NUMBER 78-0460

BL2647 C100
L00977 L513

DATA DOCUMENTATION FORM

DDF A:4:11

NOAA FORM 24-13
(4-77)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEANOGRAPHIC DATA CENTER
RECORDS SECTION
WASHINGTON, DC 20235

L00978 L521
L00979 L134
L00980 L131
L00981 L504

FORM APPROVED
O.M.B. No. 41-R2651
EXPIRES 1-81

L00982 L520
L00983 L150
L00999 L130

(While you are not required to use this form, it is the most desirable mechanism for providing the required ancillary information enabling the NODC and users to obtain the greatest benefit from your data.)

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

Energy Resources Co. Inc.
185 Alewife Brook Parkway
Cambridge, Mass. 02138

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

OCS Benchmark Study (North Atlantic)
(BLM Contract No. AA550-CT6-51)

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

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4. PLATFORM NAME(S)	5. PLATFORM TYPE(S) (E.G., SHIP, BUOY, ETC.)	6. PLATFORM AND OPERATOR NATIONALITY(IES)		7. DATES	
		PLATFORM	OPERATOR	FROM: MO/DAY/YR	TO: MO/DAY/YR
R/V GYRE	Ship	U.S.	U.S.	5/5/77	5/25/77

8. ARE DATA PROPRIETARY?

☐ NO ☒ YES BLM COAR approval required for all releases

IF YES, WHEN CAN THEY BE RELEASED FOR GENERAL USE? YEAR____ MONTH____

9. ARE DATA DECLARED NATIONAL PROGRAM (DNP)?

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

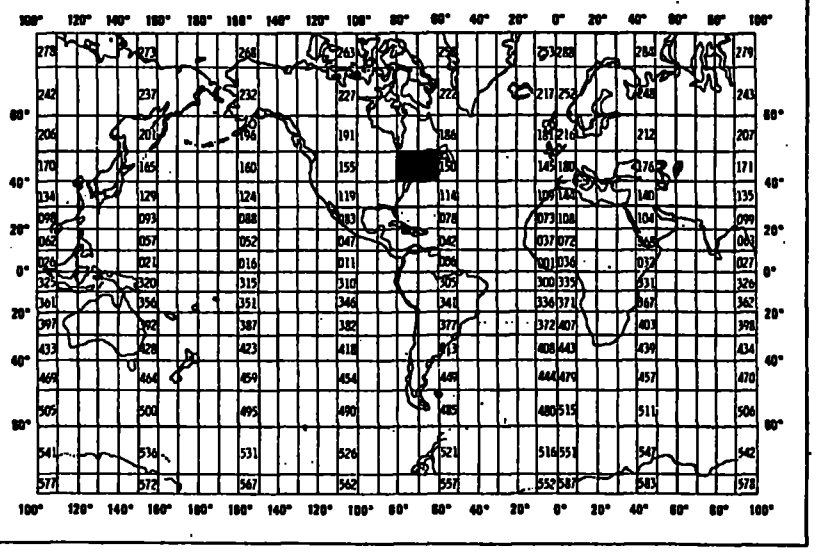
☒ NO ☐ YES ☐ PART *(SPECIFY BELOW)*

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

Roy McDonald
(617) 661-3111

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

GENERAL AREA



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B. SCIENTIFIC CONTENT

Include enough information concerning manner of observation, instrumentation, analysis, and data reduction routines to make them understandable to future users. Furnish the minimum documentation considered relevant to each data type. Documentation will be retained as a permanent part of the data and will be available to future users. Equivalent information already available may be substituted for this section of the form (i.e., publications, reports, and manuscripts describing observational and analytical methods). If you do not provide equivalent information by attachment, please complete the scientific content section in a manner similar to the one shown in the following example.

EXAMPLE (HYPOTHETICAL INFORMATION)

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
Salinity	‰	Nansen bottles	Inductive salinometer (Hytech model S510)	N/A (Not applicable)
		STD Bissett-Berman Model 9006	N/A	Values averaged over 5-meter intervals
Water color	Forel scale	Visual comparison with Forel bottles	N/A	N/A
Sediment size	ϕ units and percent by weight	Ewing corer	Standard sieves. Carbonate fraction removed by acid treatment	Same as "Sedimentary Rock Manual," Folk '65

(SPACE IS PROVIDED ON THE FOLLOWING TWO PAGES FOR THIS INFORMATION)

File 1

B. SCIENTIFIC CONTENT

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FRCO FORM 03 $P\text{-}PO_4$	µg-atoms/liter	Beckman DU Spectrophotometer	Strickland & Parsons	Average of 2 replicate samples filtered through GFC filters
$N\text{-}NO_2$	µg-atoms/liter	Spectronic 70 Spectrophotometer Model 33-30-41	Strickland & Parsons	
$N\text{-}NO_3$	µg-atoms/liter			
FORM 04 Salinity	parts/1000	Induction Salinometer Model RS-7A	Beckman Industrial Instr., Inc.	Average of 2 bottles
FORM 05 POC	µg/liter	185 B CHN Analyzer Hewlett Packard	Menzel, D.W. & Vaccaro, R.F. (1964)*	Average of 3 replicates
PON	µg/liter			
FORM 06 DOC	mg/liter	Infrared Analyzer	Winkler Titratrin-Azide Modification	Average of 2 bottles
FORM 07 DO	mℓ/liter			
Temperature	°C	NBIS Mark III CTD	N/A	N/A
FORM 23 Pressure	decibars	NBIS Mark III CTD	N/A	N/A
Conductivity	mmhos	NBIS Mark III CTD	N/A	N/A
DO Temp	°C	Beckman O_2 probe on NBIS CTD	N/A	N/A
DO Current	µA			N/A

*Limnology and Oceanography
Sharp, D.H. (1973),
Progress Report to U.S.
Atlantic Energy Commission

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FILE 1

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
Temperature	°C	NBIS Mark III CTD	N/A	N/A
Depth	meters	NBIS Mark III CTD	N/A	All calculated from temperature, pressur conductivity, DO Temp, and DO Current reported on ERCO form 23. See attach memo.
Salinity	parts/1000	NBIS Mark III CTD	N/A	
Density	σ_T units	NBIS Mark III CTD	N/A	
DO	ml/ℓ	NBIS Mark III CTD	N/A	

FORM 24

FILE 1 - DATA PROCESSING TECHNIQUES

Form 23 data contains the following "raw" parameters: temperature; pressure; conductivity; oxygen; probe current; and internal oxygen probe temperature.

The conversion from in situ pressure (d-bars) to depth (meters) simply involves subtracting the pressure level recorded on deck (the first parameter line) from the following values:

Depth (meters) = Pressure (d-bars) - Deck Pressure (d-bars)

Due to the shallow depths encountered, this is an adequate approximation.

Both the temperature and the conductivity values are corrected according to the most recent instrument calibration. Then salinity is calculated by means of a standard algorithm that contains a correction for temperature and pressure-induced changes in the conductivity cell. Density in sigma-T units then follows from the processed temperature, depth,and salinity values.

Dissolved oxygen is calculated from a combination of water temperature, internal probe temperature, probe current, pressure, and salinity:

D.O. (mℓ/ℓ) = BUN (T,S) * PPO

"BUN" is Bunsen's cofficient, and "PPO" is the partial pressure of oxygen, as calculated from the following equation:

$$PPO = K * OC * \exp [.0001675\ P - .03\ TAVE]$$

"OC is the oxygen probe currant (μA), "TAVE" is the average of the internal probe temperature and the water temperature, and "K" is a calibration factor determined from water samples taken during the cast.

