E, for example, the 25° isotherm went from 54 m to about 30 m, but deeper the 20° isotherm went from 144 m to about 97 m and the 17° isotherm went from 295 m up to 248 m. Less obvious is the smaller downward movement of isotherms both to the east and west of the sharp zone of upwelling.

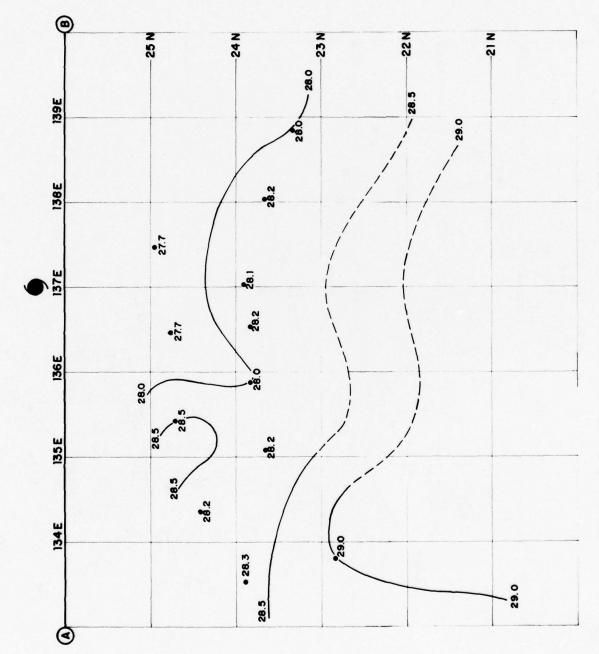


Figure 4.1. Sea surface temperature on 14th.

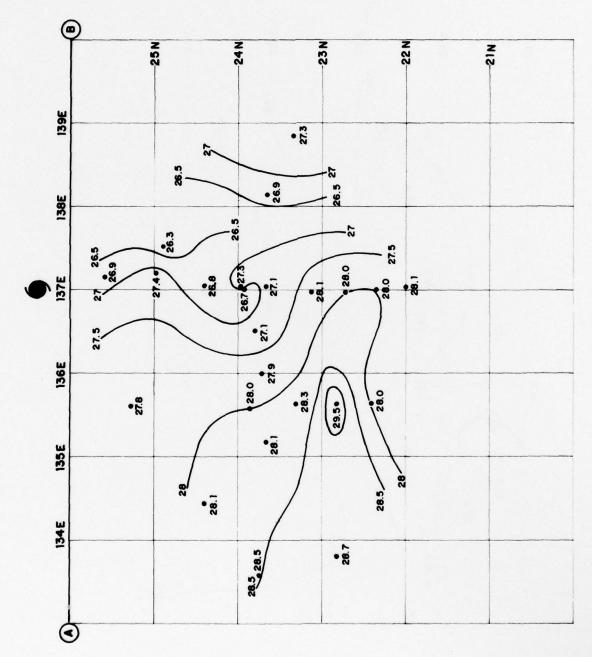


Figure 4.2. Sea surface temperature on 15th.

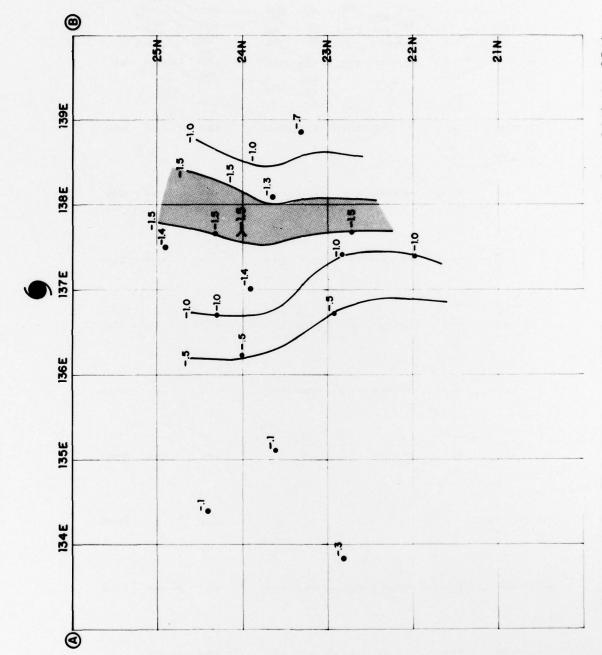


Figure 4.3. Changes in sea surface temperature from 14th to 15th.

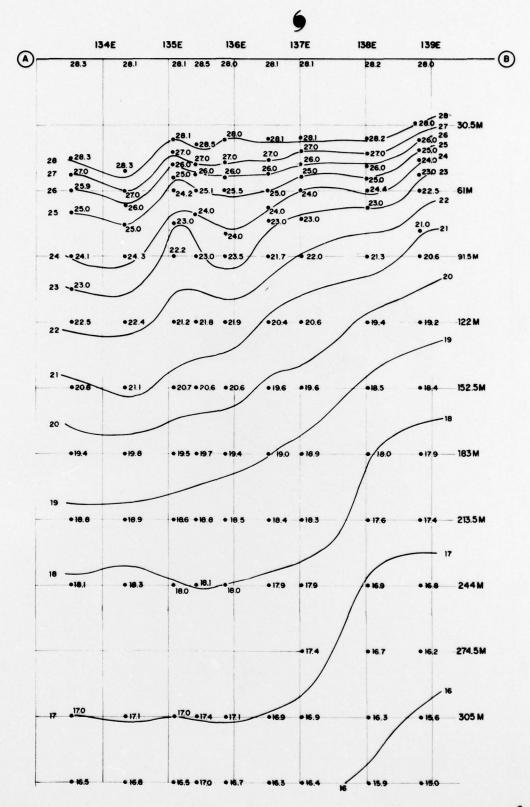


Figure 4.4. West to east vertical cross-section, along 24^oN, perpendicular to track of Typhoon PHYLLIS, on 14 August. (Isotherms in degrees C.)

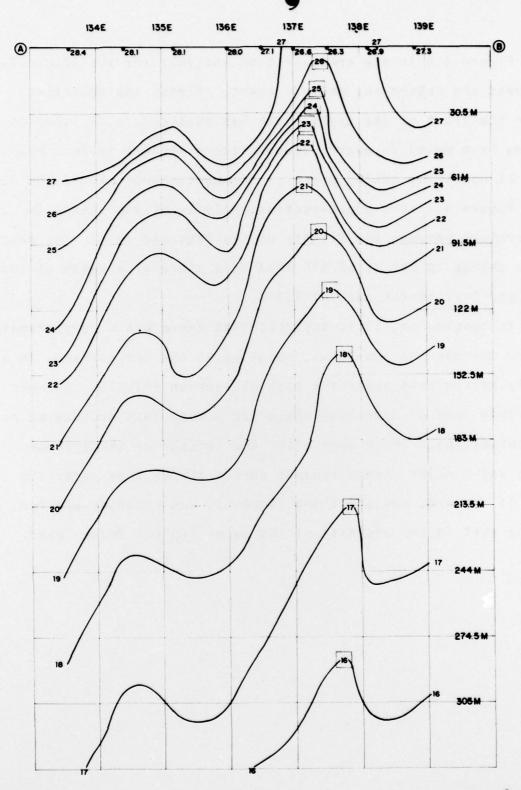


Figure 4.5. West to east vertical cross-section, along $24^{\circ}N$, perpendicular to track of Typhoron PHYLLIS, on 15 August. (Isotherms in degrees C.)

