

PRELIMINARY CRUISE REPORT

CRUISE 95-010

*R/V LONGHORN*

(CRUISE 676)

SEPTEMBER 22, 1996 - OCTOBER 11, 1996

## **REPORTE DEL VIAJE**

### **A. TITULO DEL PROYECTO:**

Estructura del cráter de impacto del Chicxulub, Yucatán (México).

### **B. SUMARIO DE LOS OBJETIVOS DEL VIAJE**

El propósito primario de este proyecto fue recoger información sísmica a lo largo de dos líneas (A,B) que cruzan el borde costero norte del cráter de impacto sepultado KT del Chicxulub en Yucatán (México). Los datos fueron recolectados utilizando una serie de Sismógrafos de fondo oceánico (OBSs) pertenecientes a la Universidad de Texas (Austin) los cuales fueron desplegados a lo largo de las dos líneas con un espaciamiento de 10 o de 20 Km. El objetivo fundamental fue delimitar la estructura profunda de la corteza crateriana. La información recopilada complementará los datos de reflexión sísmica recolectados por el buque de sísmico GECO Sigma a lo largo de tres líneas (A,B,C) bajo la dirección de el Sindicato de Perfilamiento de Reflexión de las Instituciones Británicas (BIRPS) (Reino Unido). El GECO Sigma proporcionó la fuente de energía para el experimento. Los datos sísmicos (refracción y reflexión de apertura amplia) fueron también recolectados utilizando una serie de sismógrafos de tierra instalados en la línea costera por el Imperial College (Colegio Imperial) de Londres (Reino Unido). Se instalaron instrumentos para la obtención de datos magnéticos y de gravedad a bordo del R/V Longhorn por la Geological Survey (Inspección Geológica) de Canadá, y dichos datos fueron recolectados continuamente a lo largo de todo el viaje durante períodos de tiempo sin desplegar ni reponer los OBSs. Algunos observadores de México también participaron en el viaje. Se trataba de un programa internacional con participación de México, El Reino Unido, Estados Unidos y Canadá. La colaboración estadounidense fue posible gracias a una donación a la Universidad de Texas (Austin) patrocinio de la Fundación Nacional para la Ciencia (NSF).

### **C. VIAJE Y DATOS**

Buque R/V Longhorn 676; 22 de septiembre de 1996 – 11 de octubre de 1996.

### **D. PLAN DEL R/V LONGHORN**

Véase documento adjunto nº 1.

### **E. TRIPULACION DE LOS BUQUES:**

Noé Cantú, Capitán; Hayden Abel, Piloto; Randy Pritchard, Piloto; Charles Rowe, Técnico; y Frank Walker, Cocinero.

#### F. DESTACAMENTO CIENTIFICO:

Richard T. Buffler, Codirector Científico, Universidad de Texas, Instituto de Geofísica, Austin, Texas; Yosio Nakamura, Codirector Científico, Universidad de Texas, Instituto de Geofísica, Austin, Texas; Ben Yates, Universidad de Texas, Instituto de Geofísica, Austin, Texas; John Brittan, Imperial College, Londres, RU; Roy Cooper, Inspección Geodésica de Canadá, Ottawa, Canadá (22/9/96-8/10/96); Carlos Ruiz, PEMEX, Cd. del Carmen, México (25/9/96-1/10/96); Adilce Flores, UNAM, México D.F., México (22/9/96-1/10/96).

#### G. SUMARIO DEL VIAJE:

22/9/96 - Salida de Port Aransas, Texas a las 14:12 (todas horas locales). Rumbo a Progreso, México. Se recogieron datos continuamente a lo largo de todo el viaje (véase Documento adjunto nº 2). Se recopilaban datos a bordo constantemente durante todo el viaje (situación, velocidad, rumbo, profundidad, temperatura del aire y del mar, salinidad, presión barométrica, velocidad del viento y dirección, Véanse Documentos adjuntos 3-5).

23/9/96 - Rumbo a Progreso. Se puso en funcionamiento el magnetómetro a las 10:35.

24/9/96 - Se prosiguió rumbo a Progreso. A las 17:40 se descubrió extravío del magnetómetro. Había sido arrancado de el extremo del cable, las razones se desconocen. Sin repuesto disponible.

25/9/96 - A las 07:42 detención frente a la costa de Progreso, cerca de la Estación OBS 10 en la intersección de las líneas sísmicas A y C, con objeto de determinar la temperatura del agua del mar, la salinidad y la velocidad para el GECO Sigma, el buque geofísico que recolectaba datos de reflexión sísmica y suministraba la fuente de energía sísmica para el proyecto. Estos datos serían usados para ayudar a equilibrar el cable sísmico (Estación CDT nº 1; véase documento adjunto nº 6). Llegada a Progreso, Puerto Yukalpetén a las 09:30. Paso de aduana y obtención de combustible. Contacto con el buque geofísico GECO Sigma, el cual estaba amarrado en el muelle principal de Progreso. Se acordó intentar establecer contacto entre los dos cada seis horas. Se discutió el plan de viaje con Mike Warner (Imperial College, Reino Unido), quien estaba dirigiendo el experimento sísmico en tierra, y con Alan Hildebrand y Mark Pilkington (Inspección Geológica de Canadá), quienes se encontraban dirigiendo análisis de gravedad en el puerto e inmediaciones costeras. Salida a las 16:12, en ruta a la estación OBS 1. Se continuó recolectando datos gravitatorios.

26/9/96 - Detención a las 01:20 y recogida del segundo perfil de temperatura del agua

marina, salinidad y velocidad en la Estación CTD 2 (Véase Documento nº 7). Despliegue del primer OBS en la Estación 1 a las 02:24. Continuación del despliegue de OBSs durante todo el día en las Estaciones 2-25 a lo largo de la línea este-oeste designada como línea A. Último OBS en la Estación 25 desplegado a las 23:49. (Véanse hojas de sumario de OBS para recabar detalles sobre horario de despliegue, situación, datos adquiridos, e información varia sobre cada OBS en cada una de las estaciones - Documentos adjuntos 8-11). Eclipse lunar total - noche agradable.

27/9/96 - De vuelta rumbo al oeste a lo largo de la Línea A para recoger largo perfil gravitatorio. Detención a mitad de camino a lo largo de la línea para desplegar OBS en la Estación 34 inmediatamente afuera de las inmediaciones costeras de Progreso siguiendo la trayectoria de la línea sísmica C. El OBS de la Estación 20 no fue desplegado y el instrumento fue utilizado en la Estación 34. Continuación del análisis de gravedad a lo largo de la línea A. Se sobrepasó la línea de "disparo" A del GECO Sigma de oeste a este aproximadamente a las 18:45 (Véase Documento adjunto 11 para localización de las líneas sísmicas A,B, y C, y Documento adjunto 12 para sumario de líneas sísmicas).

28/9/96 - Continuación del análisis de gravedad en la parte oeste del área de estudio.

29/9/96 - Se comenzó el reposicionamiento de OBSs en las Estaciones 1-8 a las 06:00, continuando hasta las 17:46. Todos los OBSs fueron recuperados. El OBS nº 5 no se recuperó hasta unos diez minutos más tarde. Se descubrió una mala conexión en la batería CPU. El sistema de soporte hubo de ser utilizado para desplegar el OBS. Ningún dato fue recogido. OBSs 1-8 reprogramados para convertirse en OBSs 26-33. A las 21:31 OBS fue desplegado en Estación 35 en las inmediaciones costeras de Progreso a lo largo de la trayectoria portuaria de la Línea B. OBS de repuesto usado para la Estación 35. OBS 26 desplegado a las 23:14. GECO Sigma informó de problemas de "disparo" y rompió la línea por un círculo de 3 horas para solucionar el problema (véase Documento adjunto 12).

30/9/96 - Continuación del despliegue de OBSs en las Estaciones 27 a 33 (07:39). Continuación de recogida de datos gravitatorios.

1/10/96 - Piloto a bordo a las 09:30. Llegada a Progreso (Puerto Yukalpetén) a las 10:10 para contacto oficial con la aduana mexicana y repostaje. John Halpenny de Canadá estableció contacto con la lancha para discutir el programa de gravedad. Había manejado a Yucatán desde Pt. Aransas tras ayudar a Roy Cooper con la instalación de Instrumental

gravitatorio en el Longhorn durante una semana, previamente al viaje. La mayoría de la tripulación y el destacamento científico al completo visitaron las oficinas de aduanas en Progreso para mostrar pasaportes y firmar formularios. Carlos Ruiz y Adilce Flores desembarcaron para unirse al equipo de gravedad y al sísmico a fin de saber del aspecto del proyecto. Partida de Port. Yukalpeten a las 18:40. Piloto desconectado a las 18:45. Continuación del análisis gravitatorio.

2/10/96 - Continuación del análisis de gravedad en la parte oeste del área de estudio.

3/10/96 - Continuación del análisis de gravedad en la parte este del área de estudio.

4/10/96 - Continuación del análisis de gravedad en la parte este del área de estudio.

5/10/96 - Continuación del análisis de gravedad en la parte este del área de estudio.

6/10/96 - A las 08:15 comienzo de la recuperación de OBSs a lo largo de la Línea A empezando con OBS nº 25 (extremo este de la línea) y prosiguiendo hacia el oeste. A las 14:21 El juego de lápiz y pluma de Yosio se perdió en la Estación nº 22. Continuación de la recuperación de OBSs nº 24-15. Fifi (OBS nº 18, única mujer a cargo de un OBS) recuperada a las 19:23.

7/10/96 - Continuación de la recuperación de OBSs a lo largo de la Línea A (números 14-9) y a continuación comienzo de la recuperación de OBSs a lo largo de la Línea B (números 26-33). El OBS nº 27 fue localizado a las 09:15, aunque fue rápidamente perdido de vista debido a los fuertes vientos. No había radiofaro en funcionamiento para poder seguirle la pista. Área revisada hasta las 09:45 antes de tener que partir para la próxima recogida. OBS 27 se declaró como extraviado. Hacia la tarde y al comienzo de la noche, se experimentaron fuertes vientos (30-40 nudos, con rachas por encima de los 40) y alta mar (8-10 pies, con olas de más de 12 pies). Esto era debido a efectos meridionales de la tormenta tropical Josephine que se había formado en el noroeste del Golfo y se estaba moviendo en dirección noreste por el norte del Golfo (véanse mapas del tiempo - Documento adjunto 13). Velocidad del buque severamente reducida a 4-5 nudos. Retraso a las estaciones 31 y 32, aunque se pudieron recobrar OBSs utilizando radiofaros. A causa del retraso general, peligro de marejada para buque y tripulación durante recuperación nocturna, además era necesario llegar a las Estaciones 34 y 35 a tiempo, se decidió abandonar el intento de llegar a la Estación 33. Se intentaría encontrar OBS después de

dejar puerto mañana. Partida hacia la estación 34 a las 17:45.

8/10/96 - De camino a OBS 34, el piloto Abel avistó luz intermitente aproximadamente a las 03:15. Tras investigación más profusa se descubrió que la luz procedía del OBS extraviado. OBS 27 recuperado a las 03:50. Se comprobó que el interruptor del faro había sido de algún modo desconectado. A las 05:52 se recuperó OBS 34. A las 07:00 un remolcador de Progreso llegó con un equipo de filmación de TV-UNAM, para filmar las operaciones con los OBSs como parte de un programa que estaban haciendo sobre el cráter KT del Chicxulub y el experimento sísmico. Todos a bordo para las 07:12, incluyendo a cinco de TV-UNAM además de científicos de la UNAM, Instituto de Geofísica (Jaime Urrutia Chávez). Filmaron la recuperación del OBS 35 a las 07:24 y otras actividades en el barco. Conexión del piloto a las 08:56. Fondeado en Yukalpetén a las 09:25. Encuentro con Alan Hildebrand, Mark Pilkington y John Kalpeny de Canadá, quienes estaban haciendo análisis de gravedad como parte del experimento global de Chicxulub. TV-UNAM desembarcó. Roy Cooper y todo el instrumental de gravedad abandonó el buque para hacer un análisis junto al puerto utilizando un pequeño bote. Salida de Puerto Yukalpetén a las 14:16. En camino al punto dónde se había calculado que el OBS 33 habría sido arrastrado, aproximadamente a 24 millas al sur de su localización inicial. Trayecto hacia el norte de cinco millas, luego hacia el este, luego hacia el norte, y después de nuevo hacia el oeste a 10 millas al norte del punto de partida.

9/10/96 - Continuación de la búsqueda del OBS 33. No se escuchó ninguna señal. Se abandonó la búsqueda a la 01:30 aproximadamente y se prosiguió hacia el noroeste hacia Port Aransas con objeto de llegar el viernes, 11/10/96. Rumbo a Pt. Aransas.

10/10/96 - Rumbo a Pt. Aransas. Se envió boletín a las autoridades mexicanas vía Pt. Aransas (UTMSI) así como a un agente a Progreso para alertar a todas las áreas costeras acerca del OBS extraviado. Se comprobó el estado de todos los datos sísmicos encontrados y grabados que habían proporcionado buena información de todos los canales de cada uno de los aparatos de OBS que recuperaban datos (32 de las 34 estaciones; el nº 5 fue el único en no recoger ninguna información y el nº 33 se extravió).

11/10/96 - Se continuó rumbo a Pt. Aransas. Llegada a Pt. Aransas (Texas) a las 13:03. Paso de aduanas a las 14:00 aproximadamente.

## **H. SUMARIO DEL BUQUE E INFORMACION RECOGIDA**

### **1. R/V LONGHORN**

**Documento adjunto nº 1** – Sumario de especificaciones.

### **2. DATOS GRAVITATORIOS**

**Documento adjunto nº 2** – Trazado mostrando lugares donde fueron recolectados datos de gravedad durante el viaje.

**3. DATOS DE A BORDO** – tiempo, situación (latitud y longitud), velocidad, rumbo, distancia recorrida, profundidad, temperatura del aire, temperatura del mar, salinidad, presión barométrica, velocidad del viento y dirección.

**Documento adjunto nº 3** – Registro científico diario; tabla con lectura de cada hora y anotación de posiciones científicas, como por ejemplo, despliegues de OBS.

**Documento adjunto nº 4** – Sumario del día.

**Documento adjunto nº 5** – Gráficas de datos diarios y trayecto del buque.

**4. ESTACIONES CTD** – Temperatura, Salinidad, velocidad vs. profundidad.

**Documento adjunto nº 6** – Datos de la Estación CTD nº 1 – tablas y varias gráficas.

**Documento adjunto nº 7** – Datos de la Estación CTD nº 2 – tablas y varias gráficas.

### **5. DATOS DE OBS**

**Documento adjunto nº 8** – Sumario de datos sobre OBSs utilizados. Posición de las Estaciones OBS 1-35, y datos recogidos.

**Documento adjunto nº 9** – Tabla mostrando línea de tiempo (OBS vs. tiempo/fecha).

**Documento adjunto nº 10** – Sumario de parámetros de grabación de los OBSs.

**Documento adjunto nº 11** – Mapa mostrando las posiciones de los OBSs y las líneas sísmicas trazadas por el GECO Sigma.

### **6. DATOS SISMICOS**

**Documento adjunto nº 12** – Sumario de tres líneas sísmicas (A,B,C) trazadas por el GECO Sigma (véase documento adjunto para posiciones de las líneas).

### **7. METEOROLOGIA**

**Documento adjunto nº 13** – Mapas meteorológicos mostrando la tormenta tropical Josephine en el norte del Golfo de México.

## CRUISE REPORT

### A. PROJECT TITLE:

Structure of the Chicxulub Impact Crater, Yucatan, Gulf of Mexico

### B. SUMMARY OF CRUISE OBJECTIVES

The primary purpose of this project was to collect seismic (wide-angle reflection and refraction) data along two lines (A,B) that cross the northern offshore part of the buried Chicxulub KT Impact Crater, Yucatan, Mexico. Data were collected using a series of University of Texas Ocean Bottom Seismographs (OBSs) deployed along the two lines at a spacing of either 10 or 20 km. The overall goal was to image the deep crustal structure of the crater. The data collected will complement seismic reflection data collected by the seismic vessel GECO Sigma along three lines (A,B,C) under the direction of the British Institutions Reflection Profiling Syndicate (BIRPS ) (UK). The GECO Sigma provided the energy source for the experiment. Seismic data (wide-angle reflection and refraction) also were collected using a series of land seismographs installed onshore by Imperial College of London (UK). Instruments for collecting gravity and magnetic data were installed on the R/V Longhorn by the Geological Survey of Canada, and these data were collected continuously throughout the cruise during times not deploying or recovering OBSs. Observers from Mexico also participated on the cruise. This was an international program involving Mexico, the United Kingdom, the United States, and Canada. The US involvement was sponsored by a grant to the University of Texas at Austin from the National Science Foundation.



C. CRUISE AND DATES:

Cruise R/V Longhorn 676; September 22, 1996 - October 11, 1996

D. R/V LONGHORN SPECIFICATONS

See Attachment No. 1

E. SHIPS CREW:

Noe Cantu, Captain; Hayden Abel, Mate; Randy Pritchard, Mate; Charles Rowe, Technician, and Frank Walker, Cook

F. SCIENTIFIC PARTY:

Richard T. Buffler, Co-chief Scientist, University of Texas, Institute for Geophysics, Austin, Texas; Yosio Nakamura, Co-chief Scientist, University of Texas, Institute for Geophysics, Austin, Texas; Ben Yates, University of Texas, Institute for Geophysics, Austin, Texas; John Brittan, Imperial College, London, UK; Roy Cooper, Geodetic Survey of Canada, Ottawa, Canada (9/22/96 - 10/8/96); Carlos Ruiz, PEMEX, Cd. del Carmen, Mexico (9/25/96 - 10/1/96); Adilce Flores, UNAM, Mexico City, Mexico (9/22/96 - 10/1/96)

G. CRUISE SUMMARY:

9/22/96 - Departed Pt. Aransas, Texas at 1412 (all times local). Transiting to Progreso, Mexico. Collected gravity data continuously throughout entire cruise (see Attachment No. 2). Collected various shipboard data continuously throughout the cruise (location, speed, course, depth, air and sea temperature, salinity, barometric pressure, wind speed and vector, see Attachments 3-5).

9/23/96 - Transiting to Progreso. Deployed magnetometer at 1035.

9/24/96 - Continuing transit to Progreso. At 1740 discovered magnetometer missing. It had twisted off from end of cable, reasons unknown. No replacement available.

9/25/96 - At 0742 stopped just offshore Progreso, near OBS Station 10 at intersection of seismic lines A and C, to collect profile of seawater temperature, salinity and velocity for GECO Sigma, the geophysical ship that would be collecting seismic reflection data and providing the seismic energy source for the project. These data would be used to help balance the seismic streamer (CTD Station No. 1; see Attachment No. 6). Arrived Progreso, Puerto Yukalpeten at 0930. Cleared customs and obtained fuel. In contact with geophysical ship GECO Sigma, which was docked at main pier at Progreso. Arranged to try to make contact each other every 6 hours. Discussed cruise plan with Mike Warner (Imperial College, UK), who were conducting onland seismic experiment, and Alan Hildebrand and Mark Pilkington (Geol. Survey of Canada), who were conducting the gravity surveys onshore and offshore. Departed at 1612, enroute to OBS Station 1. Continued to collect gravity data.

9/26/96 - Stopped at 0120 and collected second profile of seawater temperature, salinity and velocity at CTD Station 2 (see Attachment No. 7). Deployed first OBS at Station 1 at 0214. Continued to deploy OBSs all day at Stations 2-25 along east-west line designated as Line A. Final OBS at Station 25 deployed at 2349. (See attached OBS summary sheets for details of times of deployment, locations, data acquired, and various information about each

OBS at each station - Attachments 8-11). Full eclipse of the moon - beautiful night.

9/27/96 - Transited back west along Line A to collect long gravity profile. Stopped half-way along line to deploy OBS at Station 34 just offshore from Progreso along extension of seismic line C. OBS at Station 20 was not deployed and instrument was used at Station 34. Continued gravity survey along line A. Passed GECO Sigma shooting Line A from west to east at approximately 1845 (see Attachment 11 for location of seismic lines A,B, and C, and Attachment 12 for summary of seismic lines).

9/28/96 - Continued gravity survey in western part of study area

9/29/96 - Began recovery of OBSs at Stations 1-8 at 0600, continuing through 1746. All OBSs recovered. OBS No. 5 late coming up by about 10 minutes. Discovered bad CPU battery connection. Backup system used to release OBS. No data recorded. OBSs 1-8 re-programmed to become OBSs 26-33. At 2131 deployed OBS at Station 35 offshore Progreso along onshore extension of line B. Used spare OBS for Station 35. Deployed OBS 26 at 2314. GECO Sigma reported gun problems and broke line for 3 hour circle to fix problem (see Attachment 12).

9/30/96 - Continued deployment of OBSs at Stations 27 (0029) through 33 (0739). Continued to collect gravity data.

10/1/96 - Pilot on board at 0930. Arrive Progreso (Port Yukalpeten) at 1010 for official contact with Mexican immigration and for fuel. John Halpenny from

Canada met boat to discuss gravity program. He had driven to Yucatan from Pt. Aransas after helping Roy Cooper with installation of gravity instruments on Longhorn for one week prior to cruise. Most crew and entire scientific party visited immigration office in Progreso to show passports and sign forms. Carlos Ruiz and Adilce Flores disembarked from ship to join onshore seismic and gravity parties to learn about that aspect of project. Leave Port Yukalpeten at 1840. Pilot off at 1845. Continue gravity survey.

10/2/96 - Continue gravity survey in western part of study area.

10/3/96 - Continue gravity survey in eastern part of study area.

10/4/96 - Continue gravity survey in eastern part of study area.

10/5/96 - Continue gravity survey in eastern part of study area.

10/6/96 - At 0815 begin recovery of OBS's along Line A starting with OBS No. 25 (east end of line) and going west. At 1421 deployed Yosio's pen and pencil set at OBS station No. 22. Continued recovery of OBS No. 24-15. Fifi (OBS No. 18, only female OBS) recovered at 1923.

10/7/96 - Continued recovery of OBSs along Line A (Nos. 14-9) and then began recovery of OBSs along Line B (Nos. 26-33). OBS 27 was sited at 0915, but it was quickly lost from sight due to high winds. There was no radio beacon active to track it. Searched area until 0945 before had to leave for next pickup. OBS 27 declared lost. Toward afternoon and into evening, experienced high winds (30-40 kts, with gusts over 40) and high seas (8-10 feet, with some waves

up to 12 feet). This was southern effects of Tropical Storm Josephine that had developed in northwestern Gulf and was moving northeast across northern Gulf ( see weather maps - Attachment 13). Ship's speed severely reduced to 4-5kts. Late to stations 31 and 32, but were able to recover OBS using radio beacons. Because so far behind schedule, danger to ship and crew from heavy seas during night recovery, plus need to arrive at Stations 34 and 35 on time, decided to abandon trying to reach Station 33. Would try to find OBS after leaving port tomorrow. Left for station 34 at 1745.

10/8/96 - During transit to OBS 34, Mate Abel sighted strobe light at approximately 0315. Upon further investigation discovered strobe to be from lost OBS 27. Recovered OBS 27 at 0350. Found beacon switch somehow had been switched off? At 0552 recovered OBS 34. At 0700 a tugboat from Progreso arrived with film crew from TV-UNAM, to film OBS operations as part of a program they were doing on the Chicxulub KT crater and the seismic experiment. All on board by 0712, including five from TV- UNAM plus two scientists from UNAM, Instituto Geofisica (Jaime Urrutia sp? ? Chavez ). They filmed recovery of OBS 35 at 0724 plus other activities on ship. Picked up pilot at 0856. Docked at Yukalpeten at 0925. Met by Alan Hildedbrand, Mark Pilkington and John Halpenny from Canada, who were doing gravity surveys as part of the overall Chicxulub experiment. TV-UNAM disembarked. Roy Cooper and all the gravity instrumentation left the ship to do nearshore survey using small vessel. Departed Port Yukalpeten at 1406. Transited to location where predicted OBS 33 might have drifted, approximately 24 miles south of original location. Arrived about 2000 to begin search using radio direction finders. Made a transit north for five miles, then

headed east, then north, and then back west to 10 miles north of starting point.

10/9/96 - Continued search for OBS 33. Heard no signals. Abandoned search at approximately 0130 and headed northwest for Pt. Aransas in order to arrive by Friday, 10/11/96. Transiting to Pt. Aransas.

10/10/96 - Transiting to Pt. Aransas. Sent bulletin to Mexican authorities via Pt. Aransas (UTMSI) and agent in Progreso to alert all coastal areas about lost OBS. Checked status of all seismic data recorded and found that had obtained good data on all channels from each OBS instrument that recovered data (32 out of 34 stations; only No. 5 recorded no data and No. 33 was lost).

10/11/96 - Continued transiting to Pt. Aransas. Arrived Pt. Aransas, TX at 1303. Cleared customs and immigrations at approximately 1400.

## H. SUMMARY OF SHIP AND DATA COLLECTED

### 1. R/V LONGHORN

**Attachment No. 1** - Summary of specifications.

### 2. GRAVITY DATA

**Attachment No. 2** - Track plot showing location of gravity data collected during cruise.

3. SHIPBOARD DATA - time, location (latitude and longitude), speed, course, distance traveled, depth, air temperature, sea temperature, salinity, barometric pressure, wind speed and vector

**Attachment No. 3** - Daily science log; table with readings every hour plus science locations noted, ie, OBS deployments.

**Attachment No. 4** - Daily summary.

**Attachment No. 5** - Graphs of daily data and plot of ship track.

4. CTD STATIONS - Temperature, salinity, velocity vs. depth.

**Attachment No. 6** - Data from CTD Station No. 1 - tables plus various graphs.

**Attachment No. 7** - Data from CTD Station No. 2 - tables plus various graphs.

5. OBS DATA

**Attachment No. 8** - Summary of data on OBSs used. location of OBS stations 1-35, and data acquired.

**Attachment No. 9** - Chart showing OBS timeline (OBS vs. time/date).

**Attachment No. 10** - Summary of OBS recording parameters.

**Attachment No. 11** -Map showing OBS locations and seismic lines shot by GECO Sigma.

6. SEISMIC DATA

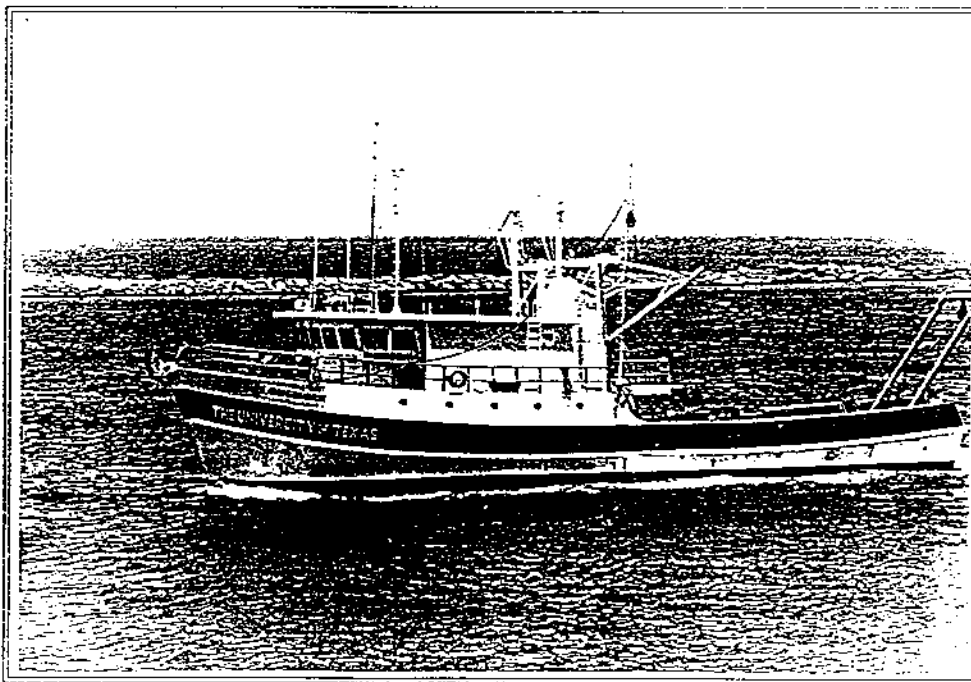
**Attachment No. 12** - Summary of three seismic lines (A,B,C) shot by GECO Sigma (see Attachment 11 for line locations)

7. WEATHER

**Attachment No. 13** - Weather maps showing Tropical Storm Josephine in northern Gulf of Mexico.

ATTACHMENT NO. 1 - SUMMARY OF SPECIFICATIONS, *R/V LONGHORN*

*R/V LONGHORN* ... Length 105' ... Beam 25'9" ... Draft 7'  
210 Gross Tons ... Speed 10 Kts  
4-5 Crew ... 12 Scientists  
*General Purpose Coastal Oceanographic Research Vessel*





## VESSEL

### GENERAL CHARACTERISTICS AND DESCRIPTION

The LONGHORN was designed by Robert L. Harrelson as a general purpose coastal oceanographic research vessel. She was built in 1971 by the Allied Shipyard. For her first fourteen years she served admirably in her intended role. During this period, however, it became evident that additional length was needed to increase her deck space, wheelhouse area, laboratory space, and to provide the ability to operate in a greater range of weather conditions. By 1985 she was in need of a midlife refit, and an NSF/UNOLS Material Inspection Review team indicated items needing correction which could be handled most expeditiously through a major refit. They also recommended that lengthening be seriously considered.

In June, 1986, a midlife refit and lengthening project was completed by the Master Marine Shipyard. A 20-ft. section was added amidships along with a completely new and enlarged wheelhouse, all new living quarters below decks, and all new and expanded laboratories. New, modern marine electronic navigation and communication aids were installed at the same time. The ship had previously been repowered with GM 12V71 diesels. Thus in 1986 the R/V LONGHORN entered into a new phase of her life as an enlarged, improved, and rebuilt vessel. Besides being larger than she was originally (85-ft.), the LONGHORN's draft was reduced by almost one foot and her cruising speed increased by one knot.

#### *Principal Dimensions*

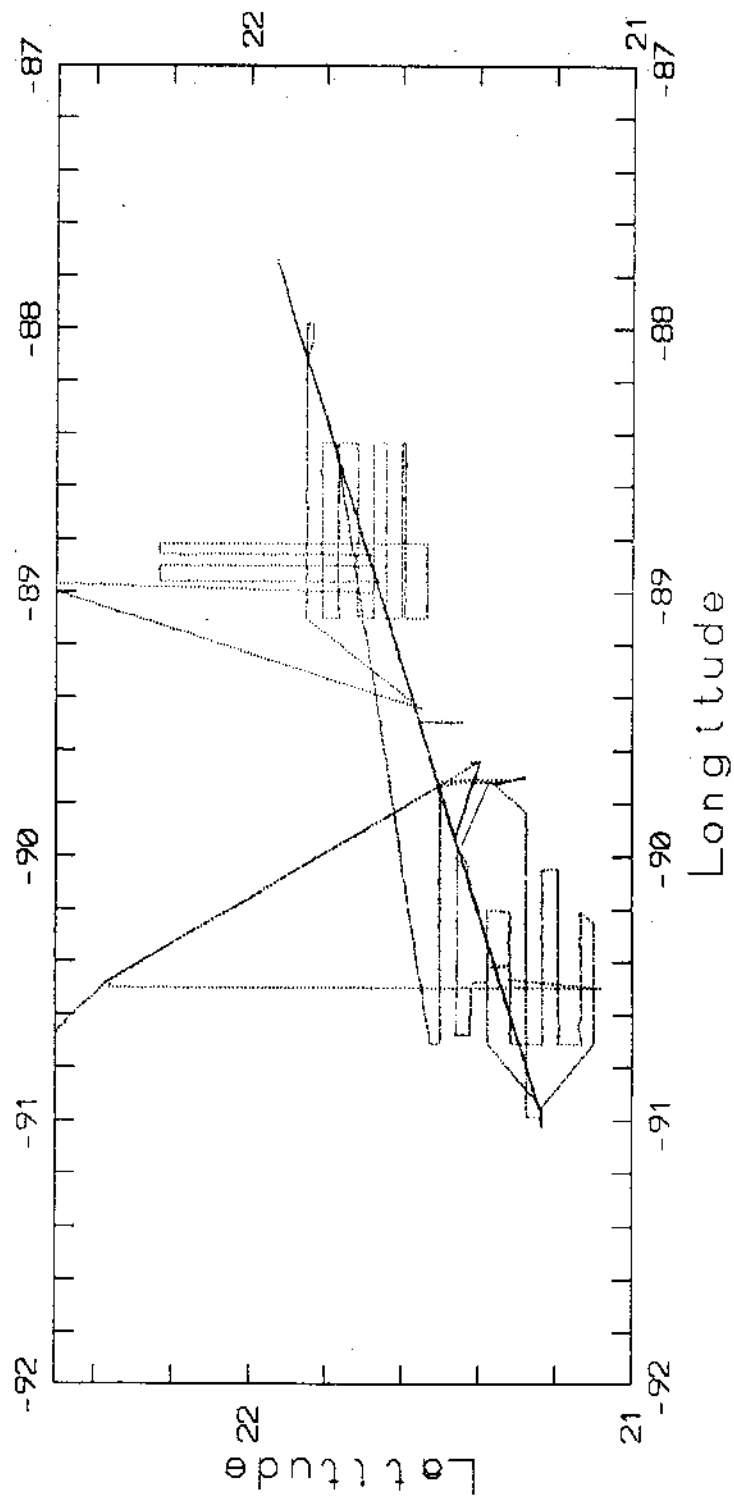
LENGTH OVERALL	102'-10"
LENGTH WATERLINE	94'-5"
BREADTH MLD.	25'-9"
DEPTH MLD.	9'-9"
DRAFT MLD. D.W.L.	6'-8"
DISPLACEMENT	210 tons

#### *Machinery*

PROPULSION	2 Detroit Diesels 12V71
GENERATING	2 75-kw sets, Detroit Diesels 671
BOWTHRUSTER	Marco tunnel thruster, hydraulic
CRANE	Tico 150 marine crane
MAIN WINCH	Dynacon, 9,000' 3x19 1/2" wire rope
HYDRO WINCHES	(1) Dynacon 8000A, 10,000' (3,048m) 1/4" 7x19 stainless steel wire rope; (2) Dynacon 8000A, 10,750' (3,276m) single-conductor 7/32" electromechanical cable

ATTACHMENT NO. 2 - TRACK PLOT SHOWING LOCATION OF  
GRAVITY DATA COLLECTED DURING CRUISE

Chitoxulub Gravity Track Plot



**ATTACHMENT NO. 3 - DAILY SCIENCE LOG; TABLE WITH READINGS EVERY HOUR PLUS SCIENCE  
LOCATIONS NOTED, IE, OBS DEPLOYMENTS**

**(24 PAGES)**

# LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 1 09-22-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRSS	MILES OPTMAL AIRT	RH	BAROM	AWS AND	TWS	IND	SSI	A-SEA	SALIN	DEPTH'S	TRANS	FLICK	COMMENTS				
1913	27 50.26N	97 3.21W	1.2	023	0.0	10	32.3	100.	1012.0	10.0	135	10.9	162	29.90	2.4	36.31	0	----	0.0	CRUISE 676 UNDERWAY
1937	27 48.30N	97 0.49W	8.9	140	3.3	0	27.7	100.	1012.0	20.0	000	11.1	140	29.22	-1.5	35.78	0	----	0.0	MAGNETOMETER DEPLOYED
2000	27 45.08N	96 57.99W	8.0	132	3.1	0	27.6	100.	1012.0	25.0	000	17.0	132	29.30	-1.7	35.90	0	----	0.0	
2100	27 40.40N	96 51.00W	8.5	128	8.4	0	27.6	100.	1011.0	26.0	000	17.5	128	28.98	-1.3	35.71	0	----	0.0	
2200	27 34.82N	96 43.74W	8.1	134	8.6	11	27.6	100.	1011.0	25.0	000	16.9	134	29.24	-1.6	35.49	12	----	0.0	
2300	27 28.92N	96 36.95W	9.2	140	8.5	0	27.6	100.	1011.0	25.0	000	15.8	140	29.08	-1.4	35.74	0	----	0.0	

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 2 09-23-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRSE	MILES OPTICAL AIRT	RH	BAROM	AWS AWD	TWS TWD	SSI A-SEA	SALIN	DEPTH	TRANS	FLOOR	COMMENTS	
0000	27 23.15N	96 30.03W	8.2	127	0.0	0	27.5	100.	1010.0	27.0	000	18.8	127	29.25 -1.7 35.80	0 ---- 0.0
0020	27 21.32N	96 27.65W	8.1	129	2.8	0	27.5	100.	1010.0	26.0	000	17.9	129	29.21 -1.7 35.55	0 ---- 0.0
0100	27 17.69N	96 22.90W	8.6	134	5.6	0	27.5	100.	1011.0	27.0	157	35.1	296	29.23 -1.7 35.65	0 ---- 0.0
0200	27 12.10N	96 16.11W	8.5	136	8.3	0	27.6	100.	1011.0	27.0	000	18.5	136	29.59 -1.9 35.55	0 ---- 0.0
0300	27 5.84N	96 10.70W	7.6	140	7.9	0	27.6	100.	1012.0	29.0	157	36.1	302	29.58 -1.9 35.31	0 ---- 0.0
0400	27 0.72N	96 4.65W	7.6	135	7.4	0	27.7	100.	1012.0	29.0	000	21.4	135	29.74 -2.0 35.09	0 ---- 0.0
0500	26 55.67N	95 59.03W	7.1	138	7.1	0	27.6	100.	1012.0	30.0	000	22.9	138	29.59 -1.9 35.50	0 ---- 0.0
0600	26 51.10N	95 52.98W	6.2	127	7.1	0	27.4	100.	1012.0	28.0	000	21.8	127	29.60 -2.2 35.16	0 ---- 0.0
0700	26 46.96N	95 46.90W	7.0	129	6.9	0	27.1	100.	1012.0	30.0	157	36.6	290	29.93 -2.8 34.96	0 ---- 0.0
0800	26 42.77N	95 41.10W	7.9	130	6.7	0	27.1	100.	1011.0	26.0	157	33.4	292	29.52 -2.4 34.82	0 ---- 0.0
0900	26 38.28N	95 35.56W	8.4	127	6.7	0	25.6	100.	1012.0	30.0	157	37.9	289	29.73 -4.1 34.38	0 ---- 0.0
1000	26 33.22N	95 29.88W	7.0	134	7.2	0	27.3	100.	1011.0	31.0	157	37.6	295	29.82 -2.5 34.30	0 ---- 0.0
1100	26 28.15N	95 24.33W	8.0	131	7.1	0	27.5	100.	1012.0	27.0	157	34.5	293	29.77 -2.2 34.62	0 ---- 0.0
1200	26 23.06N	95 18.28W	5.9	139	7.5	0	27.7	100.	1012.0	24.0	157	29.5	300	29.87 -2.1 35.44	0 ---- 0.0
1210	26 22.22N	95 17.26W	7.2	118	1.2	0	27.6	100.	1012.0	25.0	135	30.5	262	29.92 -2.3 35.84	0 ---- 0.0
1300	26 17.77N	95 11.98W	7.3	149	6.5	0	27.7	100.	1012.0	25.0	135	30.6	293	29.89 -2.1 35.98	0 ---- 0.0
1556	26 0.84N	94 52.85W	8.5	133	24.1	0	28.3	100.	1013.0	23.0	157	31.0	296	29.92 -1.6 36.01	0 ---- 0.0
1600	26 0.46N	94 52.39W	8.8	137	0.6	0	28.3	100.	1013.0	22.0	135	28.9	284	29.90 -1.6 36.07	0 ---- 0.0
1700	25 54.71N	94 47.99W	7.8	126	8.7	0	28.4	100.	1013.0	25.0	135	31.0	271	30.01 -1.6 36.10	0 ---- 0.0
1800	25 49.65N	94 40.21W	9.0	128	8.7	0	28.6	100.	1013.0	21.0	135	28.1	276	30.05 -1.4 36.05	0 ---- 0.0
1810	25 48.76N	94 38.99W	8.5	133	1.5	0	28.6	100.	1013.0	22.0	157	30.0	296	30.08 -1.4 36.04	0 ---- 0.0
1900	25 43.76N	94 32.88W	9.8	138	7.4	0	28.4	100.	1012.0	22.0	157	31.3	302	30.15 -1.7 36.17	0 ---- 0.0
2000	25 37.52N	94 25.72W	9.5	134	9.0	0	28.5	100.	1012.0	21.0	157	30.0	298	30.09 -1.5 36.06	0 ---- 0.0
2100	25 31.17N	94 18.74W	9.5	136	8.9	0	28.6	100.	1011.0	22.0	157	31.6	300	30.09 -1.4 35.88	0 ---- 0.0
2200	25 25.06N	94 11.35W	8.5	130	9.1	0	28.0	100.	1011.0	18.0	157	26.1	294	30.07 -2.0 36.00	0 ---- 0.0
2300	25 18.62N	94 4.37W	9.3	139	9.1	0	27.8	100.	1011.0	19.0	157	27.8	303	30.11 -2.3 36.05	0 ---- 0.0
L.A. NOON (13:10:25 LOCAL); MONDAY; 09/23/															

SUNRISE (07:10:25 LOCAL); MONDAY; 09/23/

L.A. NOON(13:10:25 LOCAL); MONDAY; 09/23

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 3 09-24-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SPEED KNOTS	MILES DEPTH AIRFT	PH	BAROM	AWS AWD	TWS TWD	SST A-SEA	SALIN	DEPTH35	TRANS	FLOOR	COMMENTS					
0000	25 12.22N	93 56.86W	9.1	134	0.0	0	27.9	100.	1011.0	18.0	157	26.6	299	30.05 -2.1	36.08	0	---	0.0	
0009	25 11.20N	93 55.75W	9.0	128	1.4	0	27.7	100.	1011.0	18.0	157	26.5	293	30.11 -2.4	36.08	0	---	0.0	SUNSET(19:09:02 LOCAL); MONDAY; 09/23/96
0100	25 5.62N	93 49.35W	9.4	132	8.1	0	27.9	100.	1012.0	20.0	157	28.9	296	30.02 -2.1	35.95	0	---	0.0	
0200	24 58.89N	93 41.82W	9.4	129	9.6	0	28.0	100.	1012.0	21.0	157	29.9	293	29.94 -1.9	35.98	0	---	0.0	
0300	24 52.28N	93 34.47N	9.3	132	9.4	0	28.0	100.	1013.0	23.0	157	32.4	296	29.83 -1.8	35.99	0	---	0.0	
0400	24 45.67N	93 26.94W	9.0	133	9.5	0	28.0	100.	1013.0	25.0	157	33.5	296	29.98 -1.9	36.02	0	---	0.0	
0500	24 39.38N	93 19.50W	9.0	130	9.2	0	27.9	100.	1012.0	25.0	157	33.5	293	30.04 -2.1	35.97	0	---	0.0	
0600	24 33.01N	93 12.55W	9.0	138	9.1	0	27.8	100.	1012.0	25.0	157	33.5	301	30.11 -2.3	35.89	0	---	0.0	
0700	24 26.74N	93 5.81W	8.5	153	8.9	0	27.9	100.	1011.0	21.0	157	29.0	316	30.31 -2.4	36.09	0	---	0.0	
0800	24 20.65N	92 59.00W	9.7	140	8.7	0	27.8	100.	1011.0	22.0	157	31.2	304	30.10 -2.3	36.14	0	---	0.0	
0900	24 14.52N	92 52.24W	7.7	137	8.7	0	27.7	100.	1011.0	19.0	157	26.3	300	29.98 -2.2	36.09	0	---	0.0	
1000	24 8.24N	92 45.59W	8.8	136	8.8	0	27.7	100.	1011.0	19.0	157	27.3	300	30.26 -2.5	36.07	0	---	0.0	
1100	24 2.12N	92 38.81W	8.6	138	8.7	0	27.7	100.	1011.0	16.0	157	24.2	303	30.17 -2.4	36.12	0	---	0.0	
1159	23 56.23N	92 32.13W	8.1	130	8.5	0	27.9	100.	1012.0	20.0	157	27.7	293	30.33 -2.4	36.10	0	---	0.0	SUNRISE (06:59:44 LOCAL); TUESDAY; 09/24/96
1200	23 56.14N	92 32.02W	8.5	134	0.1	0	27.8	100.	1012.0	20.0	157	28.0	298	30.34 -2.5	36.23	0	---	0.0	
1300	23 50.02N	92 25.32W	8.9	136	8.7	0	27.7	100.	1012.0	8.0	000	0.9	316	30.26 -2.5	35.97	0	---	0.0	
1400	23 43.95N	92 18.58W	8.3	139	8.7	0	28.4	100.	1013.0	16.0	135	22.6	289	30.29 -1.8	36.13	0	---	0.0	
1500	23 37.84N	92 11.45W	9.0	127	9.0	0	28.6	100.	1013.0	16.0	135	23.3	277	30.32 -1.7	36.17	0	---	0.0	
1520	23 36.08N	92 8.75W	8.6	123	3.0	0	28.4	100.	1013.0	18.0	135	24.8	272	30.40 -2.0	35.80	0	---	0.0	MESSAGE IN THE BOTTLE RELEASE SITE
1600	23 32.18N	92 3.68W	9.7	135	6.1	0	28.6	100.	1013.0	18.0	135	25.8	285	30.45 -1.8	36.13	0	---	0.0	
1700	23 26.72N	91 55.58W	9.2	124	9.0	0	26.1	100.	1013.0	19.0	000	9.8	124	30.42 -4.3	36.01	0	---	0.0	
1758	23 21.43N	91 48.68W	8.6	125	8.6	0	28.0	100.	1012.0	10.0	022	3.9	205	30.56 -2.5	35.98	0	---	0.0	L.A. NOON(12:58:45 LOCAL); TUESDAY; 09/24/96
1800	23 21.25N	91 48.43W	8.7	129	0.3	0	28.1	100.	1012.0	7.0	032	3.5	258	30.53 -2.4	36.03	0	---	0.0	
1900	23 15.61N	91 40.79W	9.8	126	9.0	0	28.2	100.	1011.0	11.0	000	1.2	126	31.17 -2.9	35.83	0	---	0.0	
2000	23 9.81N	91 32.99W	9.3	131	9.2	0	28.2	100.	1010.0	15.0	135	22.6	283	31.18 -2.9	35.89	0	---	0.0	
2100	23 4.19N	91 25.34W	8.9	128	9.0	0	28.4	100.	1010.0	13.0	157	21.5	294	31.27 -2.8	35.88	0	---	0.0	
2200	22 58.52N	91 17.51W	9.2	137	9.2	0	28.2	100.	1010.0	13.0	157	21.8	303	30.92 -2.7	36.13	0	---	0.0	
2237	22 55.20N	91 13.19W	8.5	131	5.2	0	28.4	100.	1010.0	19.0	157	27.0	295	30.85 -2.4	36.12	0	---	0.0	MAGNETOMETER LOST
2300	22 52.47N	91 10.87W	9.5	146	3.5	0	28.2	100.	1010.0	16.0	135	23.7	297	30.88 -2.6	35.90	0	---	0.0	
2357	22 46.93N	91 3.82W	9.2	123	8.6	0	28.2	100.	1010.0	25.0	157	33.7	286	31.14 -2.9	35.91	0	---	0.0	SUNSET(18:57:43 LOCAL); TUESDAY; 09/24/96

