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ACCESSION
NUMBER

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TR0031
C100

DATA DOCUMENTATION FORM

NOAA FORM 24-13
(4-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEANOGRAPHIC DATA CENTER
RECORDS SECTION
ROCKVILLE, MARYLAND 20852

FORM APPROVED
O.M.B. No. 41-R2051

This form should accompany all data submissions to NODC. Section A, Originator Identification, must be completed when the data are submitted. It is highly desirable for NODC to also receive the remaining pertinent information at that time. This may be most easily accomplished by attaching reports, publications, or manuscripts which are readily available describing data collection, analysis, and format specifics. Readable, handwritten submissions are acceptable in all cases. All data shipments should be sent to the above address.

A. ORIGINATOR IDENTIFICATION

THIS SECTION MUST BE COMPLETED BY DONOR FOR ALL DATA TRANSMITTALS

1. NAME AND ADDRESS OF INSTITUTION, LABORATORY, OR ACTIVITY WITH WHICH SUBMITTED DATA ARE ASSOCIATED:
Oceanographic Surveys Branch National Oceanic and Atmospheric
Oceanographic Division Administration
Office of Marine Surveys and Maps 6001 Executive Boulevard
National Ocean Survey Rockville, Maryland 20852

2. EXPEDITION, PROJECT, OR PROGRAM DURING WHICH DATA WERE COLLECTED

OPR-500-FE-73
South Coastal Plains Expedition

3. CRUISE NUMBER(S) USED BY ORIGINATOR TO IDENTIFY DATA IN THIS SHIPMENT

OPR-500-FE-73

4. PLATFORM NAME(S)

NOAA Ship FERREL

5. PLATFORM TYPE(S)
(E.G., SHIP, BUOY, ETC.)

130' Survey Ship

6. PLATFORM AND OPERATOR 7. DATES
NATIONALITY(IES)

PLATFORM OPERATOR (FROM: MO, DAY, YR TO: MO, DAY, YR)

USA

USA

2-12-73

4-21-73

8. ARE DATA PROPRIETARY?

☒ NO ☐ YES

IF YES, WHEN CAN THEY BE RELEASED
FOR GENERAL USE? YEAR MONTH

11. PLEASE DARKEN ALL MARSDEN SQUARES IN WHICH ANY DATA CONTAINED IN YOUR SUBMISSION WERE COLLECTED.

Marsden Square 116

GENERAL AREA

9. ARE DATA DECLARED NATIONAL PROGRAM (DNP)?

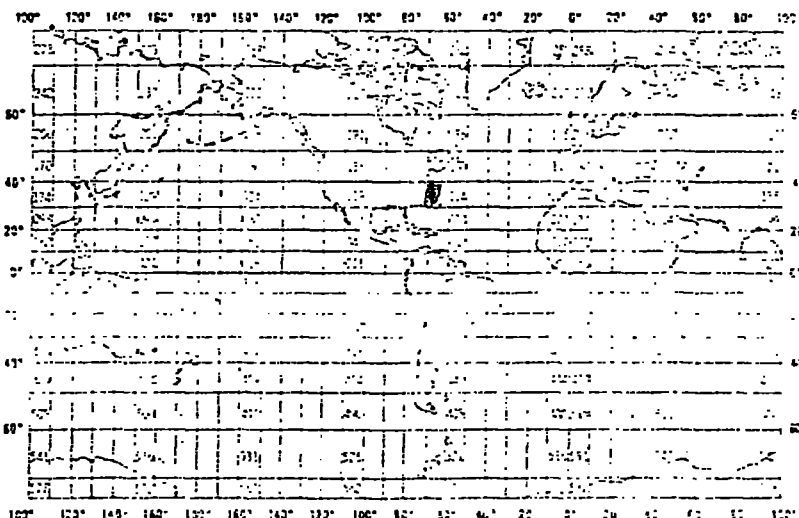
(I.E., SHOULD THEY BE INCLUDED IN WORLD DATA CENTERS HOLDINGS FOR INTERNATIONAL EXCHANGE?)