Figure 4.6 is the cross-section analysis for the 17th. Two features are noteworthy on this chart. First, the upwelling under the track of the typhoon eye has subsided, i.e., the isotherms have moved downward; second, there appears to be a new zone of upwelling taking place to the east between 138°E and 139°E.

Figure 4.7 is a cross-section analysis of the change in temperature between the flights on the 14th and 15th. The maximum was a change in excess of 5°C that took place at a depth of about 40 m and just to the east of 137°E.

In conclusion, it is apparent that there was a very dramatic upward movement of isotherms, relative to the sea surface, in a fairly narrow band under the path of Typhoon PHYLLIS. Outward from this zone of upwelling there was a much less pronounced zone of downwelling. Three days after the passage of the typhoon there was a major return towards normal in the zone under the path of the eye; new upwelling, however, was becoming apparent to the east in the vicinity of the major typhoon feeder band.

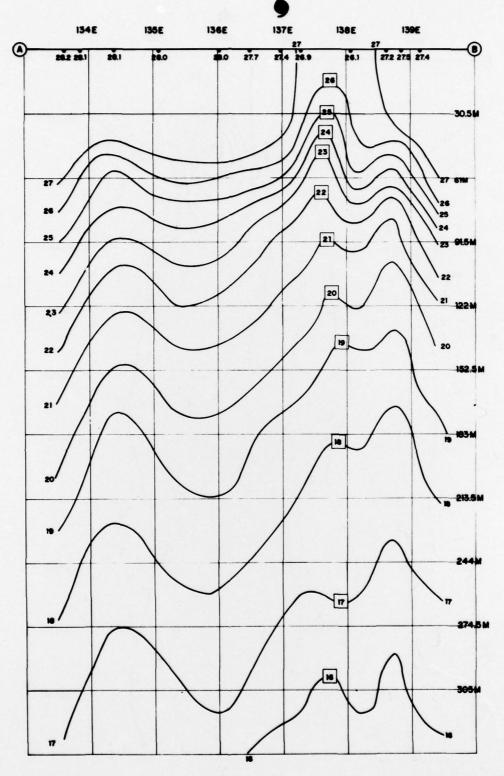


Figure 4.6. West to east vertical cross-section, along $24^{\rm O}{\rm N}$, perpendicular to track of Typhoon PHYLLIS, on 17 August. (Isotherms in degrees C.)

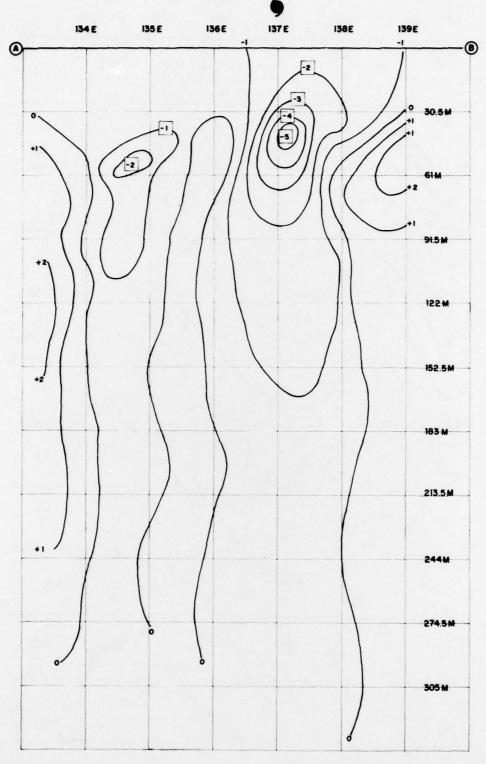


Figure 4.7. Vertical cross-section depicting changes in temperatures from the 14th to the 15th.

APPENDIX A

AXBT OBSERVATIONS PRODUCED FROM DIGITIZED RECORDS

Column and line entries on these listings are discussed and defined on p. 16 of this report.

LISTING FRCP XOT FILE AT FLEET NUMERICAL MEATHER CENTRAL, MONTEREY, CALIF, 93940 DEPTHS TO NEAREST METER. TEMPERATURES IN MUNDRETHS OF DEGREES CELSIUS