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 4 09-25-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRUISE	MILES DETAIL AIRT	MH BAROM	AMS AND	TWS TWD	SST A-SEA	SALIN	DEPTH	FRAME	FLOOR	COMMENTS					
0000	22 46.63N	91 3.43W	8.7	127	0.0	0	28.2	100.1010.0	30.0	157	38.2	289	31.14 -2.9	36.09	0	----	0.0	
0100	22 41.42N	90 55.99W	8.9	124	8.7	0	28.3	100.1010.0	19.0	157	27.4	288	30.60 -2.3	35.86	0	----	0.0	
0200	22 36.31N	90 48.70W	8.4	136	8.5	0	28.1	100.1011.0	21.0	157	28.9	299	29.63 -1.5	36.06	0	----	0.0	
0300	22 31.00N	90 41.54W	8.9	123	8.5	0	28.1	100.1012.0	20.0	157	28.4	287	29.33 -1.2	36.09	0	----	0.0	
0400	22 26.05N	90 34.30W	7.8	129	8.3	0	28.0	100.1012.0	18.0	157	25.4	293	30.18 -2.1	36.03	0	----	0.0	
0500	22 20.71N	90 27.63W	8.5	142	8.2	0	27.6	100.1011.0	22.0	000	13.5	142	30.13 -2.5	36.06	0	----	0.0	
0600	22 13.94N	90 21.68W	8.4	139	8.7	0	27.1	100.1011.0	20.0	000	11.6	139	29.10 -2.0	36.03	0	----	0.0	
0700	22 7.30N	90 15.91W	7.8	140	8.5	0	26.9	100.1010.0	15.0	000	7.2	140	28.82 -1.9	36.08	0	----	0.0	
0800	22 0.68N	90 10.46W	8.6	142	8.4	0	26.8	100.1010.0	15.0	000	6.4	142	28.73 -1.9	35.99	0	----	0.0	
0900	21 54.31N	90 4.74W	8.3	143	8.4	0	26.6	100.1009.0	16.0	000	7.7	143	28.81 -2.2	36.05	0	----	0.0	
1000	21 47.75N	89 59.13W	9.1	134	8.4	0	26.2	100.1010.0	16.0	022	8.4	181	28.69 -2.4	36.06	0	----	0.0	
1100	21 41.02N	89 53.38W	8.5	143	8.6	0	25.4	100.1010.0	16.0	022	8.8	187	28.33 -2.9	35.92	0	----	0.0	
1149	21 35.56N	89 48.76W	8.3	141	7.0	0	25.0	100.1010.0	17.0	000	8.7	141	26.93 -1.9	36.05	0	----	0.0	SUNRISE (06:49:01 LOCAL); WEDNESDAY; 09/
1200	21 34.28N	89 47.66W	8.6	138	1.6	0	25.0	100.1010.0	16.0	000	7.4	138	26.99 -1.9	36.09	0	----	0.0	
1244	21 30.11N	89 44.15W	0.6	204	5.4	0	25.8	100.1011.0	3.0	000	2.4	204	26.86 -1.0	36.13	0	----	0.0	CTD 01 START
1246	21 30.08N	89 44.15W	0.8	176	0.0	0	26.3	100.1011.0	3.0	022	2.3	206	26.84 -0.5	36.21	0	----	0.0	CTD 01 ON DECK
1300	21 29.60N	89 44.09W	9.3	167	0.7	0	25.6	100.1011.0	15.0	000	5.7	167	26.79 -1.1	36.19	0	----	0.0	
1400	21 20.62N	89 43.30W	10.8	165	9.4	0	25.1	100.1012.0	14.0	000	3.2	165	24.45 0.6	36.08	0	----	0.0	
1458	21 16.68N	89 42.14W	0.4	216	4.5	0	27.2	100.1012.0	5.0	000	4.6	216	26.07 1.1	35.98	0	----	0.0	DOCKSIDE YUKALPETEN; MEXICO
1500	21 16.68N	89 42.13W	0.7	056	0.0	0	27.3	100.1012.0	2.0	022	1.4	089	26.07 1.2	35.98	0	----	0.0	
1600	21 16.65N	89 42.10W	0.7	341	0.8	0	28.3	100.1012.0	5.0	022	4.4	007	26.09 2.2	35.96	0	----	0.0	
1700	21 16.66N	89 42.13W	0.2	061	0.7	0	29.1	100.1011.0	5.0	022	4.8	084	24.70 4.4	35.99	0	----	0.0	
1749	21 16.68N	89 42.10W	0.3	051	0.4	0	29.3	100.1010.0	3.0	022	2.7	075	24.58 4.7	36.01	0	----	0.0	L.A. NOON(12:49:59 LOCAL); WEDNESDAY; 09/
1800	21 16.65N	89 42.12W	0.9	206	0.2	0	29.3	100.1010.0	5.0	022	4.2	233	24.53 4.7	35.93	0	----	0.0	
1900	21 16.67N	89 42.10W	0.4	009	0.7	0	30.0	100.1009.0	3.0	022	2.6	034	24.34 5.6	35.99	0	----	0.0	
2000	21 16.66N	89 42.11W	0.5	315	0.8	0	32.3	100.1008.0	6.0	022	5.5	339	25.23 7.0	35.96	0	----	0.0	
2100	21 16.68N	89 42.11W	1.2	301	0.5	0	33.8	100.1008.0	7.0	000	5.8	301	27.17 6.6	35.99	0	----	0.0	OFF WE GO
2113	21 16.69N	89 42.13W	0.8	259	0.1	0	32.7	100.1008.0	13.0	000	12.2	259	27.26 5.4	35.94	0	----	0.0	
2200	21 20.27N	89 43.22W	4.5	332	3.8	13	30.5	100.1008.0	13.0	000	8.5	332	25.70 4.8	35.98	0	----	0.0	
2300	21 16.97N	89 49.49W	8.5	236	8.3	14	26.8	100.1008.0	2.0	000	6.5	056	26.51 0.2	35.97	0	----	0.0	
2352	21 16.57N	89 57.34W	8.6	271	7.5	13	27.3	100.1008.0	9.0	000	0.4	271	26.29 1.0	35.88	0	----	0.0	SUNSET(18:52:26 LOCAL); WEDNESDAY; 09/25

# LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 5 09-26-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRSE	MILES OPTICAL AIRT	SH BARON	AME AND	TWS TWD	SSR A-SEA	SALIN	DEPTH	TRANS	FLIPR	COMMENTS
0000	21 16.52N	89 58.57W	8.5 268	0.0	14	27.0	100.	1008.0	10.0 000	1.5 268	26.13	0.8 35.88	0.0 0.0
0100	21 16.47N	90 7.82W	8.7 275	8.7	18	26.7	100.	1009.0	9.0 000	0.3 275	26.68	0.5 35.96	0.0 0.0
0200	21 16.49N	90 17.23W	9.0 264	8.8	12	27.3	100.	1010.0	6.0 000	3.0 084	27.27	0.4 35.67	0.0 0.0
0300	21 16.45N	90 26.69W	8.5 266	8.9	15	27.3	100.	1010.0	6.0 022	3.7 048	27.53	-0.2 35.66	0.0 0.0
0400	21 16.50N	90 36.13W	9.4 270	8.9	13	27.1	100.	1011.0	5.0 000	4.4 090	27.78	-0.6 35.74	0.0 0.0
0500	21 16.49N	90 45.68W	9.2 273	8.9	15	27.1	100.	1011.0	7.0 000	2.2 093	28.71	-1.6 35.83	0.0 0.0
0600	21 16.50N	90 46.09W	9.0 271	0.4	13	26.9	100.	1011.0	8.0 022	3.5 028	28.69	-1.7 35.95	0.0 0.0
0700	21 16.51N	90 46.15W	8.8 271	0.1	19	26.9	100.	1011.0	10.0 000	1.2 271	28.69	-1.7 36.03	0.0 0.0
0800	21 16.50N	90 55.10W	9.1 271	8.4	28	26.9	100.	1010.0	7.0 022	3.8 045	28.78	-1.8 35.76	0.0 0.0
0900	21 16.52N	90 57.15W	0.4 222	1.9	31	26.9	100.	1010.0	15.0 022	14.6 245	28.82	-1.9 36.11	0.0 0.0
1000	21 16.47N	90 57.19W	0.6 116	0.1	29	26.8	100.	1010.0	15.0 022	14.4 139	28.82	-2.0 36.15	0.0 0.0
1100	21 16.02N	90 58.94W	7.8 076	4.9	29	26.6	100.	1009.0	6.0 000	1.8 256	28.79	-2.1 35.79	0.0 0.0
1200	21 14.36N	90 57.35W	2.1 055	1.5	28	26.9	100.	1009.0	15.0 022	13.1 081	28.77	-1.8 36.05	0.0 0.0
1300	21 15.60N	90 51.44W	7.5 077	5.7	36	26.3	100.	1009.0	20.0 000	12.5 077	28.05	-1.7 35.86	0.0 0.0
1400	21 16.78N	90 45.13W	3.5 063	5.1	24	26.1	100.	1009.0	21.0 157	24.3 223	28.72	-2.6 36.13	0.0 0.0
1500	21 17.28N	90 43.85W	9.3 080	2.2	22	25.8	100.	1009.0	10.0 135	17.8 236	28.67	-2.8 36.08	0.0 0.0
1600	21 18.93N	90 36.18W	7.8 075	7.4	30	25.4	100.	1009.0	10.0 135	16.5 229	28.10	-2.7 35.99	0.0 0.0
1700	21 19.19N	90 34.93W	5.2 075	1.2	20	25.5	100.	1010.0	8.0 135	12.2 227	27.87	-2.3 35.97	0.0 0.0
1800	21 20.51N	90 28.74W	7.7 076	5.9	19	25.5	100.	1010.0	15.0 157	22.3 241	28.04	-2.5 35.95	0.0 0.0
1900	21 21.59N	90 23.52W	2.9 122	5.0	19	25.0	100.	1010.0	11.0 135	13.2 265	27.88	-2.8 36.13	0.0 0.0
2000	21 21.77N	90 22.32W	7.0 086	1.1	19	24.8	100.	1010.0	9.0 135	14.8 240	27.86	-3.0 36.03	0.0 0.0
2100	21 22.10N	90 21.05W	8.1 077	1.2	17	24.9	100.	1011.0	10.0 135	16.7 232	27.89	-2.9 35.97	0.0 0.0
2200	21 23.92N	90 12.57W	8.8 077	8.1	18	25.0	100.	1011.0	10.0 135	17.4 233	27.68	-2.6 35.98	0.0 0.0
2300	21 24.04N	90 12.26W	3.4 037	0.4	18	25.3	100.	1011.0	10.0 157	13.2 200	27.65	-2.3 36.13	0.0 0.0
2400	21 25.28N	90 6.55W	2.3 073	5.4	17	25.0	100.	1011.0	6.0 135	7.8 220	27.53	-2.5 36.15	0.0 0.0
2500	21 25.70N	90 4.53W	8.5 077	2.0	17	25.0	100.	1012.0	12.0 135	19.0 230	27.31	-2.3 35.93	0.0 0.0
2600	21 26.46N	90 1.06W	4.8 085	3.4	17	25.0	100.	1012.0	9.0 135	12.9 235	26.99	-1.9 35.93	0.0 0.0
2700	21 27.52N	89 56.04W	7.5 076	4.8	16	25.0	100.	1011.0	12.0 135	18.1 228	26.94	-1.9 35.95	0.0 0.0
2800	21 27.66N	89 55.39W	3.0 072	0.6	16	25.2	100.	1011.0	10.0 135	12.3 216	26.83	-1.6 36.04	0.0 0.0
2900	21 28.89N	89 49.73W	3.6 077	5.4	16	25.6	100.	1011.0	11.0 135	13.8 222	27.38	-1.7 36.14	0.0 0.0
3000	21 29.25N	89 47.71W	7.9 076	1.9	16	25.6	100.	1011.0	15.0 135	22.3 225	27.35	-1.7 35.95	0.0 0.0
3100	21 30.09N	89 44.08W	3.5 062	3.5	17	26.0	100.	1011.0	11.0 157	14.3 224	26.99	-0.9 36.00	0.0 0.0
3200	21 31.00N	89 39.51W	4.5 076	4.3	17	26.2	100.	1011.0	15.0 157	19.3 238	27.93	-1.7 36.01	0.0 0.0
3300	21 31.06N	89 39.43W	7.5 075	0.2	17	26.2	100.	1011.0	19.0 157	26.1 238	27.92	-1.7 35.80	0.0 0.0
3400	21 31.72N	89 36.38W	8.0 074	2.9	0	26.3	100.	1011.0	22.0 157	29.6 237	27.69	-1.3 35.99	0.0 0.0



# LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 5 09-26-1996; PAGE # 2

GMT	LATITUDE	LONGITUDE	SEED CRSE	MILES OPTICAL AINT	RH	BAROM	AWS AWD	TWS TWD	SST A-SEA	SALIN	DPH35	TRANS	FLUCK	COMMENTS				
1730	21 32.00N	89 35.11W	4.1 073	1.2	0	26.3	100.	1010.0	16.0	157	19.9	235	27.43	-1.1 36.12	0	----	0.0	OBS 12 DEPLOYED
1749	21 32.57N	89 32.59W	8.1 070	2.4	0	26.5	100.	1010.0	20.0	157	27.7	233	27.54	-1.0 35.97	0	----	0.0	L.A. NOON(12:49:00 LOCAL); THURSDAY; 09/
1800	21 32.84N	89 31.07W	7.5 083	1.5	0	26.6	100.	1010.0	21.0	157	28.1	246	27.85	-1.2 36.12	0	----	0.0	
1804	21 32.98N	89 30.60W	3.9 067	0.5	0	26.7	100.	1010.0	18.0	157	21.7	228	27.86	-1.1 36.04	0	----	0.0	OBS 13 DEPLOYED
1838	21 33.90N	89 26.03W	4.1 082	4.4	0	26.8	100.	1009.0	16.0	157	19.9	244	27.54	-0.7 36.16	0	----	0.0	OBS 14 DEPLOYED
1900	21 34.53N	89 23.15W	7.2 079	2.8	0	27.1	100.	1009.0	23.0	157	29.8	241	28.02	-0.9 36.02	0	----	0.0	
1920	21 35.17N	89 20.44W	4.5 064	2.6	0	27.3	100.	1009.0	20.0	157	24.2	225	28.34	-1.0 36.03	0	----	0.0	OBS 15 DEPLOYED
2000	21 36.22N	89 15.24W	8.1 075	5.0	0	27.4	100.	1008.0	22.0	157	29.6	238	28.64	-1.2 36.01	0	----	0.0	
2004	21 36.35N	89 14.76W	3.0 081	0.5	0	27.3	100.	1009.0	22.0	157	24.8	241	28.61	-1.3 36.08	0	----	0.0	OBS 16 DEPLOYED
2046	21 37.54N	89 9.16W	3.7 070	5.4	0	27.4	100.	1008.0	23.0	157	26.5	230	28.52	-1.1 36.07	0	----	0.0	OBS 17 DEPLOYED
2100	21 37.96N	89 7.31W	9.2 077	1.8	0	27.5	100.	1008.0	30.0	135	37.1	222	28.45	-0.9 35.96	0	----	0.0	
2128	21 38.75N	89 3.43W	4.0 090	3.7	0	27.6	100.	1008.0	26.0	135	29.0	230	28.49	-0.8 36.13	0	----	0.0	OBS 18 (FIFI) DEPLOYED
2200	21 39.60N	88 59.26W	8.9 069	4.1	0	27.7	100.	1008.0	31.0	135	37.8	213	28.50	-0.8 35.97	0	----	0.0	
2211	21 39.98N	88 57.83W	3.2 068	1.4	0	27.7	100.	1008.0	22.0	135	24.4	208	28.43	-0.7 36.15	0	----	0.0	OBS 19 DEPLOYED
2300	21 41.37N	88 51.39W	8.1 072	6.2	0	27.4	100.	1008.0	28.0	135	34.2	216	28.46	-1.0 35.54	0	----	0.0	
2320	21 41.96N	88 48.66W	7.8 075	2.6	0	27.6	100.	1009.0	26.0	135	32.0	219	28.65	-1.0 35.90	0	----	0.0	
2321	21 41.99N	88 48.52W	7.6 080	0.1	0	27.3	100.	1009.0	26.0	135	31.8	224	28.65	-1.3 35.78	0	----	0.0	
2337	21 42.40N	88 46.52W	2.8 071	1.9	0	27.5	100.	1009.0	8.0	135	10.2	217	28.55	-1.0 36.03	0	----	0.0	OBS 21 DEPLOYED
2346	21 42.72N	88 45.38W	7.4 075	1.1	0	27.0	100.	1009.0	20.0	135	25.8	221	28.42	-1.4 35.91	0	----	0.0	SUNSET(18:46:39 LOCAL); THURSDAY; 09/26/

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 6 09-27-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SEPD CRSE	MILES	DEPTH	ALT	PH	BAROM	AMS	AND	TWS	TWD	SST	A-SST	SALIN	DPH	HS	TRANS	FLOOR	COMMENTS
0000	21 43.09N	88 43.51W	7.8	079	0.0	0	27.0	100.0	1009.0	16.0	135	22.2	228	28.11	-1.1	35.67	0	----	0.0	
0020	21 43.63N	88 40.87W	3.1	078	2.5	0	27.3	100.0	1009.0	21.0	135	23.3	218	28.07	-0.7	35.85	0	----	0.0	OBS 22 DEPLOYED
0100	21 44.72N	88 35.69W	7.2	073	5.0	0	27.1	100.0	1010.0	27.0	135	32.5	217	28.08	-0.9	35.81	0	----	0.0	
0117	21 45.20N	88 33.54W	7.4	066	2.1	0	27.3	100.0	1010.0	24.0	135	29.7	211	28.39	-1.0	35.68	0	----	0.0	START OF LUNAR ECLIPSE
0149	21 46.03N	88 29.53W	4.3	070	3.9	0	27.6	100.0	1011.0	8.0	135	11.5	220	28.28	-0.6	35.81	0	----	0.0	OBS 23 DEPLOYED
0200	21 46.42N	88 28.14W	8.5	075	1.4	0	27.7	100.0	1011.0	9.0	135	16.2	231	28.22	-0.5	35.89	0	----	0.0	
0220	21 46.90N	88 25.52W	7.0	080	2.5	0	27.6	100.0	1011.0	10.0	135	15.7	233	28.20	-0.6	35.79	0	----	0.0	TOTAL LUNAR ECLIPSE
0300	21 48.03N	88 20.20W	8.1	062	5.1	0	27.6	100.0	1011.0	22.0	157	29.8	225	28.01	-0.4	35.91	0	----	0.0	
0315	21 48.46N	88 18.23W	3.8	073	1.9	0	27.6	100.0	1012.0	19.0	157	22.8	234	27.75	-0.1	35.92	0	----	0.0	OBS 24 DEPLOYED
0400	21 49.66N	88 12.79W	6.6	070	5.2	0	26.9	100.0	1012.0	8.0	135	13.5	225	27.70	-0.8	35.82	0	----	0.0	
0449	21 50.87N	88 6.94W	3.8	067	5.6	0	27.0	100.0	1012.0	12.0	135	14.9	212	28.14	-1.1	35.93	0	----	0.0	OBS 25 DEPLOYED
0500	21 51.21N	88 5.90W	7.5	079	1.0	0	27.0	100.0	1012.0	15.0	135	21.0	228	28.24	-1.2	35.85	0	----	0.0	
0600	21 52.71N	87 58.70W	7.2	076	6.9	0	27.3	100.0	1012.0	11.0	135	16.9	228	28.77	-1.4	35.82	0	----	0.0	
0700	21 54.29N	87 51.19W	7.2	077	7.2	0	27.3	100.0	1012.0	12.0	135	17.8	228	28.62	-1.3	35.89	0	----	0.0	
0800	21 55.45N	87 46.06W	9.5	250	7.8	0	27.4	100.0	1011.0	11.0	135	18.9	045	28.96	-1.5	35.89	0	----	0.0	
0900	21 53.31N	87 56.41W	8.5	258	9.9	0	27.1	100.0	1011.0	7.0	135	14.3	057	28.79	-1.6	35.85	0	----	0.0	
1000	21 51.06N	88 6.82W	10.4	253	10.0	0	26.8	100.0	1012.0	10.0	135	18.6	051	28.03	-1.2	35.99	0	----	0.0	
1100	21 48.74N	88 17.06W	10.2	255	9.8	0	26.4	100.0	1012.0	4.0	135	13.3	062	27.53	-1.1	36.05	0	----	0.0	
1143	21 47.26N	88 24.44W	9.2	258	7.0	0	26.6	100.0	1012.0	10.0	157	18.8	068	27.69	-1.0	35.98	0	----	0.0	SUNRISE (06:43:58 LOCAL); FRIDAY; 09/27/
1200	21 46.59N	88 27.38W	10.3	255	2.8	0	26.6	100.0	1012.0	10.0	135	18.8	052	27.67	-1.0	36.06	0	----	0.0	
1300	21 44.32N	88 37.79W	9.8	259	10.0	0	26.6	100.0	1012.0	8.0	157	17.5	068	26.83	-0.2	35.99	0	----	0.0	
1400	21 42.34N	88 48.19W	9.3	260	9.9	35	26.9	100.0	1012.0	6.0	157	15.0	071	27.70	-0.8	36.13	0	----	0.0	
1500	21 39.95N	88 58.46W	10.2	256	9.9	37	27.4	100.0	1013.0	6.0	157	15.9	067	28.26	-0.8	35.99	0	----	0.0	
1600	21 37.72N	89 8.71W	10.1	260	9.8	17	27.9	100.0	1013.0	4.0	157	13.9	073	28.12	-0.2	36.11	0	----	0.0	
1700	21 35.51N	89 19.00W	9.7	251	9.9	18	28.5	100.0	1012.0	3.0	157	12.5	065	27.89	0.6	36.13	0	----	0.0	
1748	21 33.70N	89 27.23W	10.4	255	7.9	18	31.6	100.0	1011.0	0.0	135	10.4	075	27.08	4.5	36.11	0	----	0.0	L.A. NOON(12:48:19 LOCAL); FRIDAY; 09/27
1800	21 33.25N	89 29.23W	9.8	258	1.9	17	33.1	100.0	1011.0	4.0	000	5.8	078	27.29	5.8	36.09	0	----	0.0	
1845	21 36.52N	89 29.52W	5.2	179	7.0	11	26.0	100.0	1010.0	9.0	000	3.8	179	25.39	0.6	36.02	0	----	0.0	OBS 34 DEPLOYED
1900	21 27.82N	89 29.78W	6.7	351	1.6	12	27.3	100.0	1010.0	7.0	135	12.7	148	25.84	1.4	35.64	0	----	0.0	
2000	21 33.10N	89 30.70W	9.6	259	6.5	17	28.5	100.0	1009.0	9.0	000	0.6	079	27.33	1.1	35.94	0	----	0.0	
2100	21 31.20N	89 39.52W	7.6	259	8.5	17	28.4	100.0	1008.0	11.0	000	3.4	259	26.96	----	35.79	0	----	0.0	
2200	21 29.36N	89 48.13W	9.1	256	8.3	17	27.3	100.0	1008.0	8.0	000	1.1	076	26.79	0.5	35.75	0	----	0.0	
2300	21 27.48N	89 56.86W	8.6	257	8.4	17	26.7	100.0	1008.0	11.0	000	2.4	257	27.14	-0.4	35.45	0	----	0.0	
2350	21 25.69N	90 3.83W	8.7	274	6.9	16	27.0	100.0	1008.0	15.0	022	7.7	322	27.18	-0.1	35.65	0	----	0.0	SUNSET(18:50:57 LOCAL); FRIDAY; 09/27/96

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 7 09-28-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SPEED	CRSE	MILES	DEPTH	AIR	SH	BAROM	HWS	AWD	TWS	TWD	SST	A-SEA	SALIN	DEPTH	TRANS	FLOOR	COMMENTS
0000	21 25.56N	90 5.27W	8.6	255	0.0	17	26.8	100.	1009.0	12.0	000	3.4	255	27.23	-0.4	35.65	0	----	0.0	
0100	21 23.64N	90 14.26W	8.8	268	8.7	17	26.9	100.	1009.0	9.0	022	3.5	006	27.38	-0.4	35.65	0	----	0.0	
0200	21 21.72N	90 23.40W	8.1	257	8.8	19	26.9	100.	1010.0	11.0	000	2.9	257	27.81	-0.9	35.65	0	----	0.0	
0300	21 19.81N	90 32.34W	8.5	269	8.6	20	27.0	100.	1011.0	9.0	000	0.5	269	27.92	-0.9	35.68	0	----	0.0	
0400	21 17.94N	90 41.18W	8.2	254	9.5	21	27.0	100.	1010.0	10.0	022	4.0	328	28.13	-1.1	35.55	0	----	0.0	
0500	21 16.00N	90 49.95W	7.3	260	8.4	25	26.8	100.	1010.0	5.0	022	3.3	044	27.91	-1.1	35.47	0	----	0.0	
0600	21 13.94N	90 56.69W	6.9	119	9.1	27	26.5	100.	1010.0	25.0	157	31.5	281	28.63	-2.1	35.36	0	----	0.0	
0700	21 10.47N	90 50.45W	6.2	124	6.8	23	26.0	100.	1010.0	25.0	157	30.8	285	27.78	-1.7	35.90	0	----	0.0	
0800	21 6.77N	90 43.87W	7.6	123	7.2	0	25.4	100.	1009.0	25.0	157	32.2	285	27.55	-2.1	35.99	0	----	0.0	
0900	21 6.03N	90 36.33W	6.8	092	7.3	13	24.6	100.	1009.0	16.0	157	22.4	256	25.99	-1.3	35.90	0	----	0.0	
1000	21 6.01N	90 28.35W	7.3	089	7.5	19	23.8	100.	1009.0	16.0	135	21.8	237	25.25	-1.4	35.94	0	----	0.0	
1100	21 6.03N	90 20.28W	7.8	087	7.6	14	23.3	100.	1010.0	16.0	135	22.2	236	24.78	-1.4	35.94	0	----	0.0	
1151	21 7.19N	90 13.59W	8.4	048	6.7	11	23.4	100.	1011.0	20.0	135	26.6	195	25.14	-1.7	35.98	0	----	0.0	SUNRISE (06:51:25 LOCAL); SATURDAY; 09/2
1200	21 7.90N	90 12.64W	7.4	055	1.1	11	23.4	100.	1011.0	20.0	157	27.0	218	25.31	-1.9	35.95	0	----	0.0	
1300	21 8.02N	90 20.54W	8.4	268	7.9	16	26.8	100.	1011.0	6.0	022	3.7	049	24.44	2.3	35.74	0	----	0.0	
1400	21 7.99N	90 29.12W	8.0	269	8.1	11	29.7	100.	1012.0	3.0	022	5.4	076	25.40	4.3	35.78	0	----	0.0	
1500	21 8.21N	90 37.66W	6.8	280	8.0	14	30.0	100.	1012.0	6.0	060	0.8	100	26.40	3.6	35.80	0	----	0.0	
1600	21 11.15N	90 42.53W	7.3	359	7.8	18	28.6	100.	1012.0	19.0	022	12.6	034	27.49	1.1	35.52	0	----	0.0	
1700	21 11.48N	90 35.16W	7.4	099	7.4	15	25.8	100.	1011.0	21.0	157	28.0	262	26.66	-0.8	35.95	0	----	0.0	
1752	21 11.51N	90 28.39W	6.6	092	6.4	13	25.3	100.	1010.0	19.0	135	24.1	238	26.08	-0.7	35.95	0	----	0.0	L.A. NOON (12:52:03 LOCAL); SATURDAY; 09/
1800	21 11.43N	90 27.32W	8.2	089	1.0	12	25.3	100.	1010.0	20.0	135	26.4	236	26.00	-0.7	35.98	0	----	0.0	
0819	21 11.50N	90 24.80W	8.1	092	2.4	11	25.7	100.	1010.0	21.0	135	27.3	239	25.91	-0.2	35.99	0	----	0.0	
1819	21 11.50N	90 24.76W	8.2	093	0.0	12	25.2	100.	1010.0	19.0	135	25.5	241	25.89	-0.6	35.96	0	----	0.0	
1900	21 11.54N	90 19.43W	7.5	091	5.0	10	25.2	100.	1009.0	19.0	135	24.9	238	25.57	-0.3	35.98	0	----	0.0	
2000	21 11.50N	90 11.57N	6.9	085	7.4	14	25.0	100.	1008.0	20.0	135	25.4	231	25.10	-0.1	35.95	0	----	0.0	
2100	21 11.50N	90 3.76W	7.4	094	7.3	10	24.9	100.	1008.0	22.0	135	27.7	239	25.17	-0.2	35.94	0	----	0.0	
2200	21 14.01N	90 8.07W	8.1	272	8.0	18	27.9	100.	1008.0	11.0	000	2.9	272	24.72	3.1	35.73	0	----	0.0	
2300	21 13.98N	90 17.27W	9.1	269	8.6	10	27.2	100.	1009.0	8.0	000	1.1	089	25.29	1.9	35.81	0	----	0.0	
2351	21 14.00N	90 24.92W	8.4	267	7.2	13	26.8	100.	1009.0	10.0	000	1.5	267	26.18	0.6	35.67	0	----	0.0	SUNSET (18:51:27 LOCAL); SATURDAY; 09/28/

# LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 8 09-29-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRSE	MILES OFFSHORE	SH BAROM	AME AND THIS TWD	SST A-SEA SALIN	DEPTH35	TEMP	FLUOR	COMMENTS				
0000	21 13.99N	90 26.24W	8.6	264	0.0	13 26.8	100.1009.0	7.0	000	1.6	084 26.38 0.4 35.86	0	0.0		
0100	21 13.94N	90 35.29W	7.9	265	8.5	17 27.2	100.1010.0	7.0	000	0.9	085 26.80 0.4 35.68	0	0.0		
0200	21 15.47N	90 42.55W	7.7	002	8.3	20 27.1	100.1010.0	11.0	022	4.9	061 28.00 -0.9 35.71	0	0.0		
0300	21 18.99N	90 38.23W	6.9	087	7.5	20 26.7	100.1011.0	23.0	157	29.5	249 27.74 -1.0 35.87	0	0.0		
0400	21 19.00N	90 30.47W	7.3	090	7.3	19 25.4	100.1011.0	14.0	000	6.7	090 27.77 -2.3 36.00	0	0.0		
0500	21 21.34N	90 25.00W	8.3	003	7.5	19 25.2	100.1010.0	13.0	022	6.2	056 26.60 -1.4 35.85	0	0.0		
0600	21 22.58N	90 33.43W	8.0	270	8.8	20 26.0	100.1010.0	0.0	022	8.0	090 27.85 -1.8 36.04	0	0.0		
0700	21 22.40N	90 42.80W	9.8	237	8.8	22 26.1	100.1009.0	10.0	157	19.4	045 28.40 -2.3 35.81	0	0.0		
0800	21 18.10N	90 50.35W	5.9	235	8.3	27 25.9	100.1008.0	11.0	135	15.7	025 28.42 -2.5 35.91	0	0.0		
0900	21 14.81N	90 56.08W	6.2	231	6.3	28 26.0	100.1009.0	8.0	157	13.9	038 27.91 -1.9 35.93	0	0.0		
1000	21 14.17N	91 1.43W	2.1	032	5.4	31 26.3	100.1008.0	6.0	000	3.9	032 28.51 -2.2 35.97	0	0.0		
1100	21 14.37N	90 57.47W	3.6	061	3.8	28 25.8	100.1009.0	11.0	157	14.4	224 28.02 -2.2 36.06	0	0.0		OBS 01 RECOVERED
1105	21 14.39N	90 57.47W	1.5	144	0.1	38 25.8	100.1009.0	13.0	022	11.6	169 28.00 -2.2 36.10	0	0.0		SUNRISE (06:54:17 LOCAL); SUNDAY; 09/29/
1154	21 15.66N	90 51.95W	7.6	071	5.5	25 25.5	100.1009.0	22.0	157	29.2	234 28.13 -2.6 35.84	0	0.0		
1200	21 15.83N	90 51.18W	8.2	073	0.7	26 25.4	100.1009.0	19.0	000	10.8	073 28.16 -2.7 36.03	0	0.0		
1300	21 16.86N	90 45.79W	7.9	259	5.7	23 25.7	100.1009.0	7.0	135	13.8	057 27.94 -2.2 35.78	0	0.0		
1304	21 16.81N	90 46.19W	1.4	214	0.4	29 25.6	100.1009.0	15.0	135	16.0	352 27.95 -2.3 36.24	0	0.0		OBS 02 RECOVERED
1325	21 17.27N	90 43.94W	7.1	075	2.2	22 25.6	100.1009.0	21.0	000	13.9	075 27.79 -2.1 35.98	0	0.0		FRIGATEBIRDS ON THE A-FRAME
1400	21 18.17N	90 39.65W	6.8	083	4.1	21 25.6	100.1010.0	20.0	000	13.2	083 27.57 -1.9 36.02	0	0.0		
1400	21 18.60N	90 37.98W	6.0	087	2.1	20 24.5	100.1010.0	21.0	000	15.0	087 27.76 -3.2 36.07	0	0.0		
1500	21 19.27N	90 34.81W	0.5	201	3.7	19 25.5	100.1010.0	10.0	157	10.5	359 27.54 -2.0 36.21	0	0.0		
1503	21 19.18N	90 34.87W	0.4	227	0.1	19 25.3	100.1010.0	10.0	135	10.3	003 27.53 -2.2 36.25	0	0.0		OBS 03 RECOVERED
1600	21 20.08N	90 30.57W	7.9	075	4.6	18 25.1	100.1010.0	21.0	000	13.1	075 26.14 -1.0 36.07	0	0.0		
1659	21 21.63N	90 23.44W	2.8	241	7.3	19 26.2	100.1010.0	7.0	000	4.2	241 26.87 -0.6 36.22	0	0.0		7 BLUE HERONS FLY ACROSS BOW
1700	21 21.62N	90 23.48W	2.1	252	0.0	18 26.1	100.1010.0	8.0	157	10.0	054 26.90 -0.8 36.22	0	0.0		
1702	21 21.61N	90 23.53W	1.0	257	0.0	25 25.9	100.1010.0	7.0	157	7.9	057 26.85 -0.9 36.25	0	0.0		OBS 04 RECOVERED
1751	21 22.87N	90 17.80W	7.7	081	5.7	15 25.8	100.1010.0	22.0	157	29.3	244 25.96 -0.1 36.11	0	0.0		L.A. NOON(12:51:01 LOCAL); SUNDAY; 09/29/
1800	21 23.11N	90 16.63W	6.8	078	1.1	16 26.0	100.1010.0	23.0	157	29.4	240 26.35 -0.3 36.09	0	0.0		
1900	21 24.14N	90 12.21W	2.0	216	4.7	18 26.8	100.1008.0	11.0	157	12.9	016 26.85 -0.5 36.24	0	0.0		OBS 05 RECOVERED
1915	21 23.99N	90 12.29W	0.5	020	0.3	18 26.2	100.1009.0	11.0	135	11.4	156 26.85 -0.6 36.24	0	0.0		
2000	21 24.95N	90 8.18W	5.5	080	4.1	17 25.9	100.1008.0	16.0	157	21.2	243 26.46 -0.5 36.19	0	0.0		OBS 06 RECOVERED
2020	21 25.25N	90 6.67W	1.2	188	1.6	19 25.9	100.1008.0	11.0	157	12.1	347 25.60 0.3 36.26	0	0.0		
2100	21 26.06N	90 2.74W	5.6	072	3.9	16 25.7	100.1008.0	19.0	157	24.3	234 25.52 0.1 36.03	0	0.0		OBS 07 RECOVERED
2134	21 26.45N	90 1.06W	1.5	174	2.8	42 26.7	100.1008.0	11.0	022	9.5	199 25.59 1.1 36.19	0	0.0		
2200	21 27.03N	89 58.55W	7.4	063	2.5	17 25.7	100.1009.0	23.0	000	15.5	063 25.20 0.5 35.88	0	0.0		

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 8 09-29-1996; PAGE # 2

GMT	LATITUDE	LONGITUDE	SEPD CRSE	MILES	DEPTH	ALT	RH	BAROM	AWS	AMP	TWS	TWD	SST	A-SEA	SALIN	DEPTH	FLOR	COMMENTS	
2212	21 27.38N	89 57.25W	6.5	078	1.3	17	24.7	100.	1009.0	39.0	0.22	33.1	104	25.22	-0.5	35.84	0	0.0	GREAT EGRET ON THE BACK DECK
2249	21 27.65N	89 55.39W	0.7	130	2.6	33	23.2	100.	1009.0	6.0	135	6.5	269	25.38	-2.1	36.18	0	0.0	OBS 08 RECOVERED
2300	21 27.33N	89 54.69W	6.8	103	0.9	16	23.3	100.	1009.0	5.0	0.22	2.9	241	25.30	-2.0	36.19	0	0.0	
2348	21 26.03N	89 49.15W	5.0	109	5.4	14	23.4	100.	1010.0	3.0	0.00	3.0	289	24.87	-1.4	36.03	0	0.0	SUNSET(18:48:06 LOCAL); SUNDAY; 09/29/96

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 9 09-30-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SPEED	CHIRP	MILES	OPTICAL	AIR	PH	SARON	AMS	AND	TWS	TWD	SAT-A-SEA	SALIN	DEPTH	TRANS	FLOOR	COMMENTS
0000	21 25.79N	89 47.74W	7.0	095	0.0	14	23.4	100.	1010.0	4.0	000	3.0	275	24.78	-1.3	36.06	0	----	0.0
0100	21 24.58N	89 42.67W	2.7	099	4.9	11	23.6	100.	1010.0	0.0	022	2.7	279	24.80	-1.2	36.17	0	----	0.0
0200	21 24.08N	89 38.83W	3.7	348	4.3	0	23.9	100.	1011.0	5.0	157	8.5	155	24.98	-1.0	36.23	0	----	0.0
0230	21 23.80N	89 38.66W	4.3	181	2.5	10	24.0	100.	1011.0	3.0	022	1.9	324	25.01	-1.0	36.22	0	----	0.0
0300	21 26.50N	89 40.82W	8.0	318	4.1	13	25.3	100.	1011.0	18.0	022	11.0	356	25.03	0.2	36.09	0	----	0.0
0400	21 33.27N	89 46.81W	8.7	321	8.8	20	26.5	100.	1011.0	16.0	022	8.6	006	26.63	-0.1	35.96	0	----	0.0
0414	21 34.31N	89 47.72W	3.4	141	1.5	21	26.2	100.	1011.0	16.0	135	18.6	283	27.07	-0.8	36.23	0	----	0.0
0500	21 36.85N	89 49.89W	4.3	324	3.6	22	26.8	100.	1011.0	12.0	000	7.7	324	26.48	0.3	36.22	0	----	0.0
0529	21 38.53N	89 51.34W	4.5	310	2.2	26	26.9	100.	1011.0	7.0	000	2.5	310	26.99	-0.5	36.17	0	----	0.0
0600	21 41.10N	89 53.51W	4.5	313	3.3	28	27.1	100.	1011.0	11.0	000	6.5	313	27.60	-0.5	36.12	0	----	0.0
0647	21 43.16N	89 56.34W	1.6	096	3.4	31	26.8	100.	1010.0	15.0	135	16.2	235	27.82	-1.0	35.99	0	----	0.0
0700	21 43.97N	89 56.01W	8.7	325	1.3	31	27.0	100.	1010.0	8.0	022	3.3	078	27.88	-0.8	35.86	0	----	0.0
0735	21 47.81N	89 59.27W	4.7	326	4.9	35	27.1	100.	1010.0	12.0	022	7.9	001	28.11	-1.0	35.76	0	----	0.0
0800	21 50.37N	90 1.43W	8.5	323	3.2	37	27.2	100.	1010.0	10.0	000	1.5	323	28.16	-0.9	35.81	0	----	0.0
0820	21 52.42N	90 3.23W	3.9	344	2.7	40	27.0	100.	1009.0	13.0	022	9.5	015	28.47	-1.4	35.81	0	----	0.0
0900	21 57.06N	90 7.16W	9.3	320	5.9	43	27.1	100.	1010.0	8.0	000	1.3	140	28.47	-1.3	35.94	0	----	0.0
0934	22 0.92N	90 10.57W	4.2	311	5.0	44	27.0	100.	1010.0	14.0	022	10.2	342	28.37	-1.3	36.12	0	----	0.0
1000	22 3.86N	90 13.08W	8.8	326	3.8	46	27.0	100.	1010.0	5.0	022	4.6	121	28.56	-1.5	35.77	0	----	0.0
1048	22 9.40N	90 17.86W	3.1	331	7.1	49	26.9	100.	1010.0	13.0	022	10.2	000	28.75	-1.8	36.18	0	----	0.0
1100	22 10.78N	90 18.94W	9.2	324	1.7	49	27.3	100.	1010.0	8.0	000	1.2	144	28.79	-1.4	35.84	0	----	0.0
1152	22 16.78N	90 24.22W	8.5	317	7.8	46	27.4	100.	1010.0	8.0	000	0.5	137	28.75	-1.3	35.95	0	----	0.0
1200	22 17.70N	90 25.02W	8.7	325	1.2	41	27.2	100.	1010.0	8.0	000	0.7	145	28.75	-1.5	35.78	0	----	0.0
1239	22 22.06N	90 28.77W	4.1	329	5.6	34	27.3	100.	1011.0	11.0	022	7.4	003	29.00	-1.7	36.21	0	----	0.0
1300	22 21.59N	90 29.99W	8.0	277	2.3	19	27.1	100.	1011.0	8.0	135	14.8	074	28.99	-1.8	35.79	0	----	0.0
1400	22 13.94N	90 30.00W	8.2	173	7.7	0	27.4	100.	1011.0	23.0	157	30.7	336	28.78	-1.3	36.16	0	----	0.0
1500	22 6.21N	90 30.04W	7.5	185	7.7	0	27.0	100.	1011.0	24.0	157	31.1	347	28.76	-1.7	36.15	0	----	0.0
1600	21 58.52N	90 30.04W	7.2	179	7.7	0	27.1	100.	1012.0	25.0	157	31.8	341	28.55	-1.4	36.25	0	----	0.0
1700	21 50.93N	90 30.00W	7.3	179	7.6	42	26.9	100.	1012.0	22.0	135	27.6	324	28.46	-1.5	36.24	0	----	0.0
1751	21 44.47N	90 29.95W	7.5	177	6.5	0	26.5	100.	1011.0	19.0	157	26.1	340	27.99	-1.4	36.16	0	----	0.0
1800	21 43.31N	90 29.94W	8.0	182	1.2	38	26.7	100.	1011.0	19.0	135	25.3	329	28.07	-1.3	36.22	0	----	0.0
1900	21 35.14N	90 29.96W	8.5	173	8.0	30	26.6	100.	1010.0	15.0	135	21.9	324	28.05	-1.4	36.07	0	----	0.0
2000	21 27.11N	90 30.01W	8.6	181	8.2	19	26.5	100.	1010.0	11.0	135	18.1	335	27.64	-1.1	35.86	0	----	0.0
2100	21 18.88N	90 29.93W	8.7	176	8.2	19	26.0	100.	1009.0	9.0	135	16.4	332	26.59	-0.5	35.72	0	----	0.0
2200	21 10.52N	90 30.04W	9.1	182	8.4	19	25.4	100.	1009.0	8.0	157	16.8	351	25.48	-0.4	35.82	0	----	0.0
2300	21 7.37N	90 29.62W	7.2	004	8.0	19	25.3	100.	1009.0	14.0	022	7.8	047	25.19	0.1	35.78	0	----	0.0

