

CRUISE REPORT: AR28_ 1975b

(Updated SEP, 2007)



A. HIGHLIGHTS

A.1. CRUISE SUMMARY INFORMATION

Section Designation	AR28_ 1975b		
Expedition designation (ExpoCodes)	74CH19750704		
Chief Scientists	D.J. Ellett		
Dates	4 JUL to 10 JUL 1975		
Ship	<i>RSS Challenger</i>		
Ports of call	Greenock, UK – Oban, UK		
Station geographic boundaries	13° 38' W	56° 44' N	7° 40' W
		57° 14' N	
Stations	29 CTD stations		
Floats and drifters deployed	1 current meter mooring deployed		
Moorings deployed or recovered			
Author	D.J. Ellett		

Introduction

Documentation for the STD data collected on RRS Challenger Cruise 7/75 (May 1975) by the Scottish Marine Biological Association, Oban, Argyll, Scotland, UK, under the direction of D. J. Ellett.

Note that SMBA commented that for cast C775/027 (BODC Series Reference 90035) that the salinity from bottle sample was doubtful.

S.N.B.A., Dunstaffnage Marine Research Laboratory

Cruise_Report: RRS CHALLENGER Cruise 7A/1975 (a.k.a. C775)

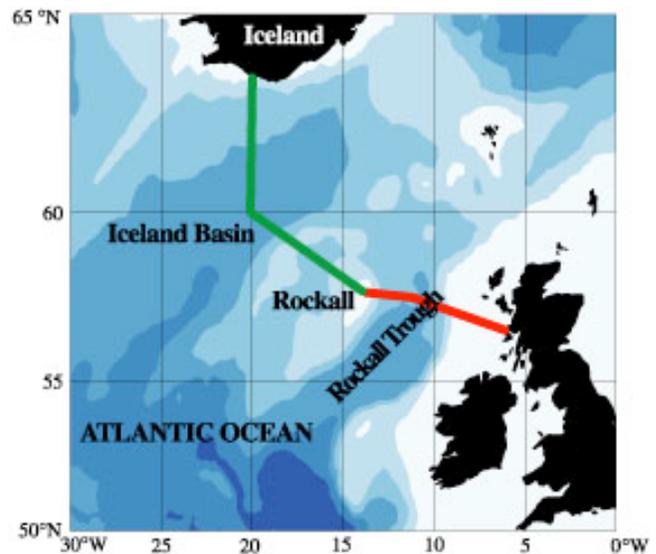
Duration: 1444h 1 May to 1200h 6 May 1975. All times BST.

Locality: Rockall Channel, 57° to 58°N.

Staff D.J. Ellett A. Edwards
G.G. Coghill N. Pascoe
A.M. Souter G. Tuttle
H. Valicente (UCW, Aberystwyth)

Aims:

- 1) To moor current meters at 57°N, 9°W for the duration of the cruise.
- 2) To make hourly STD lowerings at the current meter site over a period of 14 hours.
- 3) To work hydrographic sections across the shelf-edge at 57°N to Anton Dohrn Seamount and Rockall Bank.
- 4) To obtain bottom samples for the Dept. of Geology, UCW, Aberystwyth.
- 5) Further developments of the cassette tape data-logging system for the STD.
- 6) To obtain 50 litres surface water samples for ^{137}Cs analysis by the Fisheries Radiobiological Laboratory.
- 7) To transmit messages to Bracknell of vertical temperature profiles.