15 52 15 52	7E NP 2027	TENP 2171 1634	TEMP 2159	TENP 21.9.7	TE NP 2091	2278 1663	7EHP 2385 1676	TEMP 2232	7E #P 2454 1760
90 90 312	0EPT# 108 333	0EPTH 97 335	96	125	0EPTH 148	DEPTH 137 335	0EPTH 74 267	DEPTH 132	DEPTH 85 269
7ENF 2137 1606	7EHP 2074 1665	2253 1686	7ENP 2238 1624	7EHP 2320	TEMP 2113	7547 2347 1769	2439 1729	7ENP	TEMP 2526 1933
06PTH 77 282	0EP TH 102 277	83 311	05P TH 61 338	05P TH 180	0EP TH 122	0EP TH 125 280	0EP TH 64 244	0EPTH	DEP TH 75 223
754P 2240 1670	1EPF 2157 1675	2320 2320 1749	TENP 2283 1681	7EHP	TEMP 2136	TERP 2425 1862	2468 1831	TENP 2314	TENP 2581 1968
0E PTH 63 254	DEPTH 86 256	DE PTH 73 262	0EPTH 77 307	DEPTH TEHP 75 2474	DEPTH 113	DE PTH 109 244	0EPTH 61 207	DE#TH	0EPTH 70 217
2293 1690	TEMP 2240 1715	7ENP 2380 1774	2346 1722	7 ENP 2496 1685	2169 1651	1EHP 2543 1925	2542 1857	TEHP 2401	764P
0E P TH 58 2 38	DEP TH 77 232	0EPTH 63 254	0EP TH 74 291	0EPTH 70 135	0EPTH 103 335	DEPTH 90 227	06 P TH 57 20 S	DEPTH TEMP 82 2401	HT # 193
1 1 2327 1728	2 TEHP 2350 1771	3 2401 1791	TEMP 2543 1801	5 2535 1694	6 TEMP 2267 1687	7 TEMP 2651 1958	7 2726 1959	9 76 2437 334 1658	10 7EHP 2741 2103
NT COUNT 1 0EPTH TEHP 52 2327 221 1728	0EPTH 67 206	0EPTH 6U 241	DEPTH 59 237	0£PTH 64 325	0EPTH 79 318	DEPTH 76 214	0EPTH 50 168	9 0EPTH TEHP 76 2437 334 1658	10 DEPTH TEHP 61 2741 169 2103
1 80 8	595 TENP 2672 1790	5 1634 PTH TEMP 57 2443 222 1810	8 1624 PTH TEMP 54 2564 196 189J	5 1685 PTH TEMP 61 2575 295 1748	2632 2432 1714	15 1663 PPTH TEMP 70 2706 184 2063	14 1594 PTH TEMP 44 2845 155 1987	14 1658 19TH TEMP 62 2578 302 1711	348 1432 0EPTH TEMP 56 2788 157 2152
DEFIN TEMP PRINT COUNT 336 1492 1 10 EPTM DEPTM 47 238 7 52 2 172 1808 221 1	333 1595 DEPTH TEMP 46 2672 188 1790	335 1634 DEPTH TEN 57 244 222 181	338 1624 DEPTH TEMP 54 2564 196 1893	335 1685 DEPTH TEMP 61 2575 295 1748	335 1651 OEPTH TENP 63 2432 298 1714	335 1663 DEPTH TEMP 70 2706 184 2063	334 1594 DEPTH TEMP 44 2845 155 1987	334 1658 DEPTH TEMP 62 2578 302 1711	346 14 DEPTH 56 157
852	1EMP 2786 1835	1ENP 2624 1881	1ENP 2763 1908	16HP 2793 1630	7EHP 2+90	15HP 2814 2127	1EMP 2863 2082	15HP 2779 1901	7ENP 2837 2194
AC.PR SURF, TENP MAX 21 2809 H TEMF DEPTH TENP H 2793 41 251 E 1991 152 1652	2622 0EPTH TEMP 41 2786 163 1835	2818 DEPTH TENP 49 2624 187 1881	2820 DEPTH TEMP 48 2763 182 1908	2600 CEPTH TEMP 43 2793 237 1630	2624 DEPTH TEMP 55 2490 265 1779	2906 0EPTH TEMP 60 2814 171 2127	2867 0EPTH TEMP 41 2863 126 2082	284U 05PTH TEMP 45 2779 222 1901	2860 DEPTH TEMP 52 2837 142 2194
AC.PR S 21 21 2793 138 1991	20 TEMF 2815 1883	20 15 15 15 15 15 15 15 15 15 15 15 15 15 1	19 7804 1969	17 TENF 2802 1893	17 TEMP 2798 1834	20 1EMF 2894 2143	23 2868 2145 1594	16 TENP 2829 1958	23 2953
DEPTH DEPTH DEPTH	F 37 142	E 43	152 152	E 40	5E 40 40 24C	51 165	138 138 138	5 38 254 254	5 13 127
IN 134505 21 1246 136 1991	1N 13802F TEMP OF 2818 1926	IN 13761E TEMP DE 2814 1985	1N 13632E TEMP DE 2824 2057	IN 13552E TEPP DE 29J5 1954	N 13505E TEMP 0 2824 1877	N 13349E TEMP 0 2899 2184	IN 13251E TEMP DE 2871 2225 1612	3N 132345 TEHP OF 2844 2016	13237E 15KP 0 2862 2273
2320N 2320N 29 2 26 2 118 1	CEPTH T 36 2 128 1	9 2355N GEPTH T +6 2	5 2354N CEPTH TI 38 2	3 2350N DEPTH TO 27 2 191 1			6 2151N DEPTH T 27 2 93 2 323 1	6 2113N DEPTH T 34 2 193 2	•
1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.506	6750	3545	.553	9652	3633	1716	9726	273
754814 PTH TENP J 2849 105 1956	75.41+ PTH TEMP J 2822 117 1974	753814 PTH TEMP 2 2818 113 2089	753814 PTH TEMP 1 2820 105 2117	PTF1914 PTH TEMP 3 2503 173 1983	PTH TEMP PTH TEMP 2824 157 2046	EPTH TEMP J 2963 148 2233	75.814 J PTH TEMP 2367 85 2278 287 1644	6 753514 0 EPTH TEMP 0 2843 171 2139	6 75-814 J 10 2960 91 2392
SHIP VYMNOO HHHM LAPM VQ26 75481+ 0456 2320 OEPTH TEMP OEPTH J 2849 28 118 336 1492	VUZ6 754A1+ U5U6 2340 DEPTH TEMP CEPTH J 2822 34 117 1974 128	0EPTH TEMP CEPTH CEPTH 2 2418 + 60 113 2089 144	VUZE 753314 3545 2354 DEPTH TEMP CEPTH ' 3 2820 38	V026 751914 J553 2350 DEPTH TEMP DEPTH 3 2502 27 173 1983 191	VOZ6 759814 0632 2340 CEPTH TEMP DEPTH 2844 37 257 2446 219	V.26 75JA14 3633 2259 CEPTH TEMP CEPTH J 2963 48	VOZE 75-914 J716 2151 DEPTH TEMP DEPTH V 2967 27 85 2278 93 267 1644 323	V026 753914 0726 2113 DEPTH TEMP DEPTH 0 2843 34 171 2139 193	V026 754814 J736 2451 CEPTH TEMP CEPTH 0 2360 22 91 2392 116