SUNRISE (06:52:57 LOCAL); MONDAY; 09/30/

L.A. NOON (13:51:30 LOCAL); MONDAY; 09/30

LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 9 09-30-1996; PAGE # 2

GMT	LATITUDE	LONGITUDE	SSPD	CRISM	MLIMS	OPTMAL	AJVT	RH	BAROM	AWS	AWD	TWS	TWD	SST	A-SEA	SALTIN	DPTHIS	TRANS	FLOCK	COMMENTS
2349	21 13.55N	90 28.74W	7.5	012	6.2	19	25.5	100	1009.0	10.0	022	4.2	077	25.70	-0.2	35.75	0	-----	0.0	SUNSET(18:49:51 LOCAL); MONDAY; 09/30/96

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 -- DAILY SCIENCE LOG; DAY # 10 10-01-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD	CRSE	MILES	OPTICAL	ALT	PH	BAROM	AMS	AND	TWS	END	SST	A-SEA	SALLIS	DEPTH	TIME	FLOOR	COMMENTS
0000	21 14.92N	90 28.57W	6.6	005	0.0	0	25.5	100.	1010.0	5.0	022	2.8	141	25.86	-0.3	35.87	0	----	0.0	
0100	21 19.04N	90 24.23W	8.5	083	7.6	0	25.4	100.	1010.0	24.0	157	32.0	246	25.55	-0.1	35.98	0	----	0.0	
0200	21 19.00N	90 16.20W	8.5	095	7.6	0	25.0	100.	1011.0	27.0	000	18.5	095	25.12	-0.1	35.71	0	----	0.0	
0300	21 22.52N	90 13.24W	8.2	271	7.7	0	25.6	100.	1011.0	11.0	022	4.6	336	25.44	0.1	35.68	0	----	0.0	
0400	21 22.51N	90 22.33W	8.1	276	8.5	0	26.2	100.	1012.0	11.0	022	4.7	339	26.50	-0.3	35.90	0	----	0.0	
0500	21 24.73N	90 28.88W	8.0	352	8.2	0	26.6	100.	1011.0	31.0	000	23.0	352	27.35	-0.7	35.21	0	----	0.0	
0600	21 25.01N	90 37.77W	8.7	270	8.6	0	26.4	100.	1011.0	13.0	000	4.3	270	27.68	-1.2	35.62	0	----	0.0	
0700	21 27.48N	90 41.74W	5.8	079	7.5	0	26.2	100.	1010.0	29.0	157	34.4	240	28.30	-2.1	35.95	0	----	0.0	
0800	21 27.38N	90 34.90W	6.6	095	6.4	0	25.5	100.	1011.0	21.0	000	14.4	095	27.60	-2.1	35.45	0	----	0.0	
0900	21 27.48N	90 27.60W	5.3	087	6.9	0	24.9	100.	1011.0	20.0	157	25.0	249	27.38	-2.4	35.85	0	----	0.0	
1000	21 27.41N	90 19.89W	6.9	036	7.2	0	24.4	100.	1011.0	18.0	157	24.5	259	26.83	-2.4	36.13	0	----	0.0	
1100	21 27.63N	90 12.20W	7.5	079	7.5	0	24.0	100.	1011.0	16.0	157	23.1	243	25.62	-1.6	35.97	0	----	0.0	SUNRISE (06:51:47 LOCAL); TUESDAY; 10/01
1151	21 27.60N	90 5.28W	6.7	039	6.5	0	23.6	100.	1011.0	14.0	157	20.4	263	24.84	-1.2	35.97	0	----	0.0	
1200	21 27.60N	90 4.01W	7.8	034	1.2	0	23.6	100.	1011.0	16.0	000	8.2	094	24.86	-1.2	36.02	0	----	0.0	
1219	21 27.60N	90 1.34W	8.2	101	2.5	0	23.5	100.	1011.0	15.0	157	22.8	266	24.95	-1.4	35.95	0	----	0.0	RUDDY TURNSTONE ON BACK DECK
1300	21 27.50N	89 55.50W	9.1	093	5.6	0	23.5	100.	1011.0	13.0	157	21.7	259	24.67	-1.1	36.09	0	----	0.0	
1400	21 23.15N	89 48.42W	8.3	134	8.2	0	23.6	100.	1012.0	15.0	135	21.7	284	23.44	0.1	36.08	0	----	0.0	
1451	21 18.37N	89 43.11W	4.2	138	7.0	0	24.8	100.	1012.0	5.0	157	9.0	305	26.34	-1.5	35.94	0	----	0.0	PILOT ABOARD
1500	21 17.39N	89 42.44W	6.2	151	1.2	0	25.1	100.	1012.0	6.0	157	12.0	329	26.81	-1.7	35.95	0	----	0.0	
1516	21 16.68N	89 42.12W	0.1	109	0.9	0	26.9	100.	1012.0	1.0	000	0.9	109	26.65	0.2	35.79	0	----	0.0	DOCKSIDE YUKALPETEN; MEXICO
2243	21 16.67N	89 42.12W	0.9	020	0.1	0	30.3	100.	1010.0	4.0	022	3.2	048	26.43	3.8	35.94	0	----	0.0	
2300	21 16.67N	89 42.11W	0.8	264	0.3	0	28.9	100.	1010.0	7.0	000	6.2	264	26.54	2.3	36.00	0	----	0.0	
2335	21 16.68N	89 42.10W	0.9	322	0.4	0	27.4	100.	1011.0	4.0	022	3.2	350	26.39	1.0	35.95	0	----	0.0	UNDERWAY
2345	21 17.29N	89 42.34W	5.8	339	0.7	0	26.8	100.	1011.0	18.0	022	12.8	011	26.58	0.2	35.94	0	----	0.0	SUNSET (18:45:49 LOCAL); TUESDAY; 10/01/9



## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 11 10-02-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SPD	CRSE	MILES OFFSHORE	ALT	HK	BAROM	AWS	AWD	WVS	TWD	SST	A-SSEA	RAIN	DEPTH	TRASH	FLOOR	COMMENTS
21 19:14N	89 42.62W	7.8	354	0.0	0	25.8	100.	1010.0	13.0	000	5.2	354	25.45	0.3	35.87	0	---	0.0	
21 27:56N	89 42.92W	9.6	346	8.4	0	25.1	100.	1011.0	8.0	135	16.3	145	25.18	-0.4	35.94	0	---	0.0	
21 28:96N	89 48.92W	8.2	264	8.1	0	25.1	100.	1012.0	2.0	135	9.7	075	25.56	-0.4	35.96	0	---	0.0	
21 29:96N	89 57.54W	8.3	275	8.1	0	25.6	100.	1012.0	0.0	135	8.3	095	25.64	-0.4	35.84	0	---	0.0	
21 30:07N	90 6.24W	8.5	272	8.1	0	25.4	100.	1013.0	0.0	135	8.5	092	26.31	-0.9	35.99	0	---	0.0	
21 29:96N	90 15.04W	7.7	278	8.2	0	25.4	100.	1012.0	5.0	135	11.8	080	27.31	-1.9	35.99	0	---	0.0	
21 29:98N	90 23.75W	8.7	268	8.1	0	25.5	100.	1012.0	6.0	135	13.6	069	27.55	-2.0	35.87	0	---	0.0	
21 29:99N	90 32.60W	9.9	270	8.3	0	25.6	100.	1011.0	5.0	157	14.6	082	27.73	-2.1	36.03	0	---	0.0	
21 30:04N	90 41.50W	8.0	269	8.3	0	25.7	100.	1011.0	8.0	135	14.8	066	28.26	-2.5	36.04	0	---	0.0	
21 32:28N	90 35.83W	8.7	080	8.7	0	25.5	100.	1010.0	6.0	135	13.6	241	28.23	-2.7	36.10	0	---	0.0	
21 33:26N	90 26.64W	8.3	081	8.6	0	25.6	100.	1010.0	5.0	157	13.1	252	28.02	-2.4	36.08	0	---	0.0	
21 34:22N	90 17.40W	9.4	081	8.7	0	25.1	100.	1011.0	10.0	157	19.0	249	27.42	-2.3	36.11	0	---	0.0	
21 35:13N	90 9.37W	8.6	081	7.6	0	24.6	100.	1011.0	16.0	157	24.2	246	26.73	-2.1	36.08	0	---	0.0	SUNRISE (06:52:23 LOCAL); WEDNESDAY; 10/
21 35:23N	90 8.12W	9.2	083	1.2	0	24.5	100.	1011.0	18.0	157	26.7	248	26.54	-2.0	36.05	0	---	0.0	
21 36:06N	89 59.32W	7.8	083	8.3	0	24.7	100.	1012.0	15.0	157	22.4	248	26.69	-1.9	36.05	0	---	0.0	
21 37:05N	89 50.51W	8.2	082	8.3	0	24.7	100.	1012.0	11.0	157	18.8	249	26.19	-1.4	36.01	0	---	0.0	
21 37:97N	89 42.05W	7.9	077	8.0	0	25.2	100.	1013.0	7.0	157	14.6	246	27.29	-2.0	36.04	0	---	0.0	
21 39:00N	89 33.45W	7.9	080	8.1	0	25.6	100.	1013.0	15.0	157	22.5	245	27.17	-1.5	36.02	0	---	0.0	
21 39:96N	89 24.74W	8.3	080	8.2	0	26.0	100.	1012.0	17.0	157	24.9	244	27.41	-1.4	36.12	0	---	0.0	
21 40:62N	89 18.21W	8.3	078	5.2	0	26.6	100.	1011.0	15.0	157	22.9	243	28.35	-1.7	36.11	0	---	0.0	L.A. NOON (12:46:05 LOCAL); WEDNESDAY; 10/
21 40:96N	89 16.25W	8.5	078	1.9	0	26.8	100.	1011.0	13.0	157	21.1	244	28.57	-1.7	36.11	0	---	0.0	
21 41:95N	89 7.75W	7.7	093	8.0	0	26.6	100.	1009.0	15.0	135	21.2	242	28.52	-1.9	36.07	0	---	0.0	
21 42:82N	88 59.32W	8.1	083	8.0	0	27.1	100.	1009.0	16.0	157	23.7	248	28.24	-1.1	36.02	0	---	0.0	
21 43:54N	88 51.08W	8.3	048	7.8	0	27.4	100.	1008.0	20.0	157	27.8	212	28.24	----	36.04	0	---	0.0	
21 44:57N	88 43.03W	7.6	084	7.6	0	27.3	100.	1009.0	21.0	157	28.2	247	28.25	-0.9	36.02	0	---	0.0	
21 45:62N	88 34.97W	8.3	084	7.6	0	27.1	100.	1009.0	22.0	157	29.8	247	28.18	-1.0	35.85	0	---	0.0	
21 46:06N	88 30.06W	7.1	082	4.6	0	26.8	100.	1009.0	21.0	157	27.7	245	28.16	-1.3	35.92	0	---	0.0	SUNSET (18:39:57 LOCAL); WEDNESDAY; 10/02

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 12 10-03-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SEPD CRSE	MILES OFFSHORE	SH	BAROM	AMS	AND	TWS	END	SAT	A-SHA	SALIN	DPH	35	TRANS	KPDR	COMMENTS		
0000	21 46.14N	88 27.20W	9.2	076	0.0	0	26.8	100.	1009.0	22.0	157	30.7	240	28.06	-1.2	35.96	0	----	0.0	
0100	21 48.62N	88 31.61W	7.8	282	8.4	0	27.8	100.	1009.0	9.0	157	16.5	089	28.07	-0.2	35.97	0	----	0.0	
0200	21 48.49N	88 40.81W	8.3	267	8.6	0	27.6	100.	1010.0	11.0	022	4.6	333	28.29	-0.6	35.84	0	----	0.0	
0300	21 48.56N	88 50.05W	8.3	266	8.6	0	27.7	100.	1010.0	5.0	022	4.1	058	27.92	-0.2	35.67	0	----	0.0	
0400	21 48.52N	88 59.37W	8.6	270	8.7	0	27.5	100.	1010.0	2.0	157	10.5	085	27.75	-0.2	35.91	0	----	0.0	
0500	21 46.40N	89 6.03W	7.7	176	8.3	0	26.5	100.	1009.0	19.0	135	25.0	323	27.97	-1.4	35.80	0	----	0.0	
0600	21 45.98N	88 57.80W	8.3	087	8.1	0	26.2	100.	1009.0	21.0	157	28.8	250	27.31	-1.1	35.95	0	----	0.0	
0700	21 46.05N	88 49.31W	9.4	088	7.9	0	26.1	100.	1008.0	20.0	135	27.5	237	27.52	-1.4	36.01	0	----	0.0	
0800	21 46.09N	88 40.67W	7.9	096	8.1	0	26.0	100.	1008.0	14.0	135	20.4	246	27.62	-1.6	35.95	0	----	0.0	
0900	21 45.98N	88 31.88W	8.5	087	8.2	0	25.9	100.	1008.0	7.0	135	14.3	246	27.66	-1.7	36.06	0	----	0.0	
1000	21 43.27N	88 25.98W	8.9	181	8.2	0	25.6	100.	1008.0	21.0	157	29.4	345	27.77	-2.1	35.99	0	----	0.0	
1100	21 43.00N	88 34.78W	8.4	266	8.5	0	25.4	100.	1008.0	10.0	135	17.0	061	27.74	-2.3	35.88	0	----	0.0	SUNRISE (06:46:54 LOCAL); THURSDAY; 10/0
1146	21 43.04N	88 41.78W	7.8	267	6.5	0	25.4	100.	1009.0	11.0	135	17.4	060	27.67	-2.2	35.92	0	----	0.0	
1200	21 43.00N	88 43.93W	8.9	268	2.0	0	25.5	100.	1009.0	11.0	135	18.4	063	27.59	-2.0	35.92	0	----	0.0	
1300	21 43.03N	88 52.84W	8.1	268	8.3	0	25.4	100.	1009.0	11.0	135	17.7	061	27.33	-1.9	35.71	0	----	0.0	
1400	21 43.01N	89 1.71W	8.5	267	8.3	0	25.1	100.	1010.0	11.0	157	19.1	074	27.32	-2.2	35.79	0	----	0.0	
1500	21 40.45N	89 4.18W	8.2	086	8.1	0	25.6	100.	1010.0	10.0	135	16.6	241	27.30	-1.7	36.05	0	----	0.0	
1600	21 40.51N	88 55.05W	8.7	087	8.5	0	26.1	100.	1009.0	11.0	157	19.3	254	27.21	-1.1	36.06	0	----	0.0	
1700	21 40.43N	88 45.89W	8.5	088	8.5	0	26.7	100.	1009.0	11.0	157	19.1	255	28.60	-1.9	36.07	0	----	0.0	
1743	21 40.54N	88 39.43W	9.1	094	6.0	0	26.8	100.	1009.0	11.0	135	18.6	249	29.05	-2.2	36.03	0	----	0.0	L.A. NOON(12:43:12 LOCAL); THURSDAY; 10/
1800	21 40.51N	88 36.87W	8.1	089	2.4	0	26.7	100.	1008.0	10.0	135	16.7	244	29.01	-2.3	35.97	0	----	0.0	
1900	21 40.47N	88 28.01W	7.7	085	8.3	0	26.9	100.	1007.0	13.0	135	19.2	236	28.94	-2.0	36.05	0	----	0.0	
2000	21 38.51N	88 30.77W	8.6	269	8.4	0	30.3	100.	1007.0	21.0	157	29.1	073	29.19	1.1	35.92	0	----	0.0	
2100	21 38.57N	88 39.95W	9.0	265	8.6	0	30.3	100.	1007.0	15.0	187	23.6	070	28.96	1.3	36.09	0	----	0.0	
2200	21 38.53N	88 48.96W	8.1	274	8.4	0	28.8	100.	1007.0	13.0	157	20.7	080	29.04	-0.2	35.77	0	----	0.0	
2300	21 38.48N	88 57.84W	8.4	268	8.3	0	28.5	100.	1007.0	13.0	157	21.0	074	27.45	1.0	35.58	0	----	0.0	
2341	21 38.47N	89 3.91W	8.5	274	5.7	0	28.0	100.	1007.0	13.0	157	21.1	080	28.11	-0.1	35.77	0	----	0.0	SUNSET(18:41:19 LOCAL); THURSDAY; 10/03/

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 13 10-04-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD	CRIS	MILES	DEPTH	ALT	SH	BAROM	AME	AND	TWS	TWD	SET	A-SHA	SALLIN	DPHIES	TRANS	ELPOA	COMMENTS
0000	21 37.87N	89 6.03W	8.9	181	0.0	0.0	0	27.1	100.1008.0	5.0	157	13.7	352	28.26	-1.1	35.95	0	----	0.0	
0100	21 35.99N	88 59.02W	8.5	088	8.4	0	26.5	100.1008.0	21.0	157	29.0	251	27.38	-0.8	35.95	0	----	0.0		
0200	21 36.01N	89 50.27W	8.2	088	8.2	0	27.0	100.1009.0	26.0	157	33.7	250	28.59	-1.5	36.01	0	----	0.0		
0300	21 36.01N	88 41.87W	8.2	103	7.9	0	25.8	100.1009.0	24.0	135	30.4	249	28.81	-3.0	35.96	0	----	0.0		
0400	21 36.04N	88 33.77W	7.7	032	7.6	0	25.0	100.1009.0	13.0	135	19.2	243	29.07	-4.0	35.98	0	----	0.0		
0500	21 35.87N	88 26.00W	7.7	181	7.6	0	24.7	100.1009.0	21.0	157	28.3	344	29.84	-5.1	36.26	0	----	0.0		
0600	21 35.45N	88 34.06W	7.8	271	7.7	0	24.8	100.1008.0	7.0	135	13.7	069	29.22	-4.4	36.09	0	----	0.0		
0700	21 35.48N	88 42.58W	8.8	270	8.0	0	25.5	100.1007.0	11.0	135	18.3	064	28.66	-3.1	35.78	0	----	0.0		
0800	21 35.47N	88 51.07W	8.6	270	8.0	0	25.5	100.1007.0	6.0	135	13.5	071	27.97	-2.4	35.53	0	----	0.0		
0900	21 35.48N	88 59.41W	8.8	269	7.8	0	25.2	100.1007.0	3.0	135	11.1	078	27.00	-1.8	35.53	0	----	0.0		
1000	21 33.79N	89 6.07W	8.0	176	7.8	0	25.0	100.1007.0	18.0	135	24.3	324	26.80	-1.8	35.91	0	----	0.0		
1100	21 31.99N	88 59.77W	7.3	086	7.6	0	25.1	100.1007.0	15.0	135	20.8	235	26.80	-1.7	35.95	0	----	0.0		
1147	21 32.02N	88 53.19W	7.5	094	6.0	0	25.4	100.1008.0	11.0	135	17.1	247	27.70	-2.3	35.87	0	----	0.0	SUNRISE (06:47:55 LOCAL); FRIDAY; 10/04/	
1200	21 31.99N	88 51.66W	7.7	098	1.6	0	25.7	100.1008.0	8.0	135	14.5	255	28.32	-2.6	35.96	0	----	0.0		
1300	21 37.24N	88 49.00W	7.1	353	7.7	0	27.2	100.1008.0	6.0	000	1.1	173	28.34	-1.1	35.86	0	----	0.0		
1400	21 45.37N	88 48.98W	8.7	359	8.1	0	28.1	100.1008.0	2.0	135	10.2	171	27.68	0.4	35.69	0	----	0.0		
1500	21 53.56N	88 49.00W	8.2	000	8.2	0	30.9	100.1009.0	4.0	157	12.0	172	27.70	3.2	35.71	0	----	0.0		
1600	22 1.76N	88 49.04W	8.4	357	8.2	0	31.7	100.1009.0	1.0	157	9.3	174	29.32	2.3	35.58	0	----	0.0		
1700	22 9.90N	88 49.01W	8.1	003	8.1	0	29.6	100.1008.0	1.0	135	8.8	178	29.84	-0.2	35.74	0	----	0.0		
1743	22 14.02N	88 50.61W	7.4	266	5.6	0	27.5	100.1008.0	13.0	157	20.0	071	30.09	-2.5	35.58	0	----	0.0	L.A. NOON(12:43:38 LOCAL); FRIDAY; 10/04	
1800	22 12.71N	88 51.47W	7.1	182	2.0	0	27.8	100.1008.0	16.0	157	22.7	346	30.17	-2.3	35.62	0	----	0.0		
1900	22 5.32N	88 51.47W	8.0	174	7.4	0	27.9	100.1007.0	6.0	157	13.7	344	30.11	-2.2	35.83	0	----	0.0		
2000	21 57.89N	88 51.52W	7.6	184	7.4	0	30.2	100.1007.0	1.0	135	8.3	359	29.71	0.4	35.80	0	----	0.0		
2100	21 50.17N	88 51.45W	8.0	173	7.7	0	29.2	100.1006.0	5.0	022	3.9	323	28.56	0.6	35.71	0	----	0.0		
2200	21 42.35N	88 51.50W	7.0	179	7.9	0	27.4	100.1006.0	8.0	022	3.1	261	28.21	-0.8	35.84	0	----	0.0		
2300	21 44.14N	88 54.00W	6.8	000	7.6	0	27.3	100.1007.0	18.0	135	23.3	146	27.60	-0.3	35.97	0	----	0.0		
2339	21 48.94N	88 54.04W	7.6	357	4.8	0	26.7	100.1008.0	18.0	157	25.2	161	28.24	-1.5	35.62	0	----	0.0	SUNSET(18:39:41 LOCAL); FRIDAY; 10/04/96	

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 14 10-05-1996; PAGE # 1

GAT	LATITUDE	LONGITUDE	SPED	CRSE	MILES	DEPTH	ALT	SH	BAROM	AWS	AMS	TWS	TWD	EST A-SEA	SALIN	DPH	TS	TRANS	FLOOR	COMMENTS
0000	21 51.50N	88 54.05W	7.5	353	0.0	0	26.5	100.	1008.0	19.0	000	11.5	353	28.09	-1.5	35.66	0	----	0.0	
0100	21 59.10N	88 54.03W	7.8	351	7.6	0	26.0	100.	1008.0	13.0	000	5.2	351	28.83	-2.8	35.62	0	----	0.0	
0200	22 0.69N	88 54.05W	7.5	010	7.6	0	26.9	100.	1009.0	21.0	157	28.1	173	29.57	-2.6	35.57	0	----	0.0	
0300	22 14.04N	88 54.35W	7.4	273	7.6	0	26.7	100.	1009.0	16.0	135	16.1	067	30.04	-3.3	35.62	0	----	0.0	
0400	22 9.45N	88 57.47W	7.2	174	7.4	0	26.3	100.	1009.0	18.0	135	23.6	321	29.72	-3.4	35.75	0	----	0.0	
0500	22 1.99N	88 57.64W	7.8	175	7.5	0	26.4	100.	1008.0	20.0	135	26.1	322	29.24	-2.8	35.71	0	----	0.0	
0600	21 54.69N	88 57.47W	6.3	189	7.3	0	25.9	100.	1008.0	21.0	135	25.8	333	27.79	-1.8	35.86	0	----	0.0	
0700	21 47.37N	88 57.52W	7.7	187	7.3	0	26.0	100.	1008.0	23.0	135	29.0	332	27.91	-1.9	35.81	0	----	0.0	
0800	21 40.46N	88 58.15W	7.3	272	7.4	0	25.8	100.	1007.0	5.0	000	2.3	092	27.15	-1.3	35.69	0	----	0.0	
0900	21 46.35N	88 59.83W	8.0	358	7.6	0	26.5	100.	1007.0	15.0	135	21.4	188	28.04	-1.5	35.52	0	----	0.0	
1000	21 54.06N	88 59.51W	7.9	005	7.7	0	26.7	100.	1007.0	16.0	135	22.3	154	28.07	-1.3	35.49	0	----	0.0	
1100	22 1.87N	88 59.12W	8.5	351	7.8	0	26.6	100.	1007.0	10.0	157	18.1	158	28.58	-1.9	35.70	0	----	0.0	
1148	22 8.28N	88 59.01W	9.7	007	6.4	0	26.7	100.	1008.0	11.0	000	1.3	007	29.33	-2.6	35.45	0	----	0.0	SUNRISE (06:48:50 LOCAL); SATURDAY; 10/0
1200	22 9.84N	88 58.91W	8.1	353	1.6	0	26.8	100.	1008.0	11.0	022	4.7	056	29.54	-2.7	35.39	0	----	0.0	
1300	22 17.55N	88 58.66W	7.6	006	7.7	0	27.4	100.	1008.0	7.0	157	14.3	175	29.65	-2.2	35.37	0	----	0.0	
1400	22 25.00N	88 58.33W	6.8	001	7.4	0	28.0	100.	1008.0	8.0	000	1.2	001	29.01	-1.0	35.61	0	----	0.0	
1500	22 32.42N	88 58.07W	8.1	008	7.4	0	28.3	100.	1009.0	9.0	022	3.5	094	29.04	-0.7	35.54	0	----	0.0	
1600	22 29.64N	89 0.04W	6.6	211	6.7	0	27.5	100.	1008.0	25.0	135	30.0	354	29.05	-1.5	35.56	0	----	0.0	
1700	22 23.87N	89 2.84W	6.8	202	6.3	0	27.4	100.	1007.0	25.0	135	30.2	346	29.42	-2.0	35.61	0	----	0.0	
1744	22 19.61N	89 4.90W	6.0	206	4.7	0	27.5	100.	1007.0	19.0	135	23.6	351	29.90	-2.4	35.69	0	----	0.0	L.A. NOON (12:44:18 LOCAL); SATURDAY; 10/
1800	22 17.93N	89 5.57W	7.0	205	1.7	0	27.5	100.	1007.0	20.0	157	26.6	008	30.01	-2.5	35.77	0	----	0.0	
1900	22 11.84N	89 8.62W	6.9	191	6.8	0	27.4	100.	1006.0	12.0	135	17.6	342	29.74	-2.3	35.86	0	----	0.0	
2000	22 5.48N	89 11.41W	7.3	205	6.9	0	28.1	100.	1005.0	10.0	135	16.0	358	29.41	-1.3	35.72	0	----	0.0	
2100	21 59.21N	89 14.41W	7.0	205	6.9	0	28.7	100.	1005.0	0.0	157	7.0	025	29.79	-1.0	35.78	0	----	0.0	
2200	21 52.43N	89 17.42W	7.0	201	7.3	0	29.8	100.	1004.0	0.0	135	7.0	021	29.28	0.5	35.95	0	----	0.0	
2300	21 45.23N	89 20.84W	6.9	201	7.9	0	29.3	100.	1005.0	8.0	135	13.8	356	28.55	0.7	35.51	0	----	0.0	
2340	21 40.33N	89 23.14W	7.4	206	5.3	0	27.2	100.	1005.0	13.0	135	19.0	357	27.90	-0.7	35.12	0	----	0.0	SUNSET (18:40:46 LOCAL); SATURDAY; 10/05/

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 15 10-06-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SPEED	COURSE	MILES	DEPTH	ALT	SH	BAROM	AWS	AWD	WVS	TWD	SST	A-SEA	SALIN	DPTR35	TRANS	FIBOX	COMMENTS
0000	21 38.00N	89 24.16W	7.1	214	0.0	0	23.9	100.	1005.0	58.0	135	63.2	353	27.61	-3.7	35.64	0	----	0.0	
0100	21 34.15N	89 25.25W	7.8	048	7.5	0	23.4	100.	1007.0	22.0	157	29.4	211	27.15	-3.7	35.36	0	----	0.0	
0200	21 39.57N	89 19.03W	7.3	049	7.9	0	24.3	100.	1008.0	8.0	135	14.1	205	27.60	-3.3	35.16	0	----	0.0	
0300	21 45.25N	89 12.60W	8.5	049	8.3	0	24.3	100.	1008.0	10.0	135	17.1	204	28.07	-3.7	35.57	0	----	0.0	
0400	21 50.86N	89 6.03W	7.9	037	8.3	0	25.0	100.	1008.0	7.0	135	13.8	195	28.10	-3.1	35.54	0	----	0.0	
0500	21 51.02N	88 57.80W	7.8	085	7.8	0	24.7	100.	1007.0	32.0	135	37.9	228	28.29	-3.5	35.12	0	----	0.0	
0600	21 51.01N	88 49.61W	7.5	094	7.6	0	24.4	100.	1007.0	8.0	157	15.2	262	27.97	-3.5	35.44	0	----	0.0	
0700	21 50.86N	88 41.34W	8.8	093	7.7	0	24.9	100.	1006.0	15.0	157	23.4	258	28.10	-3.2	35.56	0	----	0.0	
0800	21 50.89N	88 32.97W	7.8	088	7.9	0	25.3	100.	1007.0	23.0	135	29.0	233	27.53	-2.2	35.71	0	----	0.0	
0900	21 50.95N	88 24.73W	7.6	088	7.7	0	24.6	100.	1007.0	21.0	135	26.3	234	28.20	-3.6	35.56	0	----	0.0	
1000	21 51.04N	88 16.60W	7.5	084	7.6	0	24.7	100.	1006.0	31.0	135	36.7	227	27.73	-3.0	35.43	0	----	0.0	
1100	21 51.02N	88 8.56W	6.9	087	7.5	0	25.0	100.	1006.0	17.0	135	22.4	234	27.76	-2.7	35.57	0	----	0.0	
1145	21 51.01N	88 2.47W	8.1	095	5.7	0	24.9	100.	1006.0	29.0	135	35.2	239	27.69	-2.7	35.61	0	----	0.0	SUNRISE (06:45:17 LOCAL); SUNDAY; 10/06/
1200	21 51.02N	88 0.43W	8.7	095	1.9	0	25.0	100.	1007.0	25.0	135	31.8	241	27.83	-2.8	35.37	0	----	0.0	
1300	21 50.50N	88 4.69W	9.1	285	7.8	0	24.6	100.	1007.0	17.0	157	25.6	090	27.41	-2.8	35.85	0	----	0.0	
1325	21 50.92N	88 7.41W	5.1	264	2.6	0	24.8	100.	1007.0	20.0	135	23.9	047	27.55	-2.7	35.87	0	----	0.0	OBS 25 RECOVERED (1318)
1326	21 50.92N	88 7.48W	5.4	258	0.1	0	24.7	100.	1007.0	19.0	135	23.1	042	27.53	-2.8	35.74	0	----	0.0	21 50.879N 88 06.966W
1400	21 49.99N	88 10.74W	8.0	255	3.2	0	24.8	100.	1007.0	19.0	135	25.3	042	27.31	-2.5	35.75	0	----	0.0	
1500	21 48.22N	88 18.40W	2.4	281	7.4	0	25.4	100.	1007.0	15.0	135	16.8	061	27.26	-1.8	35.92	0	----	0.0	
1519	21 48.49N	88 18.23W	0.2	256	0.5	0	25.7	100.	1007.0	13.0	022	12.8	278	27.31	-1.6	35.90	0	----	0.0	OBS 24 RECOVERED
1600	21 47.57N	88 21.77W	6.2	248	3.6	0	26.3	100.	1007.0	21.0	135	25.8	032	27.35	-1.0	35.84	0	----	0.0	
1700	21 46.10N	88 28.33W	6.6	259	6.3	0	27.4	100.	1006.0	19.0	135	24.1	045	27.76	-0.3	35.94	0	----	0.0	
1730	21 46.10N	88 29.52W	2.5	049	2.3	0	28.0	100.	1006.0	13.0	022	10.7	076	27.89	0.1	35.87	0	----	0.0	OBS 23 RECOVERED
1741	21 46.16N	88 30.28W	7.5	244	1.1	0	27.7	100.	1005.0	20.0	135	25.9	030	28.02	-0.3	35.85	0	----	0.0	L.A. MOON(12:41:42 LOCAL); SUNDAY; 10/06
1800	21 45.58N	88 32.60W	5.3	261	2.3	0	27.8	100.	1005.0	23.0	135	27.8	045	28.07	-0.2	35.94	0	----	0.0	
1900	21 43.85N	88 39.94W	5.5	245	7.1	0	27.9	100.	1004.0	18.0	157	23.2	047	28.22	-0.3	35.74	0	----	0.0	
1921	21 43.86N	88 40.75W	2.1	073	1.8	0	28.9	100.	1003.0	8.0	022	6.1	103	28.11	0.7	35.78	0	----	0.0	OBS 22 RECOVERED
2000	21 42.80N	88 44.46W	5.5	264	3.7	0	28.1	100.	1003.0	11.0	157	17.2	059	28.60	-0.5	35.39	0	----	0.0	
2034	21 42.46N	88 46.48W	1.6	102	2.5	0	28.1	100.	1002.0	3.0	135	4.3	252	28.45	-0.3	35.42	0	----	0.0	OBS 21 RECOVERED
2100	21 41.93N	88 48.73W	5.4	252	2.3	0	27.7	100.	1003.0	11.0	157	17.1	057	28.18	-0.4	35.50	0	----	0.0	
2200	21 40.55N	88 54.11W	5.9	250	5.2	0	27.1	100.	1002.0	15.0	135	19.5	037	27.62	-0.5	35.40	0	----	0.0	
2300	21 39.92N	88 57.84W	2.3	010	4.1	0	25.4	100.	1003.0	11.0	000	8.7	010	27.63	-2.2	35.39	0	----	0.0	
2303	21 40.00N	88 57.79W	2.6	071	0.1	0	25.6	100.	1003.0	11.0	000	8.4	071	27.65	-2.0	35.39	0	----	0.0	OBS 19 RECOVERED
2336	21 39.41N	89 0.39W	6.0	255	2.7	0	25.8	100.	1003.0	22.0	135	26.5	039	27.18	-1.3	35.28	0	----	0.0	SUNSET(18:38:21 LOCAL); SUNDAY; 10/06/96

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 16 10-07-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD	CHSK	MILES	DEPTH	ALT	MR	SAROM	AMS	TWS	TWD	SST	A-SSE	SALIN	DEPTH	TRANS	FLOOR	COMMENTS	
0000	21 38.93N	89 4.39W	5.2	255	0.0	0	25.8	100.	1003.0	20.0	135	24.0	038	27.54	-1.7	35.58	0	----	0.0	
0023	21 38.76N	89 4.35W	1.4	098	1.4	0	25.8	100.	1003.0	13.0	022	11.7	123	27.23	-1.4	35.50	0	----	0.0	OBS 18 (FIFI) RECOVERED
0100	21 38.02N	89 5.43W	5.4	257	3.1	0	25.6	100.	1003.0	19.0	157	24.1	059	27.06	-1.4	35.51	0	----	0.0	
0136	21 37.58N	89 5.07W	0.3	112	2.9	0	25.5	100.	1003.0	13.0	022	12.7	135	27.07	-1.5	35.36	0	----	0.0	OBS 17 RECOVERED
0200	21 37.13N	89 10.88W	4.6	254	1.8	0	25.5	100.	1003.0	21.0	135	24.5	036	27.23	-1.7	35.21	0	----	0.0	
0252	21 36.40N	89 14.74W	0.2	354	4.0	0	25.5	100.	1004.0	18.0	022	17.8	016	27.68	-2.1	35.78	0	----	0.0	OBS 16 RECOVERED - FRIGATE
0300	21 36.47N	89 15.16W	5.8	259	0.7	0	25.5	100.	1003.0	20.0	135	24.4	043	27.59	-2.0	35.55	0	----	0.0	
0400	21 34.98N	89 20.47W	5.0	010	5.5	0	25.5	100.	1003.0	15.0	000	10.0	010	27.59	-2.0	35.68	0	----	0.0	
0404	21 35.18N	89 20.45W	1.4	112	0.2	0	25.3	100.	1003.0	23.0	000	20.6	112	27.61	-2.3	35.73	0	----	0.0	OBS 15 RECOVERED
0500	21 34.04N	89 25.17W	5.7	268	4.7	0	25.0	100.	1001.0	30.0	157	35.3	059	27.33	-2.3	35.55	0	----	0.0	
0521	21 33.96N	89 25.93W	1.1	023	1.5	0	25.2	100.	1002.0	18.0	000	16.9	023	27.31	-2.1	35.79	0	----	0.0	OBS 14 RECOVERED
0600	21 33.23N	89 28.79W	5.0	250	2.8	0	25.2	100.	1001.0	27.0	135	30.7	031	27.45	-2.2	35.60	0	----	0.0	
0635	21 32.99N	89 30.50W	1.9	037	2.5	0	25.4	100.	1001.0	18.0	000	16.1	037	27.54	-2.1	35.74	0	----	0.0	OBS 13 RECOVERED
0700	21 32.63N	89 32.21W	5.0	258	1.8	0	25.4	100.	1000.0	28.0	135	31.7	039	27.31	-1.9	35.62	0	----	0.0	
0756	21 32.04N	89 34.85W	3.0	098	3.8	0	25.3	100.	1000.0	20.0	022	17.3	124	27.39	-2.0	35.43	0	----	0.0	OBS 12 RECOVERED
0800	21 32.14N	89 34.88W	3.5	287	0.2	0	25.1	100.	999.0	30.0	135	32.6	066	27.38	-2.2	35.54	0	----	0.0	
0800	21 30.94N	89 39.59W	4.8	057	5.0	0	25.7	100.	1000.0	35.0	022	10.7	089	27.64	-1.9	35.86	0	----	0.0	OBS 11 RECOVERED
0908	21 31.06N	89 39.46W	1.4	339	0.2	0	25.8	100.	1000.0	20.0	000	18.6	339	27.63	-1.8	35.86	0	----	0.0	
1000	21 30.02N	89 43.27W	5.3	259	4.0	0	25.3	100.	999.0	22.0	135	26.0	042	27.52	-2.2	35.56	0	----	0.0	OBS 10 RECOVERED
1020	21 30.13N	89 43.97W	0.4	103	1.3	0	25.6	100.	999.0	16.0	000	15.6	103	27.41	-1.8	35.88	0	----	0.0	
1100	21 29.17N	89 47.27W	5.3	250	3.4	0	25.4	100.	999.0	23.0	135	27.0	033	27.17	-1.7	34.98	0	----	0.0	
1138	21 28.92N	89 49.60W	2.5	102	3.0	0	25.3	100.	1000.0	22.0	022	19.7	127	27.23	-1.9	35.86	0	----	0.0	OBS 09 RECOVERED
1152	21 30.14N	89 49.15W	6.8	355	1.3	0	25.5	100.	999.0	16.0	157	22.4	159	27.22	-1.7	35.39	0	----	0.0	SUNRISE (06:52:34 LOCAL)
1200	21 31.06N	89 49.22W	7.6	351	0.9	0	25.7	100.	999.0	13.0	022	6.6	039	27.56	-1.8	35.58	0	----	0.0	
1300	21 34.16N	89 47.92W	7.1	070	5.3	0	26.2	100.	1000.0	18.0	022	11.8	105	28.09	-1.8	35.80	0	----	0.0	
1311	21 34.33N	89 47.54W	0.9	087	0.7	0	26.2	100.	1000.0	19.0	000	18.1	087	28.09	-1.8	35.57	0	----	0.0	OBS 26 RECOVERED
1400	21 37.32N	89 50.32W	5.9	324	4.2	0	26.3	100.	1000.0	18.0	135	22.6	109	28.18	-1.8	36.00	0	----	0.0	
1500	21 39.73N	89 52.17W	6.6	319	4.8	0	27.0	100.	1001.0	18.0	135	23.1	105	28.22	-1.2	35.39	0	----	0.0	
1540	21 43.11N	89 55.07W	5.1	104	4.6	0	25.7	100.	1001.0	10.0	022	5.6	146	28.36	-2.6	35.81	0	----	0.0	OBS 28 RECOVERED
1600	21 44.35N	89 56.21W	5.9	299	2.0	0	27.0	100.	1001.0	19.0	157	24.6	101	28.33	-1.3	35.78	0	----	0.0	
1649	21 47.77N	89 59.23W	2.8	123	5.0	0	25.4	100.	1001.0	15.0	022	12.5	150	28.53	-3.1	35.87	0	----	0.0	OBS 29 RECOVERED
1700	21 48.37N	89 59.59W	5.1	314	0.8	0	27.0	100.	1001.0	31.0	135	34.8	094	28.65	-1.6	35.44	0	----	0.0	
1747	21 51.41N	90 2.51W	5.7	310	4.1	0	27.4	100.	1000.0	36.0	135	39.2	090	28.78	-1.3	34.70	0	----	0.0	L.A. NOON (12:47:34 LOCAL)
1800	21 52.30N	90 3.31W	4.9	344	1.2	0	27.0	100.	1000.0	36.0	135	39.6	124	28.80	-1.8	35.02	0	----	0.0	
1803	21 52.45N	90 3.28W	7.8	120	0.2	0	26.9	100.	1001.0	21.0	022	14.1	154	28.78	-1.8	35.59	0	----	0.0	OBS 30 RECOVERED

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 16 10-07-1996; PAGE # 2

GMT	LATITUDE	LONGITUDE	SPD	CRSE	MILES	OPTICAL	ALINT	RH	BAROM	AWE	AWD	IWS	TWD	SET	A-SEA	SALIN	DPH35	TRANS	FLOOR	COMMENTS
1900	21 55.80N	90 6.46W	5.4	328	4.7	0	26.9	100.	1000.0	32.0	135	36.0	109	28.85	-1.9	34.33	0	---	0.0	
2000	21 59.93N	90 10.03W	5.7	324	5.3	0	26.8	100.	1000.0	35.0	000	29.3	324	28.82	-2.0	34.41	0	---	0.0	
2015	22 0.70N	90 10.41W	2.0	192	1.1	0	27.2	100.	1000.0	31.0	157	32.9	350	28.80	-1.6	35.00	0	---	0.0	OBS 31 RECOVERED
2100	22 3.02N	90 12.42W	5.3	287	3.4	0	26.8	100.	1000.0	34.0	000	28.7	287	28.80	-2.0	34.23	0	---	0.0	
2200	22 6.62N	90 15.49W	5.1	316	4.7	0	26.9	100.	1002.0	30.0	000	24.9	316	29.16	-2.2	34.87	0	---	0.0	
2243	22 8.72N	90 17.90W	2.6	215	3.4	0	26.5	100.	1002.0	16.0	157	18.4	015	29.31	-2.8	35.44	0	---	0.0	OBS 32 RECOVERED
2300	22 7.70N	90 17.03W	4.7	141	1.3	0	27.1	100.	1002.0	12.0	000	7.3	141	29.22	-2.1	35.69	0	---	0.0	
2342	22 5.09N	90 14.03W	4.9	120	3.8	0	27.0	100.	1002.0	19.0	000	14.1	120	29.04	-2.0	35.91	0	---	0.0	SUNSET(18:42:10 LOCAL); MONDAY; 10/07/96