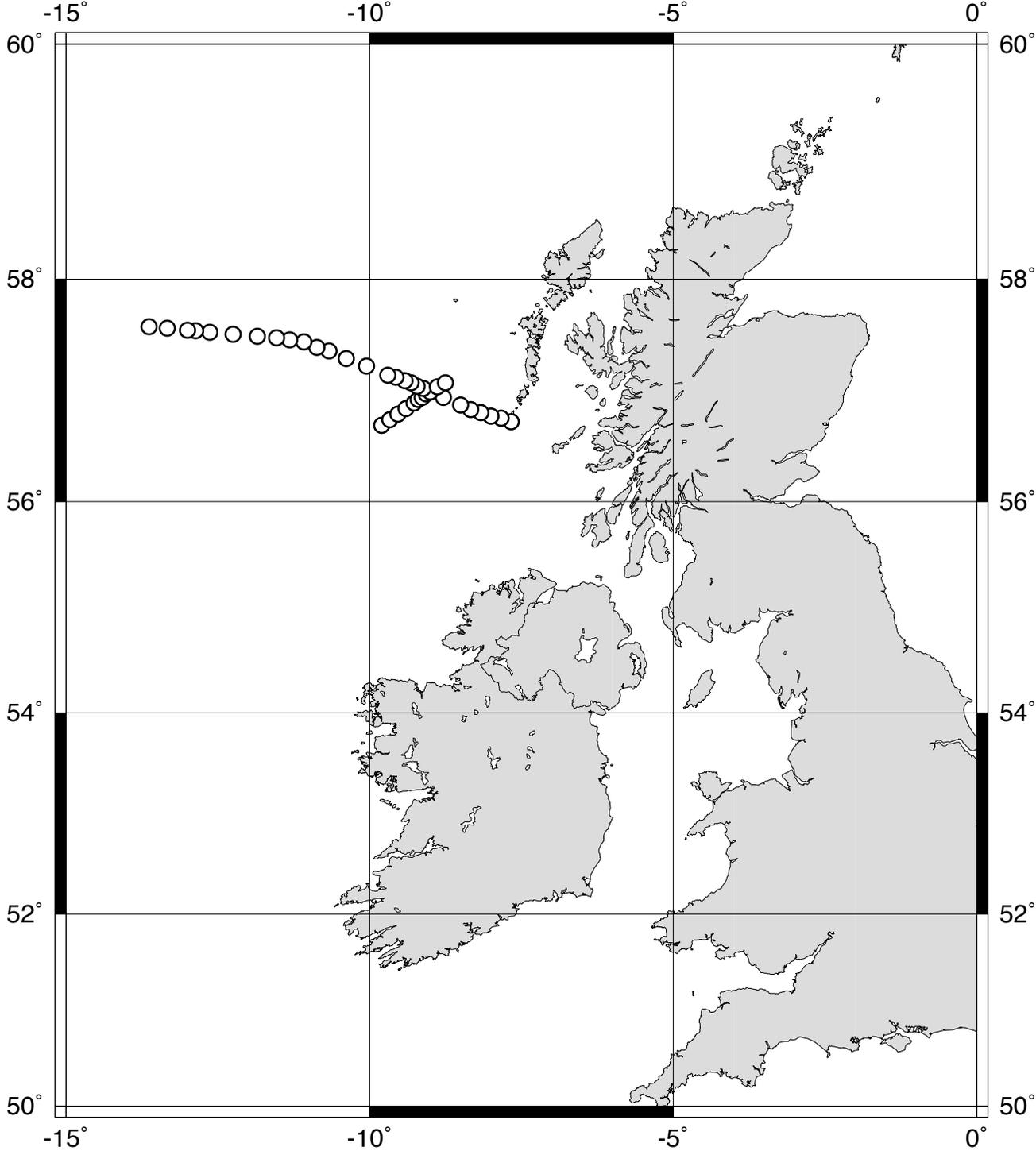


Narrative

CHALLENGER sailed from James Watt Dock, Greenock at 1445h, 1 May, clearing Customs at the Tail of the Bank at 1600h. A heavy head swell caused speed to be reduced after rounding the Mull of Kintyre, and the first station of the Anton Dohrn Seamount section was reached at 2000h, 2 May. Faults in the pen recorder of the STD led to the first four stations being worked with reversing water-bottles. Shipek grab samples were obtained and unsuccessfully attempted at a deeper fifth station at 0400h, 3 May.

At 0930h, 3 May the current meter rig was successfully launched in calm sea conditions with force 3 southerly winds. In view of nearby trawling by East German and other vessels it was deemed prudent to make the series of 14 hourly STD observations alongside the buoy at this time, the series being completed at 0022h, 4 May.

AR28 Station Locations • 1975 • Second Occupation • Ellett • RSS Challenger



Stations on the section were resumed at 0158h, 4 May and continued in fine weather, until 0230h, 5 May, when a further 10 stations had been worked using the STD. Shipek grab samples were obtained from the flanks and top of Anton Dohrn Seamount.

Retrieval of the buoy and current meters took place at 1300h, 5 May in calm conditions. Apart from initial difficulties in detaching the spar buoy from the buoy wire, due to fouling of the latter by the chains ballasting the buoy, the recovery was completed without incident. At 1630h a section on to the shelf from deep water with 8 STD stations spaced at 2-1/2 n. ml. intervals was begun. On completing this at 2225h the ship set course for the Sound of Null, surface samples for ^{137}Cs being taken en route. CHALLENGER berthed at South Pier, Oban at 1200h, 6 May.

Results

Aim 1) Current meters were successfully moored over four tidal cycles at 57°N, 9°W. Modification of the weighting of the spar buoy may be advisable to avoid entangling the buoy-wire when hauling. Navigational warnings had been broadcast by Oban and Malta Head Radios on this occasion, and steps had been taken to increase the visibility of the spar buoy on radar and to the eye.

Aim 2) Hourly STD lowerings beside the buoy showed fluctuations of properties in the lower water-column over 14 hours which will be analysed further.