Since the data on the form 23 are discrete measurements taken while the instrument is halted at a given level, no time analysis or smoothing is required. Form 24 contains near surface, bottom, mid-depth, and near surface (again) measurements of depth, temperature, salinity, density, and dissolved oxygen.

FILE 2

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
% Silt	percent by mass		Pipette analysis (Folk, 1968)	N/A
FORM 12 % Clay	percent by mass			
nφ (n= -4,-3,... 3,4)	Grade % of grain size (diameter in mm. $=2^{-\phi}$)	Rapid Sediment Analyzer (Gibbs, 1974, Jour. Sed. Petrol.)		Average of 3 to 5 sample runs
FORM 13 % Carbon	% of total mass of sediment	185B CHN Analyzer Hewlette Packard		
% Nitrogen	% of total mass of sediment			

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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
FILE 9				
Form 54:				
"TN"	total number of that species	actual count or factor times FN	first 25 of species are counted; average weight computed - average multiplied by total number for total weight FW: gotten by partial drying on paper towel then weighed on balance	
"FN"	fractional number, i.e. subsample	actual count		
"FW" (gm)	fractional weight; weight of subsample	triple beam balance		
"L"	length in mm	ruler		
"W" (mm)	width of carapace	ruler		
"S"	sex	visual observation		
FILE 3				
Form 14:				
Depth	meters	Wire depth, read off of winch control.		
No. Live	--	direct count under microscope		
No. Dead	--	" " " "		

FILE 4

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
Form 15:				
Wet weight	grams	Mettler balance model P163	Sample filtered on 202μ mesh screen and allowed to drai of all water, Sample then placed in previously weighed aluminum cooking tin and wet weighed.	
Dry weight	milligrams	Mettler balance model H54	Sample and cooking tin placed in Precision Quincy Corp. drying oven at 75°C for 24 hrs. Samples removed to dessicator for 24 hrs before first weighing and between 1st and 2nd. Weight reported mean of two.	
Original Volume	cubic meters	General Oceanics flowmeter model #2030	not applicable.	
Final Volume	milliliters	Mallinckrodic graduated cylinders	After analysis of sample on Sedgwick-Rafter cell for smaller zooplankters (<4mm length) sample is poured into graduated cylinder and the volume is recorded.	
Split	fractional amount of total sample	Plankton splitter of our own design	Sample placed in plankton splitter and split appropriately for the analysis of larger zooplankters (>4mm)**	
Count	number of organisms observed per slide	Swift Model #741184 microscope; lab-count Denominator; 1-ml Sedgwick-Rafter counting cell	1-ml subsamples randomly selected from sample and completely enumerated for smaller zooplankters (<4mm) till at least 500 have been counted. Enumeration of a 1-ml subsample is called a "count".	
Total Count	number of organisms observed per split	Wild Model #M5-86001 dissecting microscope or Olympus Model #263852 dissecting microscope	An appropriate split is selected and completely scanned and enumerated for larger zooplankters (>4mm) so that at least 1000 are counted. This is called a "total count".	
Form 16:		Counting chambers made at MBL to our specifications		
Flowmeter Reading		Lab-count Denominator		
Split				
Net				
Total Volume				
Count				

*We do not do any data processing.

**Splits are also used in the analysis of the smaller zooplankters so that a maximum time of 8 hrs is spent on each sample.

FILE 6

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
Form 22				
Type of Analysis	1 = INAA long 2 = INAA short 3 = AAS	N/A	N/A	N/A
Metal	atomic number	N/A	N/A	N/A
Sample Type	1 = zooplankton 2,3 = water column particulate 5,6 = bottom sediment 4 = macrobenthos	N/A	N/A	N/A
Metal Concentrations	1 = µg/g 2,3 = µg/ℓ 4 = µg/g 5,6 = µg/g	V & Ba = INAA Cr, Fe, Ni, Cu, Zn, Cd, Pb, = AAS using Perkin-Elmer Model 603 AAS	Organisms - Freeze-dry, low temperature ash, acid digest. Water Column Part. - Weak Acid Leach, Acid Digest Sediment - Weak Acid Leach, Acid Digest	N/A N/A N/A
Tissue Type (macrobenthos only)	0 = whole animal 1 = gut 2 = gill 3 = musculature 4 = carapace 5 = eyes 6 = heart 7 = gonad 8 = mantle 9 = heptopancreas			

FILE 6

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
Form 35				
Type of Sample *				
Total Volume	liters	--	--	--
Volume analyzed	liters	--	--	--
Dry Weight	gm	Top loading balance	--	
Wet Weight Analyzed	gm	Top loading balance		
CPI		Gas Chromatography	--	
Total f1	µg	Gas Chromatography	(Solvent Extraction	on line computer
Total f2	µg	Gas Chromatography	(Column Chromatography	PDP-10
			(Gas Chromatography	PDP-10
Total Lipids	mg	Cahn Electro balance	--	--
Total Resolved	µg	GC and planimetry	--	--
Total Unresolved	µg	GC and planimetry	--	--

* SAMPLE TYPE CODE

1	water column dissolved
2	water column particulate
3	zooplankton
4	macrobenthos
5	bottom sediment
6	surface film
7	solvents, blanks, reagents

FICE 6 cont.

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
Spike Code				
Standard Code				
Standard weight	µg/ℓ or/g			
Spike and Standard Codes depend upon whether sample is f1 or f2:				
f1			f2	
Eicosane (n-C_{20})	01		nonadecyl benzene	
Docosane (n-C_{22})	02		hexamethyl benzene	
Tetracosane (n-C_{24})	03		phenathrene	
Cholestane	04		anthracene	
Androstane	05			
Cyclohexyltridecane	06			
Cyclohexylcyclohexane	07			
Tetradecane (n-C_{14})	08			
Perhydrophenanthrene	09			

FILE 7

B. SCIENTIFIC CONTENT

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Form 8				
Species	NODC taxonomic code.			
Organism	Individual # of species group			
Size	mm			
Tissue Taken	1 = gut 2 = gill 3 = musculature 4 = carapace 5 = eyes 6 = heart 7 = gonad 8 = mantle 9 = heptopancreas			
Form 9				
Species	NODC code			
Slide Generated	See Data Record Discription			
Consultant	Consultant's Name			

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FILE 8

B. SCIENTIFIC CONTENT

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Form 2				
Wet Weight	g/m^2	$0.1m^2$ grab sample Smith-McIntyre grab.	0.5mm mesh sieve sorted via stereoscope	
Density	$no./m^2$			N/A
Form 18				
Wet Weight	g/m^2	$0.1m^2$ grab sample Smith-McIntyre grab.	0.5mm mesh sieve sorted via stereotype	
Density	$no./m^2$			
Form 19				
Wet Weight	g/m^2	$0.1m^2$ grab sample Smith-McIntyre grab.	0.5mm mesh sieve sorted via stereotype	
Density	$no./m^2$			

FILE 10

B. SCIENTIFIC CONTENT

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Form 70				
isolate number	temp. ID to identify isolate	N/A	N/A	N/A
Form 73 - Water Column				
Total Microbial biomass	mgC/m^3	Dupont Biometer	ATP by Luciferin-luciferase	Filter 100nℓ S.W. through 0.2µm pore si membrane, extract ATP c̄ TRIS-$NaHCO_3$.
Bacterial biomass	mgC/m^3	Zeus PMQ III spectrophotometer	LPS (limulus) assay	Preserve 10nℓ S.W. with 5mg NaN_3.
Bacterial Direct Count	cells/mℓ	Zeus Epifluorescent microscope	stain cells with Acridine Orange	Preserve 10nℓ S.W. wi 0.1nℓ 10% glutaraldehyde.
Form 73 - Sediments				
Total Microbial Biomass	$\mu gC/cm^3$	as above	as above	Extract ATP/in 1CC sed c̄ boiling $NaHCO_3$ Store extract @ -20C in trisbuffer.
Bacterial Biomass	$\mu gC/cm^3$	as above	as above	Preserve 1CC sediment with 5ng NaN_3 in 10nl sterile S.W.
Bacterial Direct Count	$cells/cm^3$	as above	as above	Suspend sediment in 1% glutaraldehydesolin made up in sterile seawat