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 17 10-08-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SPED CRSE	MILES OPTICAL ALIVE	MH BAROM	AMS AND TWS TMD	EST A-SEA SALIN	DEPTH35	TRANS	FILDER	COMMENTS	
0000	22 3.90N	90 12.79W	4.7 126	0.0	0	26.9 100. 1002.0	23.0 022	18.7 154	28.97	-2.0 35.75	0.0 0.0	
0100	21 59.90N	90 8.60W	6.0 128	5.6	0	26.8 100. 1003.0	15.0 022	19.7 275	28.59	-1.7 35.95	0.0 0.0	
0200	21 55.90N	90 4.21W	5.8 117	5.7	0	26.7 100. 1003.0	19.0 022	23.5 262	28.62	-1.9 35.81	0.0 0.0	
0300	21 52.03N	89 59.80W	6.3 129	5.6	0	26.7 100. 1004.0	15.0 022	23.5 262	28.59	-1.8 35.62	0.0 0.0	
0400	21 48.17N	89 55.27W	5.7 135	5.7	0	26.6 100. 1005.0	13.0 022	17.5 283	28.54	-1.9 35.78	0.0 0.0	
0500	21 44.35N	89 50.76W	6.8 129	5.7	0	26.6 100. 1004.0	11.0 022	16.5 280	28.04	-1.4 35.47	0.0 0.0	
0600	21 40.18N	89 45.66W	4.8 119	6.3	0	26.6 100. 1004.0	12.0 022	15.8 266	27.91	-1.3 35.70	0.0 0.0	
0700	21 36.33N	89 41.51W	5.9 130	5.5	0	26.5 100. 1004.0	11.0 022	15.7 280	27.70	-1.2 35.81	0.0 0.0	
0800	21 32.84N	89 37.34W	4.4 137	5.2	0	26.2 100. 1004.0	11.0 022	14.5 284	27.50	-1.3 35.91	0.0 0.0	
0850	21 30.11N	89 34.80W	1.7 242	3.9	0	26.1 100. 1005.0	16.0 022	17.6 281	27.12	-1.0 35.92	0.0 0.0	OBS 27 RECOVERED
0900	21 29.68N	89 34.03W	4.1 134	0.9	0	26.0 100. 1004.0	13.0 022	16.2 279	27.01	-1.0 35.68	0.0 0.0	
1000	21 27.46N	89 30.45W	4.0 119	4.1	0	25.8 100. 1005.0	12.0 022	15.1 264	26.65	-0.8 35.86	0.0 0.0	
1052	21 26.42N	89 29.54W	1.0 335	3.2	0	25.8 100. 1005.0	13.0 022	12.1 359	26.67	-0.8 35.39	0.0 0.0	OBS 34 RECOVERED
1100	21 26.27N	89 29.69W	5.4 246	0.3	0	26.2 100. 1005.0	19.0 022	25.0 049	26.67	-0.4 35.58	0.0 0.0	
1151	21 24.43N	89 35.77W	8.3 250	6.0	0	26.1 100. 1006.0	24.0 022	30.4 036	26.65	-0.5 35.14	0.0 0.0	SUNRISE (06:51:57 LOCAL); TUESDAY; 10/08
1200	21 24.10N	89 36.88W	7.9 254	1.1	0	25.7 100. 1006.0	26.0 022	33.4 036	26.55	-0.8 35.47	0.0 0.0	
1209	21 24.00N	89 37.83W	0.5 292	1.0	0	25.3 100. 1007.0	11.0 022	10.5 315	26.50	-1.2 35.74	0.0 0.0	TUG BOAT ALONGSIDE
1215	21 23.93N	89 37.88W	7.8 192	0.2	0	25.4 100. 1007.0	0.0 022	7.8 012	26.52	-1.1 35.70	0.0 0.0	NEWS REPORTERS AND TV CREW ABOARD
1224	21 23.70N	89 38.63W	1.0 336	0.8	0	25.7 100. 1007.0	11.0 022	10.1 000	26.49	-0.7 35.76	0.0 0.0	OBS 35 RECOVERED
1300	21 21.94N	89 42.14W	8.0 216	3.9	0	27.4 100. 1007.0	7.0 022	13.9 015	26.69	0.7 35.53	0.0 0.0	
1400	21 17.41N	89 42.25W	8.2 180	5.3	0	24.6 100. 1008.0	12.0 022	5.4 237	27.22	-2.6 35.52	0.0 0.0	
1410	21 16.67N	89 42.14W	0.9 051	0.8	0	24.6 100. 1008.0	20.0 022	20.8 209	27.31	-2.7 35.30	0.0 0.0	PILOT ON BOARD
1445	21 16.67N	89 42.11W	0.2 102	0.5	0	25.0 100. 1009.0	13.0 022	13.1 237	27.52	-2.5 35.35	0.0 0.0	DOCKSIDE YUKALPFTEN; MEXICO
1500	21 16.68N	89 42.12W	1.1 352	0.1	0	26.0 100. 1009.0	5.0 022	6.0 153	27.34	-1.3 35.34	0.0 0.0	
1600	21 16.69N	89 42.12W	0.7 316	0.7	0	27.0 100. 1009.0	6.0 022	6.7 115	27.43	-0.4 35.39	0.0 0.0	
1700	21 16.67N	89 42.11W	0.5 111	0.7	0	29.4 100. 1009.0	2.0 022	2.5 272	27.65	1.7 35.28	0.0 0.0	
1745	21 16.68N	89 42.13W	0.4 134	0.5	0	28.8 100. 1009.0	5.0 022	5.4 293	27.75	1.0 35.35	0.0 0.0	L.A. NOON (12:45:56 LOCAL); TUESDAY; 10/08
1800	21 16.68N	89 42.12W	0.2 124	0.2	0	29.2 100. 1009.0	4.0 022	4.1 261	27.78	1.4 35.27	0.0 0.0	
1846	21 16.68N	89 42.12W	0.4 129	0.8	0	30.3 100. 1008.0	6.0 022	6.3 266	27.72	2.5 35.36	0.0 0.0	PILOTS AWAY
1918	21 16.67N	89 42.10W	0.0 000	0.1	0	28.2 100. 1008.0	6.0 022	6.0 157	28.31	-0.1 35.41	0.0 0.0	
2000	21 20.86N	89 46.84W	8.0 295	6.3	0	27.1 100. 1007.0	14.0 022	20.5 086	27.73	-0.6 35.63	0.0 0.0	
2100	21 25.49N	89 54.26W	8.1 305	8.4	0	28.9 100. 1007.0	10.0 022	17.8 112	27.66	1.2 35.73	0.0 0.0	
2200	21 30.08N	90 1.37W	7.8 301	8.1	0	28.4 100. 1007.0	24.0 022	31.3 104	27.93	0.4 35.67	0.0 0.0	
2300	21 33.44N	90 7.11W	8.2 300	6.4	0	27.4 100. 1008.0	15.0 022	22.8 105	28.17	-0.7 35.80	0.0 0.0	
2341	21 36.17N	90 11.27W	7.6 306	4.7	0	26.9 100. 1008.0	21.0 022	28.2 109	28.58	-1.6 35.62	0.0 0.0	SUNSET (18:41:20 LOCAL); TUESDAY; 10/08/9



## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 18 10-09-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SEED CRSE	MILES OPTICAL ALMT	KH BAROM	AME AND TWS TWD	SST A-SEL	SALIN	DPH35	TRAKE	FLOOR	COMMENTS								
0000	21 37.39N	90 13.25W	5.3	309	0.0	0	26.7	100	1008.0	16.0	135	20.1	094	28.61	-1.9	35.79	0	----	0.0	
0100	21 41.42N	90 19.27W	7.4	309	6.9	0	26.7	100	1009.0	24.0	157	31.0	111	28.75	-2.0	35.58	0	----	0.0	
0200	21 45.37N	90 25.39W	6.9	298	6.9	0	26.9	100	1011.0	28.0	135	33.2	081	28.88	-1.9	35.93	0	----	0.0	
0300	21 49.78N	90 30.59W	7.8	001	7.0	0	26.2	100	1011.0	15.0	157	22.4	166	28.78	-2.5	35.61	0	----	0.0	
0400	21 52.24N	90 24.58W	8.4	083	8.0	0	26.1	100	1012.0	19.0	000	10.6	083	28.75	-2.6	35.96	0	----	0.0	
0500	21 55.93N	90 20.03W	7.5	353	7.9	0	26.0	100	1012.0	21.0	135	26.8	139	28.75	-2.7	35.58	0	----	0.0	
0600	21 57.38N	90 26.38W	8.4	271	7.2	0	26.6	100	1011.0	18.0	135	24.7	059	28.61	-2.0	35.91	0	----	0.0	
0700	21 59.83N	90 33.04W	8.0	318	7.3	0	26.1	100	1011.0	16.0	022	9.1	000	28.44	-2.3	35.73	0	----	0.0	
0800	22 5.26N	90 38.54W	8.8	316	7.5	0	26.0	100	1011.0	13.0	022	5.9	013	28.41	-2.4	35.83	0	----	0.0	
0900	22 10.68N	90 44.36W	7.9	310	7.7	0	26.1	100	1011.0	13.0	000	5.1	310	28.57	-2.4	35.95	0	----	0.0	
1000	22 16.37N	90 50.41W	9.0	317	8.0	0	26.4	100	1012.0	13.0	022	5.8	015	29.00	-2.6	35.79	0	----	0.0	
1100	22 22.30N	90 56.47W	8.4	318	8.2	0	26.2	100	1012.0	5.0	022	4.2	111	28.92	-2.7	35.86	0	----	0.0	
1158	22 27.85N	91 2.32W	8.2	316	7.8	0	26.1	100	1012.0	7.0	022	3.2	078	29.12	-3.0	35.78	0	----	0.0	SUNRISE (06:58:36 LOCAL); WEDNESDAY; 10/
1200	22 28.04N	91 2.53W	8.5	323	0.3	0	26.2	100	1012.0	6.0	000	2.5	143	29.12	-2.9	35.85	0	----	0.0	
1300	22 33.65N	91 8.42W	7.2	326	7.8	0	25.5	100	1013.0	8.0	135	14.0	122	29.36	-3.8	35.88	0	----	0.0	
1400	22 39.13N	91 14.11W	7.5	317	7.6	0	23.5	100	1014.0	26.0	157	33.1	119	29.46	-5.9	35.69	0	----	0.0	
1500	22 44.68N	91 19.85W	8.4	315	7.7	0	25.9	100	1015.0	5.0	135	12.4	118	29.41	-3.5	35.95	0	----	0.0	
1600	22 50.13N	91 25.81W	8.3	323	7.9	0	26.0	100	1015.0	11.0	135	17.9	117	29.40	-3.4	36.00	0	----	0.0	
1700	22 56.00N	91 31.84W	7.6	323	8.0	0	26.8	100	1015.0	11.0	135	17.2	116	29.62	-2.8	36.05	0	----	0.0	
1753	23 1.00N	91 37.20W	8.0	311	7.0	0	28.0	100	1014.0	14.0	157	21.6	116	29.49	-1.4	36.02	0	----	0.0	L.A. NOON(12:53:19 LOCAL); WEDNESDAY; 10/
1800	23 1.61N	91 37.94W	8.3	309	0.9	0	28.0	100	1014.0	22.0	157	29.8	112	29.42	-1.4	35.97	0	----	0.0	
1900	23 7.49N	91 44.02W	7.5	317	8.2	0	27.7	100	1014.0	11.0	135	17.1	110	29.44	-1.7	36.00	0	----	0.0	
2000	23 13.38N	91 50.45W	8.4	320	8.4	0	27.4	100	1013.0	14.0	135	20.8	111	29.43	-2.0	36.01	0	----	0.0	
2100	23 19.55N	91 56.76W	8.1	323	8.5	0	27.7	100	1013.0	8.0	135	14.9	120	29.40	-1.7	36.14	0	----	0.0	
2200	23 25.70N	92 3.43W	8.3	314	8.7	0	27.6	100	1013.0	5.0	135	12.4	117	29.40	-1.8	36.10	0	----	0.0	
2300	23 31.86N	92 10.24W	8.6	313	8.8	0	27.0	100	1014.0	19.0	157	27.1	117	29.27	-2.2	36.11	0	----	0.0	
2347	23 37.05N	92 15.44W	9.5	319	7.1	0	26.2	100	1014.0	19.0	135	26.6	108	29.28	-3.0	36.11	0	----	0.0	SUNSET(18:47:39 LOCAL); WEDNESDAY; 10/09

# LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 19 10-10-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRSG	MILES OFFSHORE	REL. BATHOM	AVE AND	WVS TWD	SST-A-SER	SALIN	DEPTH	TRANS	FIDOR	COMMENTS						
0000	23 38.42N	92 17.00W	9.2	315	0.0	0	26.2	100.	1014.0	19.0	135	26.3	104	29.27	-3.0	35.16	0	----	0.0
0100	23 44.92N	92 24.19W	8.8	313	9.2	0	26.2	100.	1015.0	16.0	135	23.1	103	29.12	-2.9	36.02	0	----	0.0
0200	23 51.58N	92 31.28W	9.5	312	9.3	0	26.1	100.	1015.0	18.0	135	25.6	102	29.13	-3.0	36.12	0	----	0.0
0300	23 58.21N	92 38.53W	10.1	320	9.4	0	26.1	100.	1016.0	20.0	135	28.1	109	29.15	-3.0	36.09	0	----	0.0
0400	24 4.93N	92 45.68W	8.6	317	9.4	0	26.5	100.	1016.0	21.0	157	29.1	121	29.22	-2.7	36.16	0	----	0.0
0500	24 11.53N	92 53.06W	10.2	321	9.5	0	26.5	100.	1016.0	20.0	157	29.7	126	29.19	-2.6	35.95	0	----	0.0
0600	24 18.25N	93 0.20W	9.9	314	9.4	0	25.9	100.	1016.0	5.0	157	14.6	126	28.71	-2.8	35.82	0	----	0.0
0700	24 24.51N	93 7.22W	9.2	319	9.0	0	25.3	100.	1016.0	6.0	135	14.1	121	28.61	-3.3	35.69	0	----	0.0
0800	24 30.72N	93 13.97W	8.0	309	8.7	0	25.1	100.	1016.0	11.0	135	17.6	102	28.68	-3.5	36.07	0	----	0.0
0900	24 37.04N	93 20.13W	8.5	317	8.5	0	25.1	100.	1016.0	25.0	157	33.0	120	28.61	-3.5	35.67	0	----	0.0
1000	24 42.98N	93 27.05W	8.8	311	8.4	0	25.0	100.	1016.0	22.0	157	30.3	114	28.32	-3.3	35.62	0	----	0.0
1100	24 48.50N	93 33.71W	8.8	310	8.5	0	24.9	100.	1017.0	35.0	157	43.3	112	28.34	-3.4	35.64	0	----	0.0
1200	24 54.62N	93 40.26W	8.6	313	8.5	0	24.8	100.	1017.0	16.0	157	24.2	118	28.27	-3.4	35.60	0	----	0.0
1210	24 55.69N	93 41.36W	8.7	315	1.5	0	24.9	100.	1017.0	27.0	157	35.2	117	28.24	-3.3	35.65	0	----	0.0
1300	25 0.77N	93 47.24W	9.0	317	7.4	0	25.6	100.	1018.0	28.0	157	36.5	119	28.21	-2.6	35.51	0	----	0.0
1400	25 7.19N	93 54.20W	9.0	319	9.0	0	26.5	100.	1018.0	25.0	157	33.5	122	28.22	-1.7	35.43	0	----	0.0
1500	25 13.55N	94 1.37W	9.2	310	9.1	0	27.3	100.	1018.0	28.0	157	36.7	113	28.12	-0.8	35.74	0	----	0.0
1600	25 20.04N	94 8.56W	9.3	314	9.2	0	27.6	100.	1019.0	23.0	135	30.3	101	28.14	-0.5	35.37	0	----	0.0
1700	25 26.40N	94 15.79W	8.8	316	9.1	0	27.9	100.	1019.0	25.0	157	33.3	119	28.07	-0.1	35.73	0	----	0.0
1800	25 32.86N	94 22.97W	9.4	312	9.2	0	28.5	100.	1018.0	24.0	135	31.4	099	28.02	0.4	35.67	0	----	0.0
1804	25 33.27N	94 23.46W	9.2	315	0.6	0	28.5	100.	1018.0	26.0	135	33.1	101	28.01	0.4	35.62	0	----	0.0
1900	25 39.07N	94 30.01W	8.9	315	8.3	0	28.9	100.	1018.0	18.0	157	26.4	119	28.04	0.8	35.91	0	----	0.0
2000	25 45.14N	94 36.91W	9.5	312	8.7	0	29.1	100.	1017.0	29.0	157	38.0	115	28.13	0.9	35.91	0	----	0.0
2100	25 51.19N	94 43.71W	8.3	311	8.6	0	29.0	100.	1017.0	23.0	157	30.8	114	28.14	0.8	35.96	0	----	0.0
2200	25 57.23N	94 50.59W	8.5	313	8.7	0	28.9	100.	1017.0	26.0	157	34.0	116	28.14	0.7	35.90	0	----	0.0
2300	26 3.34N	94 57.37W	8.5	311	8.6	0	28.1	100.	1017.0	30.0	157	38.0	113	27.97	0.1	35.87	0	----	0.0
2356	26 8.95N	95 3.84W	8.9	309	8.1	0	25.9	100.	1017.0	22.0	157	30.4	112	27.92	-2.0	35.93	0	----	0.0
														SUNRISE (07:10:57 LOCAL); THURSDAY; 10/1					
														L.A. NOON(13:04:07 LOCAL); THURSDAY; 10/1					
														SUNSET(18:56:28 LOCAL); THURSDAY; 10/10/					

SUNRISE (07:10:57 LOCAL); THURSDAY; 10/1

L.A. NOON (13:04:07 LOCAL); THURSDAY; 10/1

SUNSET (18:56:28 LOCAL); THURSDAY; 10/10/

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 20 10-11-1996; PAGE # 1

GMT	LATITUDE	LONGITUDE	SSPD CRSE	MILES	DEPTH AIRT	SH	BAROM	AWS	AMP	TWS	TWD	SST	A-SEA	SALIN	DPH35	IRANS	FLUOR	COMMENTS
0000	26 9.35N	95 4.33W	8.9	307	0.0	0	25.7	100.	1017.0	23.0	157	31.4	110	27.94	-2.2	35.89	0	0.0
0100	26 15.49N	95 11.35W	9.5	321	8.8	0	25.5	100.	1018.0	24.0	157	33.0	124	28.22	-2.7	35.91	0	0.0
0200	26 21.69N	95 18.49W	8.8	315	8.9	0	25.3	100.	1019.0	21.0	157	29.3	119	28.28	-2.9	35.89	0	0.0
0300	26 28.14N	95 25.99W	9.5	311	9.3	0	25.2	100.	1019.0	20.0	157	29.0	115	28.22	-3.0	36.10	0	0.0
0400	26 34.72N	95 33.51W	9.2	314	9.4	0	25.4	100.	1020.0	23.0	157	31.7	117	28.41	-3.0	36.01	0	0.0
0500	26 41.41N	95 41.10W	9.8	312	9.6	0	25.6	100.	1019.0	16.0	157	25.3	118	28.43	-2.8	36.02	0	0.0
0600	26 47.92N	95 48.89W	9.4	317	9.6	0	25.7	100.	1019.0	18.0	157	26.9	122	28.46	-2.7	36.02	0	0.0
0700	26 54.65N	95 56.71W	10.3	313	9.7	0	25.7	100.	1019.0	15.0	157	24.8	119	28.14	-2.4	35.77	0	0.0
0800	27 1.25N	96 4.48W	7.6	315	9.6	0	25.5	100.	1019.0	15.0	157	22.2	120	28.04	-2.5	35.86	0	0.0
0900	27 7.78N	96 12.01W	9.0	316	9.4	0	25.9	100.	1018.0	21.0	157	29.5	130	28.36	-2.4	36.01	0	0.0
1000	27 14.02N	96 19.60W	9.6	312	9.2	0	25.7	100.	1018.0	18.0	157	27.1	117	28.35	-2.6	35.98	0	0.0
1100	27 20.39N	96 26.97W	9.4	311	9.2	0	25.3	100.	1018.0	15.0	135	22.6	103	27.38	-2.0	35.67	0	0.0
1200	27 26.62N	96 34.33W	9.0	315	9.1	0	25.0	100.	1018.0	17.0	157	25.5	120	26.97	-1.9	35.02	0	0.0
1224	27 29.21N	96 37.37W	9.1	314	3.7	0	24.9	100.	1019.0	11.0	135	18.6	109	26.87	-1.9	35.21	0	0.0
1300	27 32.97N	96 41.84W	9.2	319	5.5	0	25.5	100.	1019.0	14.0	135	21.5	111	26.58	-1.0	33.90	0	0.0
1400	27 39.32N	96 49.30W	9.2	314	9.2	0	27.1	100.	1020.0	9.0	135	16.8	111	26.25	0.8	32.43	0	0.0
1500	27 44.75N	96 55.96W	0.7	318	8.1	0	25.7	100.	1020.0	11.0	122	10.4	342	25.91	-0.2	30.88	0	0.0
1501	27 44.79N	96 55.98W	1.1	289	0.0	0	25.6	100.	1020.0	9.0	122	8.0	314	25.90	-0.3	30.90	0	0.0
1507	27 44.82N	96 56.02W	0.6	259	0.1	0	25.5	100.	1020.0	12.0	157	12.6	107	25.90	-0.4	30.95	0	0.0
1548	27 48.47N	97 0.49W	5.8	310	5.4	0	27.3	100.	1020.0	8.0	135	12.8	103	25.11	2.1	28.21	0	0.0
1600	27 49.13N	97 1.15W	8.6	341	0.9	0	26.6	100.	1020.0	17.0	157	25.2	116	25.17	1.4	27.78	0	0.0
1700	27 52.16N	97 2.97W	5.1	200	4.8	0	24.4	100.	1020.0	12.0	157	16.8	104	24.89	-0.4	30.69	0	0.0
1800	27 50.26N	97 3.19W	0.9	308	4.5	0	25.0	100.	1020.0	5.0	100	4.1	308	25.53	-0.5	30.25	0	0.0
1804	27 50.26N	97 3.20W	0.6	131	0.1	0	26.8	100.	1020.0	2.0	157	2.6	293	25.35	1.4	30.33	0	0.0

SUNRISE (07:24:43 LOCAL): FRIDAY; 10/11/

CTD 03 START

CTD 03 ON DECK

WATER SAMPLE COLLECTED

U.T. BOAT BASIN; END OF CRUISE 676

**ATTACHMENT NO. 4 - DAILY SUMMARY**

**(20 PAGES)**

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 1 09-22-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	40.3 nm				
TOTAL DISTANCE TRAVELLED	40.3 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 8.4	MAXIMUM= 10.5	AT 1918 HRS.	MINIMUM= 1.2	AT 1913 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 27.7	MAXIMUM= 32.5	AT 1914 HRS.	MINIMUM= 27.4	AT 2308 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 29.14	MAXIMUM= 30.44	AT 1914 HRS.	MINIMUM= 28.92	AT 2023 HRS.
SALINITY (ppt) ;	AVERAGE= 35.68	MAXIMUM= 36.31	AT 1913 HRS.	MINIMUM= 34.94	AT 1924 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1011.0	MAXIMUM= 1012.0	AT 1913 HRS.	MINIMUM= 1010.0	AT 2211 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 17.2	MAXIMUM= 36.9	AT 1918 HRS.	MINIMUM= 10.9	AT 1913 HRS.
	MEAN DAILY WIND VELOCITY= 12.1 (kts) FROM 123 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 3.58	MAXIMUM= 19.82	AT 2016 HRS.	MINIMUM= 0.00	AT 1913 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 1913 HRS.	MINIMUM= 0.00	AT 1913 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 2 09-23-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	192.4 nm				
TOTAL DISTANCE TRAVELLED	232.7 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 8.0	MAXIMUM= 11.0	AT 2121 HRS.	MINIMUM= 3.6	AT 0857 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 27.7	MAXIMUM= 28.9	AT 1635 HRS.	MINIMUM= 25.3	AT 0725 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 29.82	MAXIMUM= 30.22	AT 1921 HRS.	MINIMUM= 29.14	AT 0032 HRS.
SALINITY (ppt) ;	AVERAGE= 35.48	MAXIMUM= 36.29	AT 1709 HRS.	MINIMUM= 33.12	AT 1013 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1011.7	MAXIMUM= 1014.0	AT 1644 HRS.	MINIMUM= 1010.0	AT 0000 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 28.3	MAXIMUM= 43.1	AT 1003 HRS.	MINIMUM= 3.6	AT 0923 HRS.
	MEAN DAILY WIND VELOCITY= 16.9 (kts) FROM 294 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 3 09-24-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	216.1 nm				
TOTAL DISTANCE TRAVELLED	448.8 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 9.0	MAXIMUM= 11.4	AT 2204 HRS.	MINIMUM= 4.5	AT 2235 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 28.0	MAXIMUM= 28.9	AT 1622 HRS.	MINIMUM= 25.8	AT 1658 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 30.38	MAXIMUM= 32.83	AT 0814 HRS.	MINIMUM= 29.78	AT 0326 HRS.
SALINITY (ppt) ;	AVERAGE= 36.05	MAXIMUM= 36.33	AT 1158 HRS.	MINIMUM= 35.42	AT 1857 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1011.6	MAXIMUM= 1013.0	AT 0209 HRS.	MINIMUM= 1010.0	AT 0902 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 24.6	MAXIMUM= 36.7	AT 0423 HRS.	MINIMUM= 0.2	AT 1846 HRS.
	MEAN DAILY WIND VELOCITY= 23.6 (kts) FROM 281 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 4 09-25-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	146.6 nm				
TOTAL DISTANCE TRAVELLED	595.4 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 6.1	MAXIMUM= 13.2	AT 1349 HRS.	MINIMUM= 0.0	AT 2019 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 28.0	MAXIMUM= 34.4	AT 2110 HRS.	MINIMUM= 25.0	AT 1134 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.55	MAXIMUM= 31.14	AT 0000 HRS.	MINIMUM= 24.00	AT 1427 HRS.
SALINITY (ppt) ;	AVERAGE= 36.01	MAXIMUM= 36.28	AT 0149 HRS.	MINIMUM= 35.70	AT 2207 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1010.1	MAXIMUM= 1012.0	AT 0240 HRS.	MINIMUM= 1008.0	AT 2000 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 10.5	MAXIMUM= 38.2	AT 0000 HRS.	MINIMUM= 0.1	AT 1248 HRS.
	MEAN DAILY WIND VELOCITY= 2.5 (kts) FROM 269 DEGREES TRUE				
SOLAR RADIATION-PAR (quants/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.



## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 5 09-26-1996; PAGE # 3

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	190.1 nm				
TOTAL DISTANCE TRAVELLED	785.5 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 7.9	MAXIMUM= 10.2	AT 0124 HRS.	MINIMUM= 0.0	AT 0205 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 26.4	MAXIMUM= 27.8	AT 2149 HRS.	MINIMUM= 24.8	AT 1151 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.90	MAXIMUM= 29.09	AT 0527 HRS.	MINIMUM= 25.78	AT 0018 HRS.
SALINITY (ppt) ;	AVERAGE= 35.90	MAXIMUM= 36.21	AT 1840 HRS.	MINIMUM= 35.15	AT 1415 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1009.8	MAXIMUM= 1012.0	AT 1317 HRS.	MINIMUM= 1008.0	AT 0000 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 17.5	MAXIMUM= 41.6	AT 2146 HRS.	MINIMUM= 0.1	AT 0015 HRS.
	MEAN DAILY WIND VELOCITY= 14.7 (kts) FROM 228 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 6 09-27-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	205.3 NM				
TOTAL DISTANCE TRAVELLED	990.8 NM				
SHIP'S SPEED (kts) ;	AVERAGE= 8.5	MAXIMUM= 12.4	AT 0902 HRS.	MINIMUM= 2.6	AT 0451 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 27.4	MAXIMUM= 33.2	AT 1758 HRS.	MINIMUM= 24.8	AT 1911 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.71	MAXIMUM= 30.44	AT 2117 HRS.	MINIMUM= 25.33	AT 1847 HRS.
SALINITY (ppt) ;	AVERAGE= 35.85	MAXIMUM= 36.42	AT 1453 HRS.	MINIMUM= 34.32	AT 2318 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1010.9	MAXIMUM= 1013.0	AT 1336 HRS.	MINIMUM= 1008.0	AT 2037 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 15.1	MAXIMUM= 37.7	AT 0043 HRS.	MINIMUM= 0.1	AT 2020 HRS.
	MEAN DAILY WIND VELOCITY= 1.6 (kts) FROM 260 DEGREES TRUE				
SOLAR RADIATION-FAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 7 09-28-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	188.9 nm				
TOTAL DISTANCE TRAVELLED	1179.7 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 7.9	MAXIMUM= 10.4	AT 0133 HRS.	MINIMUM= 5.2	AT 0553 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 26.2	MAXIMUM= 30.4	AT 1421 HRS.	MINIMUM= 22.8	AT 1112 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 26.37	MAXIMUM= 28.69	AT 0544 HRS.	MINIMUM= 24.32	AT 1251 HRS.
SALINITY (ppt) ;	AVERAGE= 35.82	MAXIMUM= 36.22	AT 0236 HRS.	MINIMUM= 35.03	AT 0230 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1010.0	MAXIMUM= 1012.0	AT 1314 HRS.	MINIMUM= 1008.0	AT 1936 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 14.6	MAXIMUM= 34.9	AT 0627 HRS.	MINIMUM= 0.1	AT 2201 HRS.
MEAN DAILY WIND VELOCITY= 10.9 (kts) FROM 270 DEGREES TRUE					
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= -0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= -0.03	AT 0013 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 8 09-29-1996; PAGE # 3

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	155.2 nm				
TOTAL DISTANCE TRAVELLED	1334.9 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 6.4	MAXIMUM= 10.4	AT 0719 HRS.	MINIMUM= 0.3	AT 1103 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 25.8	MAXIMUM= 27.6	AT 0145 HRS.	MINIMUM= 23.1	AT 2248 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.14	MAXIMUM= 28.54	AT 1018 HRS.	MINIMUM= 24.78	AT 2359 HRS.
SALINITY (ppt) ;	AVERAGE= 35.98	MAXIMUM= 36.31	AT 1457 HRS.	MINIMUM= 35.08	AT 1308 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1009.4	MAXIMUM= 1011.0	AT 0207 HRS.	MINIMUM= 1007.0	AT 2024 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 15.3	MAXIMUM= 34.4	AT 2209 HRS.	MINIMUM= 0.1	AT 0123 HRS.
	MEAN DAILY WIND VELOCITY= 3.0 (kts) FROM 240 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 9 09-30-1996; PAGE # 3

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	177.6 NM				
TOTAL DISTANCE TRAVELLED	1512.5 NM				
SHIP'S SPEED (kts) ;	AVERAGE= 7.4	MAXIMUM= 10.8	AT 0824 HRS.	MINIMUM= 0.0	AT 1509 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 26.3	MAXIMUM= 27.5	AT 1223 HRS.	MINIMUM= 23.3	AT 0027 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.33	MAXIMUM= 29.04	AT 1243 HRS.	MINIMUM= 24.50	AT 0021 HRS.
SALINITY (ppt) ;	AVERAGE= 35.99	MAXIMUM= 36.31	AT 0437 HRS.	MINIMUM= 35.16	AT 1106 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1010.4	MAXIMUM= 1012.0	AT 1442 HRS.	MINIMUM= 1009.0	AT 0002 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 13.0	MAXIMUM= 34.9	AT 1533 HRS.	MINIMUM= 0.1	AT 0036 HRS.
MEAN DAILY WIND VELOCITY= 10.8 (kts) FROM 147 DEGREES TRUE					
SOLAR RADIATION-PAR (quantum/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%);	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 10 10-01-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	120.0 nm				
TOTAL DISTANCE TRAVELLED	1632.5 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 7.1	MAXIMUM= 10.6	AT 1324 HRS.	MINIMUM= 0.0	AT 2326 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 25.3	MAXIMUM= 30.3	AT 2243 HRS.	MINIMUM= 23.4	AT 1232 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 26.14	MAXIMUM= 28.30	AT 0700 HRS.	MINIMUM= 23.13	AT 1437 HRS.
SALINITY (ppt) ;	AVERAGE= 35.78	MAXIMUM= 36.25	AT 0927 HRS.	MINIMUM= 34.20	AT 0808 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1011.0	MAXIMUM= 1012.0	AT 0324 HRS.	MINIMUM= 1010.0	AT 0000 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 15.6	MAXIMUM= 39.1	AT 0711 HRS.	MINIMUM= 0.1	AT 0318 HRS.
	MEAN DAILY WIND VELOCITY= 6.2 (kts) FROM 160 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 11 10-02-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	195.5 nm			
TOTAL DISTANCE TRAVELLED	1828.0 nm			
SHIP'S SPEED (kts) ;	AVERAGE= 8.2	MAXIMUM= 10.8	AT 0828 HRS.	MINIMUM= 5.4 AT 0104 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 25.8	MAXIMUM= 27.5	AT 2102 HRS.	MINIMUM= 24.4 AT 0051 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.29	MAXIMUM= 31.15	AT 0951 HRS.	MINIMUM= 24.58 AT 0011 HRS.
SALINITY (ppt) ;	AVERAGE= 36.00	MAXIMUM= 36.18	AT 0942 HRS.	MINIMUM= 35.05 AT 0831 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1010.9	MAXIMUM= 1013.0	AT 0304 HRS.	MINIMUM= 1008.0 AT 2038 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0 AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 18.8	MAXIMUM= 33.1	AT 2251 HRS.	MINIMUM= 0.7 AT 0813 HRS.
	MEAN DAILY WIND VELOCITY= 11.7 (kts) FROM 242 DEGREES TRUE			
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00 AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0 AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00 AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 12 10-03-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	200.4 nm				
TOTAL DISTANCE TRAVELLED	2028.4 nm				
SHIP'S SPEED (kts) :	AVERAGE= 8.4	MAXIMUM= 11.0	AT 0817 HRS.	MINIMUM= 6.1	AT 1438 HRS.
AIR TEMPERATURE (C) :	AVERAGE= 27.0	MAXIMUM= 30.9	AT 2039 HRS.	MINIMUM= 25.0	AT 1347 HRS.
SEA TEMPERATURE (C) :	AVERAGE= 28.01	MAXIMUM= 29.33	AT 1944 HRS.	MINIMUM= 26.84	AT 1521 HRS.
SALINITY (ppt) :	AVERAGE= 35.91	MAXIMUM= 36.21	AT 1717 HRS.	MINIMUM= 35.00	AT 1245 HRS.
BAROMETRIC PRESSURE (mb) :	AVERAGE= 1008.6	MAXIMUM= 1010.0	AT 0108 HRS.	MINIMUM= 1006.0	AT 2030 HRS.
RELATIVE HUMIDITY (%) :	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) :	AVERAGE= 18.1	MAXIMUM= 35.1	AT 0527 HRS.	MINIMUM= 0.3	AT 0159 HRS.
	MEAN DAILY WIND VELOCITY= 1.3 (kts) FROM 352 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) :	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) :	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) :	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.



## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 13 10-04-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	187.3 NM				
TOTAL DISTANCE TRAVELLED	2215.7 NM				
SHIP'S SPEED (kts) ;	AVERAGE= 7.8	MAXIMUM= 10.2	AT 0833 HRS.	MINIMUM= 3.2	AT 0502 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 27.1	MAXIMUM= 32.5	AT 1627 HRS.	MINIMUM= 24.6	AT 0552 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 28.47	MAXIMUM= 30.45	AT 1951 HRS.	MINIMUM= 26.13	AT 1010 HRS.
SALINITY (ppt) ;	AVERAGE= 35.81	MAXIMUM= 36.51	AT 0506 HRS.	MINIMUM= 35.19	AT 1346 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1007.7	MAXIMUM= 1009.0	AT 0136 HRS.	MINIMUM= 1006.0	AT 2011 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 15.6	MAXIMUM= 38.9	AT 2323 HRS.	MINIMUM= 0.1	AT 2151 HRS.
	MEAN DAILY WIND VELOCITY= 4.1 (kts) FROM 162 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 14 10-05-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	176.6 nm				
TOTAL DISTANCE TRAVELLED	2392.3 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 7.4	MAXIMUM= 9.8	AT 0808 HRS.	MINIMUM= 4.6	AT 1646 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 27.2	MAXIMUM= 30.4	AT 2207 HRS.	MINIMUM= 24.5	AT 2357 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 28.97	MAXIMUM= 30.05	AT 0322 HRS.	MINIMUM= 26.86	AT 0735 HRS.
SALINITY (ppt) ;	AVERAGE= 35.64	MAXIMUM= 36.09	AT 2002 HRS.	MINIMUM= 35.01	AT 0927 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1007.1	MAXIMUM= 1009.0	AT 0145 HRS.	MINIMUM= 1004.0	AT 2110 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 18.7	MAXIMUM= 43.3	AT 2353 HRS.	MINIMUM= 0.1	AT 1332 HRS.
	MEAN DAILY WIND VELOCITY= 6.4 (kts) FROM 358 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 15 10-06-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	161.5 nm				
TOTAL DISTANCE TRAVELLED	2553.8 nm				
SHIP'S SPEED (kts) :	AVERAGE= 6.7	MAXIMUM= 10.7	AT 0813 HRS.	MINIMUM= 0.2	AT 1515 HRS.
AIR TEMPERATURE (C) :	AVERAGE= 25.5	MAXIMUM= 29.6	AT 1920 HRS.	MINIMUM= 22.2	AT 0027 HRS.
SEA TEMPERATURE (C) :	AVERAGE= 27.78	MAXIMUM= 28.65	AT 1951 HRS.	MINIMUM= 26.93	AT 0108 HRS.
SALINITY (ppt) :	AVERAGE= 35.54	MAXIMUM= 36.07	AT 1722 HRS.	MINIMUM= 34.34	AT 0207 HRS.
BAROMETRIC PRESSURE (mb) :	AVERAGE= 1005.9	MAXIMUM= 1008.0	AT 0103 HRS.	MINIMUM= 1002.0	AT 2015 HRS.
RELATIVE HUMIDITY (%) :	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) :	AVERAGE= 24.1	MAXIMUM= 63.2	AT 0000 HRS.	MINIMUM= 2.3	AT 2250 HRS.
	MEAN DAILY WIND VELOCITY= 2.3 (kts) FROM 035 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) :	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) :	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) :	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 16 10-07-1996; PAGE # 3

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	118.3 nm				
TOTAL DISTANCE TRAVELLED	2672.1 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 5.0	MAXIMUM= 8.9	AT 1211 HRS.	MINIMUM= 0.2	AT 0252 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 26.0	MAXIMUM= 27.7	AT 1736 HRS.	MINIMUM= 24.2	AT 1122 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 28.02	MAXIMUM= 29.31	AT 2243 HRS.	MINIMUM= 27.00	AT 0046 HRS.
SALINITY (ppt) ;	AVERAGE= 35.38	MAXIMUM= 36.04	AT 2017 HRS.	MINIMUM= 34.00	AT 2047 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1000.8	MAXIMUM= 1004.0	AT 0155 HRS.	MINIMUM= 999.0	AT 0740 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 26.7	MAXIMUM= 48.0	AT 2042 HRS.	MINIMUM= 2.1	AT 1211 HRS.
	MEAN DAILY WIND VELOCITY= 17.2 (kts) FROM 168 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%);	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 17 10-08-1996; PAGE # 3

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	116.5 nm				
TOTAL DISTANCE TRAVELLED	2788.6 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 4.9	MAXIMUM= 10.2	AT 1327 HRS.	MINIMUM= 0.0	AT 1634 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 27.0	MAXIMUM= 32.5	AT 1834 HRS.	MINIMUM= 24.2	AT 1411 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 27.69	MAXIMUM= 28.97	AT 0000 HRS.	MINIMUM= 26.46	AT 1230 HRS.
SALINITY (ppt) ;	AVERAGE= 35.64	MAXIMUM= 36.11	AT 0359 HRS.	MINIMUM= 35.04	AT 1257 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1006.1	MAXIMUM= 1009.0	AT 1358 HRS.	MINIMUM= 1002.0	AT 0000 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 16.1	MAXIMUM= 44.5	AT 1206 HRS.	MINIMUM= 0.2	AT 1036 HRS.
	MEAN DAILY WIND VELOCITY= 2.1 (kts) FROM 114 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%);	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 18 10-09-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELED TODAY	189.0 nm				
TOTAL DISTANCE TRAVELED	2977.6 nm				
SHIP'S SPEED (kts) :	AVERAGE= 7.9	MAXIMUM= 10.3	AT 2011 HRS.	MINIMUM= 5.3	AT 0000 HRS.
AIR TEMPERATURE (C) :	AVERAGE= 26.4	MAXIMUM= 28.7	AT 1816 HRS.	MINIMUM= 22.3	AT 1333 HRS.
SEA TEMPERATURE (C) :	AVERAGE= 29.06	MAXIMUM= 29.62	AT 1659 HRS.	MINIMUM= 28.39	AT 0749 HRS.
SALINITY (ppt) :	AVERAGE= 35.86	MAXIMUM= 36.21	AT 2319 HRS.	MINIMUM= 34.59	AT 0509 HRS.
BAROMETRIC PRESSURE (mb) :	AVERAGE= 1012.4	MAXIMUM= 1015.0	AT 1437 HRS.	MINIMUM= 1008.0	AT 0000 HRS.
RELATIVE HUMIDITY (%) :	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) :	AVERAGE= 18.9	MAXIMUM= 46.9	AT 1346 HRS.	MINIMUM= 0.2	AT 0655 HRS.
	MEAN DAILY WIND VELOCITY= 13.2 (kts) FROM 105 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) :	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%) :	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) :	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX 96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 19 10-10-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	214.4 nm				
TOTAL DISTANCE TRAVELLED	3192.0 nm				
SHIP'S SPEED (kts) ;	AVERAGE= 8.9	MAXIMUM= 10.7	AT 0207 HRS.	MINIMUM= 0.0	AT 0957 HRS.
AIR TEMPERATURE (C) ;	AVERAGE= 26.7	MAXIMUM= 29.2	AT 1958 HRS.	MINIMUM= 24.6	AT 1213 HRS.
SEA TEMPERATURE (C) ;	AVERAGE= 28.46	MAXIMUM= 29.28	AT 0009 HRS.	MINIMUM= 27.92	AT 2334 HRS.
SALINITY (ppt) ;	AVERAGE= 35.82	MAXIMUM= 36.21	AT 0343 HRS.	MINIMUM= 35.01	AT 1631 HRS.
BAROMETRIC PRESSURE (mb) ;	AVERAGE= 1016.8	MAXIMUM= 1019.0	AT 1503 HRS.	MINIMUM= 1014.0	AT 0000 HRS.
RELATIVE HUMIDITY (%) ;	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts) ;	AVERAGE= 27.7	MAXIMUM= 43.8	AT 1656 HRS.	MINIMUM= 10.0	AT 0845 HRS.
	MEAN DAILY WIND VELOCITY= 27.4 (kts) FROM 115 DEGREES TRUE				
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%)	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> ) ;	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.

## LONGHORN CRUISE 676 CHIX '96 CRUISE 1996 - DAILY SCIENCE LOG; DAY # 20 10-11-1996; PAGE # 2

## DAILY SUMMARY

DISTANCE TRAVELLED TODAY	154.1 nm				
TOTAL DISTANCE TRAVELLED	3346.1 nm				
SHIP'S SPEED (kts);	AVERAGE= 8.5	MAXIMUM= 11.9	AT 0821 HRS.	MINIMUM= 0.2	AT 1459 HRS.
AIR TEMPERATURE (C);	AVERAGE= 25.8	MAXIMUM= 28.4	AT 1614 HRS.	MINIMUM= 23.9	AT 1758 HRS.
SEA TEMPERATURE (C);	AVERAGE= 27.36	MAXIMUM= 28.52	AT 0618 HRS.	MINIMUM= 24.77	AT 1624 HRS.
SALINITY (ppt);	AVERAGE= 34.48	MAXIMUM= 36.15	AT 0402 HRS.	MINIMUM= 27.77	AT 1559 HRS.
BAROMETRIC PRESSURE (mb);	AVERAGE= 1019.0	MAXIMUM= 1021.0	AT 1545 HRS.	MINIMUM= 1017.0	AT 0000 HRS.
RELATIVE HUMIDITY (%);	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
WIND SPEED (kts);	AVERAGE= 22.8	MAXIMUM= 40.6	AT 0007 HRS.	MINIMUM= 1.3	AT 1702 HRS.
MEAN DAILY WIND VELOCITY= 21.3 (kts) FROM 293 DEGREES TRUE					
SOLAR RADIATION-PAR (quanta/cm <sup>2</sup> /sec);	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.
LIGHT TRANSMISSION (%);	AVERAGE= 0.0	MAXIMUM= 0.0	AT 0000 HRS.	MINIMUM= 0.0	AT 0000 HRS.
CHLOROPHYLL-a (mg/m <sup>3</sup> );	AVERAGE= 0.00	MAXIMUM= 0.00	AT 0000 HRS.	MINIMUM= 0.00	AT 0000 HRS.