☒ NO ☐ YES ☐ PART (SPECIFY BELOW)

10. PERSON TO WHOM INQUIRIES CONCERNING DATA SHOULD BE ADDRESSED WITH TELEPHONE NUMBER (AND ADDRESS IF OTHER THAN IN ITEM-1)

Chief, Oceanographic Surveys
Branch

(301) 496-8501



B. SCIENTIFIC CONTENT

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS (INCLUDING MODIFICATIONS) AND LABORATORY PROCEDURES	DATA PROCESSING TECHNIQUES WITH FILTERING AND AVERAGING
Velocity	Knots	TICUS I-Mark II Meter		See attached sheet.
Direction	Degrees True	TICUS I-Mark II Meter		See attached sheet.

C. DATA FORMAT

COMPLETE THIS SECTION FOR PUNCHED CARDS OR TAPE, MAGNETIC TAPE, OR DISC SUBMISSIONS.

1. RECORD TYPES CONTAINED IN THE TRANSMITTAL OF YOUR FILE
VE METHOD OF IDENTIFYING EACH RECORD TYPE

There are two record types for tapes, 5038 and 5830.

Record Type 1 = 80 bytes (the first 5 records [Text Records])

Record Type 2 = 40, 54; 68 bytes (Data Record)

2. GIVE BRIEF DESCRIPTION OF FILE ORGANIZATION

There are a total of 36 files: (Tape 5038 contains 31)

1 Sensor

2 Sensors

Files: 1-14,19,20,
23-27,29,31
(40 bytes)Files: 15-18,21,22,28,30
(54 bytes)

(Tape 5830 contains 5)

1 Sensor

2 Sensors

3 Sensors

Files: 1
(40 bytes)Files: 2-4
(54 bytes)File: 5
(68 bytes)

3. ATTRIBUTES AS EXPRESSED IN

☐ PL-1☐ ALGOL☐ COBOL☒ FORTRAN☐ _____ LANGUAGE

4. RESPONSIBLE COMPUTER SPECIALIST:

NAME AND PHONE NUMBER Bruce Parker (301) 496-8501

ADDRESS 605, WSC-1, C333, Rockville, Maryland 20852

COMPLETE THIS SECTION IF DATA ARE ON MAGNETIC TAPE

5. RECORDING MODE <input checked="" type="checkbox"/> BCD <input type="checkbox"/> BINARY <input type="checkbox"/> ASCII <input type="checkbox"/> EBCDIC <input type="checkbox"/> _____	9. LENGTH OF INTER-RECORD GAP (IF KNOWN) <input checked="" type="checkbox"/> 3/4 INCH <input type="checkbox"/> _____
6. NUMBER OF TRACKS (CHANNELS) <input checked="" type="checkbox"/> SEVEN <input type="checkbox"/> NINE <input type="checkbox"/> _____	10. END OF FILE MARK <input type="checkbox"/> OCTAL 17 <input type="checkbox"/> _____
7. PARITY <input type="checkbox"/> ODD <input checked="" type="checkbox"/> EVEN	11. PASTE-ON-PAPER LABEL DESCRIPTION (INCLUDE ORIGINATOR NAME AND SOME LAY SPECIFICATIONS OF DATA TYPE, VOLUME NUMBER) Scope - South Coastal Plains Expedition TICUS current data (velocity and direction)
8. DENSITY <input type="checkbox"/> 200 BPI <input type="checkbox"/> 1600 BPI <input checked="" type="checkbox"/> 556 BPI <input type="checkbox"/> 800 BPI <input type="checkbox"/> _____	
12. PHYSICAL BLOCK LENGTH IN BYTES 80-U	
13. LENGTH OF BYTES IN BITS	

C. DATA FORMAT

COMPLETE THIS SECTION FOR PUNCHED CARDS OR TAPE, MAGNETIC TAPE, OR DISC SUBMISSIONS.

1. LIST RECORD TYPES CONTAINED IN THE TRANSMITTAL OF YOUR FILE GIVE METHOD OF IDENTIFYING EACH RECORD TYPE

There are 2 record types:

Type 1 contains 80 bytes (Text Record) - the first 5 records

Type 2 contains 40, 54, 68 bytes (Data Record)

There are 36 files on tape 5046.