SHP VMMAND MHHA LOMHA LO	7E NP 2276 1501	2382 2382 1891	7EMP	22.38 17.64	2372 1662	2143 1626	7EHP 2218 1639	TENP 2244	122 14 17 89
28 13230E 22 285 195 294 1549 0 2FFH TEMP PRIMT CHANNEL LONNIN LCHANNEL REPROPERTING THE PRIMT CHANNEL REPROPERT CHANNEL REPROPERTING THE PRIMT CHANNEL REP	388 388	0€PTH 99 215	DEPTH 172	90 90 235	0EPTH 66 263	139 139 331	0EPTH 105 315	0EPTH 123	0EPTH 111 261
No. 12.204 No. N	1586 2305 1623	7ENP 2454 1998	7ENP 2257	2302 1793	7EMP 2481 1681	2227 1785	75MP 234.7		2369 1866
National	107 107 299	DEP TH 86 281	142	DEP TH 78 222	93 247	122 287	0EP TH 77 299	109 109 334	0EPTH 100 234
12.236	7EHP 2368 1634	75 M 2 2 5 4 9 2 8 6 8	TEMP 2412	7EHP 2420 1828	2543 1758	TENP 2409 1775	2494 1736	7ENP 2419 1786	2493 1892
The column	0EPTH 93 298	0EPTH 72 190	0E PTH 96	05P TH	DE#TH	0EPTH 87 262	0EPTH 59 263	0EP7H 90 254	0EPTH 98 217
The common control of the control	7ENP	2617 2071	15496 1587	15HP	2753 1794	7EHP 2495 1811	2558 1799	2508 1869	
TEMP COMPHH NC.PR SURF.TEMP MAX DEPTH TEMP PRINTERS 22 893			069 TH 81 332	0EPTH 58 181	0EP TH 37 195	0EP TH 73	DEPTH 53 233	0EP TH 72 225	0EP TH 72 198
TEMP COMPHH NC.PR SURF.TEMP MAX DEPTH TEMP PRINTERS 22 893	1 1 1 1 2 2 2 3 3 3 4 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2 2679 2107 1339	3 1549 2617 1664	154 2514 1956	.5 2791 1962	16 TENP 2559 1861	7 TEMP 2657 1826	.8 2571 1967	TENP 2626 1989
He Comme	255 234 234	0EPTH 60 173 173 335	06PTM 56 311	0EPTH 55 168	33 176	0EPTH 61 216	0EPTH 45 225	0EPTH 63 176	0EPTH 67 181
TEMP DEPTH TEMP DEPTH TEMP 22 2593 2593 2593 2593 2593 2593 2593 2593 2593 2593 2593 2593 2594	186 PR	2864 2187 1349	167 164P 2706 1754	2625 2625 1969 1539	111 TENP 2800 1902	2617 1915	13 TEMP 2920 1916	2624 1985	7EMR 2812 2053
TEMP CONTHH NC.PR SUR 13.30 C C C C C C C C C	338 15 338 15 0EPTH 214	335 13 0EPTH 40 40 157 330	332 15 0EPTH 57 203	335 15 0EPTH 46 161 335	333 15 DEPTH 30 30	331 16 DEPTH 52 198	335 16 DEPTH 37 164	me	332 1 06PTH 57 171
TEMP CONTHH NC.PR SUR 13.30 C C C C C C C C C	44X TEMP 2808	22889 2290 1436	1EHP 2726 1842	7EMP 2770 1995 1600	15NP 2796 1993	2690 1992	1EHP 2840 2037	1EHP 27 98 2041	7EMP 2842 2116 1673
133230 13332 2853 2853 286	URF.TEMP 2893 DEPTH 37 196	2904 0EPTH 31 140 313	2096 DEPTH 53 251	2816 DEPTH 41 154 311	2769 DEPTH 12 132	2839 DEPTH 43	2862 DEPTH 34, 152	2633 DEPTH 51 161	2811 GEPTH 53 152 332
133230 13332 2853 2853 286	22 22 1EMP 2885 2001	26 2994 2934 2338 1549			22 TEMP 2787 2109				
The same of the sa	06 26 180 180 180 180 180 180 180 180 180 180	9E 0EPTH 24 127 294	6E 0EPTH 207	w 0	3E 0EPTH 7 108	3	9EP7+	2E DEP 11-	-
The same of the sa	1323 1323 649 646 538	1322 ENP 9.9 353 766	1311 EMP 899 058	1312 EMP 805 065 696	1314 ENP 766 207 511	1321 EMP 809 369	1324 EMP 862 156	1333 ENP 849 126	1343 EPP 1824 227 739
SAIP YENNOD HHHH VOED 750814 0745 137 2216 137 2216 137 2216 137 2216 137 2216 137 2216 135 2362 234 1341 VU2C 75.814 0815 CEPTH TEMP CEPTH TEM	21 2 2 2 2 2 2 2 2 3 3 8 1	1910N PTH T 18 2 121 2 247 1			2152N PTH T 4 2 91 2 333 1	2244N PTH T 29 2	2316N 23 2 122 2	2354N 23 2 144 2	2425n 22 22 22 23 2 23 2 23 2 23 2 23 2 23 2
SAIP YEAMUD VOED 750814	HHHH 17.5	0756 0E	3815 0E	2833	1454	0110	3932	6 76 7	1606
V026 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	153814 TH TEMP 0 2893 17 22 46	753814 10 2934 15 2362 14 1811	75.814 TF TE.1P 0 2996 36 2.82	75J814 11 TEMP 11 2816 15 2183	75.3814 TH TEMP 4 2759 72 2296 39 1599	75.914 TH TEMP 3 2339	75.91+ TH TEMP C 2962 15 2164 35 1613	75.91+ 11 TEMP J 2933 39 2145	753814 TH TEMP 0 2911 16 2256 79 1751
	SHIP 7 V026 7 OEPT 13	V026 7 0EPT	VJ26.7	V426 7	V326 7	V626	VC26.7	V026	V326