Aim 3) The hydrographic section to Anton Dohrn Seamount was worked, repeating observations made at the Scottish shelf-edge in March. Lack of time curtailed the extension of the section to Rockall, but observations were obtained in the deep water to the west of the Seamount.

As there were no problems in locating and recovering the current meters, time was available for a detailed STD section across the shelf-edge with stations spaced at 2-1/2 n.ml. intervals in order to examine conditions in the vicinity of the buoy station more closely.

Aim 4) Good Shipek grab samples were obtained at seven stations to depths of 800m. Attempts at two deeper stations were unsuccessful.

Aim 5) Data-logging to cassette tapes via the HewlettPackard 9620k calculator was carried out at all STD stations. Plots could be generated within a few minutes of the STD reaching the bottom, and this proved a valuable facility whilst the STD pen recorder was out of action. Further programme development can now be carried out ashore.

Aim 6) Surface samples for ^{137}Cs analysis were taken at ten positions between the buoy station and Ardmore Point, repeating stations sampled in March.

Aim 7) Six messages were coded from the STD profiles for transmission to Bracknell.

Instrumentation

The instrument used was a Bissett Berman STD system and the data were logged on a Hewlett Packard 9820. Instrument lowering and raising speeds between 0.5 m/s and 1 m/s. An acoustic pinger was placed above the STD to give an accurate depth measurement, this could then be used to check the STD pressure calibration. An NIO bottle with reversing thermometers was placed above the pinger, within 2m of the STD system. A bottle sample was taken at the bottom of the cast providing the temperature and salinity are uniform at that point. If large temperature or salinity gradients were present then the bottle sample was triggered at a suitable site on the upcast. A surface salinity sample was also taken at the start of the dip.

Calibration

The STD was not calibrated in the laboratory. The manufacturer's calibration was used and water samples taken to check the calibration and apply corrections where necessary.

Temperature

The manufacturer's calibration was used to convert the raw data to physical units using the equation below:

$$\text{Temperature (}^{\circ}\text{C)} = (10^6 / P_t - 2238.68) / 55.84$$

where P_t is the temperature period in microseconds

These values were then plotted against the water bottle (i.e. reversing thermometer) temperatures and a regression line fitted to the data such that:

$$\text{Temperature(WB)} = m \times \text{Temperature(STD)} + c$$

Then the regression coefficients (m and c) were applied to correct the STD temperature data - these are given in the table below.

Salinity

The manufacturer's calibration was used to convert the raw data to physical units using the equation below:

$$\text{Salinity (ppt)} = (10^6 / P_s - 4995) / 290.6 + 30$$

where P_s is the salinity period in microseconds

These values were then plotted against the STD salinity and a regression line fitted to the data such that:

$$\text{Salinity(WB)} = m \times \text{Salinity(STD)} + c + (m_1 \times \text{Pressure} + c_1) / 1000$$

Then the regression coefficients were applied to correct the STD salinity data. The data showed a salinity - pressure dependency, this was corrected by plotting delta-S (i.e. calibrated salinity - calculated salinity) against pressure to determine the slope (m_1) and intercept (c_1). These were then incorporated into the equation as shown above. The regression coefficients are given in the table below.

Pressure

The depths from the acoustic pinger were noted where the bottle samples were taken and then used to check the calibration of the pressure sensor - unless calibration values were available from the reversing thermometers. The equation below was used to convert the pressure period to physical units.

$$\text{Pressure} = (10^6 / P_d - 9712) / 0.26267$$

where P_d is the pressure period in microseconds

A regression fit was carried out using the calibration values and the slope and intercept determined. The pressure values could then be corrected using:

$$\text{Pressure (CORR)} = m \times \text{Pressure(STD)} + c$$

The fit of the STD data to the water bottle calibration data is given in the table below:

Variable	Slope (m)	Intercept (c)	Standard Deviation
Temperature (°C)	0.9993	0.0561	0.009
Salinity (ppt)	0.8674	4.6819	0.013
Pressure (dbar)	0.5031	-4.0269	2.792
Delta-S	-0.0042	11.8581	10.043

Data processing

Obvious wild points were edited out of the calibration file and the calibration programs run to obtain values for the slopes and intercepts for temperature, pressure and salinity. These were then applied to the uncalibrated data and sigma-t was calculated. The data values were then sieved to ensure a minimum separation between pressure values of 1 dbar. The data were then visually inspected and major spikes flagged.