1. Sensor
Files: 3, 9-14, 17,
18, 25-32
(40 bytes)

2. Sensors
Files: 1, 2, 4, 5, 7, 15
16, 19-24, 33
(54 bytes)

3. Sensors
Files: 6;8
(68 bytes)

3. ATTRIBUTES AS EXPRESSED IN

☐ PL-1

☐ ALGOL

☐ COBOL

☐ FORTRAN

☐

LANGUAGE

4. RESPONSIBLE COMPUTER SPECIALIST:

NAME AND PHONE NUMBER _____

ADDRESS _____

COMPLETE THIS SECTION IF DATA ARE ON MAGNETIC TAPE

5. RECORDING MODE

☐ BCD

☐ BINARY

☐ ASCII

☒ EBCDIC

6. NUMBER OF TRACKS (CHANNELS)

☐ SEVEN

☒ NINE

7. PARITY

☐ ODD

☒ EVEN

8. DENSITY

☐ 200 BPI

☒ 1600 BPI

☐ 556 BPI

☐ 800 BPI

9. LENGTH OF INTER-RECORD GAP (IF KNOWN)

☐ 3/4 INCH

10. END OF FILE MARK

☒ OCTAL 17

11. PASTE-ON-PAPER LABEL DESCRIPTION (INCLUDE ORIGINATOR NAME AND SOME LAY SPECIFICATIONS OF DATA TYPE, VOLUME NUMBER)

TAPE 5046, 5038, and
5830 - USER TAPES

12. PHYSICAL BLOCK LENGTH IN BYTES

UNBLOCKED

13. LENGTH OF BYTES IN BITS

6 Bits per character

RECORD FORMAT DESCRIPTION

RECORD NAME TICUS (Current Data)

FIELD NAME	15. POSITION FROM-1 MEASURED IN (e.g., bits, bytes)	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
<u>Text Record</u>					
Title	1	30	Bytes		Station Description
<u>Data Record</u>					
Station No.	1	4	Bytes	I3	Job Number
Blank	5	2	Bytes	2X	
Year	7	2	Bytes	I2	Year of Observation
Blank	9	1	Bytes	1X	
Month	10	2	Bytes	I2	Month (1-12)
Blank	12	1	Bytes	1X	
Day	13	2	Bytes	I2	(1-31)
Blank	15	1	Bytes	1X	
Time	16	5	Bytes	F5.2	Hour/Hundredths of Hr.
Blank	21	2	Bytes	1X	
Velocity 1	23	4	Bytes	F4.2	Knots (TICUS I-Mark II Meter)
Blank	27	1	Bytes	1X	
Direction 1	28	3	Bytes	I3	Degrees True (TICUS - Mark II Meter)
Blank	31	1	Bytes	1X	
Weight 1	32	4	Bytes	I4	See the attached explanation of term "WT".
Blank	36	5	Bytes	5X	
Velocity 2	40	4	Bytes	F4.2	Knots (TICUS I-Mark II Meter)
Blank	45	1	Bytes	1X	See the attached.
Direction 2	46	3	Bytes	I3	Degrees True (TICUS I-Mark II Meter) See the attached.
Blank	49	1	Bytes	1X	

RECORD FORMAT DESCRIPTION

RECORD NAME Continued

14. FIELD NAME	15. POSITION FROM - 1 MEASURED IN (e.g., bits, bytes)	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
Weight 2	50	4	Bytes	I4	See the attached explanation of the term "WT"
Blank	54	5	Bytes	5X	
Velocity 3	59	4	Bytes	4F.2	Knots (TICUS I-Mark II Meter) See attached sheet and Section B.
Blank	63	1	Bytes	1X	
Direction 3	64	3	Bytes	I3	Degrees True (TICUS I-Mark II) See the attached sheet and Section B.
Blank	67	1	Bytes	1X	
Weight 3	68	4	Bytes	I4	See the attached explanation of the term "WT"

D. INSTRUMENT CALIBRATION

This calibration information will be utilized by NOAA's National Oceanographic Instrumentation Center in their efforts to develop calibration standards for voluntary acceptance by the oceanographic community. Identify the instruments used by your organization to obtain the scientific content of the DDF (i.e., STD, temperature and pressure sensors, salinometers, oxygen meters, velocimeters, etc.) and furnish the calibration data requested by completing and/or checking ("✓") the appropriate spaces. Add the interval time (i.e., 3 months, 6 months, 9 months, etc.) if the fixed interval calibration cycle is checked.