**ATTACHMENT NO. 5 - GRAPHS OF DAILY DATA AND PLOT OF SHIP TRACK**

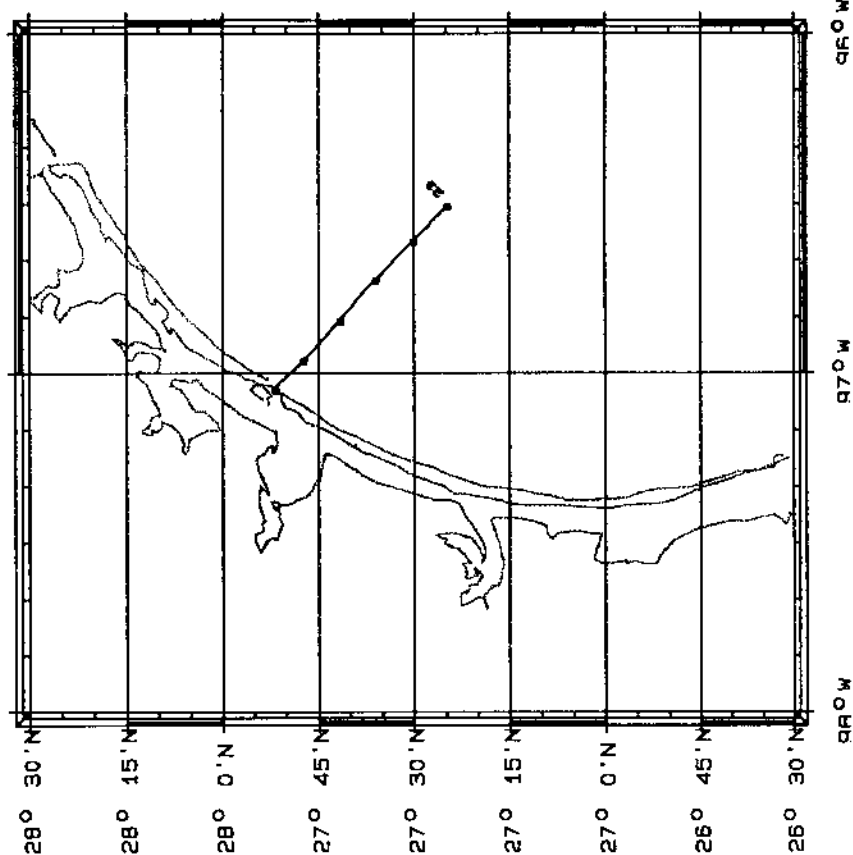
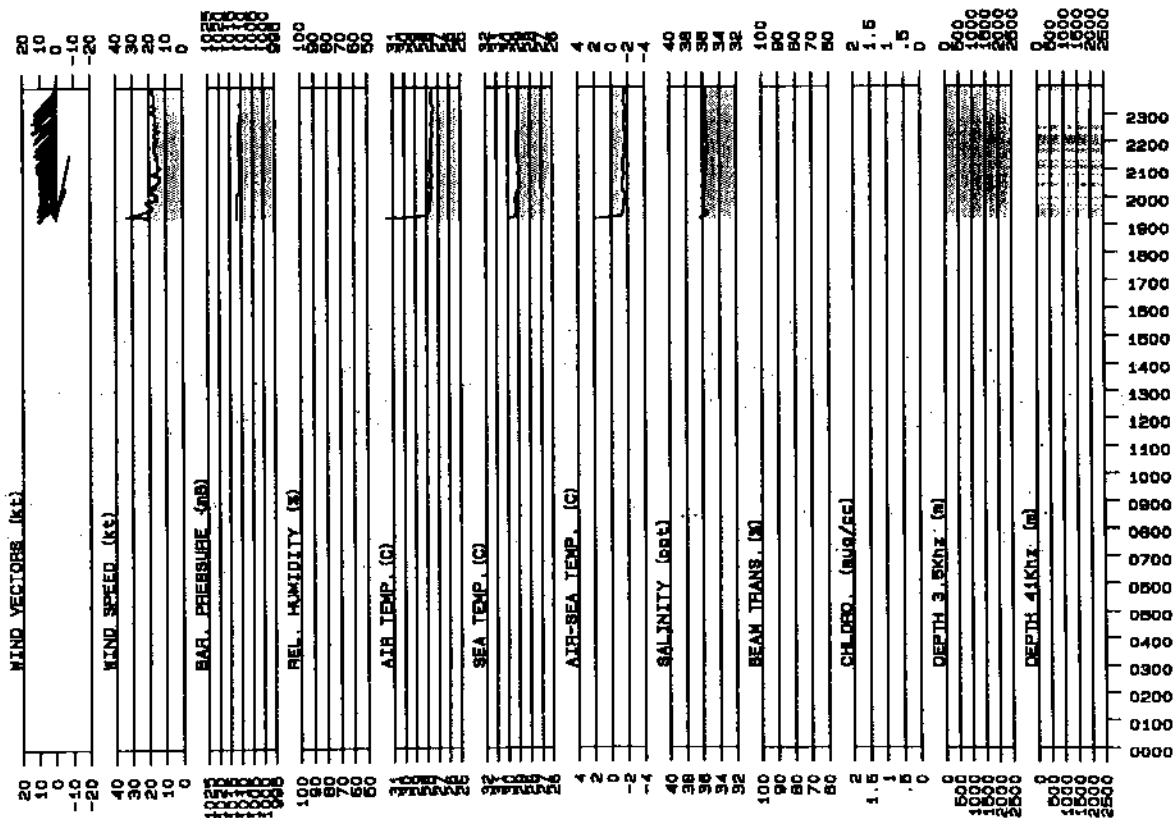
**(20 PAGES)**

# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA; 09-22-1996

SCIENTIFIC ACTIVITIES THIS DAY;

OTHER INVESTIGATIONS and NOTES  
SUN PHENOMENA



# LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA: 09-23-1996

## SCIENTIFIC ACTIVITIES THIS DAY:

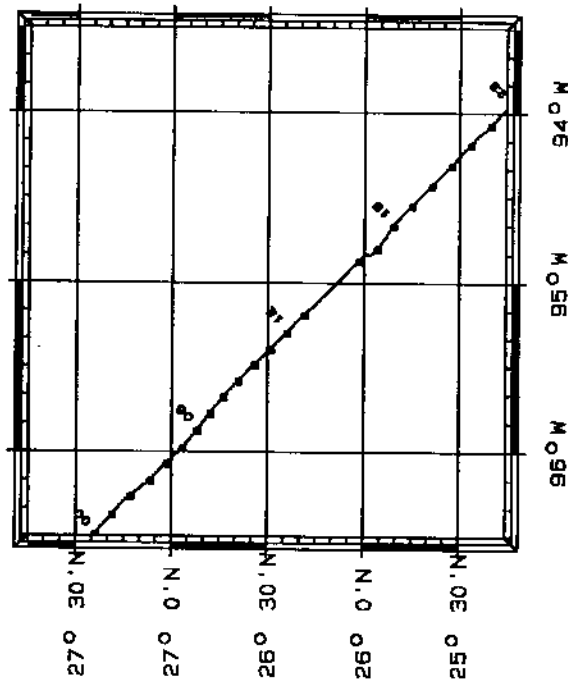
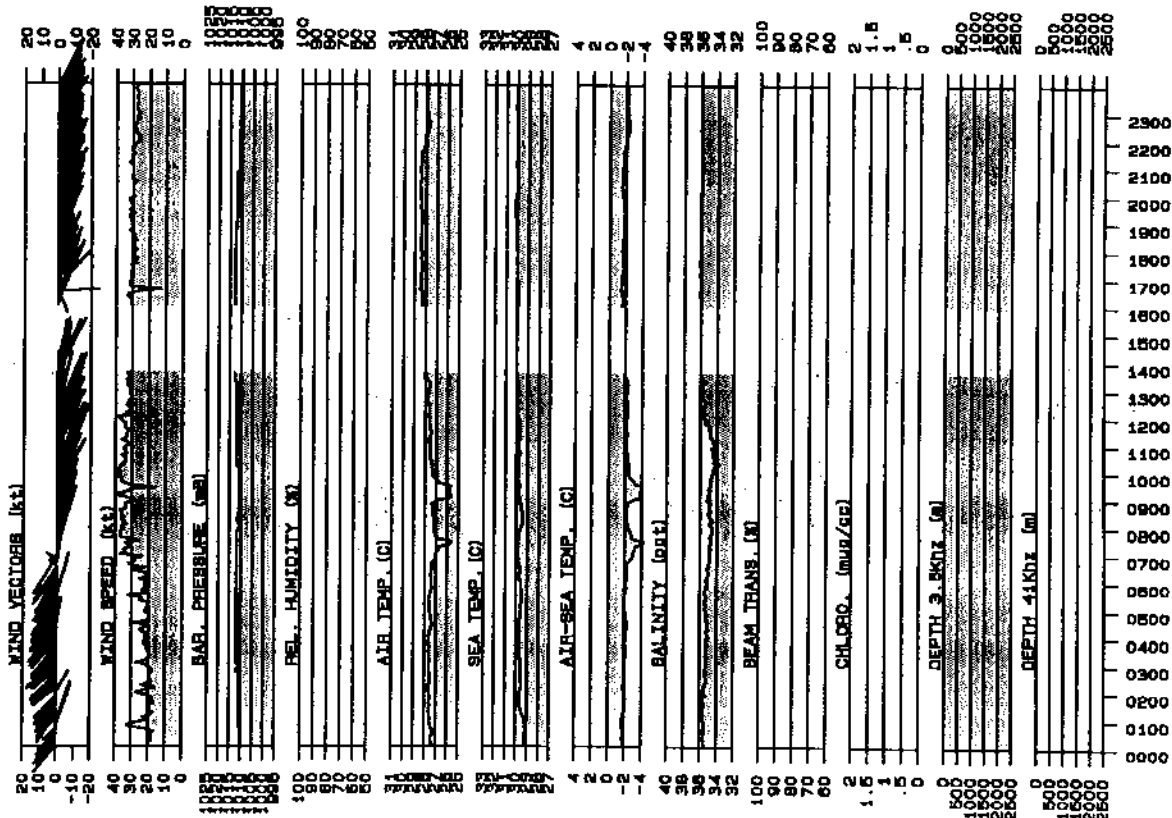
OTHER INVESTIGATIONS and NOTES

SUN PHENOMENA

SUNRISE (07:10:25 LOCAL); MONDAY: 08/23/96

L.A. NOON (13:10:28 LOCAL); MONDAY: 08/23/96

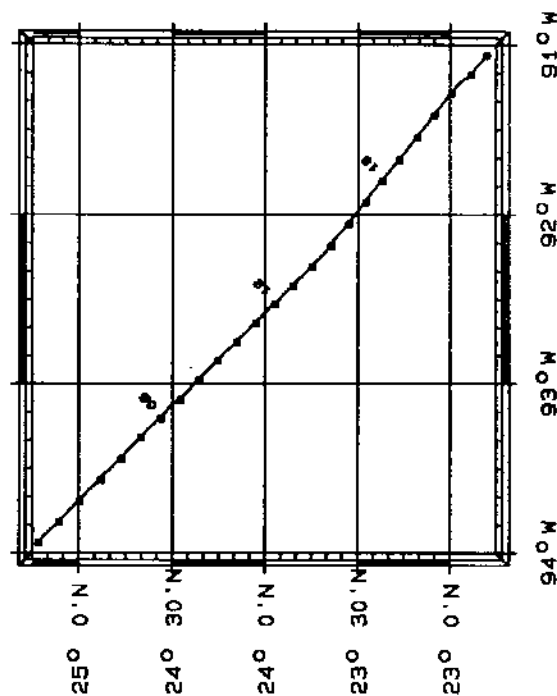
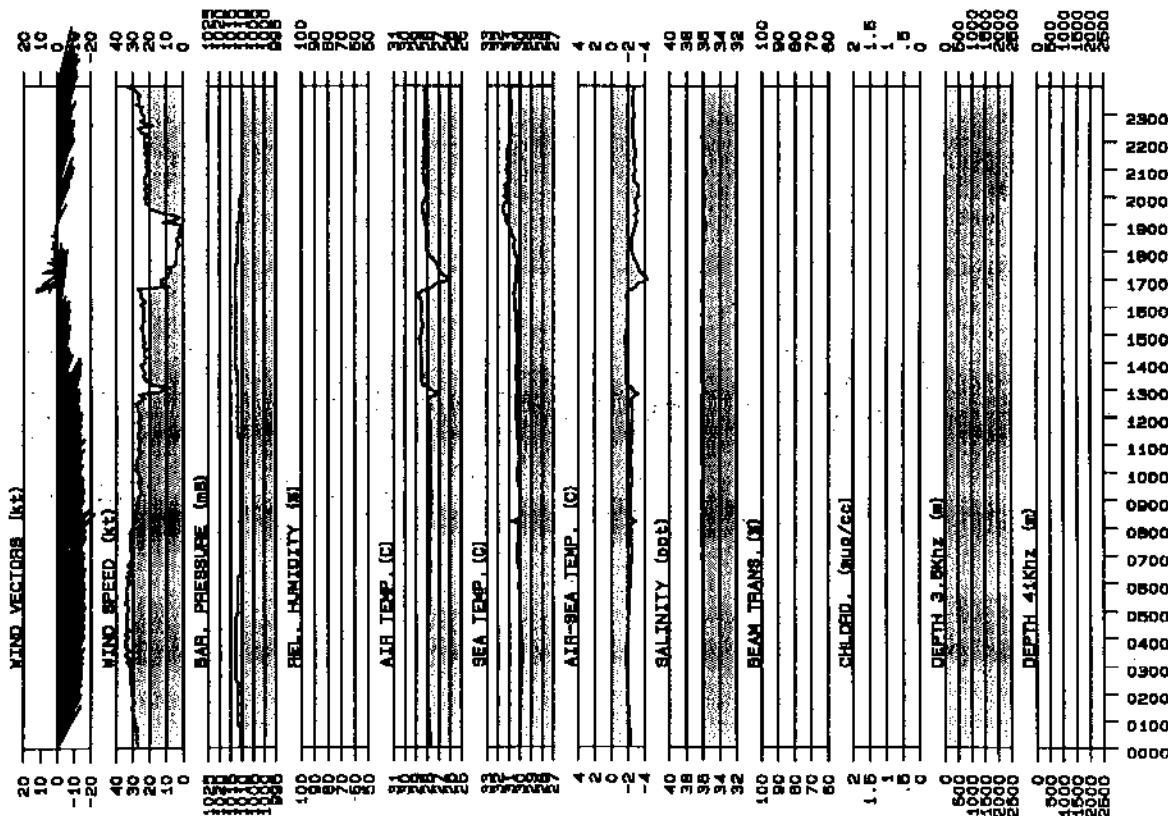
SUNSET (18:20:11 LOCAL); SUNDAY: 08/22/96



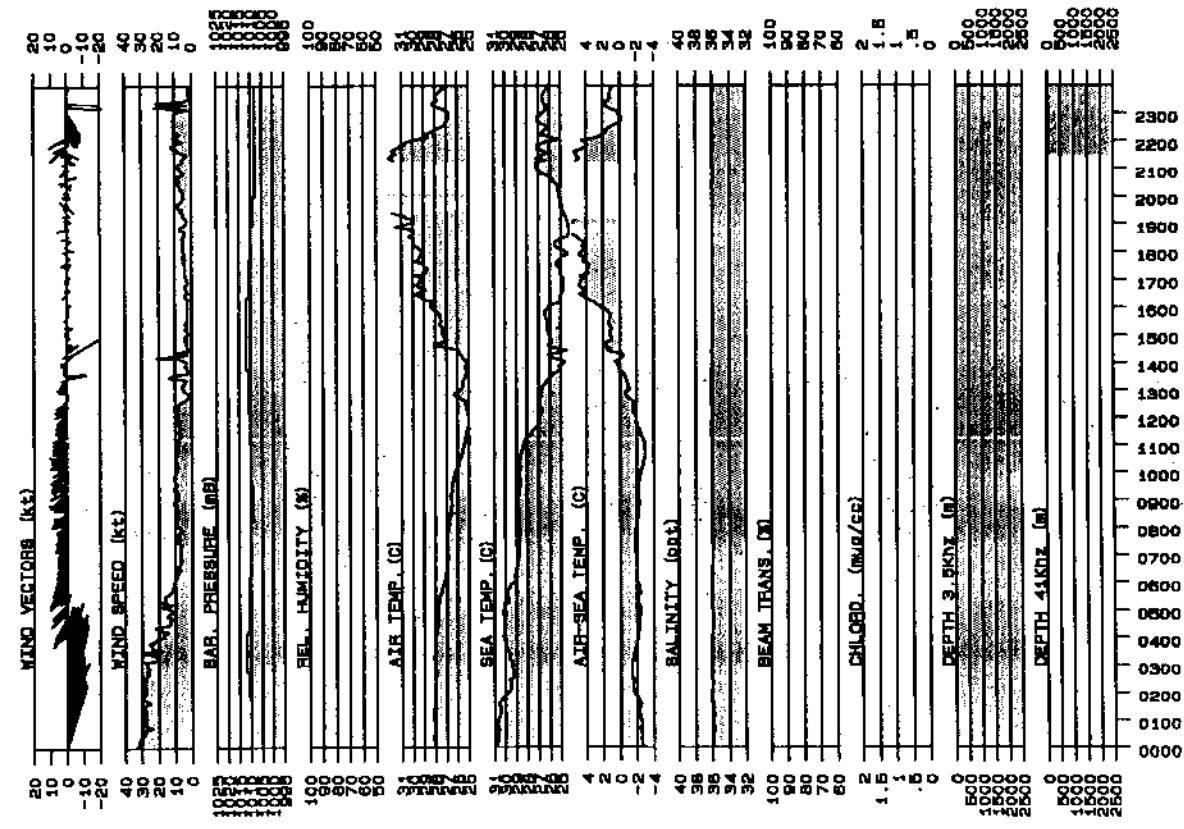
# LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA; 09-24-1996 SCIENTIFIC ACTIVITIES THIS DAY;

## OTHER INVESTIGATIONS and NOTES

SUN PHENOMENA  
SUNRISE (08:59:44 LOCAL); TUESDAY; 09/24/96  
L.A. NOON (12:58:45 LOCAL); TUESDAY; 09/24/96  
SUNSET (18:57:43 LOCAL); TUESDAY; 09/24/96



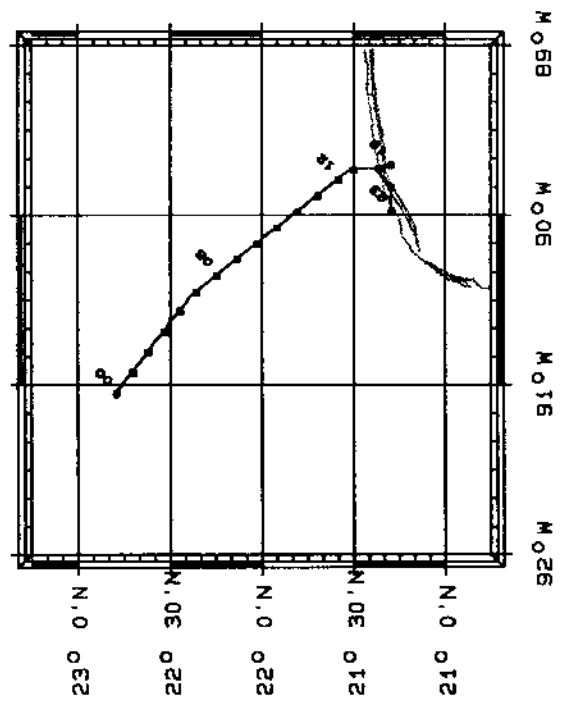
LONGHORN CRUISE 676 CHIX 96



CRUISE UNDERWAY DATA: 09-25-1996

SCIENTIFIC ACTIVITIES THIS DAY:

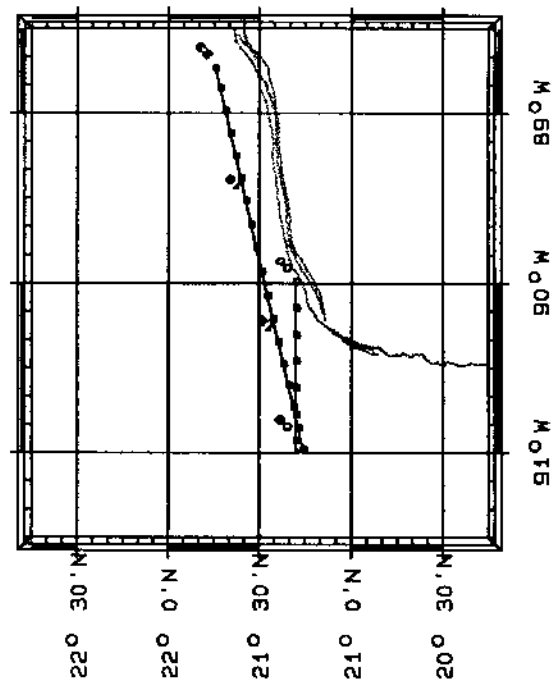
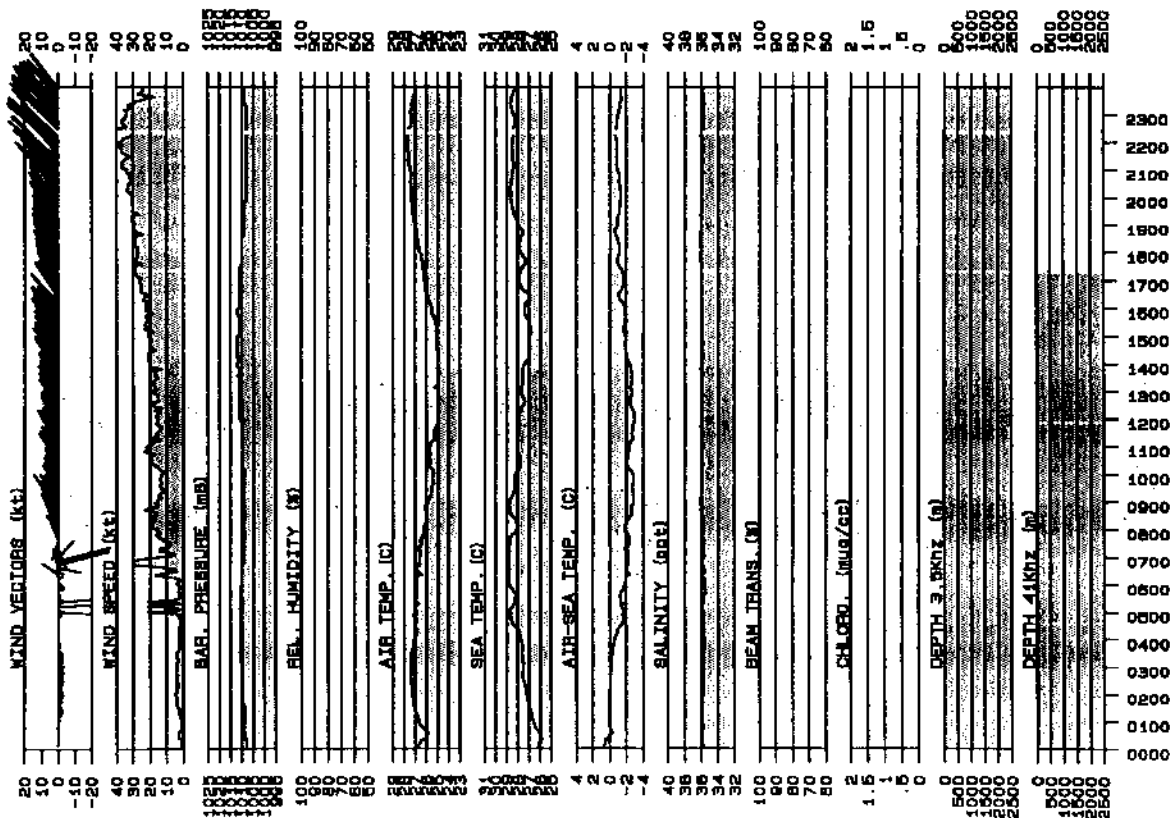
CTD CASTS  
TIME LATITUDE LONGITUDE EVENT  
1244 21 30.32N 89 44.27N 01  
OTHER INVESTIGATIONS AND NOTES  
SUN PHENOMENA  
SUNRISE (06:48:01 LOCAL): WEDNESDAY: 09/25/96  
L.A. NOON (12:48:59 LOCAL): WEDNESDAY: 09/25/96  
SUNSET (18:52:26 LOCAL): WEDNESDAY: 09/25/96



# LONGHORN CRUISE 676 CHIX 96

## SCIENTIFIC ACTIVITIES THIS DAY;

CTD CASTS  
 TIME LATITUDE LONGITUDE EVENT  
 0817 21 15.43N 90 57.34W 02  
 OTHER INVESTIGATIONS AND NOTES  
 SUN PHENOMENA  
 SUNRISE (08:51:30 LOCAL); THURSDAY: 09/28/96  
 L.A. NOON (12:49:00 LOCAL); THURSDAY: 09/28/96  
 SUNSET (18:46:39 LOCAL); THURSDAY: 09/28/96

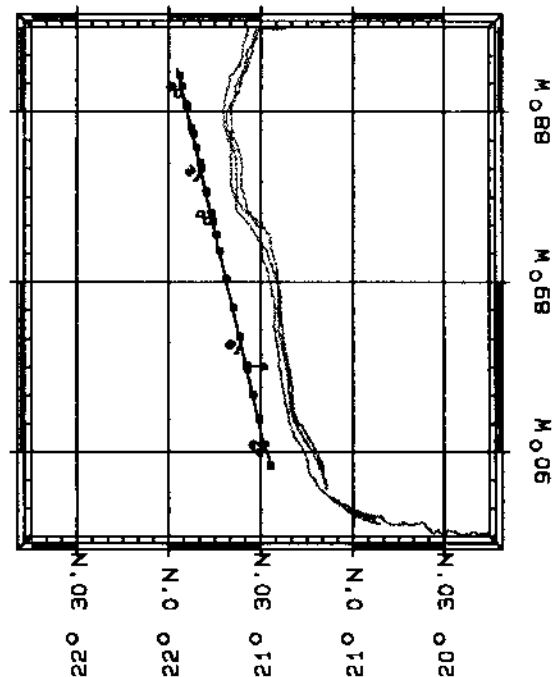
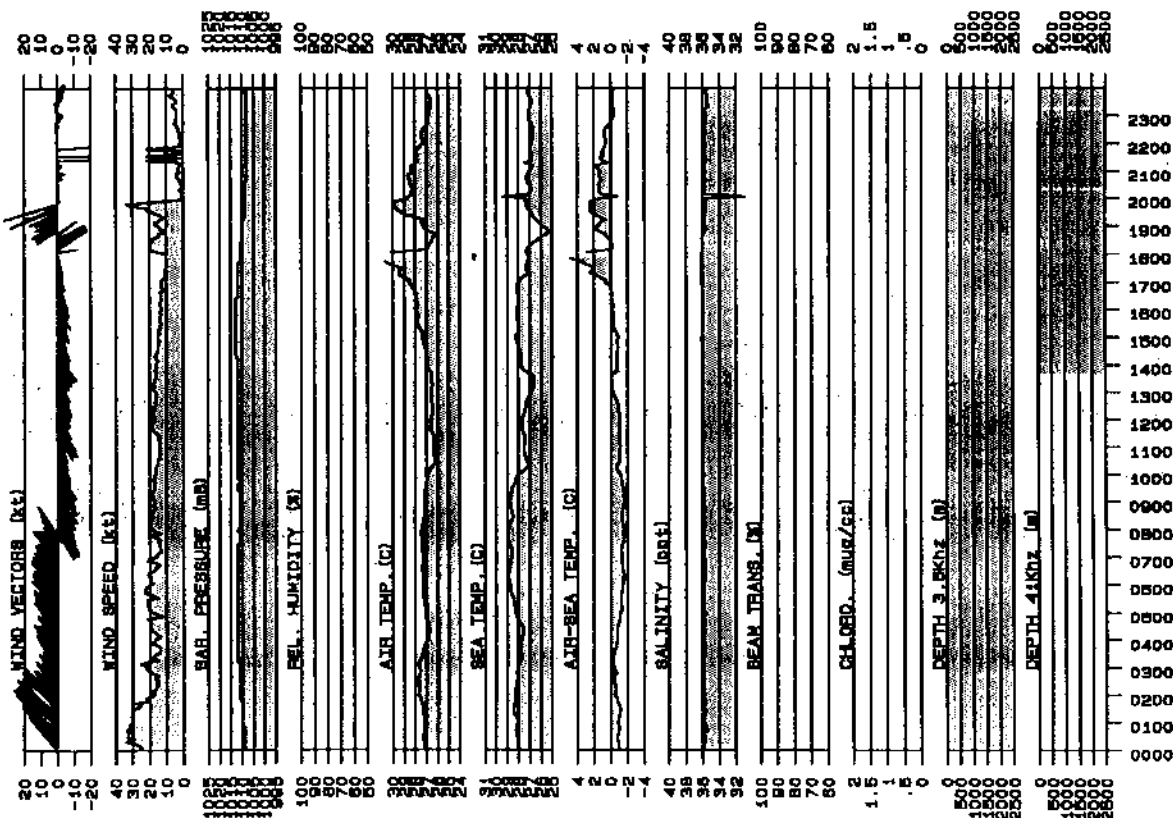


# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA; 09-27-1996

SCIENTIFIC ACTIVITIES THIS DAY;

OTHER INVESTIGATIONS AND NOTES  
 SUN PHENOMENA  
 SUNRISE (08:43:58 LOCAL); FRIDAY, 09/27/96  
 L.A. NOON (12:48:18 LOCAL); FRIDAY, 09/27/96  
 SUNSET (18:50:57 LOCAL); FRIDAY, 09/27/96



# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA; 09-28-1996

SCIENTIFIC ACTIVITIES THIS DAY;

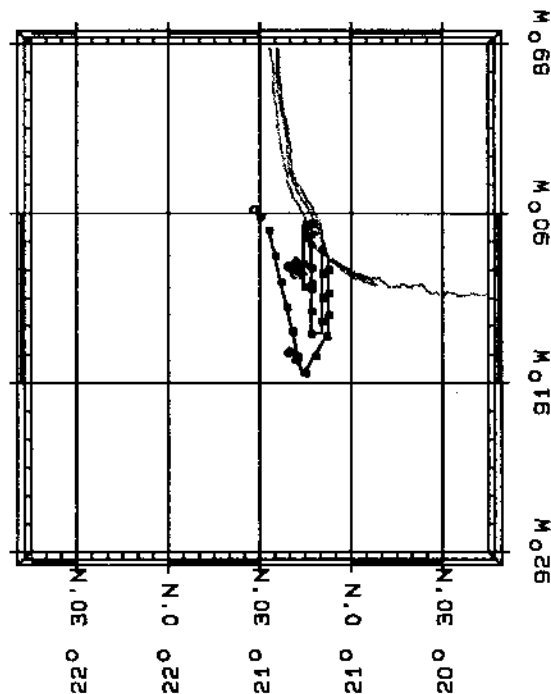
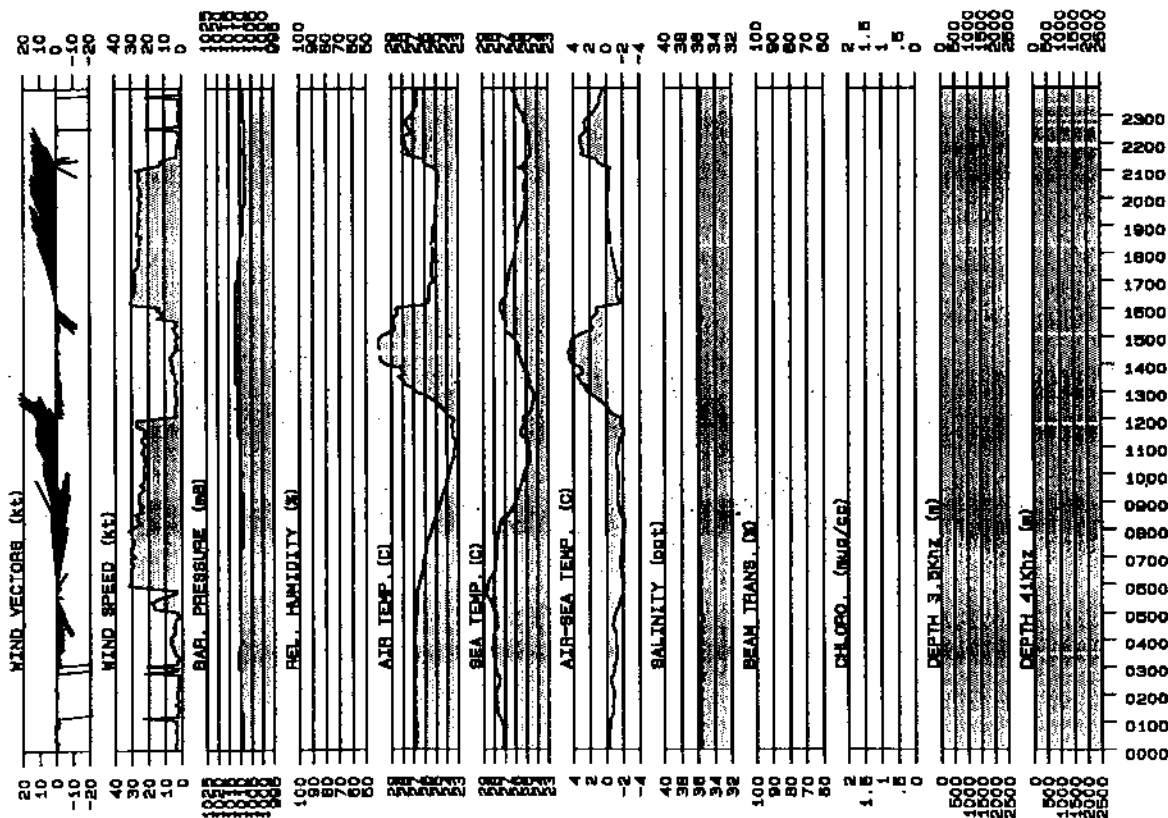
OTHER INVESTIGATIONS and NOTES

SUN PHENOMENA

SUNRISE (08:51:25 LOCAL); SATURDAY; 09/28/96

L.A. NOON (12:52:03 LOCAL); SATURDAY; 09/28/96

SUNSET (18:51:27 LOCAL); SATURDAY; 09/28/96





# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA; 09-29-1996

SCIENTIFIC ACTIVITIES THIS DAY;

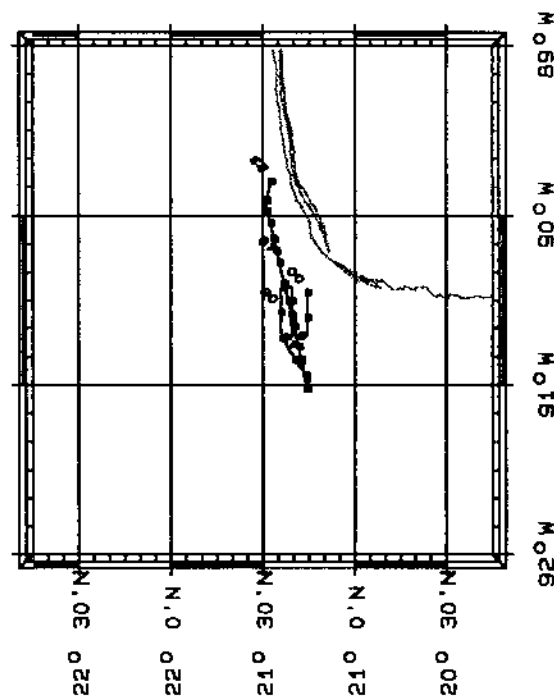
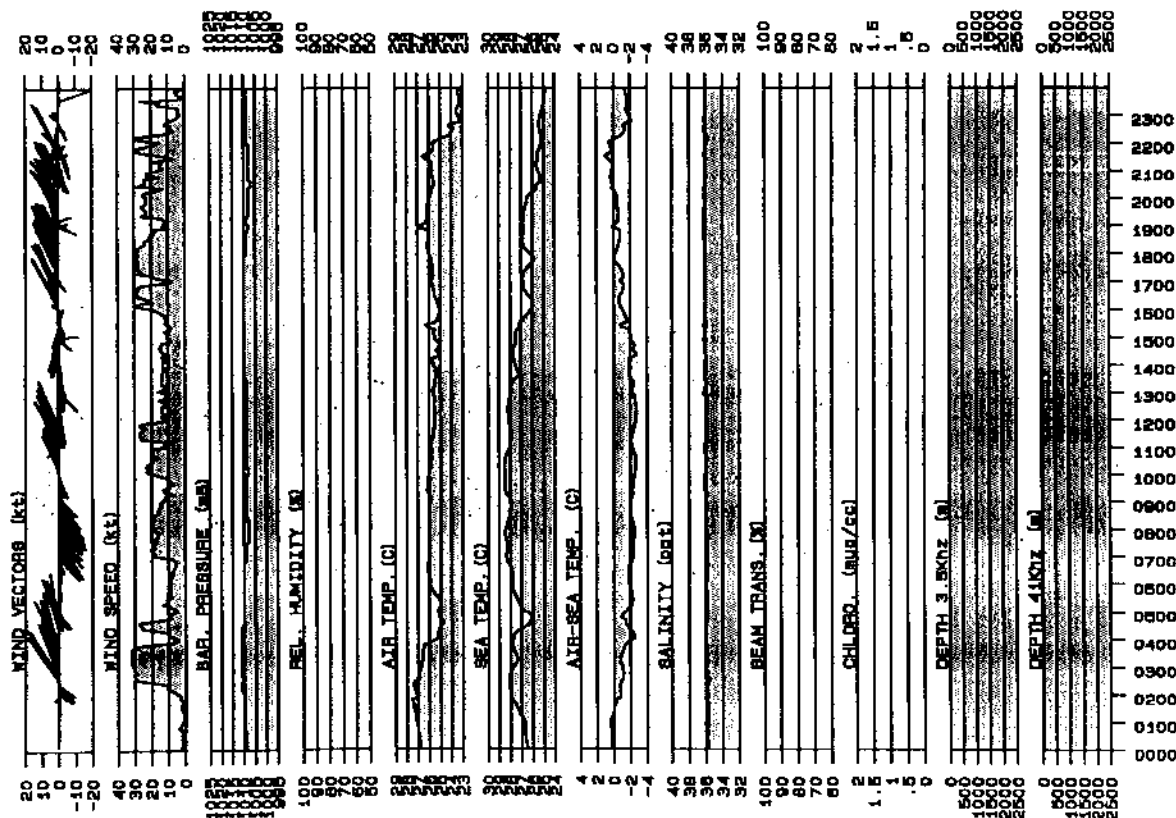
OTHER INVESTIGATIONS and NOTES

SUN PHENOMENA

SUNRISE (08:54:17 LOCAL); SUNDAY; 09/29/96

L.A. NOON (12:51:01 LOCAL); SUNDAY; 09/29/96

SUNSET (18:46:08 LOCAL); SUNDAY; 09/29/96

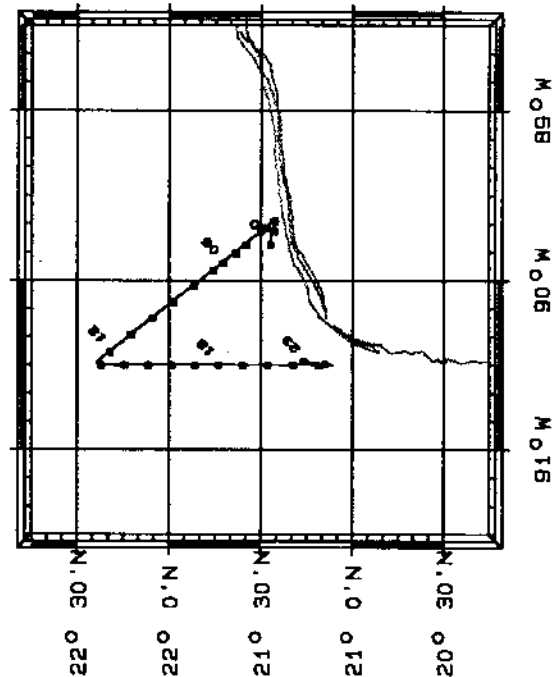
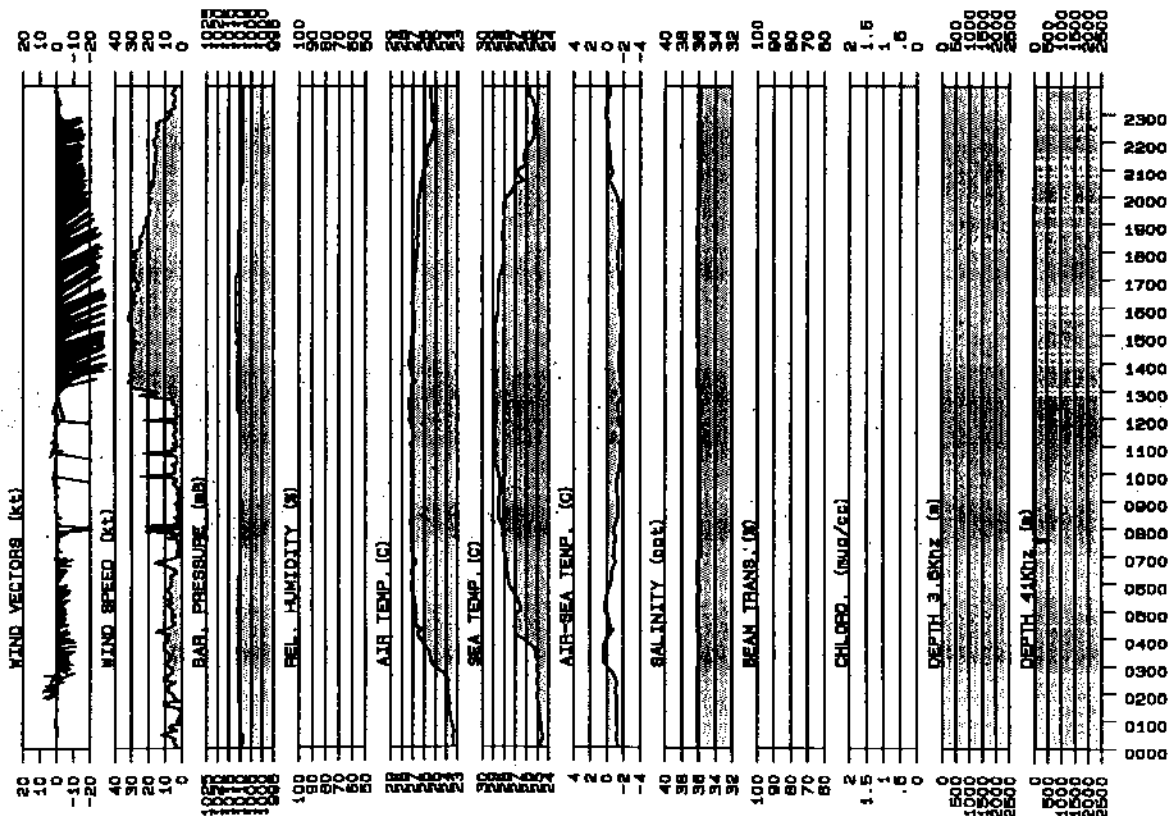


# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA: 09-30-1996

SCIENTIFIC ACTIVITIES THIS DAY:

OTHER INVESTIGATIONS and NOTES  
 SUN. PHENOMENA  
 SUNRISE (06:52:57 LOCAL): MONDAY: 09/30/96  
 L.A. NOON (12:51:30 LOCAL): MONDAY: 09/30/96  
 SUNSET (18:48:51 LOCAL): MONDAY: 09/30/96

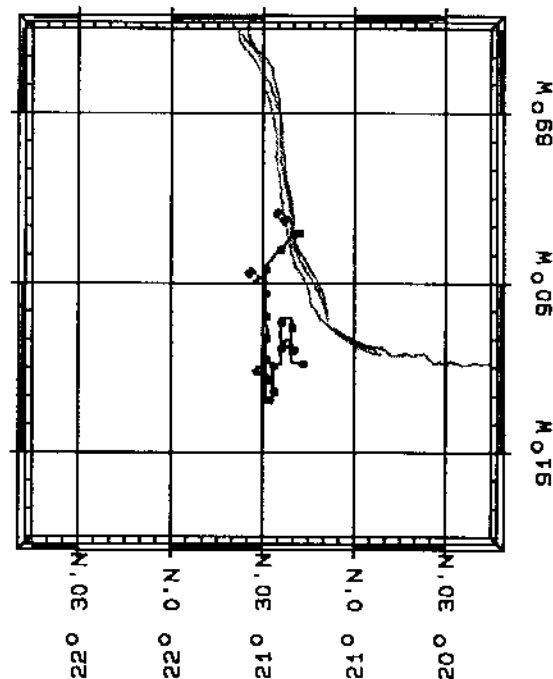
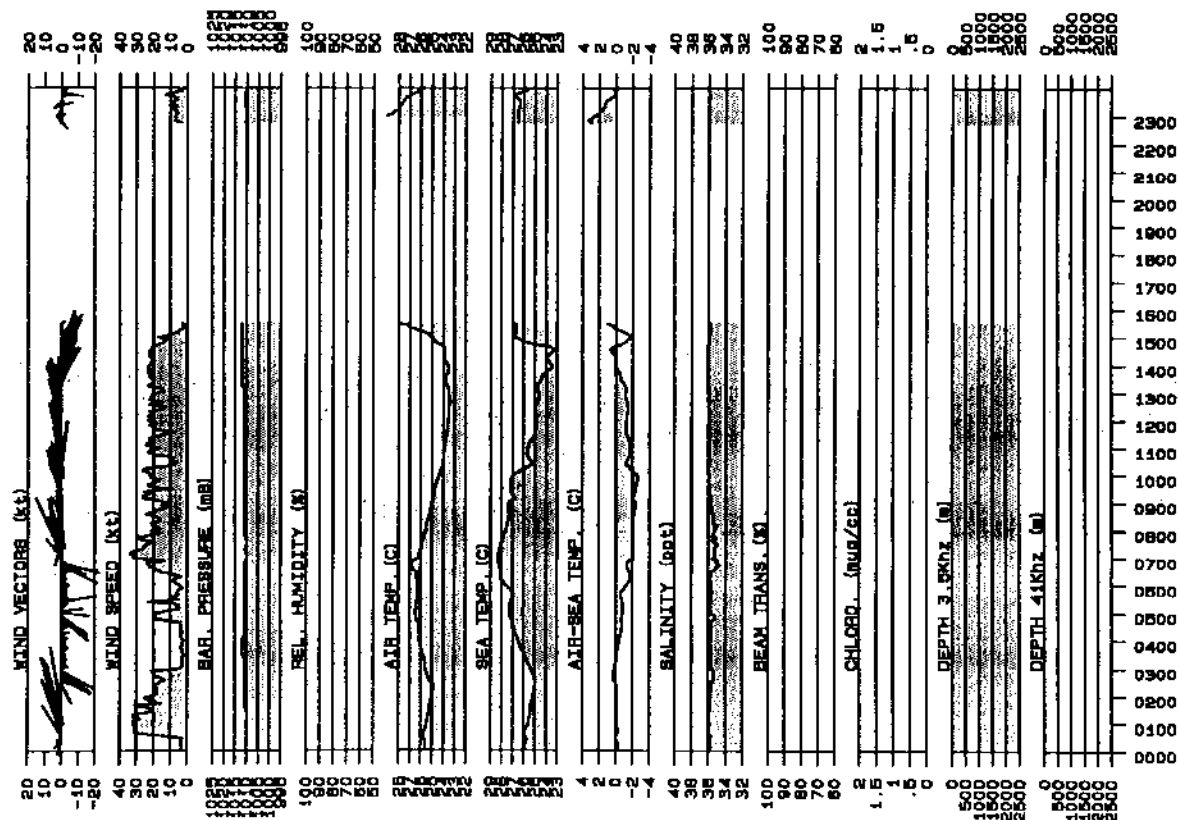


# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA: 10-01-1996

SCIENTIFIC ACTIVITIES THIS DAY:

OTHER INVESTIGATIONS and NOTES  
 SUN PHENOMENA  
 SUNRISE (06:51:47 LOCAL); TUESDAY; 10/01/96  
 SUNSET (18:46:48 LOCAL); TUESDAY; 10/01/96



# LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA: 10-02-1996

## SCIENTIFIC ACTIVITIES THIS DAY:

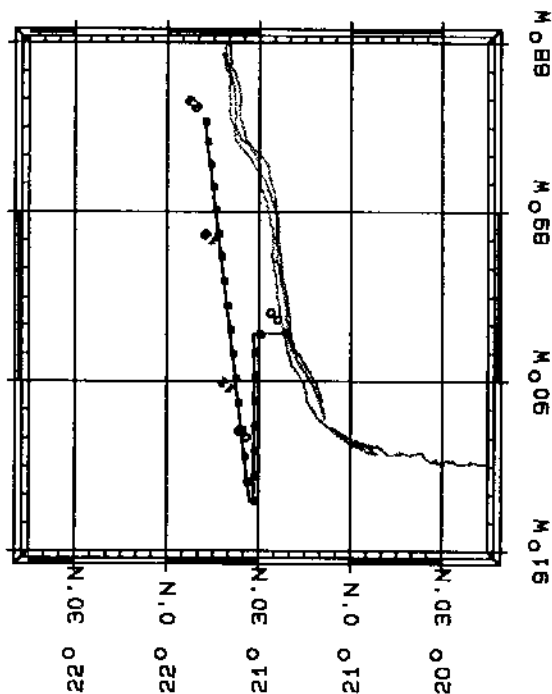
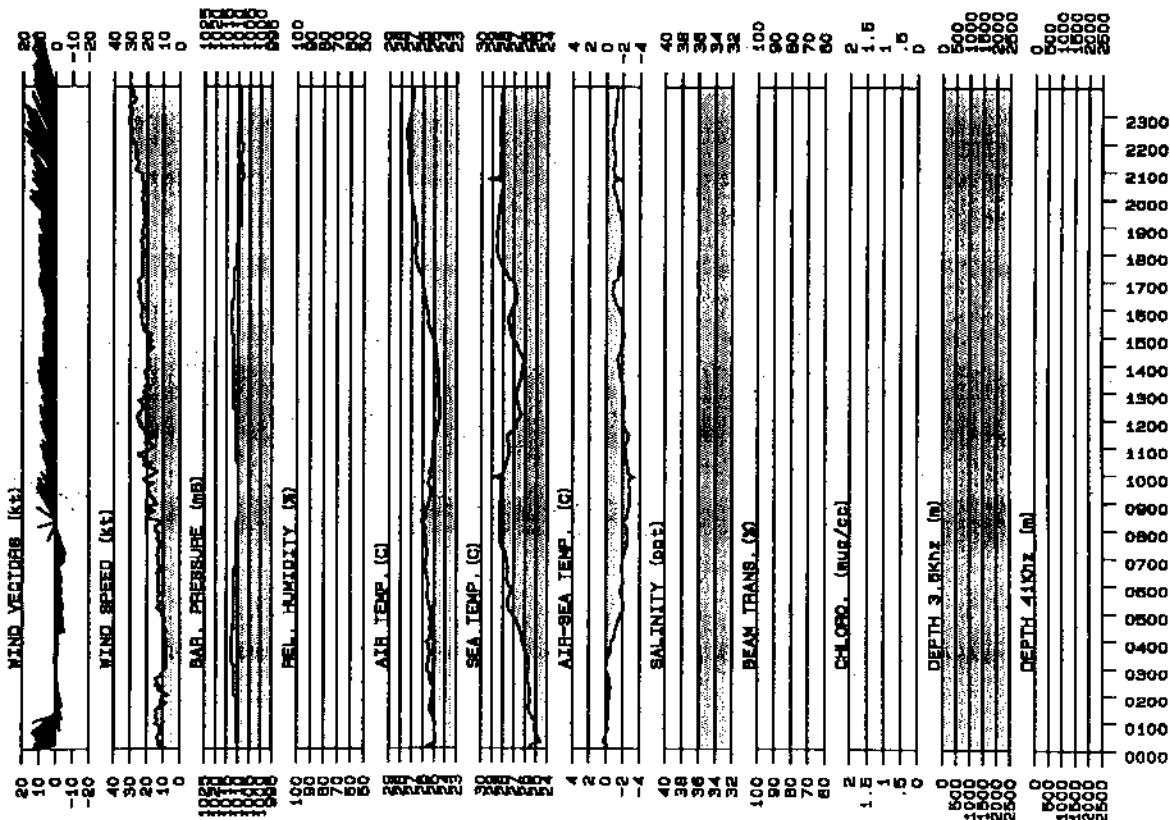
OTHER INVESTIGATIONS AND NOTES

SUN PHENOMENA

SUNRISE (08:52:23 LOCAL); WEDNESDAY, 10/02/96

L.A. NOON (12:48:05 LOCAL); WEDNESDAY, 10/02/96

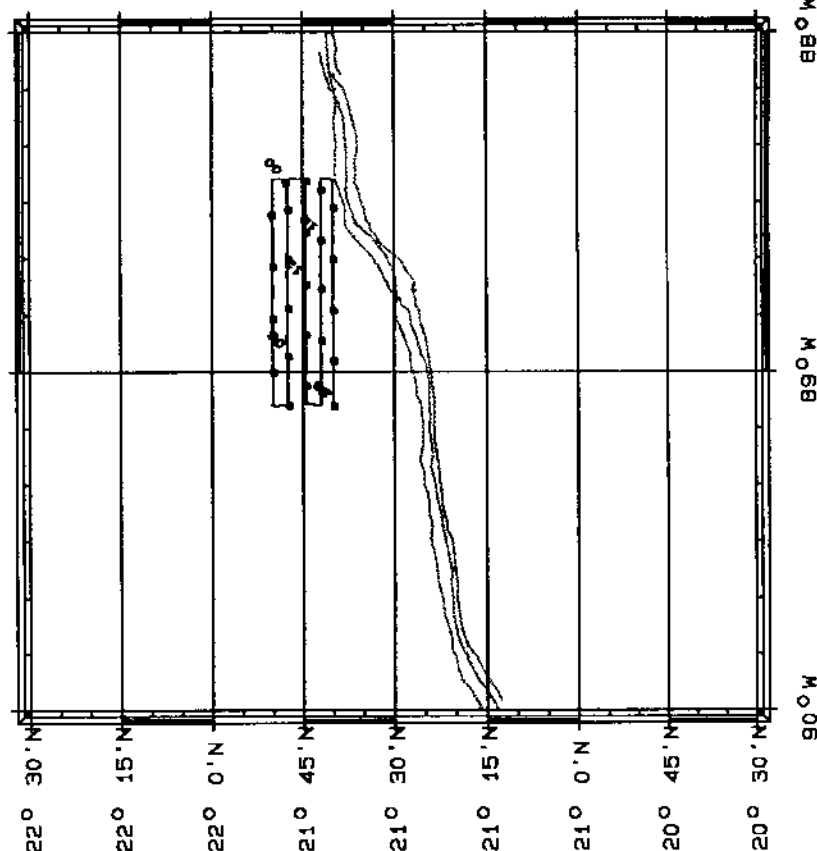
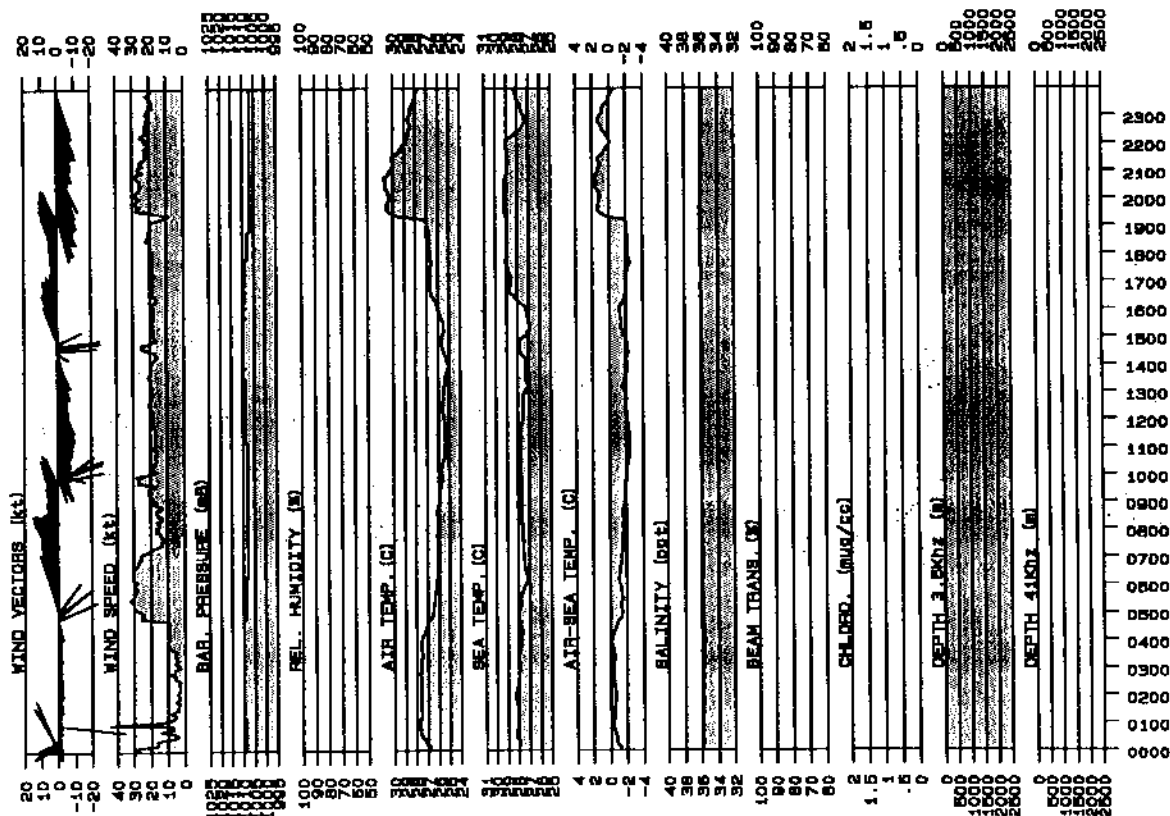
SUNSET (18:38:57 LOCAL); WEDNESDAY, 10/02/96



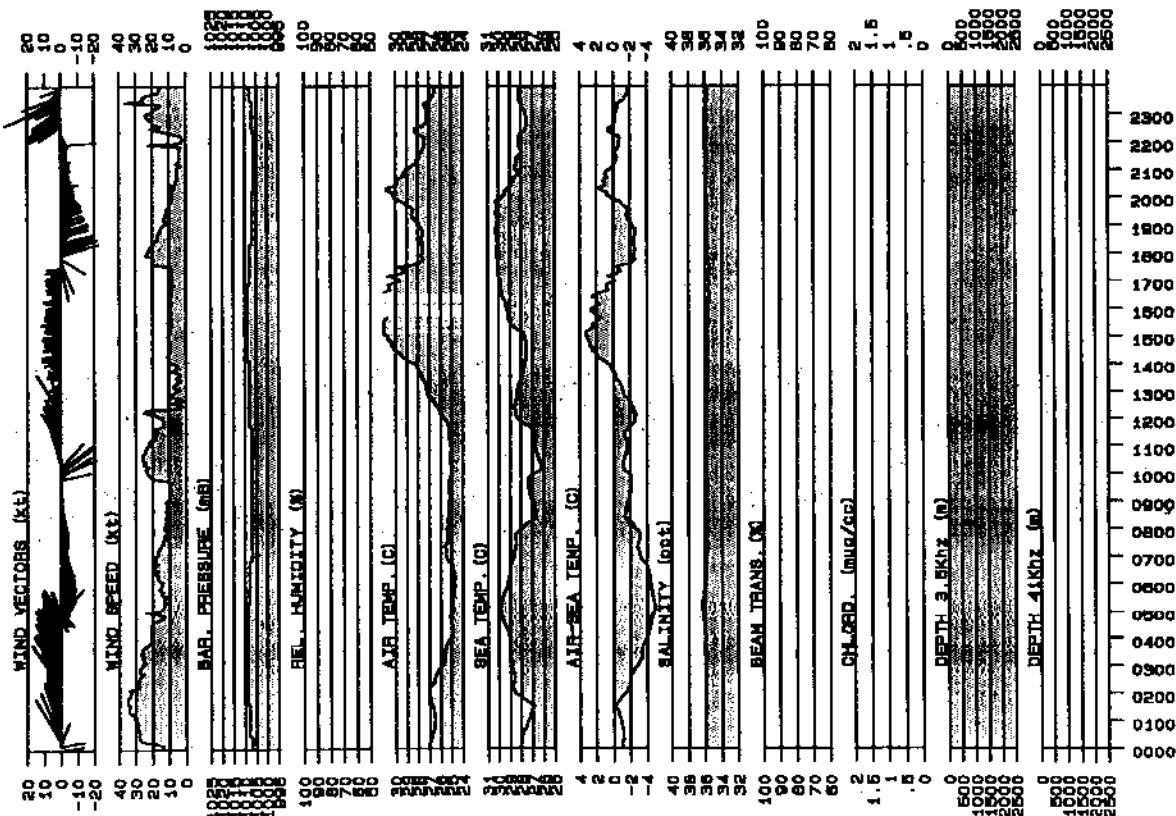
# LONGHORN CRUISE 676 CHIX 96

SCIENTIFIC ACTIVITIES THIS DAY;

OTHER INVESTIGATIONS AND NOTES  
 SUN PHENOMENA  
 SUNRISE (06:48:54 LOCAL); THURSDAY; 10/03/96  
 L.A. NOON (12:43:12 LOCAL); THURSDAY; 10/03/96  
 SUNSET (18:41:18 LOCAL); THURSDAY; 10/03/96



# LONGHORN CRUISE 676 CHIX 96



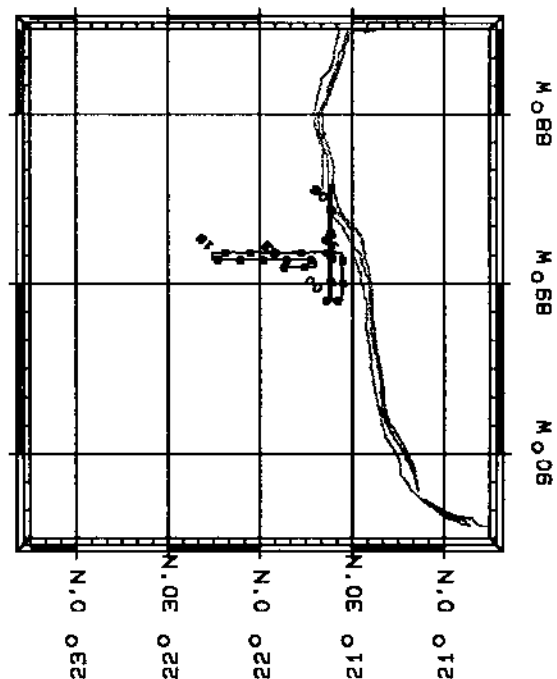
# CRUISE UNDERWAY DATA: 10-04-1996

## SCIENTIFIC ACTIVITIES THIS DAY:

### OTHER INVESTIGATIONS and NOTES

#### SUN PHENOMENA

SUNRISE (08: 47: 55 LOCAL); FRIDAY, 10/04/96  
 L.A. NOON (12: 43: 38 LOCAL); FRIDAY, 10/04/96  
 SUNSET (18: 38: 41 LOCAL); FRIDAY, 10/04/96



# LONGHORN CRUISE 676 CHIX 96

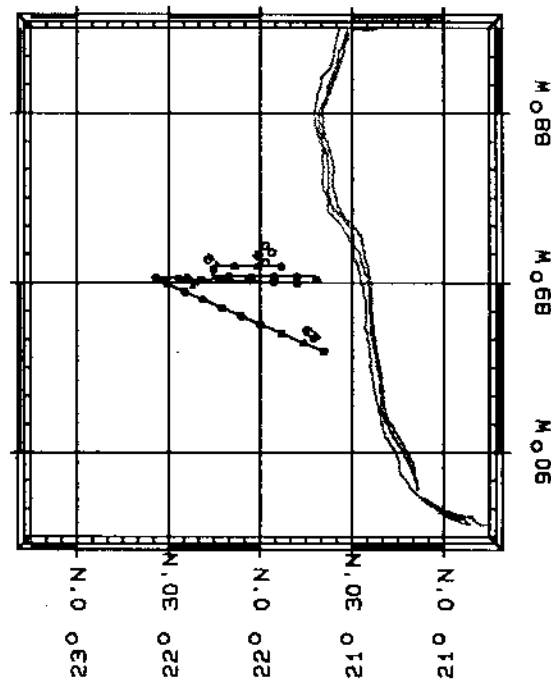
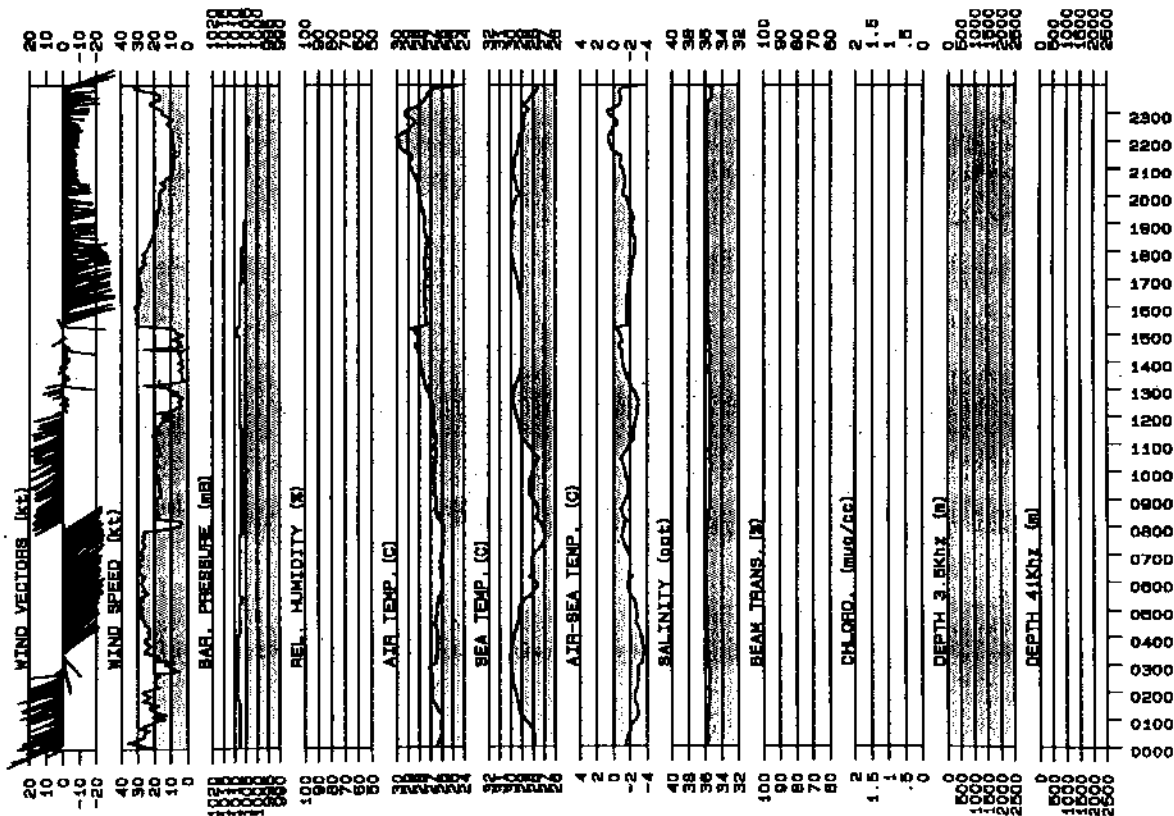
# CRUISE UNDERWAY DATA; 10-05-1996

## SCIENTIFIC ACTIVITIES THIS DAY:

### OTHER INVESTIGATIONS and NOTES

#### SUN PHENOMENA

SUNRISE (08:48:50 LOCAL); SATURDAY; 10/05/96  
 L.A. NOON (12:44:18 LOCAL); SATURDAY; 10/05/96  
 SUNSET (18:40:45 LOCAL); SATURDAY; 10/05/96



LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA: 10-06-1996

SCIENTIFIC ACTIVITIES THIS DAY;

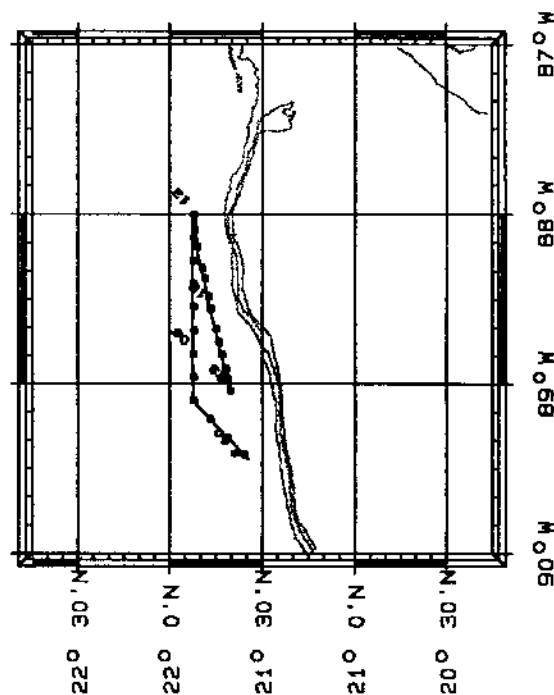
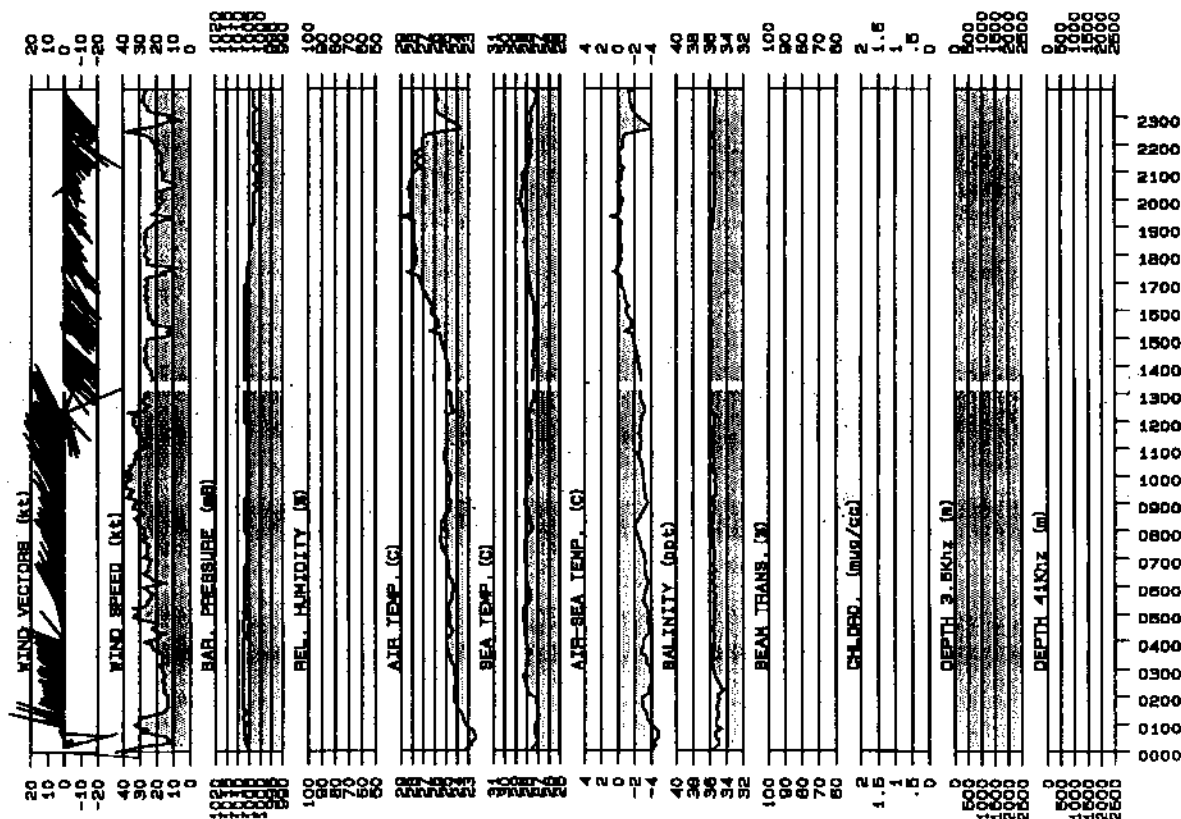
OTHER INVESTIGATIONS AND NOTES

SUN PHENOMENA

SUNRISE (06:48:17 LOCAL); SUNDAY; 10/06/96

L.A. NOON (12:41:42 LOCAL); SUNDAY; 10/06/96

SUNSET (18:38:21 LOCAL); SUNDAY; 10/06/96





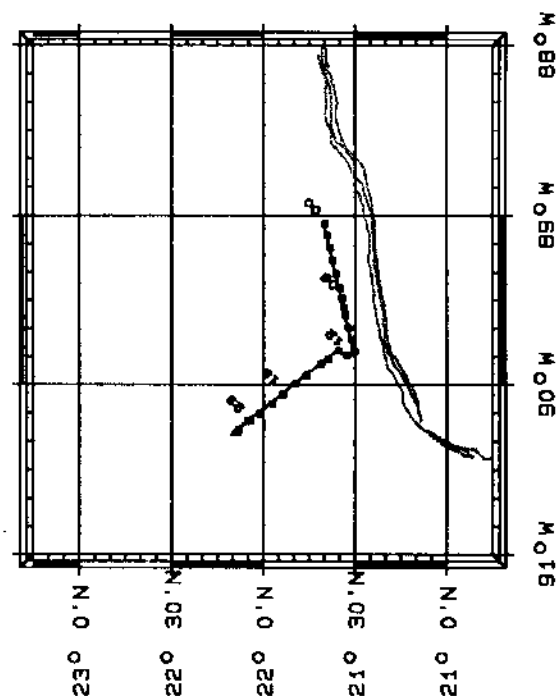
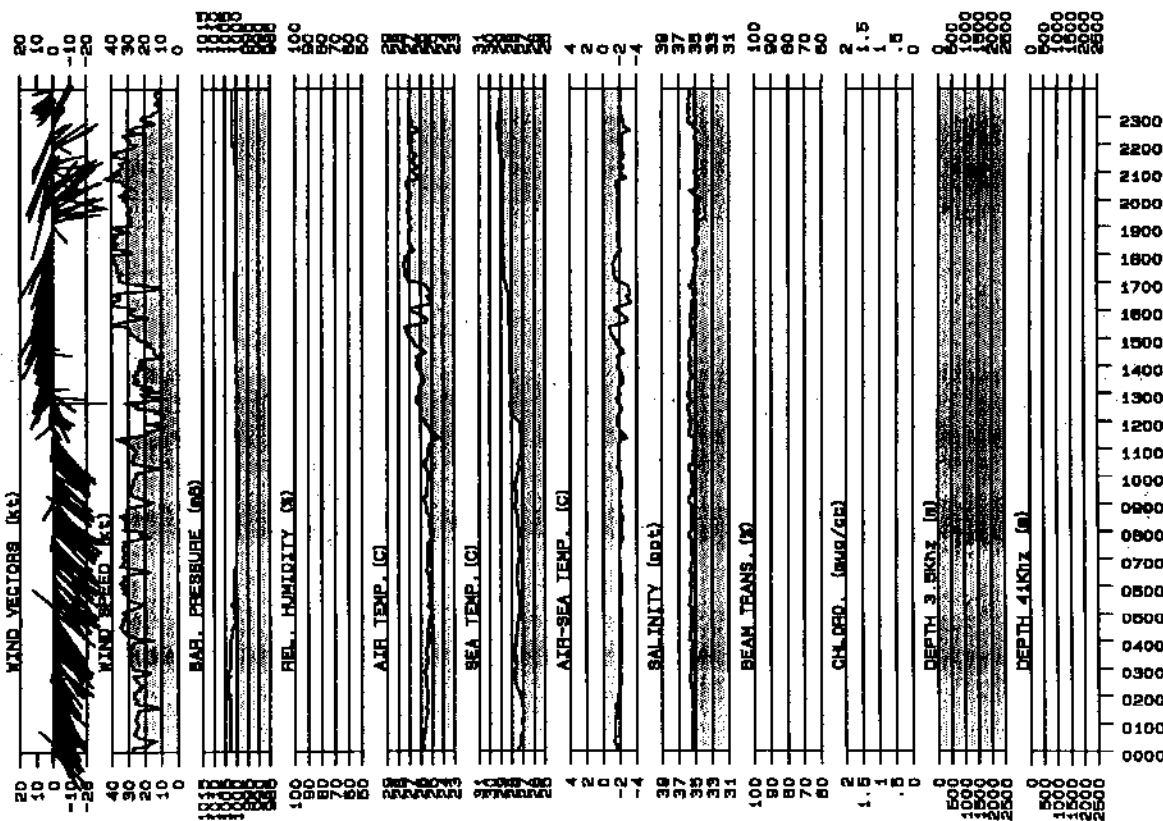
# LONGHORN CRUISE 676 CHIX 96

CRUISE UNDERWAY DATA: 10-07-1996

## SCIENTIFIC ACTIVITIES THIS DAY:

### OTHER INVESTIGATIONS AND NOTES

SUN PHENOMENA  
 SUNRISE (06:52:34 LOCAL); MONDAY; 10/07/96  
 L.A. NOON (12:47:34 LOCAL); MONDAY; 10/07/96  
 SUNSET (18:42:10 LOCAL); MONDAY; 10/07/96



# LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA: 10-08-1996

## SCIENTIFIC ACTIVITIES THIS DAY;

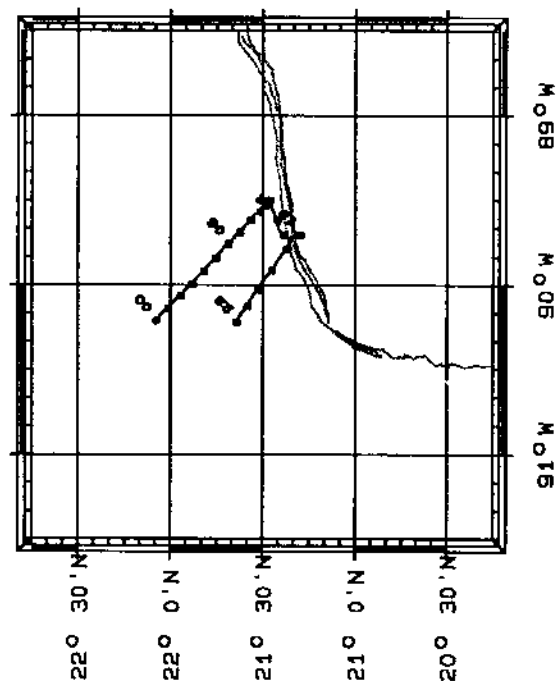
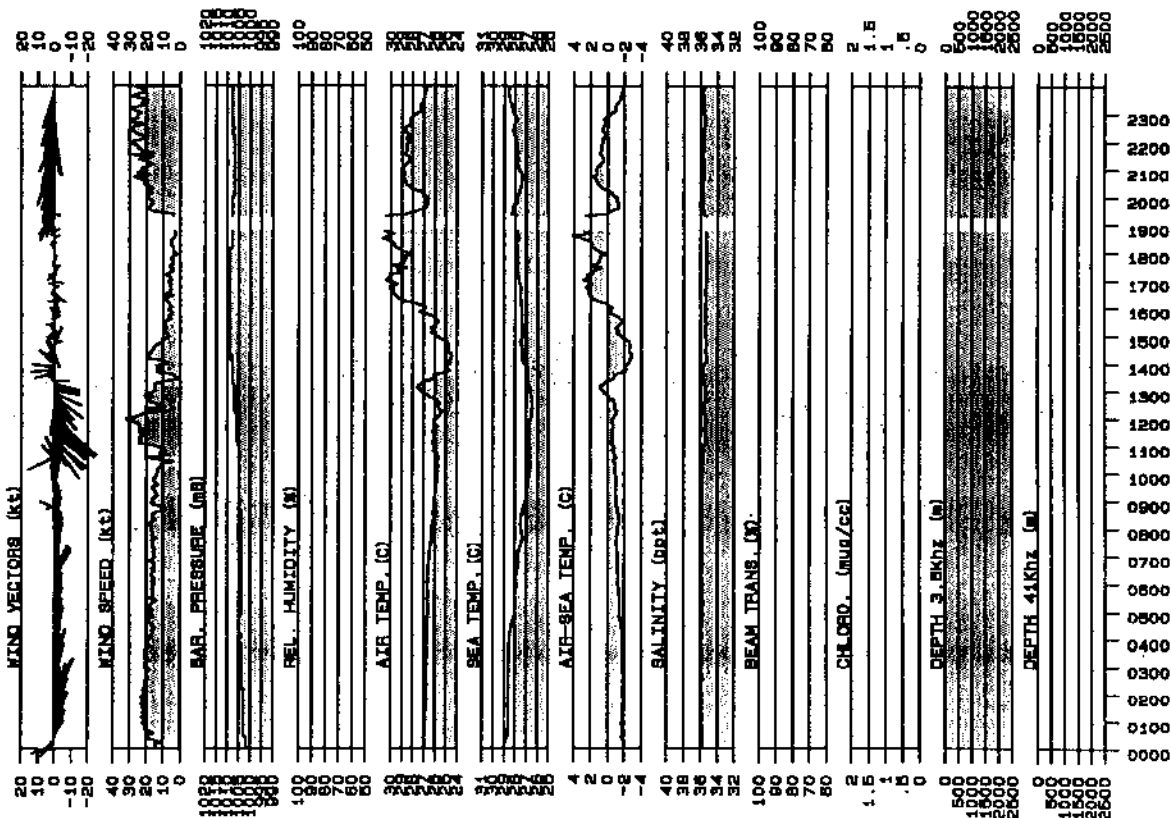
### OTHER INVESTIGATIONS and NOTES

#### SUN PHENOMENA

SUNRISE (08: 51: 57 LOCAL); TUESDAY: 10/08/96

L.A. NOON (12: 46: 58 LOCAL); TUESDAY: 10/08/96

SUNSET (16: 41: 26 LOCAL); TUESDAY: 10/08/96



# LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA; 10-09-1996

## SCIENTIFIC ACTIVITIES THIS DAY;

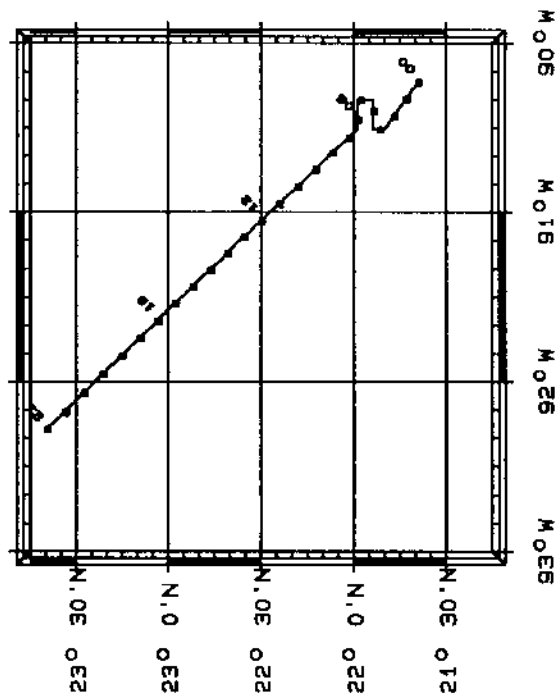
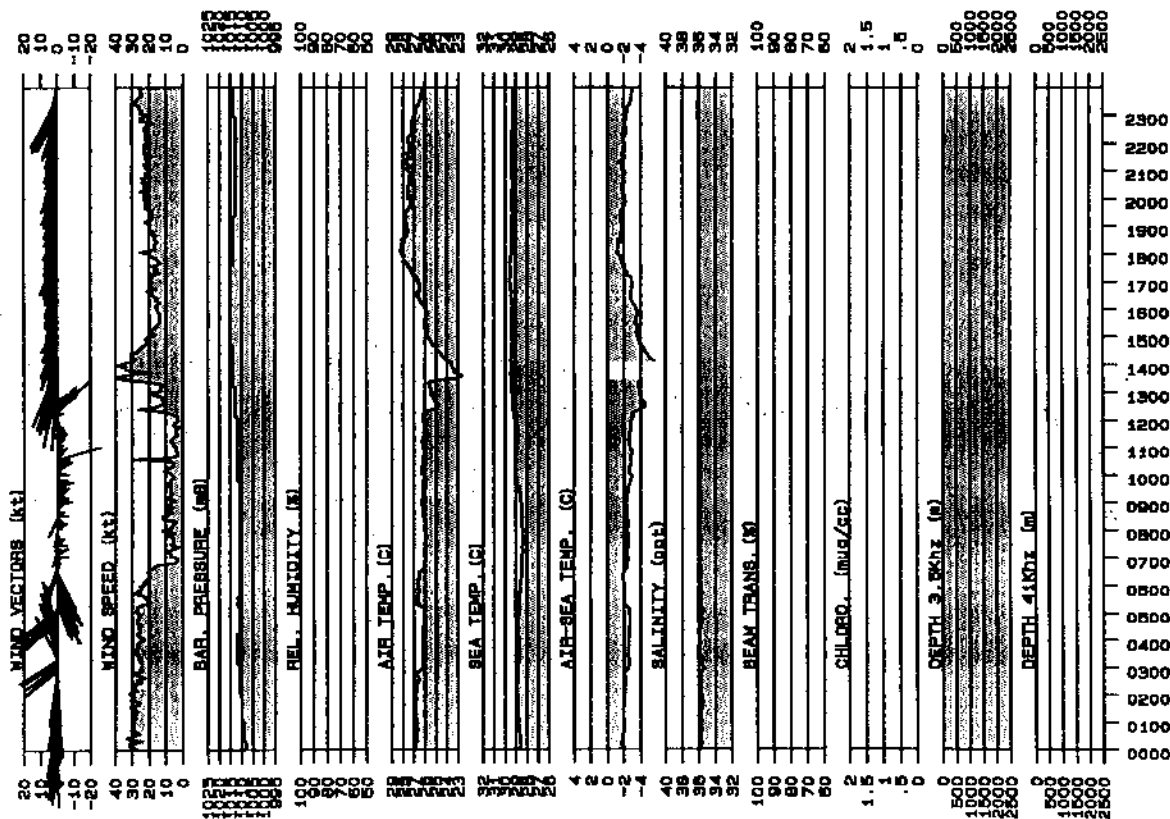
### OTHER INVESTIGATIONS AND NOTES

#### SUN PHENOMENA

SUNRISE (08:58:36 LOCAL); WEDNESDAY; 10/09/96

L.A. NOON (12:52:18 LOCAL); WEDNESDAY; 10/09/96

SUNSET (18:47:39 LOCAL); WEDNESDAY; 10/09/96



# LONGHORN CRUISE 676 CHIX 96 CRUISE UNDERWAY DATA: 10-10-1996

## SCIENTIFIC ACTIVITIES THIS DAY:

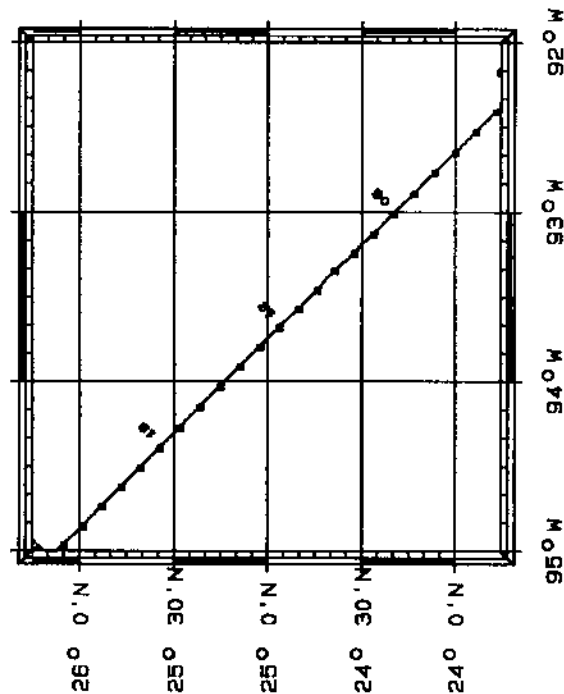
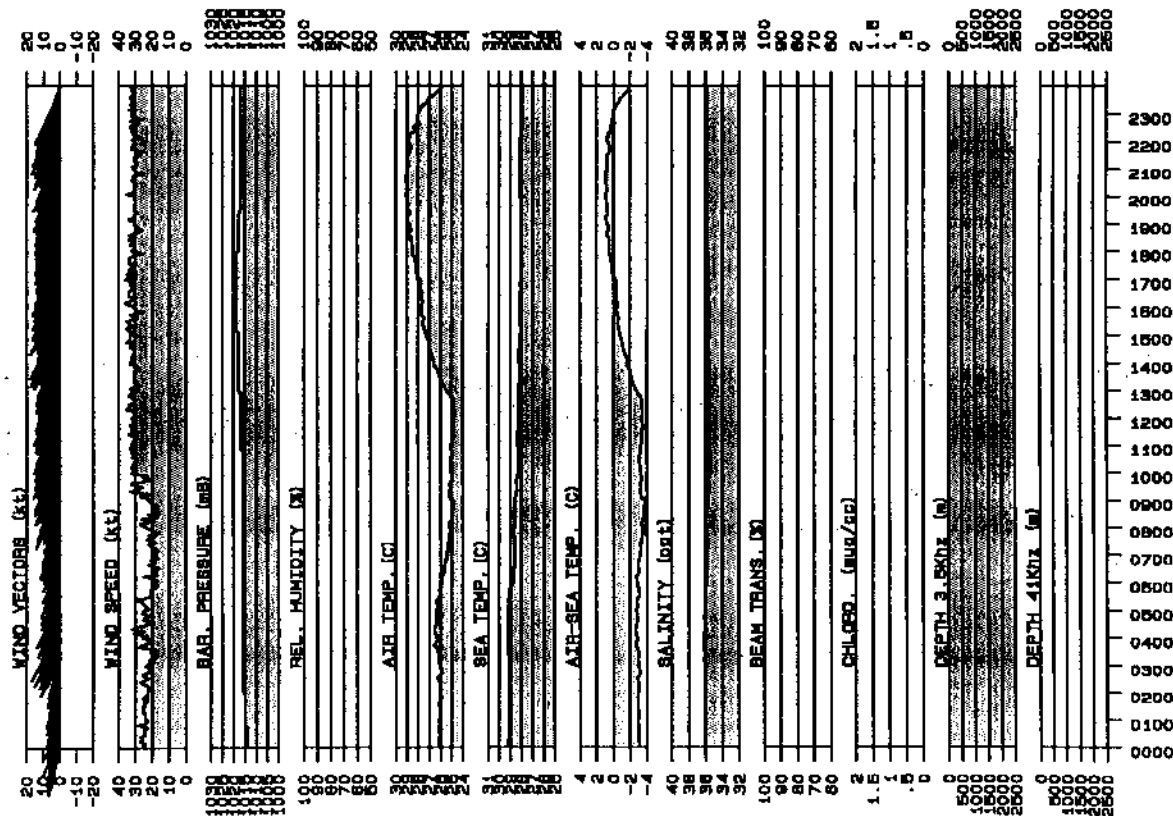
OTHER INVESTIGATIONS AND NOTES