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File 10

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Form 72				
Temperature °C	°C	Freas Model 815 low temp. incubators	N/A	N/A
Dilution	N/A	N/A	N/A	Factor by which colony number must be multiplied to obtain CFU/mℓ
Colony Type	Reference Key	Direct observation MKI - eyeball)	compare a long microphology against key.	N/A
Number	Number of colonies/filter membrane	Direct observation	N/A	N/A
H.C. and colony type	Reference Key	Direct observation	compare colony morphology against key	N/A
Number	Number of colonies in the sample	Direct observation	N/A	N/A
Form 74				
Phytoplankton Biomass	mgC/m^3	Turner Fluorometer	chl a fluorescence in acetone extract	Filtered 100nl S.W. through glass fiber filte stored in desiccator in dark. Extracted chl a c acetone.
Phytoplankton Direct Count	cells/mℓ	Phase contrast microscope, Zeiss, Sedgwick-Rafter counting chamber.	Standard methods for and wastewater analysis, 14th ed.	100nℓ S.W. and 1.0nℓ Lugolsiodine concentrate by centrifugation resuspend pellet in 1.0 or 5.0nℓ and count.

MARINE COLONY TYPE KEY

COLOR	APPEARANCE		SHAPE		SIZE (mm)	DESIGNATION
cream	opaque	rough	convex	entire	2	10
			cratered	entire	½	20
		smooth	convex	entire	1½	30
				punctiform		35
				undulate	1-2	40
			raised	entire	2	50
				undulate	1½	60
			pulvinate	entire	½	70
			umbonate	entire	2½	80
				undulate	3	90
			cratered	undulate	1-2	100
brown	opaque	rough	convex	entire	1-2	110
			umbonate	entire	1	120
		smooth	raised	entire	1-2	130
				irregular		135
				undulate	2-3	140
	translucent	smooth	convex	entire	2-4	150
			raised	entire	3	160
brown with dark center	opaque	rough	umbonate	entire	1	170
		smooth	convex	entire	1-2	180
				undulate	1-2	190
			raised	undulate		195
orange	opaque	rough	raised	irregular	4	200
			umbonate	entire	1½	210
		smooth	convex	entire	1-2	220
				undulate	1-2	225
			raised	entire	2	230
			pulvinate	entire	1	240
black/ purple	opaque	rough	filamentous		10	250
		smooth	convex	entire	3	260
	translucent	smooth	convex	entire	3-6	270

FILE 10

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Form 33				
III				
A morphology	1. straight rods 2. curved rods 3. cocci 4. spirals 5. filaments 6. irregular forms 7. pleomorphic	Zeiss Phase Contrast Microscope	Standard lab manual	
B size	1. <0.5µm 2. 0.6-1.0µm 3. 1.0-2.0µm 4. >2.0µm			
C groupings	1. individuals 2. pairs 3. chains < 4 cells 4. chains > 4 cells 5. tetrads 6. clusters			
D motility	1. motile 2. non-motile			
E Phase Character-istics	1. Refractory body capsule 2. Uniform 3. Endospores 4. Refractile granules			

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FILE 10

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Form 33 III (Contd.)				
F				
Gram Reaction	1 = (G+) 2 = (G-)			
G				
Unique Characteristics	1. None 2. Buds 3. Stalks 4. Other			

FILE 10

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
Form 33 contd.				
IV. Cultural Characteristics				
A. Luminescence	1. + 2 -	Direct observation	Observe young culture	observe isolates
B. Colony Size at 72 hrs.	1. < 0.5mm 2. 0.5-1.0mm 3. 1.1-2.5mm 4. 2.6-5.0mm 5. > 5.0mm			
C. Colony Shape	1. punctiform 2. circular 3. filamentous 4. irregular 5. rhizoid 6. spindle			
D. Elevation	1. flat 2. raised 3. convex 4. pulvinate 5. umbonate			
E. Margin	1. entire 2. undulate 3. lobate 4. erose 5. filamentous 6. curved			

FILE 10

B. SCIENTIFIC CONTENT

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F. Hydrocarbon utilization	1. + 2. -		growth on Finnerty's agar.	
G. NO_3 reduction	1. - 2. +		Difco Nitrate test strips	
H. 0/129 Sensitivity	1. + 2 -		Innib. on marine agar c 15mm filter saturated c vibriostat 0/129.	

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FILE 10

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Form 33 (contd.)				
F. Surface	1. smooth 2. rough 3. glistening			
G. Opacity	1. transparent 2. translucent 3. opaque			
H1. Chromo-genesis	1. diffusive 2. non-diffusive 3. none			
H2. Chromo-genesis	4. fluorescent 5. non-fluorescent 6. N/A			
H3. Chromo-genesis	7. yellow/green 8. purple 9. brown 10. red 11. N/A			
I. Consistency	1. mucoid 2. hard 3 butyrous			
J. Color of Marine Agar	1. colorless 2. white 3. cream 4. brown 5 purple 6. pink 7. yellow 8. orange			

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FILE 10

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Form 33 (contd.)				
V. Physiology				
A. Energy metabolism	1. aerobic acid (w/o gas) 2. anaerobic acid 3. 1 & 2 4. No acid 5. acid & gas aerobic 6. acid & gas anaerobic 7. 5 + 6	Direct Observation	MOF tubes for 48h	
B. Catalase	1. + 2. -		3% H_2O_2 on 48h colony	
C. Oxidase	1. + 2. -		streak colony (48h) on filter paper impregnated with 1% tetramethyl-p-phenethylene diamine dehydrochloride.	
D. Gelatine hydrolysis	1. + 2. -		Technique of Frazier (1926)	
E. Cellulose degradation	1. + 2. -	Direct observation	observe degradation of filter paper strip in NH_4NO_3, V_2HPO_4, Asp. Seawater medium after 4 weeks incubation.	

FILE 90

B. SCIENTIFIC CONTENT

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FORM 21				
Lat./Long.	N/A	Loran A and Satellite Fixes	N/A	N/A
Sonic Depth	Meters	Ship Instruments	N/A	N/A
Wind Speed and Direction	Knots, Degree MPH, Degree Meters, Sec, Degree	Ship Instruments (Bendix Aerovane)	N/A	N/A
Ship Speed and Heading	Knots MPH Meters/Sec Heading: 10°	Ship's Gyrocompass Inductive Speed Indicator	N/A	N/A
5-Min. Gust	Knots MPH Meters/Sec	Ship Instruments (Bendix Aerovane)	N/A	N/A
Barometric Pressure	Millibars	Recording Barometer (U.S. Meterological Service)	N/A	N/A
Air and Sea Temperature	°C, °F	Wexler Thermometer	N/A	N/A
TW	°C, °F	Wexler Thermometer	N/A	N/A

FILE 90 : cont.