INSTRUMENT TYPE (MFR., MODEL NO.)	DATE OF LAST CALIBRATION	INSTRUMENT WAS CALIBRATED BY		CHECK ONE: INSTRUMENT IS CALIBRATED					INSTRUMENT IS NOT CALI- BRATED (✓)
		YOUR ORGANIZATION (✓)	OTHER ORGANIZATION (GIVE NAME)	AT FIXED INTERVALS (✓)	BEFORE OR AFTER USE (✓)	BEFORE AND AFTER USE (✓)	ONLY AFTER REPAIR (✓)	ONLY WHEN NEW (✓)	
TICUS I, Mark II		X		X					

DISCUSSION OF TICUS REDUCTION PROCEDURE

The speeds and directions recorded by the TICUS-II system are recorded as five speeds s_i and five directions θ_i . NOS treats the two series s_i and θ_i separately deriving a mean of each series \bar{s} and $\bar{\theta}$, then assuming that in the mean \bar{s} and $\bar{\theta}$ can be treated as an ordered pair centered on the middle of the measurement cycle, $(\bar{s}, \bar{\theta})$.

The mean of the series s_i is a simple arithmetic mean.

$$\bar{s} = \sum_{i=1}^N s_i / N$$

At present no editing of the s_i is done at this stage of the programming. The NOS method of editing \bar{s} is to compare $\bar{s}(t_1)$ with $\bar{s}(t_0)$ and $\bar{s}(t_2)$ where t_0 , t_1 , t_2 represent consecutive recording intervals.

The mean of the series θ_i is determined by assigning a unit vector to each of the elements θ_i . The cosine and sine components are arithmetically averaged to yield

$$x = \left(\sum_{i=1}^N \cos \theta_i \right) / N \qquad y = \left(\sum_{i=1}^N \sin \theta_i \right) / N$$

The components (x,y) are resolved to a tentative $\bar{\theta}$

$$\bar{\theta} = \tan^{-1} y/x$$

This $\bar{\theta}$ is compared to the θ_i . If any $|\bar{\theta} - \theta_i| > 90^\circ$, that θ_i is removed and a new $\bar{\theta}$ is computed. On the second pass all θ_i such that $|\bar{\theta} - \theta_i| > 60^\circ$ are removed and a new mean computed. A third pass is made to eliminate θ_i where $|\bar{\theta} - \theta_i| > 30^\circ$ and the final $\bar{\theta}$ is computed.

This final $\bar{\theta}$ and the \bar{s} discussed above are assigned to the ordered pair $(\bar{s}, \bar{\theta})$.

The estimated validity of $\bar{\theta}$ is assigned \bar{w} according to the ratio

$$\bar{w} = \frac{\left(\sum_{i=1}^5 \cos \theta_i \right)^2 + \left(\sum_{i=1}^5 \sin \theta_i \right)^2}{(5 \cos \bar{\theta})^2 + (5 \sin \bar{\theta})^2}$$

By visual test this yields a weight $\bar{w} = 1.000$ for $\theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \bar{\theta}$ and $\bar{w} = 0.000$ for $\theta_1 - \theta_2 = \theta_2 - \theta_3 = \theta_3 - \theta_4 = \theta_4 - \theta_5 = \theta_5 - \theta_1 = 72^\circ$ or the cases of mutually cancelling vectors.

Since the weight \bar{w} applies only to the $\bar{\theta}$ the ordered pair of numbers for time t will in reality be the number \bar{s} paired with the ordered pair $(\bar{\theta}, \bar{w})$, or

$$(\bar{s}, (\bar{\theta}, \bar{w}))$$

BRIEF EXPLANATION OF THE TERM "WT" (WEIGHT)

Each direction reading shown on the printout is actually an edited average of 5 direction readings (each direction reading taken instantaneously every 7.5 seconds over a 38 second period):

"WT" is an indication of how close these 5 direction values were to each other. The two extreme cases are: (1) If all 5 direction values were identical, $WT = 1000.$; (2) If the 5 direction values were evenly distributed around the compass, $WT = 000.$

There are two situations that normally bring about low WT's: (1) readings taken at or near slack waters (or minimums), i.e. when the direction of flow is rapidly changing.; (2) when the sea state is fairly great and the data is taken near the surface (i.e. 10 to 15 ft from the surface); the current meter is jerked up and down by the bouncing surface buoy, flipping the vane around and also affecting the savonius rotor.

At the present time there is no method for adjusting the data according to WT.

WT should be used only as a rough qualitative tool.