TENP 2239 1749	7EHP 2163	2143 1557	TENP 2636	7ENP 2299 1761	7E 4P 2291 1917	7E4P 2245 1668	7E MP	7EMP 2023 1566	TENP 1981 1524
0EPTH 105 310	0EPTH 96	0EPTH 97 334	DEP TH	0EPTH 90 257	DEPTH 126 223	0EPTH 82 267	0EPTH 165	103 335	0E.PTH 92 335
1ENP 2296 1766	2221 1609	7EHP 2266 1642	7EHP	2339 1793	2336 1951	2291 1715	7ENP 2097 1677	1620	2007 2007
93 93 282	DE# TH 834	DEPTH 71 302	DEPTH TEMP 73 2432	DEPTH 72 244	0EPTH 119 219	0EPTH 76 253	DEP TH 150 332	0EP TH 74 310	05PTH 86 299
Z347	7ENP 22 84 1654	7ENP 2303 1688	63 2480	75HP 2363	7EHP 2432 2001	1EHP 2437 1726	TENP 2127 1733	1ENP 2172 1646	TENP 2101 1621
0EPTH 85 255	0EPTH 73 311	ЭЕРТН 66 279	0E PTH 63	0EPTH 68 225	DEPTH 100 207	DEPTH 63 243	0EPTH 139 303	0EPTH 64 295	DEPTH 72 291
TENP 2405 1851	7ENP 2344 1699	1ENP 2346 1739	2543 1675	TEMP 2433 1841	2458 2052	2507 1787	TENP 2307 1778	TENP 2224 1696	7ENP 2202 1698
DEPTH 72 226	0EP TH 67 275	0EPTH 58 244	0EPTH 56 333	0EP TH 60 210	0EP 7H 87 194	0EP TH 53 215	0EP TH 98 269	0EPTH 52 259	0EPTH 51 24
17 1904 1904	1 2410 1736	2 2385 1769	23 PTH TEMP 51 2611 286 1764	1988	25 TEMP 2549 2076	26 2556 2556 1916	7 1649 2337 1820	28 1 TEMP 2288 1722	29 TEHP 2252 1729
INT COUNT 20 0EPTH TEMP 67 2438 203 1904	21 0EPTH TEMP 58 2410 258 1736	22 DEPTH TEMP 54 2385 237 1769	23 DEPTH TEMP 51 2611 286 1764	24 DEPTH TEMP 51 2476 164 1988	25 0EPTH TEMP 73 2549 190 2076	26 0EPTH TENP 50 2556 196 1916	27 DEPTH TEMP 95 2337 250 1820	28 42 2288 251 1722	29 47 2252 217 1729
g 6 0 0	89 TEMP 2467 1788	57 2485 1799	3 1675 PTH TEMP 46 2721 261 1832	144 2529 2078	80 2624 2143	87 2754 1858	77 TEMP 2637 1837	15 1566 PTH TEMP 37 2344 234 1747	2446 2446 1768
0EPTH TEMP 329 1715 0EPTH TEM 56 258 192 193	334 1689 DEPTH TEMP 55 2467 242 1788	334 1557 DEPTH TEMP 48 2485 210 1799	333	334 16 0EPTH 43 143	333 1680 NEPTH TEMP 59 2624 169 2143	330 1497 DEPTH TEMP 45 2754 183 1858	332 1677 DEPTH TEMP 86 2637 231 1837	33	335 19 0EPTH 37 196
HAX 1653 2015	16 NP 2621 1919	TEMP 2684 1635	1EMP 2770 1939	1EMP 2610 2131	TEMP 2683 2182	TEMP 2790 1986	TENP 2688 1992	TEMP 2676 1753	TEMP 2650 1802
SURF.TEMP 2851 0EPTH T 52 2	2764 0EPTH 1 48 2	2764 DEPTH TEMP 41 2684 194 1835	2804 CEPTH TEMP 42 2770 224 1999	2834 DEPTH TEMP 37 2613 134 2131	2930 DEPTH TEMP 52 2693 160 2182	2813 DEPTH TEMP 42 2790 146 1986	2717 DEPTH TEMP 82 2686 206 1992	2749 DEPTH TEMP 26 2676 218 1753	2678 DEPTH TEMP 25 2650 186 1802
132 2128	19 TEMP 2748 1947	29 2758 1923	17 1EHP 2793 2052	23 TEMP 2774 2193 1644	23 1EMP 2789 2201 1680	23 2802 2028 1487	19 7710 2710 1926	20 1ENP 2722 1799	20 1EMP 2669 1874
132 132	38 171	6 66PTH 36 170	E 37	28 120 334	E 42 42 152 333	7EPTF 35 128 330	E 76 198	DEPTH 26 189	76 069TH 21 140
ИН LCNРИН 13525E 1 TEPP ОБ 2 2653	6N 13627E 1 TEPP DE 1 2768	18 13727E TEMP G 2774 2002	0N 137528 TEMP (2838 2143	2N 1370JE TEMP DE 2860 2240 1732	13N 13658 TEMP 2800 238 1734	7N 13658 TEMP 2913 2651 1539	UN 13762 TEMP 4712 1959	158N 13702E TH TEMP DE 15 2744	24N 13703 H TEMP 4 2678 12 1898
2443N 2443N PTH TE 42 28 125 21	2446N PTH TE 34 27	~	2200N PTH TE 31 28 161 21	2222N PTH TE 23 28 105 22 335 17	6 2243N DEPTH TE 39 24 146 22 294 17		23 2340N 137 DEPTH TEMP 71 2712 186 1959	J 2358N DEPTH TE 15 2 179 10	2424N 137 PTH TEMP 14 2678 132 1898
1019 244 1019 244 0EPTH 125	1634 244 DEPTH 34 147	1352 245 DEPTH 32 132	19648	1655 222 DEPTH 23 115 335	2,	3713 CE	0723 CE	97 50 GE	3737 0E
Z6 750814 1 CEPTH TEMP U 2851 115 2210 329 1715	26 750814 1 DEPTH TEMP J 2764 119 2117	26 753814 DEPTH TEMP J 276+ 133 21:56	753815 J	26 75,815 J CEPTH TEMP 1 2504 97 2278 285 1738		20 75,915 1 0CPTF TEPP 1 2343 115 2093 281 1539	20 75J815 0 DEPTH TEMP 2 2717 179 1935	26 751915 GEPTH TEMP 1 274° 162 1963	51915 H TEPP 2 2679 2 1926
SHIP WVMMOD HHMH LAP V026 750814 1018 244 CEPTH TEMP DEPTH U 2851 125 115 2210 125	VOZE 756814 1634 244 CEPTH TEMP CEPTH 3 2764 34 1.9 2117 147	Vuz6 753814 1352 245 DEPTH T24P DEPTH J 276+ 32 143 2156 132	VJ26 75J315 J648 220 OEPTH TEMP CEPTH J 29U4 31	VJ26 75-815 J655 222 DEPTH TEMP DEPTH J 2434 23 97 2274 145 285 1738 335	V126 753915 CEPTH TEMP 1 2 843 131 226 268 17 9	VC20 72,915 3713 230 CEPTH TEPP (EPTH J 2313 123 115 2093 123 281 1639 316	VSC 75J815 0723 234 DEPTH TEMP DEPTH C 2717 71 179 1945 186	V426 75)815 0734 23 DEPTH TEMP GEPT J 274" 162 162 1963 17	Vu26 751915 3737 24, DEPTH TEPP DEPTH 3 2679 11, 112 1946 13