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
Waves				
- period	seconds	visual	N/A	N/A
- height	1/2 meters	visual	N/A	N/A
-direction	10°	visual	N/A	N/A
	"49" and "99" as per WMO codes 0885 and 0877			
Cloud Cover	WMO Code 2700	visual	N/A	N/A
Present Weather	International Ship Weather Code	visual	N/A	N/A
Dominant Cloud	WMO Code 0500	visual	N/A	N/A
Sea Surface	WMO Code 3700	visual	N/A	N/A

C. DATA FORMAT

This information is requested only for data transmitted on punched cards or magnetic tape. Have one of your data processing specialists furnish answers either on the form or by attaching equivalent readily available documentation. Identify the nature and meaning of all entries and explain any codes used.

1. List the record types contained in your file transmittal (e.g., tape label record, master, detail, standard depth, etc.).

2. Describe briefly how your file is organized.

3-13. Self-explanatory.

14. Enter the field name as appropriate (e.g., header information, temperature, depth, salinity.

15. Enter starting position of the field.

16. Enter field length in number columns and unit of measurement (e.g., bit, byte, character, word) in unit column.

17. Enter attributes as expressed in the programming language specified in item 3 (e.g., "F 4.1," "BINARY FIXED (5.1)").

18. Describe field. If sort field, enter "SORT 1" for first, "SORT 2" for second, etc. If field is repeated, state number of times it is repeated.

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

	Bytes 6-9
File Header	9900
Sample Header	9920
Data Record	0XXY (Y>0)
Comment Record	0XX0

XX is the ERCO form #.

2. GIVE BRIEF DESCRIPTION OF FILE ORGANIZATION

The file is a collection of data files. Each begins with a unique file header. After the file header, there are sets of a single sample header followed by one or more data records. The data records may be succeeded by comment records.

3. ATTRIBUTES AS EXPRESSED IN ☐ PL-1 ☐ ALGOL ☐ COBOL ☒ FORTRAN ☐ _____ LANGUAGE

4. RESPONSIBLE COMPUTER SPECIALIST:

NAME AND PHONE NUMBER Joseph Post/Roy McDonald (617) 661-3111

ADDRESS Energy Resources Company. 185 Alewife Cambridge. MA

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 ☒ ½ inch

10. END OF FILE MARK
3" Gap followed by EBCDIC "23". ☐ OCTAL 17 ☒ Other

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

Energy Resources Co. Inc.
BLM OCS Contract No. AA550-CT6-51
--- Cruise 2 Data ERCO-02
--- Files 1-10, 90

12. PHYSICAL BLOCK LENGTH IN BYTES
5600

13. LENGTH OF BYTES IN BITS
8

NOAA FORM 24-13

RECORD FORMAT DESCRIPTION

RECORD NAME: File Header

14. FIELD NAME	15. POSITION FROM-1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
File #	1	2	Bytes	I2	--
Cruise #	3	2	"	I2	--
Update #	5	1	"	I1	--
Record Type	6	4	"	I4	"9900"
Cruise Dates	10	12	"	I6	Starting, ending dates, in YYMMDD.
Tape Creation Date	22	6	"	I6	
Ship Name	28	10	"	10A1	--
Ship Code	38	3	"	I3	Internal ERCO Code #

NOAA FORM 24-13

RECORD FORMAT DESCRIPTION

RECORD NAME Sample Header

14. FIELD NAME	15. POSITION FROM-1 MEASURED IN _____ (n.a., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING
File #	1	2	Bytes	I2	--
Cruise #	3	2	"	I2	--
Update #	5	1	"	I1	--
Record Type	6	4	"	I4	9920
Sample ID	10	19	"	19A1	ERCO Sample ID, (See Data Management Report)
Date	29	6	"	I6	Local Date YYMMDD
Time	35	4	"	I4	Local Time HHMM
Depth	39	3	"	I3	Depth in meters
Position -LORAN-C	42	16	"	2(A1,F7.1)	Position in LORAN-C. The text character will be X, Y, Z, or N, where N means missing data.
Position -LAT/LONG.	58	15	"	I6,A1,I7,A1	Latitude, N/S, Longitude, E/W.

NOAA FORM 24-13

RECORD FORMAT DESCRIPTION

RECORD NAME Data Record

14. FIELD NAME	15. POSITION FROM 1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING
File #	1	2	Bytes	I2	--
Cruise #	3	2	"	I2	--
Update #	5	1	"	II	--
ERCO Index	6	4	"	I4	OnnX nn-Internal ERCO file # X-Output Record Sequence No.
Sample ID	10	19	"	19A1	(See Data Management Report)
IRSN	29	4	"	I4	Sequence number of data record within a given record. = 1 unless more than one data record is associated with a given Sample ID..
Data (see memo)	33		"	(see memo)	(see memo)

NOAA FORM 24-19

DATA RECORD DESCRIPTION FOR ERCO/EDS File #1

The first 32 bytes of the data record are described in the DDF. The organization of the remaining bytes on each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form #, and 9 is the sequence #.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use & Meaning
031	Cast	33	11	I11	Cast # at station
031	Depth	44	11	I11	Depth (default is -1)
031	$P\text{-}PO_4$	55	20	F20.5	Phosphorous µg atoms/ℓ
031	$N\text{-}NO_2$	75	20	F20.5	Nitrogen (NO_2)
031	$N\text{-}NO_3$	95	20	F20.5	Nitrogen (NO_3) µg atoms/ℓ
032	$Si\text{-}SO_4$	33	20	F20.5	Silicon µg atoms/ℓ
041	Salinity	33	20	F20.5	Salinity (ppt)
051	POC	33	20	F20.5	POC (µg/ℓ)
051	PON	53	20	F20.5	PON (µg/ℓ)
061	DOC	33	20	F20.5	DOC (mg/ℓ)
071	DO	33	20	F20.5	DO (µpm)
231	Date	33	11	I11	Date (YMD)
231	Local Time (hour)	44	11	I11	--
231	Local Time (Min.)	55	11	I11	--
231	Cast	66	11	I11	--
231	Tape #	77	11	I11	--
231	Initial Reading	88	11	I11	--
231	Final Reading	99	11	I11	--

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use & Meaning
241	Conductivity Calibration	33	11	Ill	Calibration factor
241	Oxygen Cal Calibration	53	11	Ill	Calibration factor
241	Temperature °C	73	11	Ill	(
241	Depth M	93	11	Ill	(These five values taken from deck
242	Salinity ppt	33	11	Ill	(measurements
242	Density σT	53	11	Ill	(
242	DO ml/ℓ	73	11	Ill	(
242	Temperature	93	11	Ill	(
243	Depth	33	11	Ill	(These five values taken from bottom
243	Salinity	53	11	Ill	(measurements
243	Density	73	11	Ill	(
243	DO	93	11	Ill	(
244	Temperature	33	11	Ill	(
244	Depth	53	11	Ill	(These five values taken from middle
244	Salinity	73	11	Ill	(measurements
244	Density	93	11	Ill	(
245	DO	33	11	Ill	(
245	Temperature	53	11	Ill	(
245	Depth	73	11	Ill	(These five values taken from surface
245	Salinity	93	11	Ill	(measurements
246	Density	33	11	Ill	(
246	DO	53	11	Ill	(