SUN PHENOMENA

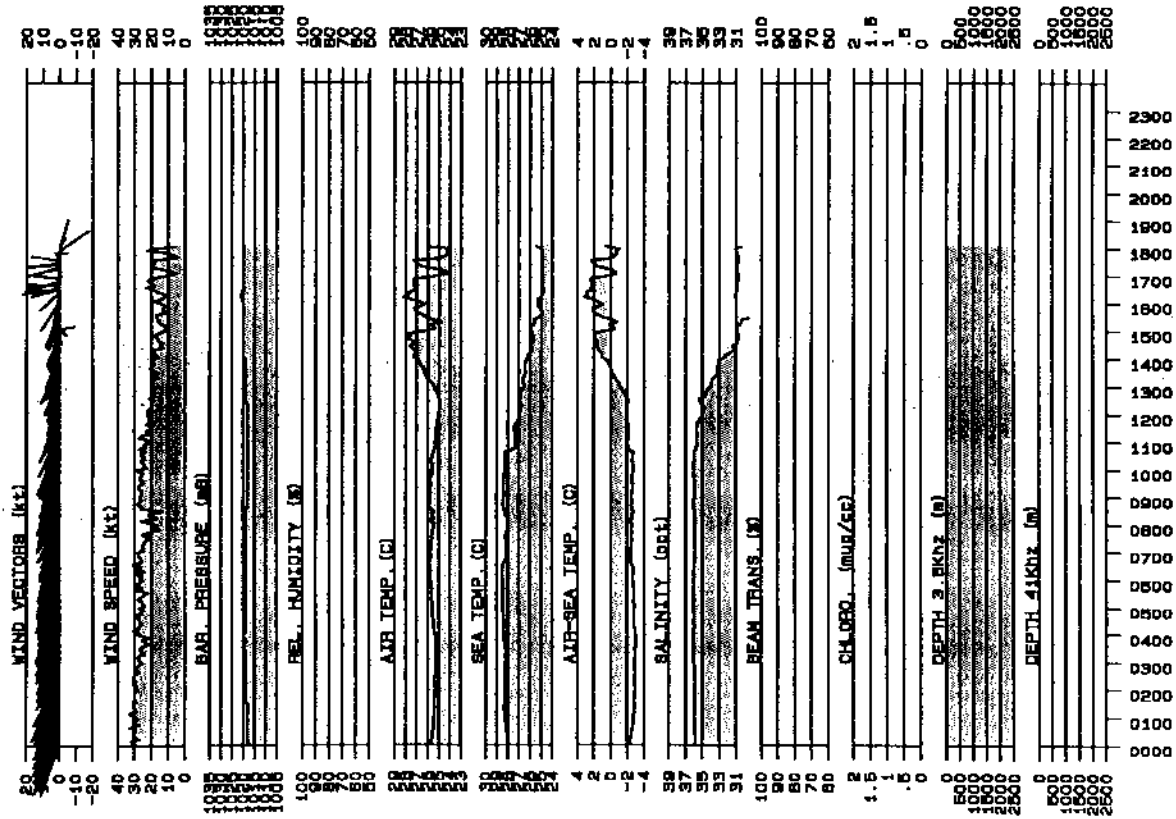
SUNRISE (07:10:57 LOCAL): THURSDAY: 10/10/96

L.A. NOON (13:04:07 LOCAL): THURSDAY: 10/10/96

SUNSET (18:56:28 LOCAL): THURSDAY: 10/10/96

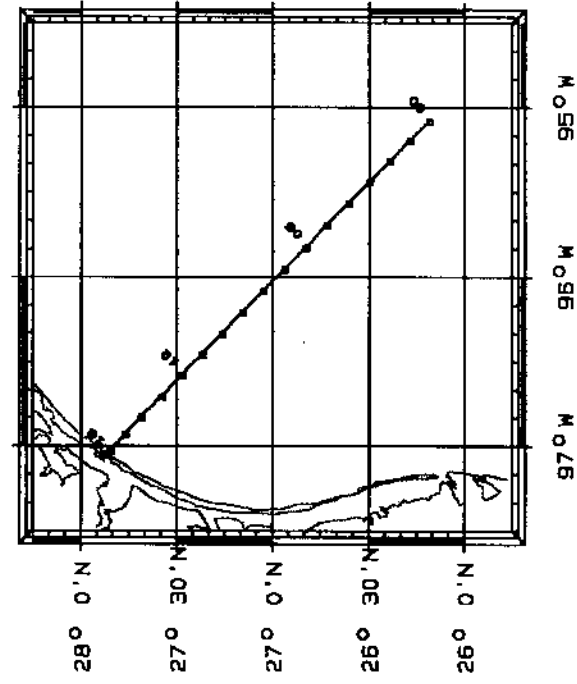


LONGHORN CRUISE 676 CHIX 96



SCIENTIFIC ACTIVITIES THIS DAY;

STD CASTS  
TIME LATITUDE LONGITUDE EVENT  
1501 27 44.09N 96 00.94W 03  
OTHER INVESTIGATIONS and NOTES  
SUN PHENOMENA  
SUNRISE (07:24:43 LOCAL); FRIDAY; 10/11/96



**ATTACHMENT NO. 6 - DATA FROM CTD STATION NO. 1 - TABLES PLUS  
VARIOUS GRAPHS**

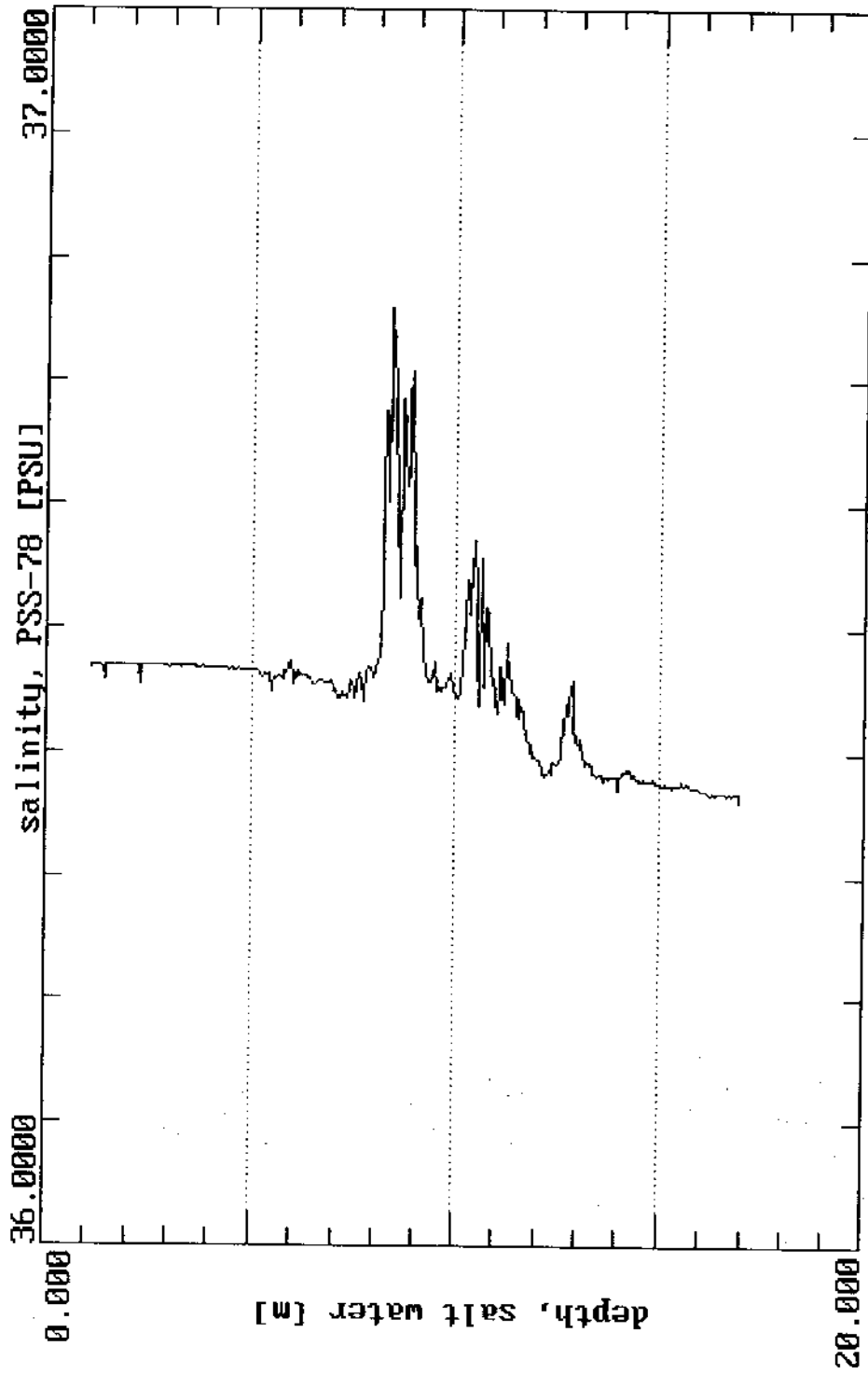
**(7 PAGES)**

```
* Sea-Bird SBE 9 Raw Data File:
* FileName = D:\CHIX96\CTDRAW\CHIX01DN.DAT
* Software Version 4.216
* Temperature SN = 1278
* Conductivity SN = 510
* Number of Bytes Per Scan = 24
* Number of Voltage Words = 4
* System UpLoad Time = Sep 25 1996 07:42:05
* Ship:LONGHORN
* Cruise:CHIX 96
* Station:01
* Latitude:21 30.109N
* Longitude:89 44.14W
# nquan = 13
# nvalues = 17
# units = metric
# name 0 = pr: pressure [db]
# name 1 = depS: depth, salt water [m]
# name 2 = t068: temperature, IPTS-68 [deg C]
# name 3 = sal00: salinity, PSS-78 [PSU]
# name 4 = svC: sound velocity, chen millero [m/s]
# name 5 = oxMm/Kg: oxygen [ $\mu$ mol/kg]
# name 6 = oxC: oxygen, current [ $\mu$ A]
# name 7 = oxT: oxygen, temperature [deg C]
# name 8 = par: irradiance (PAR)
# name 9 = xmiss: transmissometer
# name 10 = v0: voltage, number 0 [V]
# name 11 = c0S/m: conductivity [S/m]
# name 12 = flag: 0.000e+00
# span 0 = 1.000, 17.000
# span 1 = 0.993, 16.888
# span 2 = 20.7782, 26.6344
# span 3 = 36.3652, 36.5757
# span 4 = 1525.39, 1539.82
# span 5 = 52.50083, 150.71352
# span 6 = 0.24743, 0.70909
# span 7 = 26.82114, 26.86512
# span 8 = 9.463e+00, 3.358e+02
# span 9 = 68.92, 88.31
# span 10 = 0.472, 5.108
# span 11 = 5.037958, 5.681740
# span 12 = 0.000e+00, 0.000e+00
# interval = decibars: 1
# start_time = Sep 25 1996 07:42:05
```

Pr	Deps	T068	Sal00	SVC	OxMm/Kg	OxC	OxT	Par	Xmiss	V0	Cos/m	Flag
1.000	3.993	26.6344	36.4711	1539.82	142.58330	0.70697	26.82114	3.358e+02	88.31	0.472	5.681740	0.000e+00
2.000	1.987	26.6179	36.4685	1539.80	143.05998	0.70909	26.82114	2.652e+02	88.09	0.523	5.679543	0.000e+00
3.000	2.980	26.6029	36.4704	1539.79	142.21588	0.70699	26.82305	2.095e+02	88.16	0.537	5.678185	0.000e+00
4.000	3.974	26.5889	36.4688	1539.77	142.71201	0.70729	26.82990	1.771e+02	88.06	0.548	5.676444	0.000e+00
5.000	4.967	26.5185	36.4663	1539.62	143.02144	0.70776	26.83205	1.443e+02	87.91	0.529	5.667696	0.000e+00
6.000	5.961	26.3054	36.4631	1539.14	143.57974	0.70660	26.83693	1.001e+02	87.40	0.555	5.644069	0.000e+00
7.000	6.954	26.2926	36.4530	1539.12	141.06370	0.70042	26.84255	8.026e+01	87.32	0.612	5.640490	0.000e+00
8.000	7.947	25.2316	36.5193	1536.69	145.61822	0.69774	26.84285	6.501e+01	87.09	0.702	5.527633	0.000e+00
9.000	8.941	22.2692	36.5757	1529.43	150.71352	0.67599	26.84749	5.634e+01	86.16	0.846	5.211818	0.000e+00
10.000	9.934	21.0806	36.4654	1526.21	137.95601	0.62538	26.85358	4.887e+01	86.17	1.042	5.071814	0.000e+00
11.000	10.928	21.0567	36.4697	1526.16	103.27963	0.51611	26.85374	4.009e+01	86.51	0.943	5.072972	0.000e+00
12.000	11.921	20.9181	36.4069	1525.73	92.16412	0.44462	26.85705	3.193e+01	86.63	1.058	5.052360	0.000e+00
13.000	12.914	20.8280	36.4075	1525.51	85.20343	0.39660	26.86407	2.703e+01	86.26	1.101	5.044615	0.000e+00
14.000	13.908	20.7962	36.3808	1525.41	73.97748	0.35167	26.86467	2.285e+01	80.95	1.859	5.039219	0.000e+00
15.000	14.901	20.7824	36.3769	1525.39	69.26974	0.31765	26.86466	1.821e+01	73.76	3.457	5.038375	0.000e+00
16.000	15.894	20.7782	36.3720	1525.39	56.23862	0.27353	26.86466	1.426e+01	70.10	4.645	5.038166	0.000e+00
17.000	16.888	20.7787	36.3652	1525.40	52.50083	0.24743	26.86512	9.463e+00	68.92	5.108	5.037958	0.000e+00

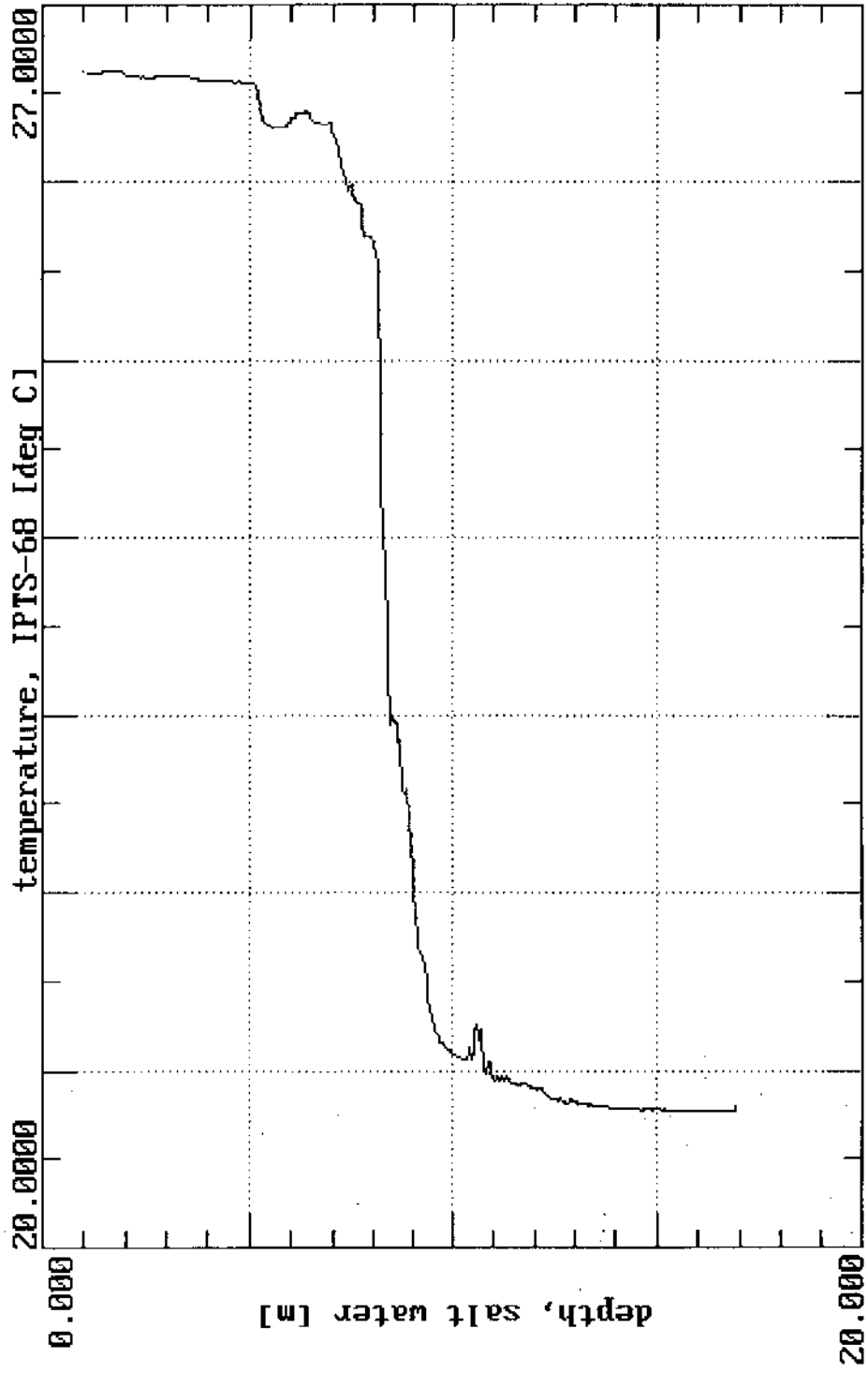


## CHIX 96 CRUISE 676 STATION 01 DOWNCAST



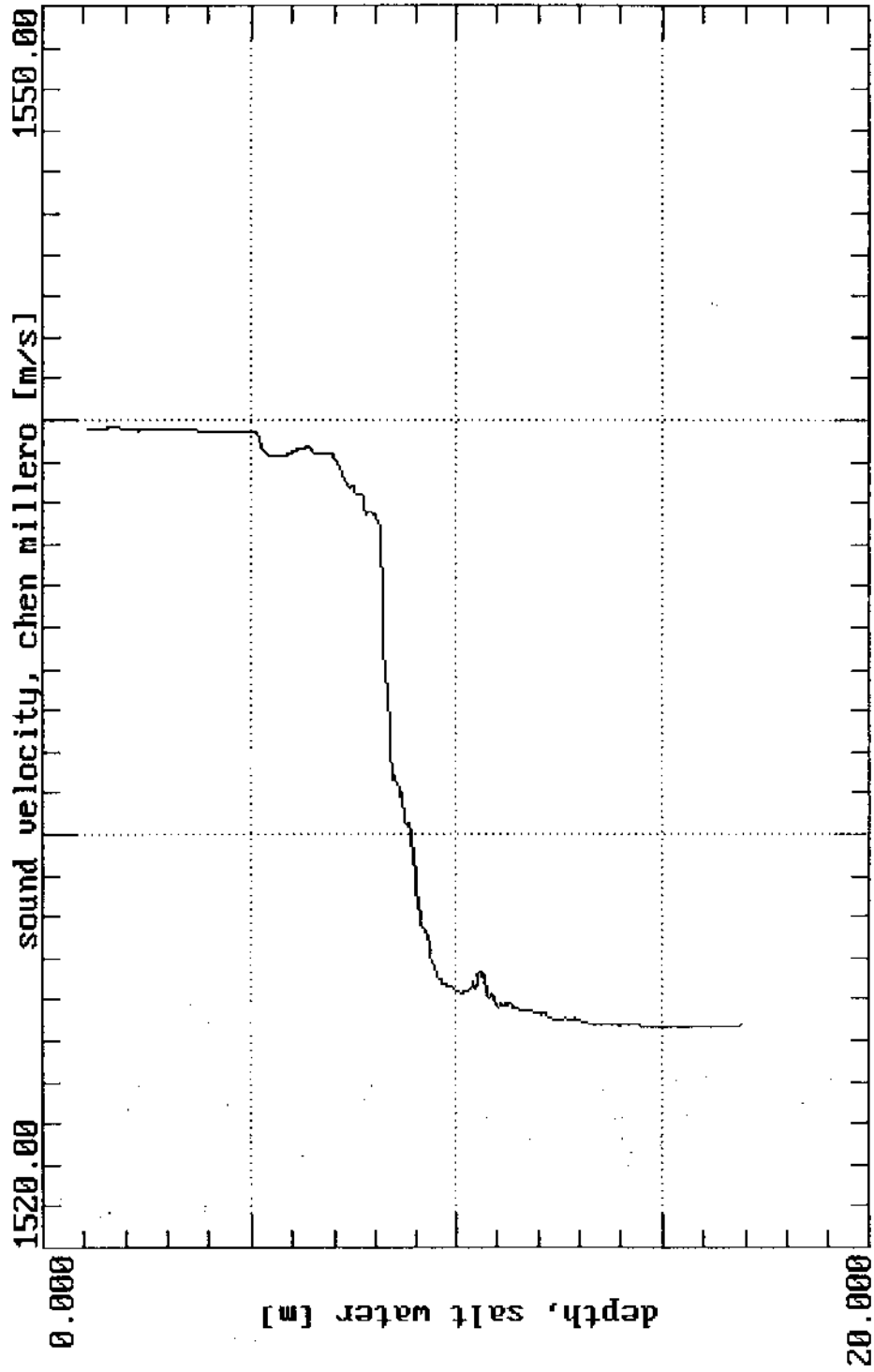
U6 = 0.022 DepS=16.979 T068=20.7962 Sal= 36.3600 CHIX01DN.DAT

## CHIX 96 CRUISE 676 STATION 01 DOWNCAST



U6 = 0.022 DepS=16.979 T068=20.7962 Sal= 36.3600 CHIX01DN.DAT

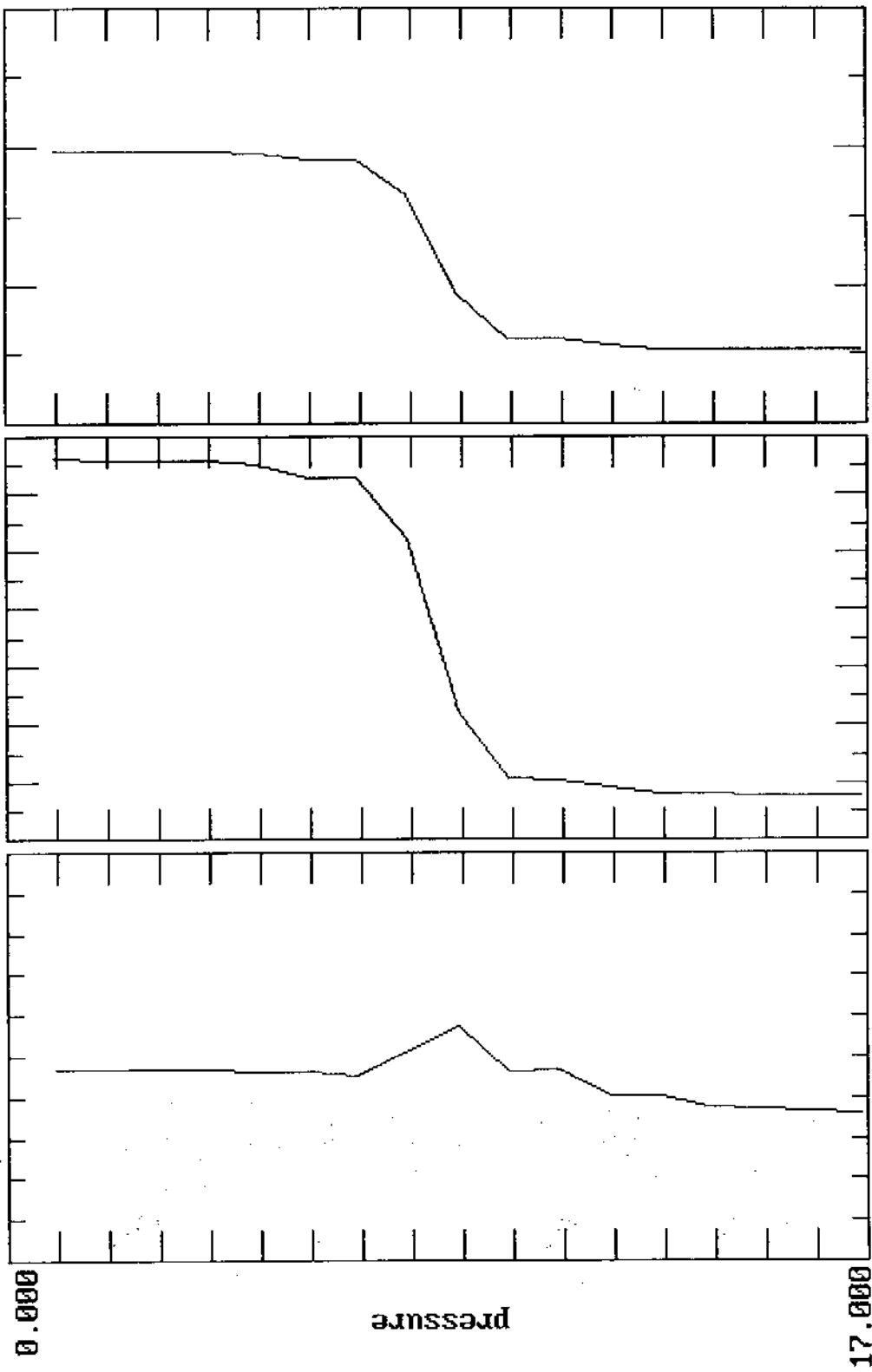
CHIX 96 CRUISE 676 STATION 01 DOWNCAST

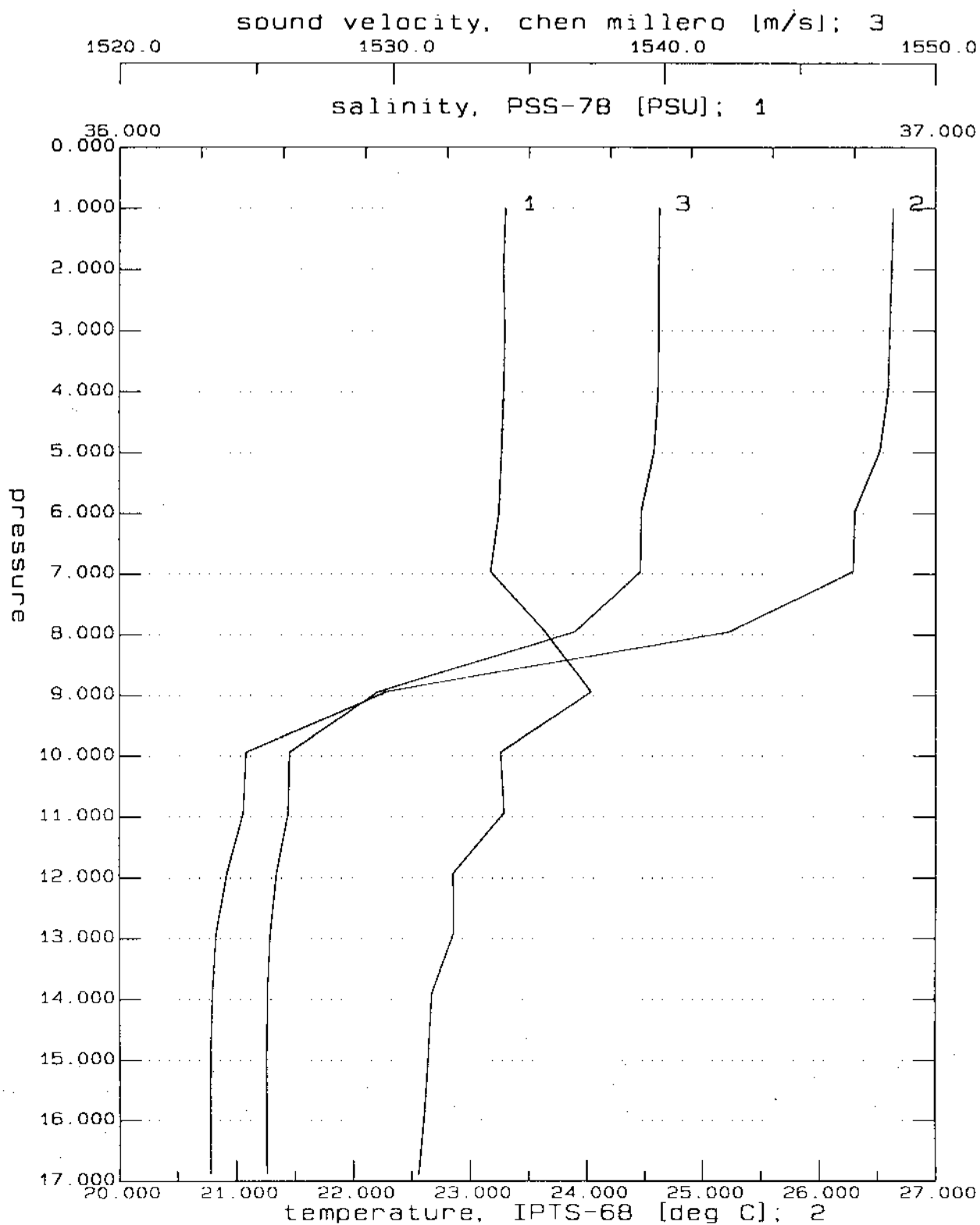


U6 = 0.022      DepS=16.979      T068=20.7962      Sal= 36.3600      CHIX01DN.DAT

## CHIX01DN.CNV: CHIX 96 CRUISE 676 STATION 01 DOWNTIME

salinity, PSS-78 IPSU temperature, IPTS-68 Id sound velocity, chen mi  
36.0000 37.0000 20.0000 27.0000 1520.00 1550.00





CHIX01DN.CNV: CHIX 96 CRUISE 676 STATION 01 DOWNTRACE

**ATTACHMENT NO. 7 - DATA FROM CTD STATION NO. 2 - TABLES PLUS  
VARIOUS GRAPHS**

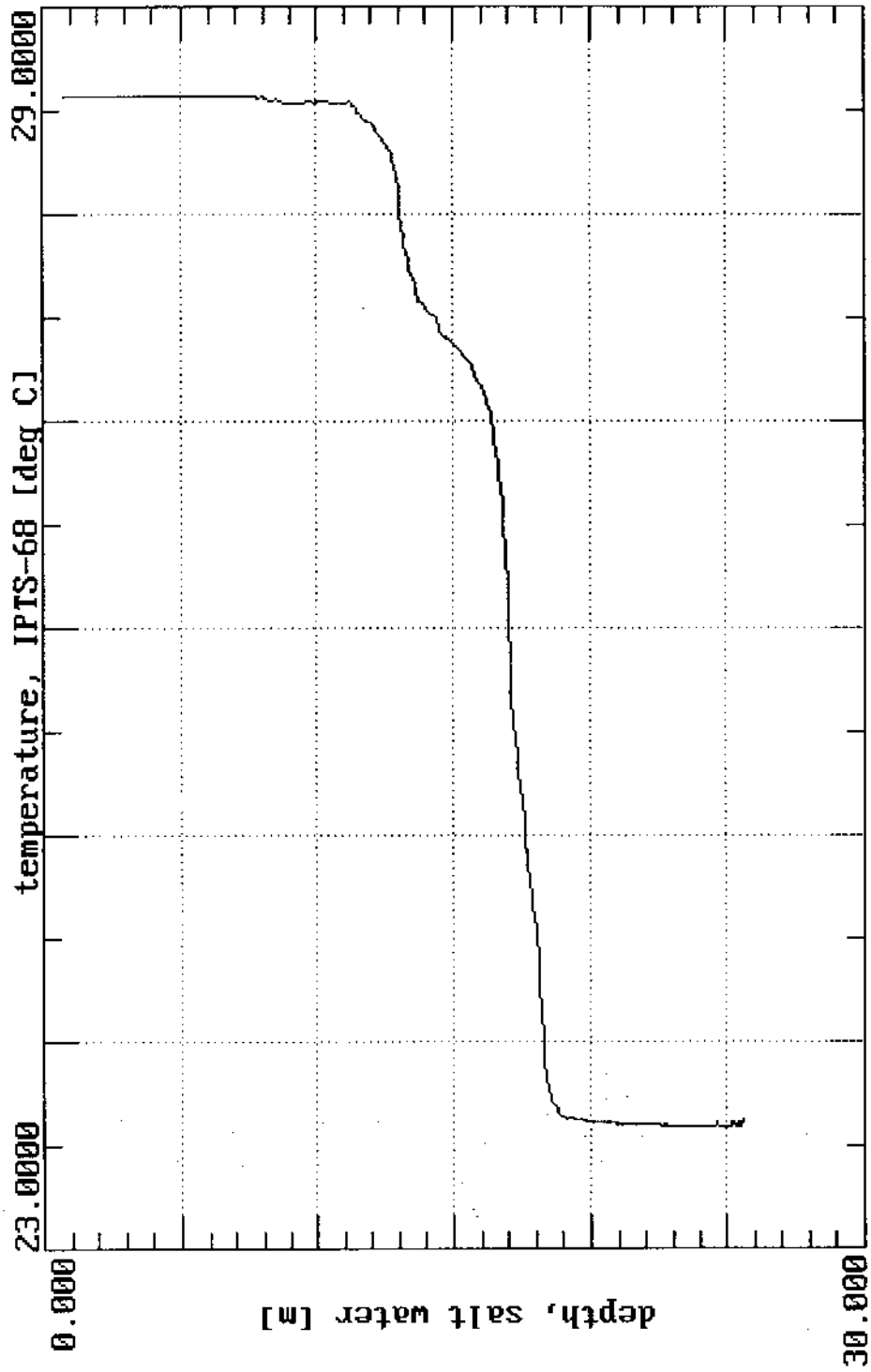
**(7 PAGES)**

```
* Sea-Bird SBE 9 Raw Data File:
* FileName = D:\CHIX96\CTDRAW\CHIX02DN.DAT
* Software Version 4.216
* Temperature SN = 1278
* Conductivity SN = 510
* Number of Bytes Per Scan = 24
* Number of Voltage Words = 4
* System UpLoad Time = Sep 26 1996 01:18:29
* Ship:LONGHORN
* Cruise:CHIX 96
* Station:02
* Latitude:21 16.518N
* Longitude:90 57.147W
# nquan = 13
# nvalues = 26
# units = metric
# name 0 = pr: pressure [db]
# name 1 = depS: depth, salt water [m]
# name 2 = t068: temperature, IPTS-68 [deg C]
# name 3 = sal00: salinity, PSS-78 [PSU]
# name 4 = svC: sound velocity, chen millero [m/s]
# name 5 = oxMm/Kg: oxygen [ $\mu$ mol/kg]
# name 6 = oxC: oxygen, current [ $\mu$ A]
# name 7 = oxT: oxygen, temperature [deg C]
# name 8 = par: irradiance (PAR)
# name 9 = xmiss: transmissometer
# name 10 = v0: voltage, number 0 [V]
# name 11 = c0S/m: conductivity [S/m]
# name 12 = flag: 0.000e+00
# span 0 = 1.000, 26.000
# span 1 = 0.993, 25.828
# span 2 = 23.6007, 28.5747
# span 3 = 36.4067, 36.4866
# span 4 = 1532.92, 1544.20
# span 5 = 161.10327, 180.31176
# span 6 = 0.78773, 0.88758
# span 7 = 28.69352, 28.74862
# span 8 = 6.160e-02, 2.194e+00
# span 9 = 79.13, 89.30
# span 10 = 0.230, 1.274
# span 11 = 5.346080, 5.889344
# span 12 = 0.000e+00, 0.000e+00
# interval = decibars: 1
# start_time = Sep 26 1996 01:18:29
```

Pr	DepS	TotS	Sal00	SVC	OxHm/Kg	OxC	OxT	Par	Xmisa	VO	COS/m	Flag
1.000	0.993	28.5726	36.4362	1544.09	161.88358	0.88156	28.69352	2.194e+00	89.28	0.265	5.889105	0.000e+00
2.000	1.987	28.5722	36.4363	1544.11	162.19085	0.88228	28.70292	1.222e+00	89.17	0.273	5.889117	0.000e+00
3.000	2.980	28.5747	36.4356	1544.13	162.08717	0.88205	28.70292	7.405e-01	89.26	0.275	5.889344	0.000e+00
4.000	3.973	28.5738	36.4360	1544.15	161.70269	0.88104	28.70354	4.380e-01	89.29	0.263	5.889335	0.000e+00
5.000	4.967	28.5721	36.4357	1544.16	161.53325	0.88070	28.70359	3.674e-01	89.27	0.244	5.889119	0.000e+00
6.000	5.960	28.5728	36.4361	1544.18	161.96573	0.88107	28.70842	2.745e-01	89.28	0.244	5.889327	0.000e+00
7.000	6.954	28.5705	36.4357	1544.19	161.71890	0.87993	28.71078	2.317e-01	89.30	0.241	5.889038	0.000e+00
8.000	7.947	28.5671	36.4352	1544.20	161.10327	0.87917	28.71412	1.798e-01	89.30	0.230	5.888636	0.000e+00
9.000	8.941	28.5443	36.4344	1544.17	162.43319	0.88103	28.71442	1.199e-01	89.24	0.236	5.886004	0.000e+00
10.000	9.934	28.5478	36.4343	1544.19	162.29232	0.88237	28.71447	1.020e-01	89.24	0.249	5.886431	0.000e+00
11.000	10.927	28.5430	36.4341	1544.20	162.86338	0.88288	28.71826	9.244e-02	89.27	0.254	5.885862	0.000e+00
12.000	11.921	28.4516	36.4312	1544.01	162.39785	0.88146	28.72414	7.923e-02	89.25	0.247	5.874998	0.000e+00
13.000	12.914	28.1778	36.4225	1543.42	163.18064	0.88007	28.72552	7.002e-02	89.06	0.254	5.841959	0.000e+00
14.000	13.907	27.5950	36.4102	1542.14	165.83151	0.87913	28.72522	6.182e-02	88.88	0.261	5.775682	0.000e+00
15.000	14.901	27.4041	36.4085	1541.73	166.24142	0.87907	28.72535	6.160e-02	88.64	0.284	5.754332	0.000e+00
16.000	15.894	27.2117	36.4067	1541.32	169.71237	0.88467	28.72655	6.160e-02	88.36	0.335	5.732882	0.000e+00
17.000	16.888	26.3170	36.4208	1539.30	174.72772	0.88758	28.73105	6.160e-02	87.98	0.380	5.631963	0.000e+00
18.000	17.881	24.6897	36.4866	1535.55	180.31176	0.88200	28.73653	6.160e-02	87.41	0.458	5.461217	0.000e+00
19.000	18.874	23.6264	36.4843	1532.96	179.59979	0.86681	28.73623	6.160e-02	86.30	0.570	5.347002	0.000e+00
20.000	19.868	23.6239	36.4694	1532.95	175.55434	0.85132	28.73623	6.160e-02	83.81	0.702	5.347162	0.000e+00
21.000	20.861	23.6150	36.4571	1532.92	170.35262	0.82908	28.73623	6.160e-02	82.31	0.827	5.346080	0.000e+00
22.000	21.854	23.6107	36.4519	1532.93	167.46324	0.81503	28.73623	6.160e-02	81.48	0.936	5.346206	0.000e+00
23.000	22.848	23.6023	36.4475	1532.92	167.52005	0.80507	28.73977	6.160e-02	80.88	1.016	5.346089	0.000e+00
24.000	23.841	23.6007	36.4430	1532.93	168.40362	0.80130	28.74572	6.160e-02	79.54	1.065	5.346385	0.000e+00
25.000	24.834	23.6034	36.4395	1532.95	166.86009	0.79560	28.74862	6.160e-02	79.13	1.130	5.347346	0.000e+00

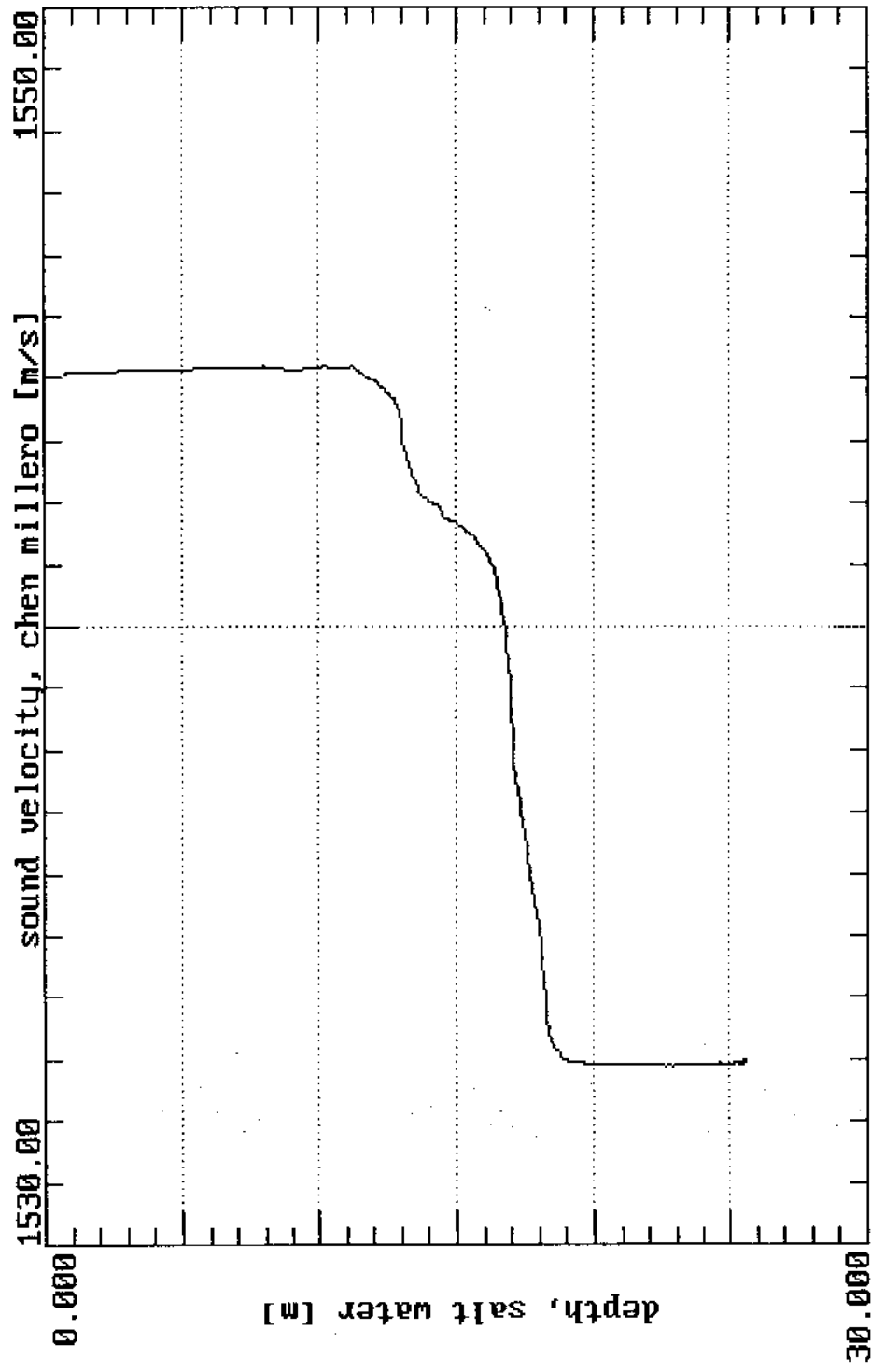


# CHIX 96 CRUISE 676 STATION 02 DOWNCAST



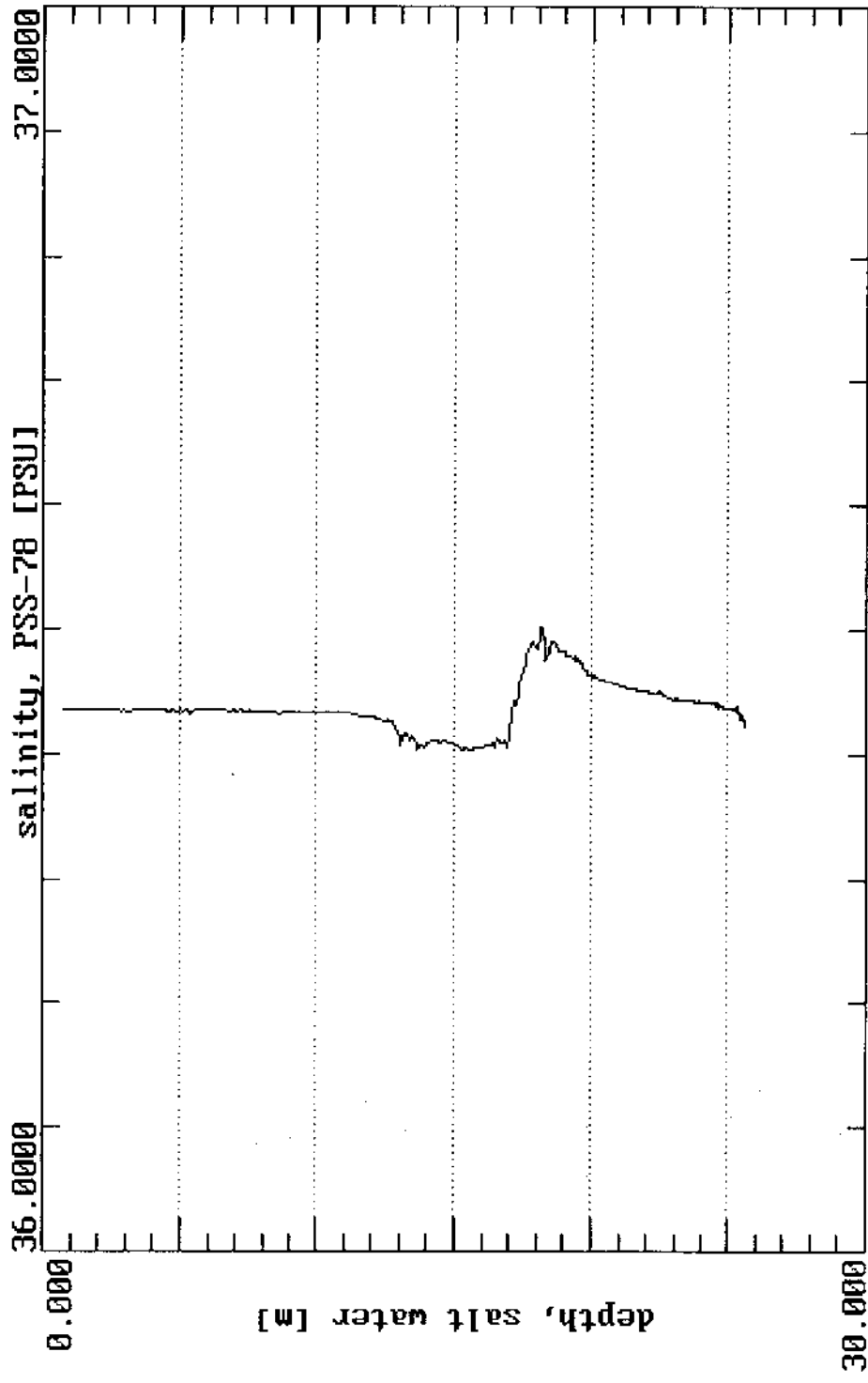
U6 = 0.088      DepS=25.319      T068=23.6029      Sal= 36.4276      CHIX02DN.DAT