1957	2217 1601	2107 1660	7EMP 2078	2016	1677 1977	2094 1595	2015	2108 1776	7E4P
DEPTH TEMP 63 1957	DEPTH 62 62 315	ВЕРТН 69 267	106	DEPTH 119	05PTH 160	0EPTH 85 277	DEPTH 129	145 259	147
15HP	2370 1624	7EMP 2175 1676	7EPP 2184 1579	75HP 2844	TEMP 1951	7EMP 2126 1736	7ENP 2160	7EHP 2161 1827	7EMP 2209
05P TH	DEP 1H 54 290	06° TH 65 253	89 83 834	DEPTH . 112	DEP TH 121	05PTH 79 260	0EP TH 117	DEP TH 119 227	0EP TH 132
76MP 2838 1486	7EP# 2489	7549 2349 1719	7EMP 2280 1616	7EHP 2131	DEPTH TENF 82 2050	TENP 2199 1747	7EMP 2216 1664	7ENP 2224 1968	7EMP 2400 1646
DEPTH 53	0E PTH 50 237	05PTH 57 205	DEPTH 76 293	0EPTH 100	05PTH 82	0EPTH 69 248	95 PTH 110 333	0E PTH 97 243	0EPTH 89 335
7EHP 2153 1561	1ENP 2568 1765	TENP 2409 1753	2378 1647	7EMP 2234	DEPTH TFHP 52 2147	TEMP 2211 1793	7EMP 2356 1676	16#P	TENP 2494 1693
DEP TH 46 301	DEPTH 45 213	0EPTH 52 186	0E P TH 68 277	05.974	DEP TH 52	0EPTH 65 226	DEP TH 66 318	0EPTH 70 203	0EPTH 80 296
7 COUNT 30 DEPTH TEMP 35 2580 267 1612	31 0EPTH TEMP 42 2580 163 1797	32 0EPTH TEMP 43 2507 164 1772	33 0EPTH TEMP 61 2527 265 1657	34 0EPTH TEMP 93 2303 316 1616	35 64 2193	36 57 2332 208 1919	37 0EPTH TEHP 76 2445 347 1701	39 0EPTH TEMP 60 2444 198 1900	39 0EPTH TEMP 78 2579 283 1732
8			0EPT	310	050	ä		3 0EPTH 69 198	
333 1486 353 1486 36 26974 TEMP 30 2694 223 1702	315 1691 0EPTH TEMP 37 2624 164 1834	301 1595 DEPTH TEMP 36 2555 144 1922	334 1579 DEPTH TEMP 52 2624 195 1780	316 1616 DEPTH TEMP 66 2556 260 1691	332 1589 DEPTH TEMP 41 2220 332 1589	334 1584 DEPTH TEMP 50 2450 180 1861	333 1664 DEPTH TEMP 61 2593 282 1778	135 1676 DEPTH TEMP 45 2516 191 1939	335 1646 DEPTH 3TEMP 53 2697 241 1806
ENP FAP	2704 02PTH TEMP 31 2648 133 1902	2636 29 2592 111 1883	2736 DEPTH TEMP 46 2670 173 1831	2707 0EPTH TEMP 57 2613 215 1773	2669 CEPTH TEMP 25 2599 257 1682	2716 44 2652 175 1878 334 1594	2800 DEPTH TEMP 56 2653 263 1783	2813 DEPTH TEMP 41 2581 179 1968	2969 GEPTH TEMP 51 2723 198 1927
AC.PR SURF.TEMP MAX 18 2747 F TEMP DEPTH TEMP 0 2729 23 2715 7 1018 195 1744	2704 02PTH 31 133	263 DEPTH 29 111	2736 0EPTH 1 46 2 173 1	2707 0EPTH 57 215	2669 CEPTH 25 25 257	2716 0EPTH 144 175 334	2800 0EPTH 56 263	2813 DEPTH 41 179	2869 GEPTH 51 198
18 S 18 S 16 S 16 S 16 S	23 TEMP 26.92 26.61	22 TEMP 2614 1918	19 1546 2724 1933	16 1E4P 2679 1807	15 1E4P 2661 1756	24 1913 1913	16 TEMP 2793	22 TEMP 2796 2002	18 764 2856 1965
130	709E 0EPTF 1 21.8	732E DEP TH 22 97	351E DEPTP 34 145	30.9E 0EPTH 40 40 186	703E 0EPTH 20 20 20 20	63.6 0cPTH 46 150 323	60.3F 0EPTH 51 241	510E DEPTH 33 173	3495 18 nEPTH TEMP 43 2856 187 1969
4H LCNMHH 9N 13712E TEMP DE 2746 1843	5N 13709E TERP DE 2702 2120	4N 137326 TEMP DE 2631 1950 1595	2N 13 75 PP 2741 1980	5N 13 TEPP 2707 1838	5N 13 TEPP 2669 1764	2733 1942 1942	3N 13 TEMP 2805 1853	16 13 2613 2337 1676	9N 13 TEMP 2873 2073
744 245 744 245 06PTH	910 2535 DEPTH 12 12 73	838 2454 CEPTH 10 89 301	915 232 DEPTH 28 131	321 233 CEPTH 35 169	936 235 CEPTH 207 207	944 234 DEPTH 37 137 331	952 234 CEPTH 49 211	335 234 0 DEPTH 31 3159 3359	u31 224 CEPTH 46
SHIP YVHNOO HHHM LAMM V266 753015 3744 2459 OEPTH TEMP OEPTH J 2747 101	V226 754815 4614 25351 DEPTH TTMP DEPTH 3 2714 12 66 2152 73	VOZE 751915 9838 2454 DEPTH TEMP DEPTH 1 2636 10 91 2495 294 1660 361	Vu26 753815 3915 2122N 138516 DEPTH TEMP DEPTH TEMP DEPTH U 2739 28 2741 34	V.26 751815 0921 2335N 13609E DEPTH TEMP CEPTH TEMP D J 2737 35 2707 141 1913 169 1838	VOZE 75JULS 3916 2355N 137CJE CEPTH TEMP GEPTH TEMP · GS J 2659 18 2669 173 1818 207 1764	-Vuze 750a15 D944 2348N 13624E DEPTH TEMP DEPTH TEMP D0 1 2716 37 2733 107 2424 137 1942 291 1679 331 1661	VOZE 72,415 0952 2343N 13603F DEPTH TEMP CEPTH TEMP D 1 2806 49 2815 145 2425 211 1853	VG26 757815 1305 2340N 13513E CEPTH TEMP DEPTH TEMP DI J 2813 31 2813 165 2457 169 2317 342 174. 335 1676	4920 75J815 1451 2249N 133499 CEPTH TEMP CEPTH TEMP J 2869 4G 2873 154 21.1 165 2473

1EHP 2438 1791	7EMP 2211 1640	7EMP 2276 1669	2226 1793	2332 1831	7EMP 2648	7EHP 2340	7EMP 2196	2180	7ENP
0EPTH 105 286	96 P T H 105	1 6 6 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 6 8 9 9 9 9	DEPTH 106 249	0EPTH 107 243	118	139 139	0EPTH 153	0EPTH 164	DEPTH 172
1686 1888	7EMP 2267 1660	2273 1694	76HP 2390 1813	24.90 184.8	2767 1878	7EHP 2411	1ENP 2243 1652	1ENP 2269	1ENP 2203
0EPTH 99 251	0EP TH 90 324	0EPTH 81 285	06P TH 77 243	0EPTH 82 225	97 97 8 334	112	0EP TH 143	0EPTH 144	0EP TH 148
154P 2509 1955	2329 1760	7ENP 2364 1733	76 PP 2469	15HP 2534 1879	754P 2632 1926	768F 2453	75HP 2368	2326 2326	7ENP 2311
05PTH 89 227	06.91H 80 255	0EPTH 65 264	0£ PTH 67 238	0EPTH 76 211	7E 03 317	0EPTH 101 334	95.04 109 308	0ÉPTH 135	DE PTH 122
7E4P 2610 2026	2398 1789	1EHP 2468 1796	7EMP 2558 1839	2611 1917	7ENP 2880 1994	7ENP 2493 1909	TENP 2440 1731	7ENP 2396 1672	2427 1687
06° TH 75 199	069 TH 78 246	05PTH 55 242	06 P TH 61 231	0EP7H 67 7 199	0EPTH 75 286	0EPTH 94 263	0E PTH 97 299	0EP TH 119 333	0EPTH 103 335
INT COUNT 40 DEPTH TEMP 68 2649 195 2013	41 0EPTH TEMP 61 2497 209 1871	42 DEPTH TEMP 48 2549 223 1817	43 DEPTH TEMP 56 2594 220 1950	55 2635	45 DEPTH TEMP 68 2954 235 2158	46 DEPTH TEMP 66 2594 245 1973	47 DEPTH TEMP 85 2489 251 1832	48 DEPTH TEMP 93 2546 298 1748	49 DEPTH TEMP 88 2530 322 1710
05PTH TEMP PRI 334 1715 05PTH JIENP 59 2729 173 2108	334 1640 0EPTH TENP 53 2611 195 1919	323 1664 DEPTH TEMP 42 2664 195 1912	333 1653 DEPTH TEMP 55 2693 213 1872 333 1653	334 1616 0EPTH TEMP 49 2843 176 2029 334 1616	334 1878 DEPTH TEMP 64 2975 210 2248	334 1742 DEPTH TEMP 59 2638 227 2022	335 1652 DEPTH TENP 67 2604 213 1936	333 1672 DEPTH TEMP 75 260 9 272 1832	335 1607 DEPTH TENP 71 2615 271 1833
SLRF.TEMP MAX 2849 DEPTH TEMP 50 2839 164 2146	2016 DEPTH TEMP 48 2737 169 1980	2791 0EPTH TEMP 40 2798 182 1934	2600 50 2769 192 1946 363 1719	2836 05PTH TEMP 47 2852 169 2052 315 1694	2956 DEPTH TEMP 54 3013 203 2283	2798 CEPTH TEMP 51 2700 206 2153	2793 0EPTH TEMP 55 2704 191 2022	2809 CEPTH TEMP 72 2636 249 1869	2805 DEPTH TEMP 62 2668 230 1915
7 2855 7 2855 5 2284	20 1EMP 2799 2056	21 TEMP 2809 1980	25 164P 2816 2035 1719	25 1EMP 285U 2115 1757	19 1EMP 3J10 2439	18 1EMP 2816 2239	19 2769 2046	17 1EMP 2789 2004	17 TEMP 2803 1988
135E 06PTH 47 47	16 42 42 14C	1536E 0GPTH 17 155	535£ 0EPTH 45 154 299	539E JEPTH 29 248 248 288	153dE 0EPTH 42	25N 13538E H TEPP DEPTH 2 2816 4C 5 2283 188	N 1376JE TEMP DEPTH 2793 50 2097 187	17 JUE DEPTH 1 59	17uus 0EPTP 49 208
5N 13 5N 13 7EMP 2361 2418	4N 13428 TEMP 2822 2114	7N 13536 TEMP 2819 2017	10 13535 TERP 2921 2076 1745	9N 135 TEMP 2835 2146 1777	ON 1353dE TEMP 0 2989 2478	5N 13 TEPP 2816 2283	9	5N 137 1EMP 2913 2067	4N 137
145 234 145 234 CEPTH	1359 242 DEPTH 38 129	1119 241 06PTH 36 155	1125 235 DEPTH 34 141 291	1138 231 DEPTH 5 26 26 26 26 275	1145 225 06PTH 20 20 164	1151 222 DEPTH 32 175	1257 2261 3EPTH 46 46 171	30* 222 36PTH 36PTH 194	0320 224 5EPTH 5EPTH 197
SHIP YMMND HHMM LAM VG26 750815 1445 234 CEPTF TEMP CEPTH 128 2431 122 334 1715	V026 753815 1359 242 OEPTH TEPP DEPTH 2 2816 38 118 2189 129	VJ26 750815 1 06 oth TEMP 3 2791 323 1664	VUZ6 754815 1125 235 CEPTH TEPP DEPTH J 28JJ 34 127 2122 141 200 1743 291	Vu2c 751815 EEPTH TEAP U 2835 133 2220 265 1784	V026 750915 1145 225 CEPTH TEMP DEPTH 0 2956 20 131 2586 164	V326 753815 1151 222 CEPTH TEMP DEPTH J 2798 32 167 2363 175	V.20 753917 1257 220 GEPTH TEMP JEPTH U 2793 46 155 2173 171	Vuzo 759817 CEPTH TEMP J 2889 171 2131	VJ26 75,817 0320 224 CFPIH TEMP GEPTH J 2835 46 191 2360 197