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use & Meaning
232	Temp (°C)	33	20	F20.5	These five measurements taken on deck.
232	Pressure (decibars)	53	20	F20.5	
232	Conductivity (mmhos)	73	20	F20.5	
232	DO (Temp)	93	20	F20.5	(Temp read by DO probe)
233	DO (MA)	33	20	F20.5	(Current read by DO probe)
233	Temp (°C)	53	20	F20.5	These five measurements taken at water surface.
233	Pressure (decibars)	73	20	F20.5	
233	Conductivity (mmhos)	93	20	F20.5	
234	DO (Temp)	33	20	F20.5	(Temp read by DO probe)
234	DO (MA)	53	20	F20.5	(Current read by DO probe)
234	Temp (°C)	73	20	F20.5	These five measurements taken near bottom.
234	Pressure (decibars)	93	20	F20.5	
235	Conductivity (mmhos)	33	20	F20.5	
235	DO (Temp)	53	20	F20.5	(Temp read by DO probe)
235	DO (MA)	73	20	F20.5	(Current read by DO probe)
235	Temp (°C)	93	20	F20.5	These five measurements taken at middle depth.
236	Pressure (decibars)	33	20	F20.5	
236	Conductivity (mmhos)	53	20	F20.5	
236	DO (Temp)	73	20	F20.5	(Temp read by DO probe)
236	DO (MA)	93	20	F20.5	(Current read by DO probe)

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
237	Temp. °C.	33	20	F20.5	These five measurements taken at surface
237	Pressure (decibars)	33	20	F20.5	
237	Conductivity (mmhos)	33	20	F20.5	
237	DO (Temp)	33	20	F20.5	Temp. read by DO probe
237	DO (mA)	33	20	F20.5	Conductivity- DO probe

239-240 Unused fields; default to -999.

DATA RECORD DESCRIPTION FOR ERCO/EDS File #2

The first 32 bytes of the data record are described in the DDF. The organization of the remaining 80 remaining bytes on each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form number and 9 is the position for the sequence number.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
121	% Silt	33	20	F20.5	per cent silt (mass)
121	% Clay	53	20	F20.5	per cent clay (mass)
121	-4ϕ	73	20	F20.5	% grain in -4ϕ group
121	-3ϕ	93	20	F20.5	% grain in -3ϕ group
122	-2ϕ	33	20	F20.5	% grain in -2ϕ group
122	-1ϕ	53	20	F20.5	% grain in -1ϕ group
122	0ϕ	73	20	F20.5	% grain in 0ϕ group
122	4ϕ	93	20	F20.5	% grain in 4ϕ group
123	3ϕ	33	20	F20.5	% grain in 3ϕ group
123	2ϕ	53	20	F20.5	% grain in 2ϕ group
123	1ϕ	73	20	F20.5	% grain in 1ϕ group
131	% Carbon	33	20	F20.5	per cent carbon (mass)
131	% Nitrogen	53	20	F20.5	per cent nitrogen (mass)

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #3

The first 32 bytes of the data record are described in the DDF. Bytes 33-98 contain all of the data, which consist of six integer format items.

Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
Data	33	11	I11	Date (YYMMDD)
Depth	44	11	I11	Depth of Cast (m.)
Total No.	55	11	I11	Total No. of Individuals Found
Taxonomic Code	66	11	I11	NODC Code of Species
No. Live	77	11	I11	Number Found Live
No. Dead	88	11	I11	Number Found Dead

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #4

The first 32 bytes of data are as described in the DDF. The organization of the remaining bytes in each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form #, and 9 is the sequence #.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
151	Date	33	11	I11	Date (YYMMDD)
151	Wet Weight	44	20	F20.5	Wet Weight (gm)
151	Dry Weight	64	20	F20.5	Dry Weight (gm)
151	Original Volume	84	20	F20.5	Volume of Water Sampled (m^3)
151	Final Volume	104	20	F20.5	Volume of Sample Collected (mℓ)
152	Split	133	11	I11	Fraction Counted
152	Taxonomic	44	11	I11	NODC Code
152	Count	55	11	I11	1st Count of Samples
152	Count	66	11	I11	2nd Count (with replacement)
152	Count	77	11	I11	3rd Count (with replacement)
152	Total Count	88	11	I11	See "Section B" of DDF
161	Date	33	11	I11	Date (YYMMDD)
161	Recount	44	11	I11	"1"
161	Flowmeter Start	55	20	F20.5	Initial Reading of Flowmeter
161	Flowmeter Stop	75	20	F20.5	Final Reading of Flowmeter
161	Split	95	11	I11	Fraction Counted
161	Net	106	11	I11	Tow Net Size (202μ or 505μ)

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
162	Total Volume	33	20	F20.5	Volume of Water Sampled (m^3)
162	Taxonomic Code	53	11	I11	NODC Code
162	Eggs/Larvae	64	11	I11	Eggs = 1; Larvae = 2
162	Count	75	11	I11	Number found in 1ml of split

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #5

The first 32 bytes of the data record are described in the DDF. The organization of the remaining bytes depends upon the value of byte 9. Bytes 7-8 are always 22, the ERCO internal data file number. Byte 9 is either 1 or 2 representing the first, second, or third line of data for that sample.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
221	PI#	33	11	I11	1 = ERCO; 4 = U. of Delaware
221	Date	44	11	I11	Date (YYMMDD)
221	Type of Analysis	55	11	I11	See "Section B" for Code
221	Type of Sample	66	11	I11	" " " " "
221	Metal	77	11	I11	Metal
221	Taxonomic Code	88	11	I11	NODC Code
221	Tissue Type	99	11	I11	See "Section B" for Code
221	Metal	110	20	F20.5	Metal Concentration
222	Uncertainty	33	20	F20.5	Uncertainty
222	Proc. Blank	53	20	F20.5	Procedural Blank Concentration
222	Uncertainty	73	20	F20.5	Uncertainty
222	Filter	93	20	F20.5	Filter Concentration
223	Uncertainty	33	20	F20.5	Uncertainty
223	Reagent	53	20	F20.5	Reagent Concentration
223	Uncertainty	73	20	F20.5	Uncertainty

DATA RECORD DESCRIPTOR FOR ERCO/EDS FILE # 6

The first 32 bytes of the data record are described in the DDF. The organization of the remaining bytes on each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form number (35, 55, or 56), and byte 9 is the sequence number.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
351	Date Analyzed, f1	33	11	I11	Date f1 fraction analyzed (YYMMDD)
351	Date Analyzed, f2	44	11	I11	Date f2 fraction analyzed (YYMMDD)
351	PI	55	11	I11	1 = Boehm (ERCO); 6 = Warner
351	Type of Sample	66	11	I11	Sample Type, See Section B
351	Machine, f1	77	11	I11	# of Machine used for f1 analysis
351	Machine, f2	88	11	I11	# of Machine used for f2 analysis
351	Run #, f1	99	11	I11	Run # for f1 analysis
351	Run #, f2	110	11	I11	Run # for f2 analysis
352	Lab ID, f1	33	11	I11	Lab ID, f1, links data to Form 55
352	Lab ID, f2	44	11	I11	Lab ID, f2, links data to From 56
352	Total Volume	55	20	F20.5	Total Sample Volume, Liters
352	Volume Analyzed	75	20	F20.5	Volume Analyzed, Liters
352	Dry Weight	95	20	F20.5	Dry Weight of Sample (g)
353	Wet Weight Analyzed	33	20	F20.5	Wet Weight of Sample (g)
353	DW/WW	53	20	F20.5	Dry Weight/Wet Weight
353	Species Code	73	11	I11	NODC Code
353	Liters	84	20	F20.5	Total Volume (liters)