## CHIX 96 CRUISE 676 STATION 02 DOWNCAST



U6 = 0.088 DepS=25.319 T068=23.6029 Sal= 36.4276 CHIX02DN.DAT

## CHIX 96 CRUISE 676 STATION 02 DOWNCAST



U6 = 0.088

DepS=25.319

T068=23.6029

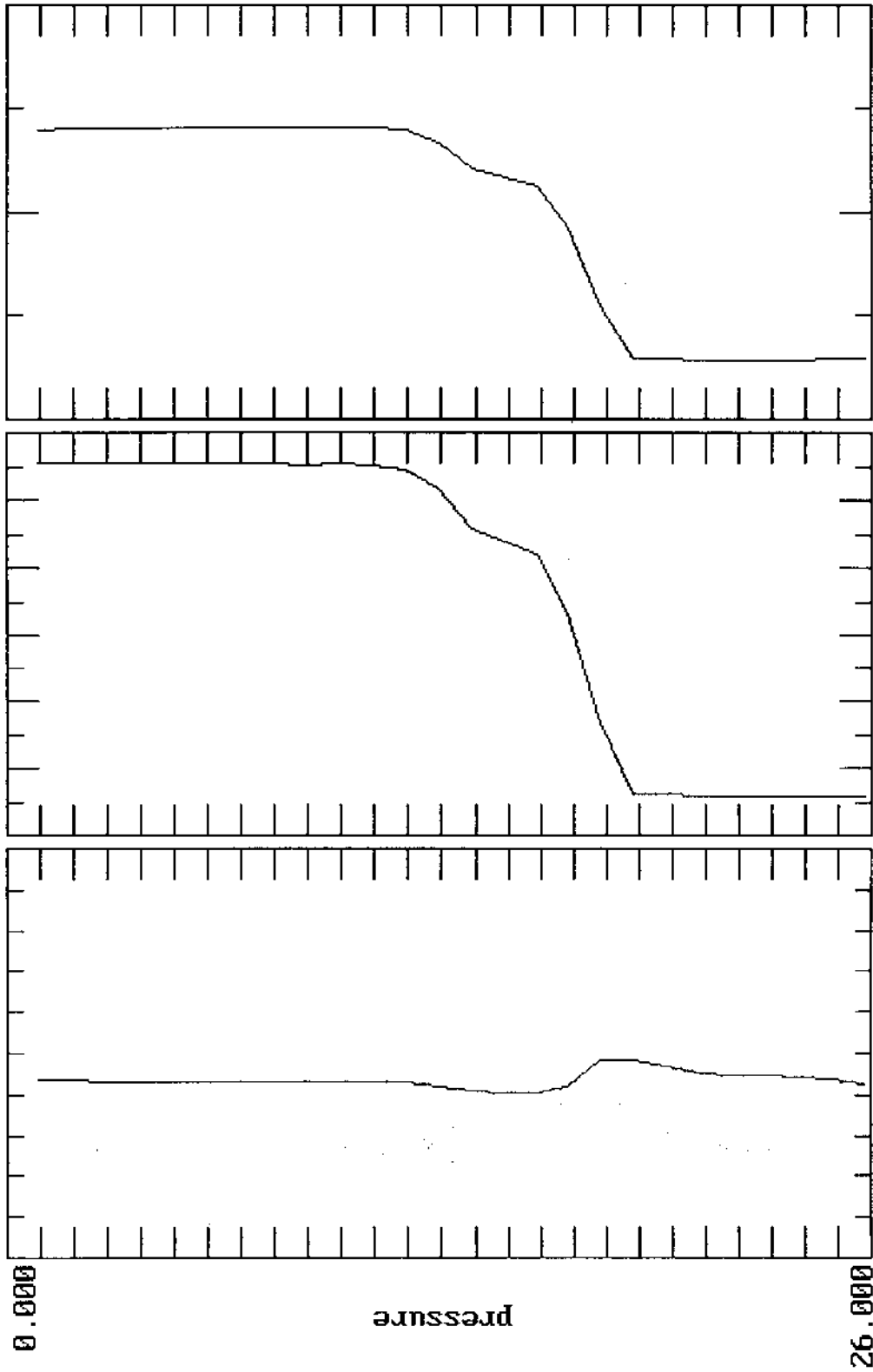
Sal= 36.4276

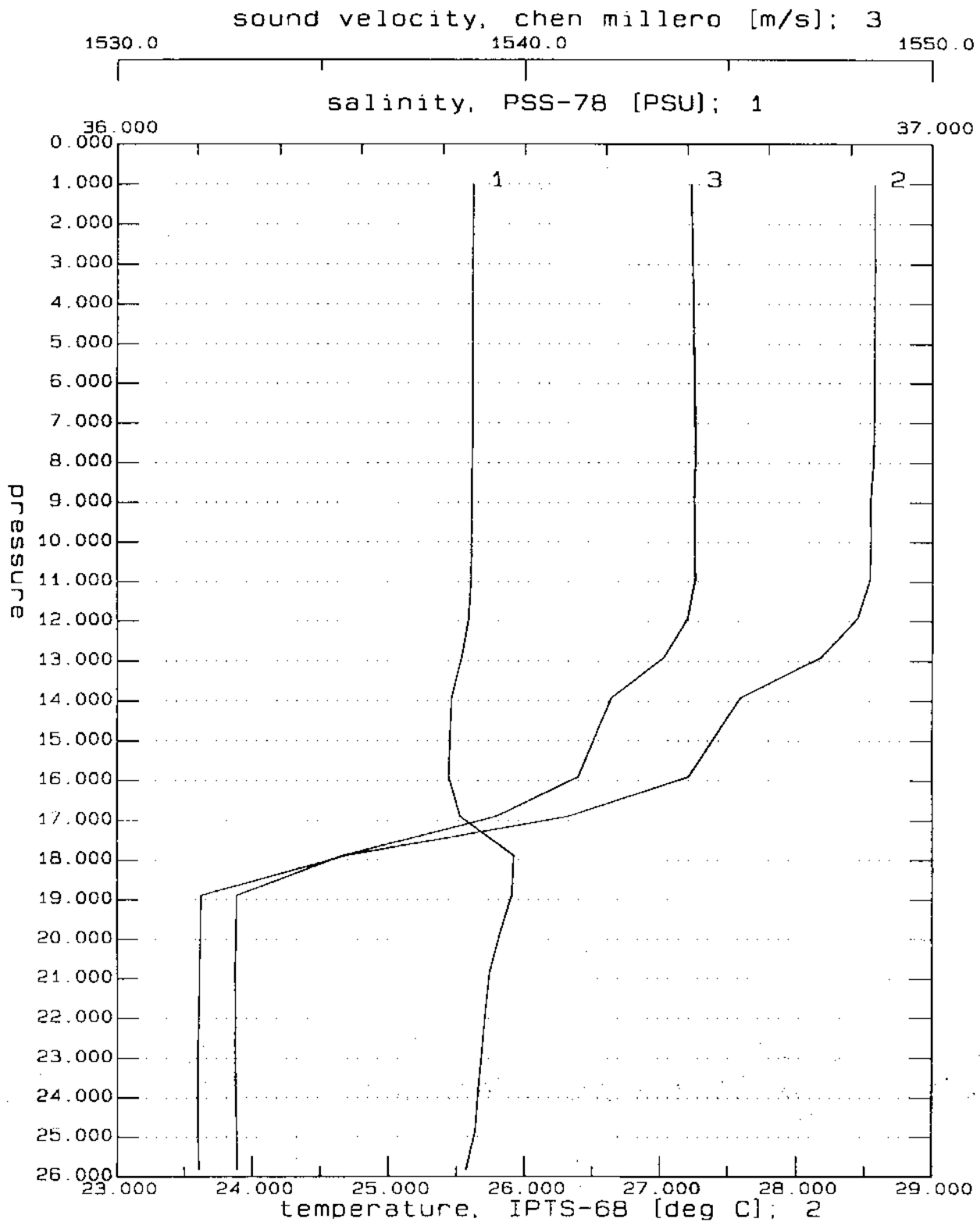
CHIX02DN.DAT

CHIX02DN.CNV: CHIX 96 CRUISE 676 STATION 02 DOWNTREACE

salinity, PSS-78 [PSU] temperature, IPTS-68 Id sound velocity, chen mi

36.0000 37.0000 23.0000 29.0000 1530.00 1550.00





CHIX02DN.CNV. CHIX 96 CRUISE 676 STATION 02 DOWNTRACE

# ATTACHMENT NO. 8 - SUMMARY OF DATA ON OBSs USED. LOCATION OF OBS STATIONS

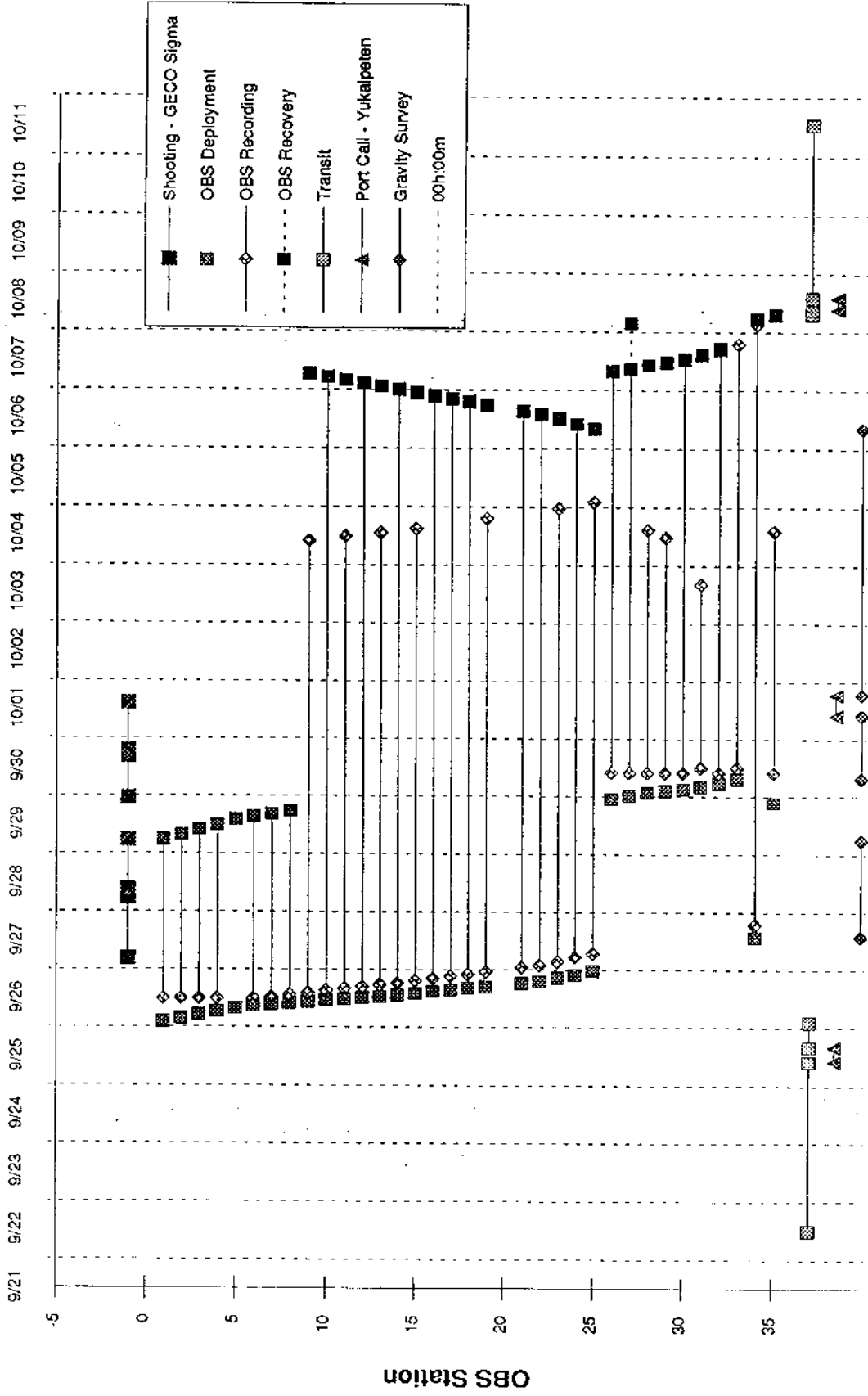
## Chicxulub Experiment OBS Deployment, Recovery and Data Summary

Station	Chassis S/N	Sphere S/N	Geo-phones	Preamp Gain dB	Active Channels	Deployment			Recovery			Acquired Data		
						Time	Location	Depth m	Time	Location	Depth m	Period	Hrs.	Mb
1	94-18	44568	MP	32.1	1-4	9/26 02:14	21°14.36'N 90°57.35'W	28.2	9/29 06:06	21°14.37'N 90°57.43'W	28.0	9/26 12:00 - 9/29 05:48	65.8	175.5
2	94-5	59368	OY	32.1	1-3	9/26 03:41	21°16.79'N 90°46.09'W	23.5	9/29 08:06	21°16.79'N 90°46.14'W	23.4	9/26 12:00 - 9/29 07:56	67.9	137
3	94-17	50676	MP	32.1	1-4	9/26 05:11	21°19.20'N 90°34.88'W	19.4	9/29 10:04	21°19.17'N 90°34.88'W	19.2	9/26 12:00 - 9/29 09:45	69.8	186
4	94-2	59126	OY	28.3	1-3	9/26 06:42	21°21.59'N 90°23.52'W	18.7	9/29 12:03	21°21.62'N 90°23.56'W	18.5	9/26 12:00 - 9/29 11:54	71.9	145
5	94-16	56962	MP	32.1	1-4	9/26 08:04	21°24.04'N 90°12.26'W	17.7	9/29 14:15	21°23.99'N 90°12.29'W	17.5		0.0	0
6	94-1	59105	OY	28.3	1-3	9/26 08:45	21°25.28'N 90°06.64'W	16.9	9/29 15:21	21°25.24'N 90°06.67'W	17.0	9/26 12:00 - 9/29 15:12	75.2	151.5
7	94-15	55472	MP	32.1	1-4	9/26 09:25	21°26.47'N 90°00.99'W	16.3	9/29 16:35	21°26.44'N 90°01.06'W	16.9	9/26 12:30 - 9/29 16:15	75.8	202
8	94-8	55497	MP	32.1	1-4	9/26 10:06	21°27.67'N 89°55.36'W	16.2	9/29 17:50	21°27.66'N 89°55.38'W	16.3	9/26 13:30 - 9/29 17:38	76.1	203
9	94-13	55478	MP	28.3	1-4	9/26 10:46	21°28.89'N 89°49.74'W	15.9	10/7 06:38	21°28.92'N 89°49.60'W	16.1	9/26 14:30 - 10/4 09:58	187.5	500
10	94-12	59371	OY	28.3	1-4	9/26 11:26	21°30.10'N 89°44.06'W	16.4	10/7 05:20	21°30.13'N 89°43.96'W	17.2	9/26 15:30 - 10/7 05:08	253.6	676.5
11	94-11	55473	MP	32.1	1-4	9/26 11:59	21°31.01'N 89°39.56'W	16.7	10/7 04:09	21°31.04'N 89°39.40'W	17.4	9/26 16:15 - 10/4 11:45	187.5	500
12	94-10	55496	MP	32.1	1-4	9/26 12:31	21°32.01'N 89°35.05'W	16.9	10/7 02:56	21°32.04'N 89°34.85'W	17.5	9/26 17:00 - 10/7 02:34	249.6	666
13	94-9	55316	MP	32.1	1-4	9/26 13:04	21°32.99'N 89°30.59'W	16.9	10/7 01:35	21°32.99'N 89°30.50'W	17.6	9/26 17:45 - 10/4 13:21	187.6	500
14	94-14	57112	MP	32.1	1-4	9/26 13:38	21°33.90'N 89°26.02'W	17.6	10/7 00:21	21°33.96'N 89°25.93'W	18.2	9/26 18:30 - 10/7 00:09	245.6	656
15	94-7	57113	MP	32.1	1-4	9/26 14:21	21°35.19'N 89°20.41'W	18.2	10/6 23:04	21°35.18'N 89°20.45'W	18.2	9/26 19:30 - 10/4 15:01	187.5	500
16	94-4	55427	MP	32.1	1-3	9/26 15:04	21°36.36'N 89°14.75'W	18.2	10/6 21:52	21°36.40'N 89°14.74'W	18.1	9/26 20:30 - 10/6 21:43	241.2	486
17	93-6	55454	MP	32.1	1-4	9/26 15:47	21°37.57'N 89°09.12'W	17.0	10/6 20:37	21°37.58'N 89°09.07'W	17.4	9/26 21:15 - 10/6 20:25	239.2	638

18	94-3	40377	MP	32.1	1-3	9/26 16:29	21°38.76'N 89°03.45'W	17.4	10/6 19:23	21°38.76'N 89°03.35'W	17.6	9/26 22:15 - 10/6 19:03	236.8	477
19	93-4	52239	MP	32.1	1-4	9/26 17:12	21°40.00'N 88°57.83'W	17.0	10/6 18:03	21°40.00'N 88°57.79'W	17.4	9/26 23:15 - 10/4 19:06	187.9	500
20	93-15	31615	MP	32.1	1-4	Moved to station 34								
21	92-7	55458	MP	32.1	1-4	9/26 18:37	21°42.41'N 88°46.50'W	15.0	10/6 15:35	21°42.45'N 88°46.44'W	15.7	9/27 01:00 - 10/6 15:17	230.3	613.5
22	93-14	29036	MP	32.1	1-3	9/26 19:26	21°43.63'N 88°40.85'W	14.2	10/6 14:21	21°43.66'N 88°40.76'W	14.5	9/27 02:00 - 10/6 14:04	228.1	459.5
23	92-5	55467	MP	32.1	1-4	9/26 20:49	21°46.03'N 88°29.52'W	14.4	10/6 12:30	21°46.10'N 88°29.52'W	14.9	9/27 03:30 - 10/4 23:19	187.8	500
24	93-8	23646	PM	32.1	1-3	9/26 22:15	21°48.46'N 88°18.23'W	15.7	10/6 10:19	21°48.49'N 88°18.23'W	16.4	9/27 05:15 - 10/6 10:02	220.8	445
25	92-2	29034	PM	32.1	1-4	9/26 23:49	21°50.87'N 88°06.92'W	14.9	10/6 08:20	21°50.88'N 88°06.97'W	16.1	9/27 06:45 - 10/5 02:04	187.3	500
26	94-18	44568	MP	32.1	1-4	9/29 23:14	21°34.31'N 89°47.72'W	20.7	10/7 08:11	21°34.32'N 89°47.52'W	20.0	9/30 10:00 - 10/7 07:55	165.9	442.5
27	94-17	50676	MP	32.1	1-4	9/30 00:29	21°38.55'N 89°51.35'W	25.6	10/8 03:50	21°30.11'N 89°34.80'W	15.6	9/30 10:00 - 10/7 09:05	167.1	445.5
28	94-5	59368	OY	32.1	1-3	9/30 01:48	21°43.14'N 89°55.32'W	30.5	10/7 10:41	21°43.11'N 89°55.03'W	31.6	9/30 10:00 - 10/4 14:40	100.7	203
29	94-16	56962	MP	32.1	1-4	9/30 02:36	21°47.84'N 89°59.31'W	35.0	10/7 11:50	21°47.75'N 89°59.22'W	35.5	9/30 10:00 - 10/4 11:40	97.7	452.5
30	94-2	59126	OY	28.3	1-3	9/30 03:21	21°52.48'N 90°03.27'W	39.9	10/7 13:04	21°52.43'N 90°03.23'W	?	9/30 10:00 - 10/7 12:50	170.8	344.5
31	94-15	55472	MP	32.1	1-4	9/30 04:35	22°00.95'N 90°10.60'W	45.0	10/7 15:16	22°00.71'N 90°10.42'W	47.1	9/30 12:00 - 10/3 16:12	76.2	203
32	94-1	59105	OY	28.3	1-3	9/30 05:48	22°09.40'N 90°17.86'W	49.4	10/7 17:43	22°08.75'N 90°17.90'W	49.3	9/30 10:00 - 10/7 16:58	175.0	352.5
33	94-8	55497	MP	32.1	1-4	9/30 07:39	22°22.08'N 90°28.79'W	70.1	Not recovered because of heavy sea					
34	93-15	31615	MP	32.1	1-3	9/27 13:46	21°26.46'N 89°29.52'W	11.0	10/8 05:53	21°26.42'N 89°29.54'W	11.6	9/27 19:00 - 10/8 03:08	248.1	500
35	93-10	55477	MP	32.1	1-3	9/29 21:31	21°23.73'N 89°38.65'W	18.6	10/8 07:25	21°23.71'N 89°38.63'W	18.4	9/30 10:00 - 10/4 14:27	100.4	203
MP=Mark Products; OY=Oyo										Water depth uncorrected for sound speed and transducer depth				
										Total				
										5163				
										12,964				

ATTACHMENT NO. 9 - CHART SHOWING OBS TIMELINE (OBS VS. TIME/DATE).

Chicxulub OBS Timeline





## ATTACHMENT NO. 10 - SUMMARY OF OBS RECORDING PARAMETERS

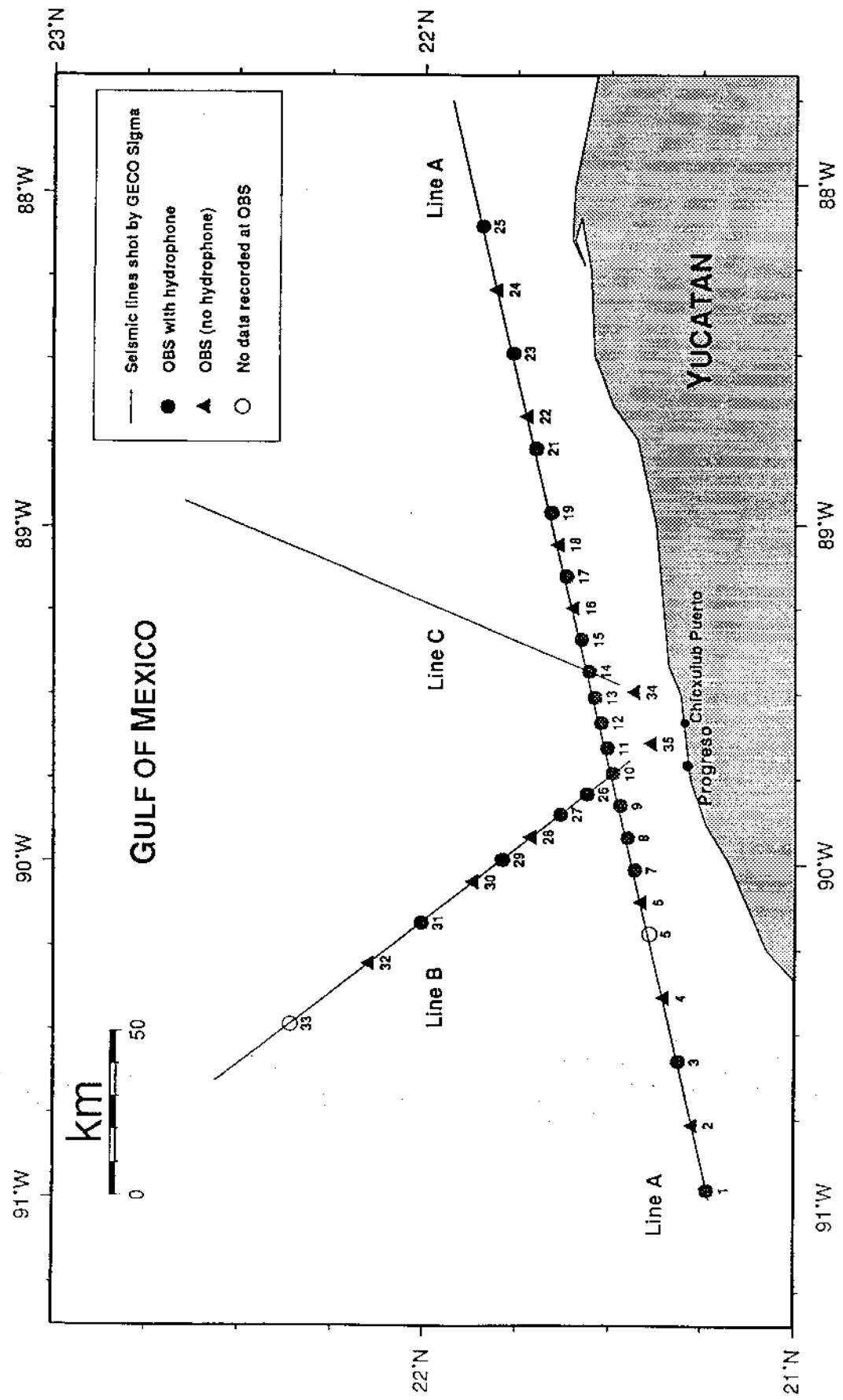
### Chicxulub Experiment UTIG OBS Recording Parameters

---

Sensors:	Channels 1-3: 3-component, 4.5 Hz, gimbaled geophones, Mark Products L-15B or Oyo GS-11D Channel 4: Hydrophone, Ocean Acoustic Research E-2PD
Sensitivity (unit digitizing level):	Channels 1-3: 1.5 nm/s for stations 2 and 28; 2.3 nm/s for stations 4, 6, 10, 30 and 32; 3.9 nm/s for station 9; 2.5 nm/s for all others Channel 4: 1.0 mPa
Polarity:	Channel 1: vertical, positive down Channels 2, 3: horizontal, — orientation to be determined from recorded water wave arrivals; channels 1, 2 and 3 form a right-hand system Channel 4: positive for increasing pressure
Alias filter frequency and rolloff:	30 Hz, -24 dB/oct
A/D conversion:	14 bits plus dynamic gain ranging
Dynamic range:	126 dB
Sample interval:	10.000 ms
Data acquisition mode:	Continuous with a short (~22 s) gap at data transfer to disk approximately every 665 s (4-channels) or 803 s (3-channels)

---

ATTACHMENT NO. 11 - MAP SHOWING OBS LOCATIONS AND SEISMIC LINES SHOT BY GECO SIGMA

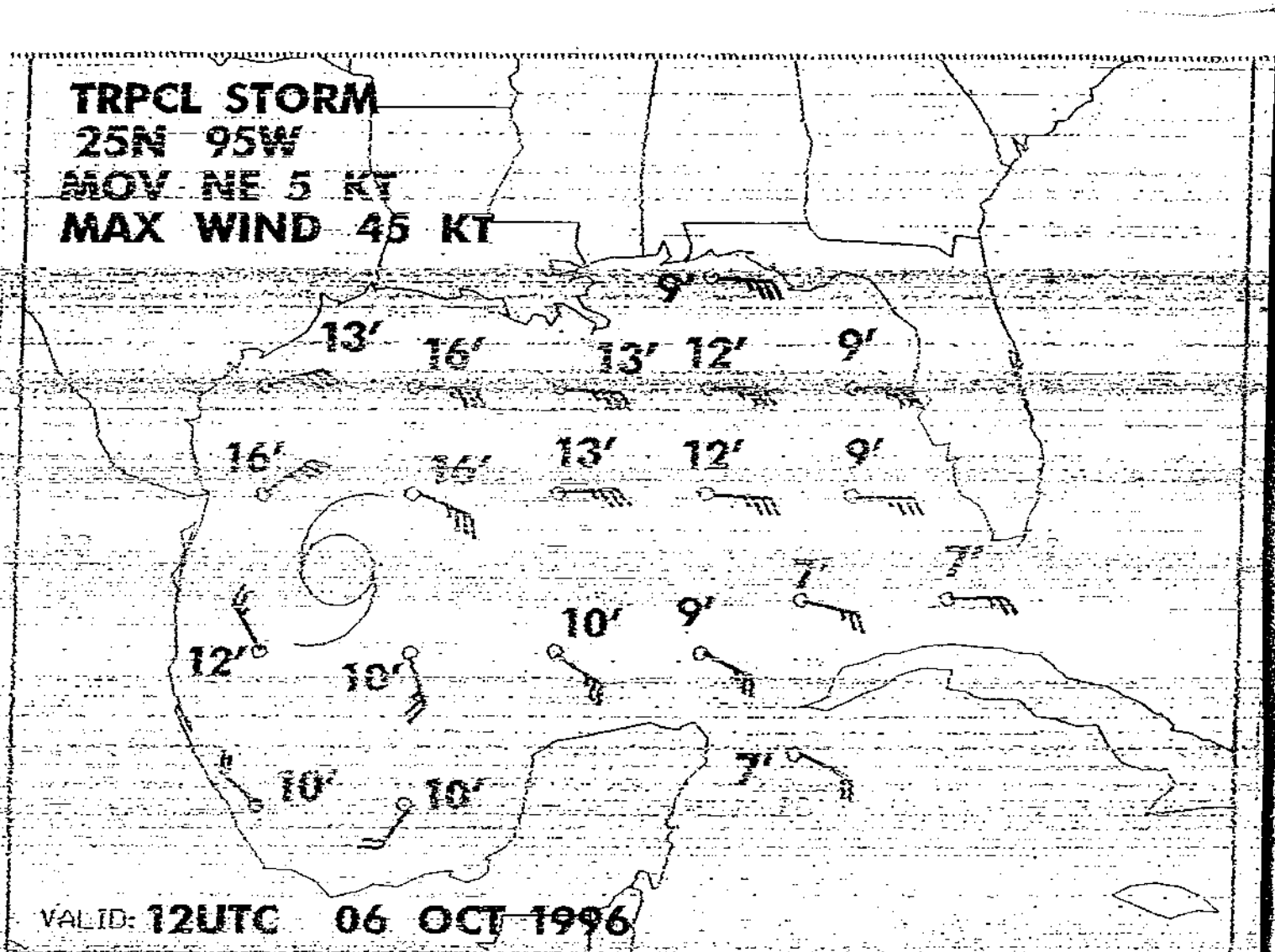


**ATTACHMENT NO. 12 - SUMMARY OF THREE SEISMIC LINES (A,B,C)  
SHOT BY GECO SIGMA (SEE ATTACHMENT 11 FOR LINE LOCATIONS)**

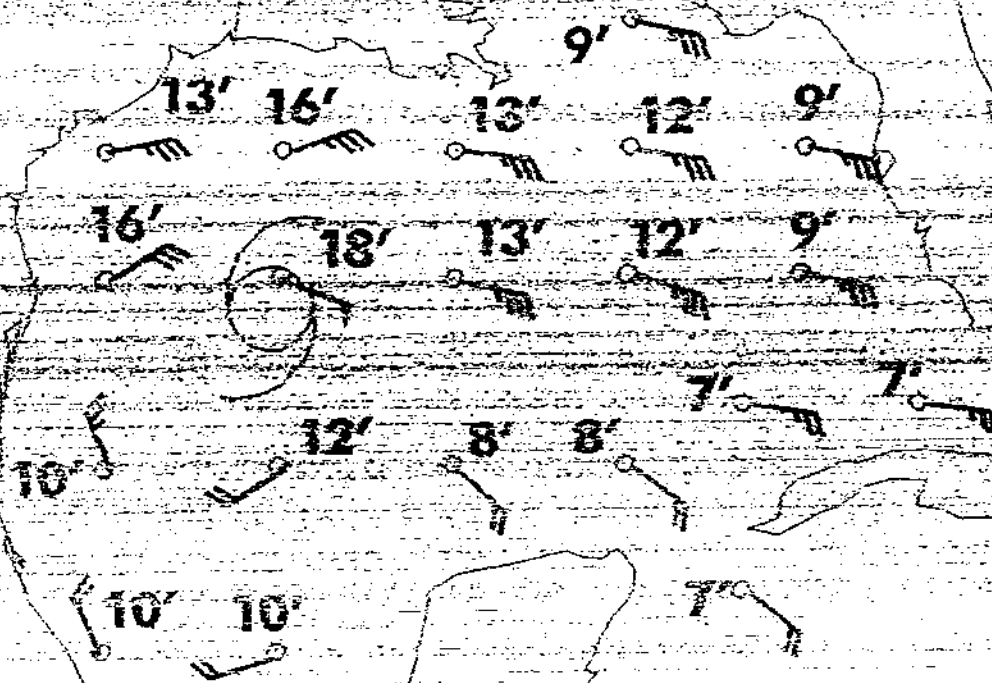
**CHICXULUB SURVEY 1996**

DATE	UT	CT (LOCAL)	SP #	LAT	LON	COMMENT
25-Sep		8:00				chartered flight to Merida
Wed	7:12	12:30				board GECO SIGMA at Progreso
26-Sep	2:30	21:30	210	36.65	890 59.6	begin deployment
Thr						changing connectors for 12.5/50.0 groups
	20:15	15:15				streamer fully deployed for tests only
	20:57		29287			test shots with one 105 cu. in. gun
	21:10		29325			last test shot with one subarray (1800 cu. in.)
	3:10	22:10				streamer fully deployed again; noise tests
27-Sep	4:00	23:00	210	13.9	910 9.6	guns being deployed
Fri						
<b>CHIX-A</b>						
SOL	9:30	4:30	987	210 14.0	910 59.0	
OBS1	10:05	5:05	1075	210 14.45	910 56.88	Bottom speed 4.2 knots
OBS5	20:30		2661			
	23:30	18:30	3100			M/V Longhorn passes to starboard
OBS10	3:21	22:21	3659	210 30.08	890 44.07	OBS 10 = WP 1
28-Sep	5:00	0:00	3888	210 31.48	890 37.55	volume 8397 cu. in.
OBS15				210 35.14	890 20.41	
EOL	10:48	5:48	4694	210 36.32	890 14.95	Airleak P1 array
<b>CHIX-A-1</b>						
SOL	14:02	9:02	4630	210 35.957	890 16.626	
OBS16	14:30	9:30	4696	210 36.35	890 14.77	Bottom speed 4.0 knots
OBS21	21:00	15:50	5700	210 42.40	880 46.51	
	23:59	18:59	6172	210 45.355	880 32.771	Last shot of the day
OBS23	0:48	19:48	6297	210 46.03	880 29.55	
29-Sep	8:20	3:20	7500-7630			100 m line deviation for anchored fishing boat
OBS25			~7150	210 36.35	880 29.55	
nom EOL		9:20	4:20	7650	210 51.30	880 4.00
EOL	10:49	5:49	7889	210 55.575	870 44.472	345.15 KM total Line A
A-->C line change 147 km 17.5 hours						
<b>CHIX-C</b>						
SOL	4:20	23:20	3660	220 39.0	880 55.64	
nom sol	5:30	0:30	3458	220 34.0	880 58.0	Bottom speed 4.5 knots
OBS14	19:55	14:55	1039	210 33.93	890 26.06	
EOL	21:07	16:07	840	210 29.0	890 28.35	141.05 KM total Line C
30-Sep			3456			shooting on time at 23 s interval
	21:35		3390	210 28.7	890 30.28	stop recording system
	23:47		3257			shooting on distance
C-->B line change 2.5 hours						
<b>CHIX-B</b>						
SOL	0:08	19:08	1168	210 27.31	890 41.70	
	0:26		1218	210 28.34	890 42.59	Bottom speed 4.2 knots
OBS10	0:55	19:55	1301	210 30.06	890 44.06	
OBS33	15:55	10:55	3760	220 21.84	900 28.57	
nom eol	16:24	10:24	3828	220 23.49	900 29.53	
EOL	19:30	14:30	4328	220 34.059	900 39.110	158.05 KM total Line B
1-Oct						647.6 KM survey total

**ATTACHMENT NO. 13 - WEATHER MAPS SHOWING TROPICAL STORM JOSEPHINE IN NORTHERN GULF OF MEXICO**

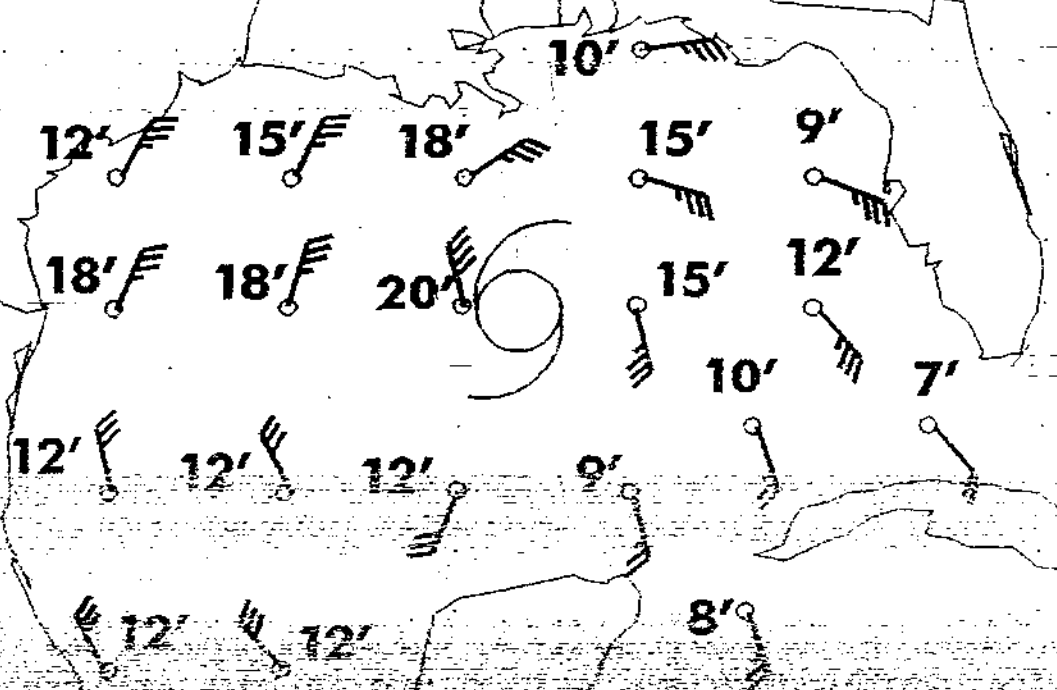


TRPCL STORM  
25.5N 93.5W  
MOV NE 7 KT



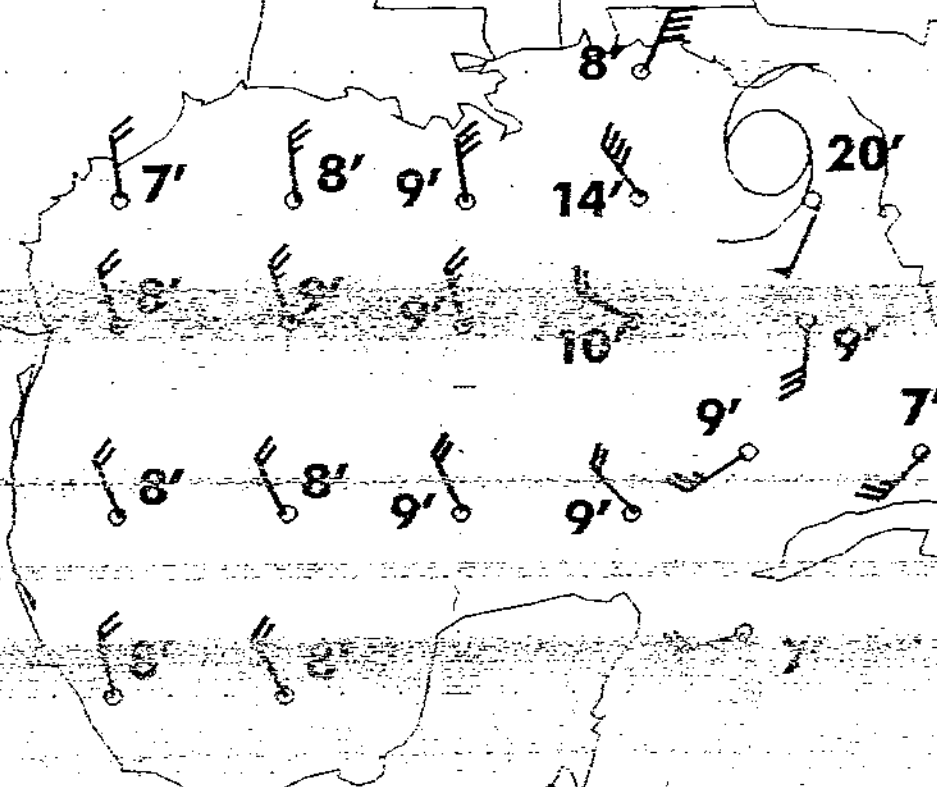
VALID: 06UTC 07 OCT 1996

**TRPCL STORM**  
**26N 89W**  
**SEE LATEST ADVSRY**



VALID: **12UTC 07 OCT 1996**

**TRPCL STORM**  
**28.7N 84.5W**  
**SEE LATEST ADVSRY**



VALID: **06UTC 08 OCT 1996**

XX

WIND - WAVE PROGNOSIS

TROPICAL PREDICTION CENTER / TAFB

ANALYST: **LL**

NATIONAL HURRICANE CENTER

U. S. COAST GUARD

MIAMI, FLORIDA 33165-2149

BELLE CHASE, LOUISIANA

305-229-4470





INSTITUTE FOR GEOPHYSICS

THE UNIVERSITY OF TEXAS AT AUSTIN

8701 North MoPac Expressway • Austin, Texas 78759-8397 • (512) 471-6156 • Fax: (512) 471-8844

Internet: [utig@utig.ig.utexas.edu](mailto:utig@utig.ig.utexas.edu) • Omnet: UTIG.AUSTIN

13 November 1996

W. Thomas Cocke  
Research Vessel Clearance Officer  
Office of Marine Science Technology  
OES/OA Room 5805  
U. S. Department of State  
22nd and C, NW  
Washington DC 20520

Dear Tom,

Please find enclosed nine copies of our preliminary cruise report resulting from Cruise No. 95-010 aboard the *RV Longhorn* from September 22, 1996 to October 11, 1996. This report is required by Mexican SRE Diplomatic Note No. DAN-01966 dated June 27, 1996 and Official Documents D00 700(2).-2200 and D00 700(2).-1769. The main report has been translated into Spanish as requested. An English version is also included. Thirteen (13) attachments are also included that summarize further the details of the cruise and the data collected. These have not been translated into Spanish, as they contain technical data and this would not be practical. As requested, we are sending this report to you for forwarding to the US. Embassy for transmittal to the Foreign Ministry (eight copies, one copy is for your files).

Please let us know if anything else is required at this time. Thanks again for all your help. We had a very successful cruise.

Sincerely yours,

Richard T. Buffler  
Senior Research Scientist and  
Professor of Geological Sciences

cc: J. Thompson  
Chicxulub Working Group