76HP 2013	2234 1695	28 71	2027	2159	2301 1843	75 HP 28 29	TE NP 2211	2126	Z105
DEPTH 16A	0ЕРТН 76 262	0EPTH 115	DEPTH TEMP 95 2027	0EPTH 91	0EPTH 203	191 191	0EPTH 128	DEPTH 135	143
2064	16HP	76HP 2199 1507	76HP 2076	7ENP 2192 1591	7ENP 2356 1869	2005	2288	7ENP 2169 1657	2179
0EP TH 154	DEP TH 71 213	0EP TH 91 335	0EP TH 91	0EP TH 86 335	060TH 78 192	0EP TH 169	0EPTH 111	DEPTH 125 334	0EP TH 120
2136	7ENP 2395 1822	7ENP 2313 1602	7ENP 2207 1524	758 222 8 1656	1974 1974	1ENP	2396 2396	7ENP 2335 1679	1ENP 2207
0FPTH 122	0E PTH 64 199	0E PTH 75 304	0E PTH 82 334	05PTH 83 307	0EPTH 73 151	DE P TH	0EPTH 92	05 PTH 91 312	0EPTH 114
7EH9 2265	7EMP 2520 1854	7EMP 2411 1612	7EMP 2439 1588	7EMP 2462 1746	7EMP 2412 2024	2320	TENP 2462 1642	TENP 2470 1752	7ENP 2296 1694
0E® TH	06 P TH 66 189	0EP TH .67 292	0EP TH 75 311	0EPTH 67 242	0£ P TH 62 138	0EP TH 118	06° TH 82 335	0EPTH 69 269	97 97 333
PRINT COUNT 51 P DEPTH TEMP 76 2432 7 335 1599	51 DEPTN TEMP 56 2572 159 1897	52 0EPTH TEMP 59 2556 280 1641	53 0EPTH TEMP 72 2478 257 1674	54 0EPTH TEMP 63 2501 222 1789	55 DEPTH TEMP 56 2489 135 2047	56 119 2389 333 1685	57 0EPTH TEMP 72 2507 293 1713	58 0EPTH TEMP 65 2500 255 1788	59 0EPTH TEHP 92 2333 324 1702
0EPTH TEMP PR. 335 1588 0EPTH TEMP 61 2560 321 1607	335 1578 DEPTH TEMP 53 2595 142 1995	335 1507 0EPTH ITEMP 54 2617 267 1656	334 1524 DEPTH ITEMP 65 2512 216 1711	325 1591 DEPTH TEMP 56 2544 196 1806	735 1596 0EPTH 77EMP 45 2731 123 2089 335 1596	333 1695 DEPTH TEMP 83 2534 322 1695	335 1642 DEPTH TEMP 57 2620 247 1809	334 1657 DEPTH TEMP 63 2612 222 1885	333 1694 DEPTH TEMP 84 2410 308 1751
SLRF. TEMP MAX 2762 0EPTH TEMP 58 2608 306 1674	2736 DEPTH TEMP 36 2673 137 2023	2733 05PTH TEMP 47 2673 2n5 1803	2644 DEPTH TEMP 58 2534 155 1799	2640 02PTH TEMP 49 2577 165 1856	2822 40 2789 111 2148 302 1676	2833 0EPTH TEMP 61 2700 269 1846	2811 DCPTH TEMP 53 2659 223 1848	2804 CEPTH TEMP 55 2674 210 1999	2809 0EPTH TEMP 6+ 2554 297 1766
2747 1687	23 2722 2045 2045 1578	19 TENF 2704 1039	18 45 2593 136 1843	19 TENP 2622 1892	25 TENP 2814 2156 2156	16 7546 2812 1678	17 163P 2761 1919	19 7EMP 2715 1931	17 TEMP 2613 1836
HMH LCNMMP AC.PR SI DBN 13700E 16 H TEPP GEPTH TEMP B 2767 50 2747 L 1650 296 1687	06PTF 30 30 126 335	11E 0EPTH 4C 194	133E 18 REPTH TEMP 45 2593 138 1843	7115 DEPTH 159	75PTP 75PTP 33 1.8 285	1376 DEPTP 53 242	1516 DEPTH 49 193	055 0697H 203	0.2F TP 59
6 2308N 137 6 2308N 137 6 2307H TEPP 48 2767 294 1690	2401N 137615 23 2737 99 2147 313 1690	2423N 13761E PIH YENP DE 34 2731 169 1989	34 2616 34 2616 115 1915	56 43 25 26 43 19 83	3 2425N 13423E CEPTH TEMP DE 26 2824 34 2218 247 1764	2345N 13337F FTH TEPP 06 48 2935 231 1921	9 2249N 13351E GCPTH TEMP 0 42 2811 176 1977	1 2345N 13505E DEPTH TEMP D 41 2810 175 1954	4 2348N 136U2E DEPTH TSMP 0 51 2848 263 1810
1326 2 1326 2	1351 240 CEPTH 23 99 313	359 242 36PTH 34 169	1429 Z	36.	1343	E 53 0	9619	36-11 DE	£3
SHIP VEINGE HHMM LANI V.26 753917 326 230 CEPTH TEMP 326TH J. 2762 448 226 1452 394	026 75.917 3551 240 CEPTH TEMP CEPTH C 2736 23 65 2194 99 294 1654 313	VG20 75JB17 JB58 242 CLPTH TEMP DEPITH J 2737 36 143 1963 169	V125 75.817 1429 245 DEPTH TEMP DEPTH G 2544 34 1.9 1940 115	VUZ6 753817 1442 253 OEPTH TENP OEPTH J 2643 25 146 2.78 128	VECO 754817 3543 242 CEPTH TC-10 CEPTH V 2822 26 50 22 66 94 241 1943 247	U226 75,917 JEG 234 DEPTH TEMP DEFTH V 2937 48	VJ26 75.817 J519 224 DEPTH TEJO GEPTH 5 2811 42 150 2091 176	VJ26 75,817 36+1 234 DEPTH TEHP DEPTH ? 26.4 +1	V126 755817 J DEPTH TEAP 223 1535