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
353	CPI	104	20	F20.5	Carbon Preference Index
354	Total f1	33	20	F20.5	f1 mass, (µg)
354	Total f2	53	20	F20.5	f2 mass, (µg)
354	Total Lipids	73	20	F20.5	Total Lipids Mass, (mg)
354	Total Resolved, f1	93	20	F20.5	Total Resolved f1 mass (µg)
355	Total Resolved, f2	33	20	F20.5	Total Resolved f2 mass (µg)
355	Total Unresolved, f1	53	20	F20.5	Total Unresolved f1 mass (µg)
355	Total Unresolved, f2	73	20	F20.5	Total Unresolved f2 mass (µg)
355	Spike Code, f1	93	11	I11	Spike Code, Section B
355	Spike %, f1	104	11	I11	% Recovered, f1
355	Standard Code, f1	115	11	I11	Standard Code, See Section B
356	Standard Weight, f1	33	20	F20.5	Wt. of Standard in µg/ℓ or /g
356	Spike Code, f1	53	11	I11	Spike Code, See Section B
356	Spike %, f1	64	11	I11	% Recovered, f1
356	Standard Code, f1	75	11	I11	Standard Code, See Section B
356	Standard Weight, f1	86	20	F20.5	Wt. of Standard in µg/ℓ or /g
356	Spike Code, f2	106	11	I11	Spike Code, See Section B
356	Spike %, f2	117	11	I11	% Recovered, f2
357	Standard Code, f2	33	11	I11	Standard Code, See Section B
357	Standard Weight, f2	44	20	F20.5	Wt. of Standard in µg/ℓ or /g

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
357	Spike Code, f2	64	11	I11	Spike Code, See Section B
357	Spike %, f2	75	11	I11	% Recovered, f2
357	Standard Code, f2	97	20	F20.5	Weight of Standard, in µg/ℓ or g
357	Sample ID, Proc.	117	5	A5	(
357	Sample ID, Proc.	122	5	A5	(Sample ID of procedural
358	Sample ID, Proc.	33	5	A5	(blank written in twenty
358	Sample ID, Proc.	38	5	A5	(ASCII bytes
358	Sample ID, Reagent	43	5	A5	(
358	Sample ID, Reagent	48	5	A5	(Sample ID of Reagent
358	Sample ID, Reagent	53	5	A5	(written in twenty
358	Sample ID, Reagent	58	5	A5	(ASCII bytes
551	Date	33	5	A5	(Date of GC run
551	Date	38	5	A5	((YYMMDD)
551	Time	43	5	A5	(Time of GC run
551	Time	48	5	A5	((YYMMDD)
551	Form	53	11	I11	= 55 for f1 data, = 56 for f2 data
551	-	64	5	A5	Blank
551	-	69	5	A5	Blank
551	-	74	5	A5	Blank

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
551	-	79	5	A5	Blank
551	-	84	5	A5	Blank
551	Sample Dry Weight	89	20	F20.5	Sample Dry Weight (gm)
551	Sample Liquid Volume	109	20	F20.5	Sample Liquid Volume
552	Internal Standard Retention Index	33	I11	I11	Internal Standard Retention Index
552	-	53	5	A5	Blank
552	-	58	5	A5	Blank
552	-	63	5	A5	Blank
552	-	68	5	A5	Blank
552	-	73	5	A5	Blank
552	-	78	5	A5	Blank
552	-	83	5	A5	Blank
552	Retention Index	88	11	I11	Retention Index
552	Area	99	20	F20.5	Area
552	Index	119	11	I11	Area Retention Index
553	Area	33	20	F20.5	Time Area
553	Retention Index	53	11	I11	Retention Index
553	Area	64	20	F20.5	Area
553	Retention Index	84	11	I11	Retention Index
553	Area	95	20	F20.5	Area
553	Retention Index	115	11	I11	Retention Index

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
Lines 4-34 follow the same format as line 3. The 32 lines from 3 to 34 contain measurements of RT's and area for all peaks located in that fraction for a given run.					
585	Area	33	20	F20.5	Area
585	Retention Index	53	11	I11	Retention Index
585	Area	64	20	F20.5	Area
585	Retention Index	84	11	I11	Retention Index
585	Area	95	20	F20.5	Area
586	1400-3400	33	20	F20.5	Sum odd/Sum even for 1400-3400
586	1400-2000	53	20	F20.5	Sum odd/Sum even for 1400-2000
586	2000-3400	73	20	F20.5	Sum odd/Sum even for 2000-3400
587	Pristane/Phytane	93	20	F20.5	Pristane AMT/Phytane AMT
587	Pristane/1700	33	20	F20.5	Pristane AMT/1700 Peak AMT
587	Pristane/1800	53	20	F20.5	Phytane AMT/1800 Peak AMT
587	1700/1800	73	20	F20.5	1700 Peak AMT/1800 Peak AMT
587	-	93	5	A5	Blank
587	-	98	5	A5	Blank
587	-	103	5	A5	Blank
587	-	108	5	A5	Blank
587	-	113	5	A5	Blank
587	-	118	5	A5	Blank

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
587	-	123	5	A5	Blank
588	-	33	5	A5	Blank
588	-	38	5	A5	Blank
588	-	43	5	A5	Blank
588	-	48	5	A5	Blank
588	-	53	5	A5	Blank
588	-	58	5	A5	Blank

Records with 60-63 in bytes 7 and 8 are identical in meaning and format to those with 55-58 in their 7th and 8th bytes, but refer to data collected on fraction 2 of the sample, aromatics.

Note that File 6 differs from all others because the value of bytes 7-8 changes to absorb an unexpected overflow of byte 9. Thus records associated with form 55 will have a byte 7-8 value of 55-58 and records associated with form 56 will have a byte 7-8 value of 60-63. Since there are no other ERCO forms between 55 and 63 this does not result in any ambiguity.

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #7

The first 32 bytes of the data record are described in the DDF. The organization of the remaining bytes on each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form #(08 or 09) and byte 9 contains the sequence #.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use & Meaning
081	Species	33	11	I11	NODC Code
081	Organism	44	11	I11	Individual # within species group
081	Size (mm)	55	11	I11	Size (mm)
081	Tissue Taken	66	11	I11	(
081	" "	77	11	I11	(1 = gut; 2 = gill;
081	" "	88	11	I11	(3 = musculature; (4 = carapace;
081	" "	99	11	I11	(5 = eyes; 6 = heart;
081	" "	110	11	I11	(7 = gonad; 8 = mantle; (9 = hepatopancreas
082	" "	33	11	I11	(
091	Species	33	11	I11	NODC Code
091	Slides Generated	34	11	I11	See bottom of page
091	Consultant	(55 (60	11 5	A5) A5)	

The Slides Generated Code is as follows:

abcdefghij should be ab-cd-ef-gh-ij

where ab = cruise
cd = station
ef = replicate
gh = organism number
ij = tissue code

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #8

The first 32 bytes of the data record are described in the DDF. The organization of the remaining bytes on each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form # (2, 18, or 19) and byte 9 contains the sequence #.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
021	Date	33	11	I11	Data Analyzed (YYMMDD)
021	Investigator	44	11	I11	9 = Maurer; 14 = Michaels
021	--	55	20	F20.5	Blank
021	--	75	20	F20.5	Blank
021	--	95	20	F20.5	Blank
022	Polychaete Wet Weight	33	20	F20.5	Wet weight if polychaete sample
022	Misc. Wet Weight	53	20	F20.5	Wet weight if miscellaneous sample
022	Taxonomic Code	73	11	I11	NODC Code
022	Density	84	11	I11	Density (no./m^2)
181	Date	33	11	I11	Date Analyzed (YYMMDD)
181	Investigator	44	11	I11	"14"
181	Mollusc Wet Weight	55	20	F20.5	Wet Weight if mollusc sample
181	--	75	20	F20.5	Blank
181	Echinoderm Wet Weight	95	20	F20.5	Wet weight if echinoderm sample
182	--	33	20	F20.5	Blank
182	--	53	20	F20.5	Blank
182	Taxonomic Code	73	11	I11	NODC Code

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Using and Meaning
182	--	33	20	F20.5	Blank
182	--	53	20	F20.5	Blank
182	Taxonomic Code	73	11	I11	NODC Code
182	Density	84	11	I11	Density (no./m^2)
191	Date	33	11	I11	Date Analyzed (YYMMDD)
191	Investigator	44	11	I11	"14"
191	--	55	20	F20.5	Blank
191	Wet Weight	75	20	F20.5	Arthropod Wet Weight (g/m^2)
191	--	95	20	F20.5	Blank
192	--	33	20	F20.5	Blank
192	--	53	20	F20.5	Blank
192	Taxonomic Code	73	11	I11	NODC Code
192	Density	84	11	I11	Density (no./m^2)

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #9

The first 32 bytes of the data record are described in the DDF. The organization of the DDF. The organization of the remaining bytes depends upon the value of byte 9, the sequence #. (There is no form 17, as was originally planned, so bytes 7 and 8 are all "54", corresponding to ERCO's Macrobenthos Field Form, #54.)

Byte 9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
1	Date	33	11	I11	Date (YYMMDD)
1	Tow Duration	44	20	F20.5	If negative - minutes; if positive - miles
1	Tow Direction	64	11	I11	Degrees from true north
1	Remarks	75	5	A5	Remarks
1	Remarks	80	5	A5	Remarks
1	Remarks	85	5	A5	Remarks
1	Remarks	90	5	A5	Remarks
1	Species Name	95	5	A5	Species Name
1	Taxonomic Code	100	11	I11	NODC Code
1	TN*	111	11	I11	Total number of individuals found
2	FN	33	11	I11	Fractional number studied
2	TW	44	20	F20.5	Total weight (g)
2	FW	64	20	F20.5	Fraction studied weight (g)
2	LWS	84	11	I11	1 = length; 2 = weight; 3 = sex
2	Data	95	20	F20.5	(The ten words following

Byte 9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
3	Data	33	20	F20.5	('LWS' are with lengths
3	Data	53	20	F20.5	((mm), weights (gms), or
3	Data	73	20	F20.5	(sex (M,F,N) of individual
3	Data	93	20	F20.5	(in the fraction studied.
4	Data	33	20	F20.5	((See note at end about
4	Data	53	20	F20.5	(continuous records if
4	Data	73	20	F20.5	(TN = -1.)
4	Data	93	20	F20.5	(1 = length; 2 = weight;
5	Data	33	20	F20.5	(3 = sex
5	LWS	53	11	I11	(
5	Data	64	26	F20.5	(
5	Data	84	20	F20.5	(
5	Data	104	20	F20.5	(See preceeding 9 lines
6	Data	33	20	F20.5	(
6	Data	53	20	F20.5	(
6	Data	73	20	F20.5	(
6	Data	93	20	F20.5	(
7	Data	33	20	F20.5	(
7	Data	53	20	F20.5	(
7	Data	73	20	F20.5	(
7	LWS	93	11	I11	1 = length; 2 = weight; 3 = sex

Byte 9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
7	Data	104	20	F20.5	(
8	Data	33	20	F20.5	(
8	Data	53	20	F20.5	(
8	Data	73	20	F20.5	(
8	Data	93	20	F20.5	(See Above
9	Data	33	20	F20.5	(
9	Data	53	20	F20.5	(
9	Data	73	20	F20.5	(
9	Data	93	20	F20.5	(
10	Data	33	20	F20.5	(

*If TN = -1, the record is continued in the next set of 10 lines. This occurs when more than 30 lengths, or more than 10 sexes or weights are to be recorded. The actual TN appears in the final group of 10 of the set, i.e., the first set with non-negative TN.

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE # 10

The first 32 bytes of the data record are described in the DDF. The organization of the remaining bytes on each data record depends upon the value of bytes 7-9. Bytes 7 and 8 contain the ERCO form #, and 9 is the sequence #.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
701	Isolate number	33	11	I11	Identifies subsample used for cultures
701	--	44	11	I11	Blank
721	Temperature	33	11	I11	°C (5 or 20)
721	Dilution	44	20	F20.5	See Section B
721	Colony Type	64	11	I11	See Reference Key (DDF)
721	Number	75	20	F20.5	Number of colonies/filter membrane
721	H.C. and colony type	95	11	I11	See Reference Key (DDF)
721	Number	106	20	F20.5	Number of colonies in sample
731	Total Microbial Biomass*	33	20	F20.5	TMB (mgC/m^3) or ($\mu gC/cc$)
731	Bacterial Biomass*	53	20	F20.5	BB (mgC/m^3) or ($\mu gC/cc$)
731	Direct Count*	73	20	F20.5	DC $cells/m^3$) or (cells/cc)
741	Phytoplankton Biomass	33	20	F20.5	Phytoplankton Biomass (gm)
741	Phytoplankton Direct Count	53	20	F20.5	Phytoplankton Direct Count
761	Glutamate Mineralization 5°	33	20	F20.5	(Units for these fields are
761	Acetate Mineralization 5°	53	20	F20.5	(either μg amino acid $hr^{-1}m^3$

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
761	Glutamate Mineralization 20°	73	20	F20.5	(or µg amino acid hr^{-1} cm^{-1}.
761	Acetate Mineralization 20°	93	20	F20.5	(First units are used if
771	Hydrocarbon Mineralization 5°C	33	20	F20.5	(bytes 16-24 are greater
771	Hydrocarbon Mineralization 20°C	53	20	F20.5	(than 2000 and less than (6000. Otherwise 2nd (are used.
331	Isolate #	33	11	I11	(
331	Temperature	44	11	I11	(
331	Morphology	55	11	I11	(
331	Size	66	11	I11	(
331	Groupings	77	11	I11	(Matched to Sample ID on
331	Motility	88	11	I11	(Form 70.
331	Phase Characteristics	99	11	I11	(Temperature °C
331	Gram Reaction	110	11	I11	(
332	Unique Characteristics	33	11	I11	(See Section B
332	Luminescence	44	11	I11	(
332	Colony Size	55	11	I11	(
332	Colony Shape	66	11	I11	(
332	Elevation	77	11	I11	(
332	Margin	88	11	I11	(
332	Surface	99	11	I11	(
332	Opacity	110	11	I11	(
333	Chromogenesis 1	33	11	I11	(

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
333	Chromogenesis 2	44	11	I11	(
333	Chromogenesis 3	55	11	I11	(
333	Consistency	66	11	I11	(
333	Color of Marine Agar	77	11	I11	(
333	Energy Metabolism	88	11	I11	(Matched to Sample ID on Form 70.
333	Catalase	99	11	I11	(Temperature °C
333	Oxidase	110	11	I11	(
334	Gelatine Hydrolysis	33	11	I11	(See Section B
334	Cellulose Degradation	44	11	I11	(
334	Hydrocarbon Utilization	66	11	I11	(
334	NO_3 Reduction	66	11	I11	(
334	0/129 Sensitivity	77	11	I11	(

*If bytes 16-24 hold a value of more than 5999, the first units are used; otherwise the second units apply.

DATA RECORD DESCRIPTION FOR ERCO/EDS FILE #90

This file differs from 1-10 because only the first fifteen bytes are repeated in each record. The first nine bytes are in the same format as file 1-10. These bytes are not succeeded by a sample ID, since no ID applies to meteorological observations. Instead bytes 10 and 11 hold the station number and 12-15 contain the four digit sample sequence number (which appears on files 1-10 in bytes 29-32).