TE # 2237	7E #	TENP 1933	7E#6	7EHP 2214 1722	TEMP 1992 1622	7EMP 2076 1572	7E#P 2252 1727
103 103	0£PTH 146 336	135 135	0EPTH 116 281	05PTH 85 257	0EP TH 110 202	0EPTP 100 341	0EPTH 90 253
7689 2269 1569	7EMP 2122 1607	7EHP 2067	2192 1720	15HP 2260 1742	76HP 2071 1700	TEMP 2173 1573	2309 1757
0EP TH 87 335	DEP TH 105 326	0EPTH 123	05PTH 100 272	DEP TH 79 234	0FP TH 92 234	333 333	DEP TH 84 234
2320 1686	7ENF 2199 1678	7EMP 2116	7EMP 2216 1773	2377 1787	2116 1742	1653 1653	76HP 2424 1789
05PTH 80 324	0EPTH 89 298	0EPTH 105	DEPTH 103 247	0E®TH 72 212 212	05 PTH 85 217	DE PTH 71 293	DE P TH 77 221
2422 1679	7EHP 2251 1700	2392 2392 1538	7EHP 2256 1831	TEMP 2444 1962	7EMP 2202 1757	TEMP 2281 1728	7E#
25 74 294 294 294 294 294 294 294 294 294 29	DEP 7H 96 203	0EP TH 62 335	0EPTH 99 207	0EPTH 68 196	06 P TH 234	0EP TH 68 242	DEPTH TEMP E9 2689 207 1088
17 17 2511 1709	1ENP 2331 1721	2339 2339 1622	7546 2462 1901	76HP 2479 1950	2266 1783	7EMP 2364 1791	7 TENP 2653 1891
NT COUNT 61 63 2511 276 1709	61 DEPTH TEMP 71 2331 261 1721	62 DEPTH TEMP 56 2339 306 1622	63 0EPTH TEMP 94 2462 183 1901	64 UEPTH TEMP 64 2479 170 1950	65 DEPTH TEMP 65 2266 194 1783	66 DEPTH TEMP 65 2364 216 1791	67 DEPTH TENP 64 2653 185 1891
15 1589 61 15 1589 61 0 CPTH TEMP DEPTH 53 2687 63 28	336 1640 DEPTH TEMP 67 2393 242 1763	335 1534 0EPTH TEMP 52 2393 258 1734	334 1599 DEPTH TEMP 77 2531 167 1928	335 1576 DEPTH TEMP 56 2523 149 1908	335 1536 DEPTH TENP 51 2562 179 1834	341 1572 DEPTH TEMP 52 2539 181 183	334 1593 DEPTH TEMP 57 2696 165 1939
TEMP 2734 1836	TEMP 2601 1813	754 2503 1759	164P 2666 1959	7EHP 2586 1946	1EMP 2624 1811	1EHP 2690 1864	7EHP 2749 2041 1593
URF.TEMP 2776 0EPTH 45 212	2736 DEPTH 53 53 223	2682 3 0EPTH TEMP 01 46 2503 241 1759	2704 DEPTH TEMP 66 2606 159 1959	2618 069TH 39 139	2727 05 0 TH 45 167	2751 0EPTH 37 167	2740 0EPTH TEMP 44 2749 138 2041 334 1593
19 2769	29 TEMP 272* 1871	17 1EMP 2613 1790	23 7674 1996 1599	22 TEMF 2600 1982	22 15MP 2682 1926	23 1ENP 2728 1907	24 1EHP 2747 2096 1627
ин ссинин кс.рк surf.темр мах len 136136 19 276 i temp oepth temp c 273 42 2769 49 2734 1 1976 172 1933 212 1936	45N 13659E H TEMP DEPTH 1 2 273A 44 2 3 1539 194 1	13N 13717E 1 TEMP DEPTH 1 2682 37	3 2736 124 3 2736 48 0 2625 144 9 1624 334	38N 13805E 4 TEMP DEPTH 5 2618 31 9 2644 136	44N 13838E F TEP DEPTH E 2724 37 7 1893 16C 5 1526	24N 13851E 1 TEPP 02PTH 7 2752 32 8 1941 154	913F DEPTH 22 127 367
TEN 13 2773 2773 1976	5N 13 TEMP 2739 1939	3N 13 TEMP 26.02 19.63	2625 2625 2625 1624	76.89 2618 2644 1574	18 13 13 15 15 15 15 15 15 15 15 15 15 15 15 15	ZN 13	6N 13 TEMP 27 36 21 60 1667
770 234 06PTH 37 163	1738 234 DEPTH 42 42 169	31, 234, 36, 31, 32, 33, 33, 33, 33, 33, 33, 33, 33, 33	06PTH 06PTH 43 140 319	731 233 CEPTH 15 119 119 335	737 2344 DE 0T+ 137 335	1759 232 JEPTH 27 138	03.1 2236N 13910F CEPTH TEMP OF 11 2736 107 2160 246 1667
SHIP VVMMUD HHMM LAN V426 753817 0746 234 DEPIH TEMP DEPIH J 2776 37	VOZ6 754817 J738 234 DEPTH TEMP DEPTH G 2738 42	VOZO 751917 G717 234 DEPTH TEMP DEPTH L 2682 33 152 1944 197	VOZO 75.617 3724 233 DEPTH TEMP DEPTH 27.4 43 128 2071 140 318 1678 319	0026 75,917 0731 233 0 2619 0 2619 119 92 2167 119 319 1632 335	UCE 751917 C737 234 DEPTH TENP DEPTH J 2727 26 124 1961 137 314 1594 335	UJZ6 75:317 U759 232 GEOTH FE4P UEPTH G 2751 27 121 1993 138	V926 750917 G541 223 LEPTH TEMP CEPTH 9 2746 137 99 2199 137 262 1722 246