The remaining bytes are arranged according to the value of bytes 7-9. Bytes 7 and 8 contain the ERCO from # and byte 9 is the sequence #.

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
211	Cruise	16	11	I11	
211	Ship	27	5	A5	
211	Date	32	11	I11	YYMMDD
211	Latitude	43	11	I11	DDMMSS
211	Longitude	54	11	I11	DDMMSS
211	Local Time-hr.	65	11	I11	
211	Local Time-min.	76	11	I11	
211	GMT-hr.	87	11	I11	
211	GMT-min.	98	11	I11	
211	Loran-C (x)	109	20	F20.5	
212	Loran-C (z)	16	20	F20.5	
212	Station	36	11	I11	
212	Cast	47	11	I11	
212	Sonic Depth	58	20	F20.5	meters
212	Maximum Sample Depth	78	20	F20.5	meters

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
212	Wind Speed (knots)	98	20	F20.5	
213	Wind Speed (MPH)	16	20	F20.5	
213	Wind Speed (m/sec.)	36	20	F20.5	
213	Wind Direction (°/10)	56	20	F20.5	
213	Air Temp. (°F)	76	20	F20.5	
231	Air Temp. (°C)	96	20	F20.5	
214	Ship Speed (knots)	16	20	F20.5	
214	Ship Speed (MPH)	36	20	F20.5	
214	Ship Speed (m/sec.)	56	20	F20.5	
214	Ship Heading (°/10)	76	20	F20.5	
214	Sea Temp. (°F)	96	20	F20.5	
215	Sea Temp. (°C)	16	20	F20.5	
215	5-min. gust (knots)	36	20	F20.5	
215	5-min. gust (MPH)	56	20	F20.5	
215	5-min. gust (m/sec.)	76	20	F20.5	
215	Barometric Pressure	96	20	F20.5	millibars
216	Wet Bulb (°F)	16	20	F20.5	
216	Wet Bulb (°C)	36	20	F20.5	
216	Rel. Humidity (%)	56	20	F20.5	
216	Cloud Cover	76	11	I11	
216	Present Weather	87	11	I11	
216	Dominant Cloud	98	11	I11	
216	Waves-Direction (°/10)	109	11	I11	

Bytes 7-9	Field Name	Position From 1 In Bytes	Length In Bytes	Attributes	Use and Meaning
216	Waves-Period	120	11	I11	
217	Waves-Height	16	11	I11	
217	Swell Direction (°/10)	27	11	I11	
217	Swell-Period	38	11	I11	
217	Swell-Height	49	11	I11	
217	Sea Surface Description	60	11	I11	
217	Absolute Wind Speed (knots)	71	20	F20.5	
217	Absolute Wind Speed (MPH)	91	20	F20.5	
217	Absolute Wind Speed (m/sec.)	111	20	F20.5	
218	Absolute Wind Direction (°C)	16	20	F20.5	
218	Absolute Wave Direction (°C)	36	20	F20.5	
218	Absolute Swell Direction (°/10)	56	20	F20.5	
218	Blank	76	20	F20.5	
218	Blank	96	20	F20.5	
219	Blank	16	20	F20.5	
219	Blank	36	20	F20.5	

RECORD FORMAT DESCRIPTION

RECORD NAME Comment Record

14. FIELD NAME	15. POSITION FROM-1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING
File #	1	2	Bytes	I2	--
Cruise #	3	2	"	I2	--
Update #	5	1	"	I1	--
Record Type	6	4	"	I4	OnnO nn-ERCO File # (03,04,05,06,07,23 or 24)
Sample ID	10	19	"	19A1	See Data Management Report
Replicate #	29	4	"	I4	--
Comment Sequence #	33	2	"	I4	= 1 for first line of comment 2 for second line, etc.
Comment	35	90	"	90A1	--

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 CALIBRATED
		YOUR ORGANIZATION (√)	OTHER ORGANIZATION (GIVE NAME)	AT FIXED INTERVALS (√)	BEFORE OR AFTER USE (√)	BEFORE AND AFTER USE (√)	ONLY AFTER REPAIR (√)	ONLY WHEN NEW (√)	(√)
185 B CHN Analyzer Hewlett Packard		X				X			
Infrared Analyzer	Nov. 1977	X		X					
Induction Salinometer	Spring, 1977	X		X					
Spectronic 70 Spectrophotometer		X			X				
Beckman DU Spectrophotometer		X			X				

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FILE 6

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 CALIBRATED
		YOUR ORGANIZATION (✓)	OTHER ORGANIZATION (GIVE NAME)	AT FIXED INTERVALS (✓)	BEFORE OR AFTER USE (✓)	BEFORE AND AFTER USE (✓)	ONLY AFTER REPAIR (✓)	ONLY WHEN NEW (✓)	(✓)
185 B CHN Analyzer Hewlett Packard		X				X			

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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 CALIBRATED
		YOUR ORGANIZATION (√)	OTHER ORGANIZATION (GIVE NAME)	AT FIXED INTERVALS (√)	BEFORE OR AFTER USE (√)	BEFORE AND AFTER USE (√)	ONLY AFTER REPAIR (√)	ONLY WHEN NEW (√)	(√)
Canberra Model 8180 MCA	N/A	X	--	N/A	X	--	--	--	--

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FILE 0

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 CALIBRATED
		YOUR ORGANIZATION (✓)	OTHER ORGANIZATION (GIVE NAME)	AT FIXED INTERVALS (✓)	BEFORE OR AFTER USE (✓)	BEFORE AND AFTER USE (✓)	ONLY AFTER REPAIR (✓)	ONLY WHEN NEW (✓)	(✓)
Hewlett Packard 5840 Gas Chromatograph					X				
Farrand optical Mk-1 spectrofluorameter					X				

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```
Password:
 accNo   fleA refNo  proj inst ship    startDate  cruise   catId
 ------- ---- ------ ---- ---- ------- ---------- -------- ----------
 7800460 C100 BL2647 0091 31X7 32GY    1977/05/05 2            307168
 7800460 L521 L00978 9999 31X7 32GY    1977/05/05 NULL         307170
 7800460 L134 L00979 9999 31X7 32GY    1977/05/05 NULL         307171
 7800460 L131 L00980 9999 31X7 32GY    1977/05/05 NULL         307172
 7800460 L504 L00981 9999 31X7 32GY    1977/05/05 NULL         307173
 7800460 L520 L00982 9999 31X7 32GY    1977/05/05 NULL         307174
 7800460 L150 L00983 9999 31X7 32GY    1977/05/05 NULL         307175
 7800460 L130 L00999 0131 31X7 32GY    1977/05/05 NULL         307176
 7800460 L513 L00977 0084 31X7 32GY    1977/05/05 NULL         307169

(9 rows affected)
```

Password:

accNo	fleA	refNo	ship	staCnt	recCnt	startDate	endDate
7800460	C100	BL2647	32GY	0	0	77/05/05	77/05/25
7800460	L521	L00978	32GY	0	0	77/05/05	77/05/25
7800460	L134	L00979	32GY	0	0	77/05/05	77/05/25
7800460	L131	L00980	32GY	0	0	77/05/05	77/05/25
7800460	L504	L00981	32GY	0	0	77/05/05	77/05/25
7800460	L520	L00982	32GY	0	0	77/05/05	77/05/25
7800460	L150	L00983	32GY	0	0	77/05/05	77/05/25
7800460	L130	L00999	32GY	0	0	77/05/05	77/05/25
7800460	L513	L00977	32GY	0	0	77/05/05	77/05/25

(9 rows affected)