References

- Sharples, F. (1987). A new data bank of SMBA STD/CTD observations in the Rockall Trough 1975-84. SMBA Marine Physics Group Report No. 36.
- Graham, J.M., Sharples, F., Meldrum, D.T. and Edwards, A. (1987). STD observations in the Rockall Trough 1975-77. SMBA Marine Physics Group Report No. 39.
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DML ROCKALL TROUGH (ANTON DOHRN SEAMOUNT) CTD SECTION STATIONS

Station	Dist. to next	Latitude	Longitude	Approx. depth (m)	Comment
A	10.0'	57 35.0 N	13 38 W	130	near Rockall
B	10.0'	57 34.0 N	13 20 W	210	
C	5.0'	57 33.0 N	13 00 W	330	
D	7.5'	57 32.5 N	12 52 W	1000	
E	12.5'	57 32.0 N	12 38 W	1658	
F	12.5'	57 30.5 N	12 15 W	1817	
G	10.0'	57 29.5 N	11 51 W	1812	
H	7.5'	57 29.0 N	11 32 W	2020	
I	7.5'	57 28.0 N	11 19 W	750	
J	7.5'	57 27.0 N	11 05 W	550	seamount crest
K	7.5'	57 24.0 N	10 52 W	850	
L	10.0'	57 22.0 N	10 40 W	2076	
M	12.0'	57 18.0 N	10 23 W	2340	
N	12.0'	57 14.0 N	10 03 W	2100	
O	10.0'	57 09.0 N	09 42 W	1900	
P	7.5'	57 06.0 N	09 25 W	1050	
Q	7.5'	57 03.0 N	09 13 W	350	
R	8.0'	57 00.0 N	09 00 W	135	shelf-edge
S	10.0'	56 57.0 N	08 47 W	125	
15G	6.25'	56 53.0 N	08 30 W	125	
T	5.75'	56 50.2 N	08 20 W	120	
14G	5.75'	56 48.5 N	08 10 W		surface only
13G	5.75'	56 47.0 N	08 00 W	110	
12G	5.75'	56 45.5 N	07 50 W		surface only
11G		56 44.0 N	07 40 W	55	Barra Head

Distance Barra Head to station A is 203 nautical miles.

Stations R to 11G are an overlap with the Sound of Mull to Shelf-edge section (see list c, BODC document reference number 77367).

DML ROCKALL TROUGH (ADDITIONAL) CTD SECTION STATIONS

DML CTD Sections Across the Shelf-Edge

a) Extra Stations Inserted Between Anton Dohrn Stations

Station	Dist. to next	Latitude	Longitude	Approx. Depth
N	12.0'	57° 14.0' N	10° 03.0' W	2100
O	5.0'	57° 09.0' N	09° 42.0' W	1900
P1	5.0'	57° 07.5' N	09° 33.5' W	1375
P	3.7'	57° 06.0' N	09° 25.0' W	1050
Q1	3.7'	57° 04.5' N	09° 19.0' W	800
Q	3.7'	57° 03.0' N	09° 13.0' W	350
R1	3.7'	57° 01.5' N	09° 06.5' W	155
R	8.0'	57° 00.0' N	09° 00.0' W	135
S	-	56° 57.0' N	08° 47.0' W	125

b) NE-SW section, crossing at R

Station	Dist. to next	Latitude	Longitude	Approx. Depth
L10	5.0'	57° 05.0' N	08° 45.0' W	123
L9	5.0'	57° 02.5' N	08° 52.5' W	125
R	2.7'	57° 00.0' N	09° 00.0' W	135
L8	2.7'	56° 58.5' N	09° 04.0' W	145
L7	2.7'	56° 57.0' N	09° 08.0' W	343
L6	2.7'	56° 55.5' N	09° 12.0' W	960
L5	5.5'	56° 54.0' N	09° 16.0' W	1286
L4	5.5'	56° 51.0' N	09° 24.0' W	
L3	5.5'	56° 48.0' N	09° 32.0' W	1720
L2	5.5'	56° 45.0' N	09° 40.0' W	
L1	5.5'	56° 42.0' N	09° 48.0' W	1820

BODC QUALITY CONTROL FLAGS

The following single character qualifying flags may be associated with one or more individual parameters with a data cycle:

Flag	Description
Blank	Unqualified
<	Below detection limit
>	In excess of quoted value
A	Taxonomic flag for affinis (aff.)
B	Beginning of CTD Down/Up Cast
C	Taxonomic flag for confer (cf.)
D	Thermometric depth
E	End of CTD Down/Up Cast
G	Non-taxonomic biological characteristic uncertainty
H	Extrapolated value
I	Taxonomic flag for single species (sp.)
K	Improbable value - unknown quality control source
L	Improbable value - originator's quality control
M	Improbable value - BODC quality control
N	Null value
O	Improbable value - user quality control
P	Trace/calm
Q	Indeterminate
R	Replacement value
S	Estimated value
T	Interpolated value
U	Uncalibrated
W	Control value
X	Excessive difference

CCHDO Data Processing Notes

DATE	CONTACT	DATA TYPE	EVENT
09/04/2007	Muus	CTD	Reformatted, online Notes for ELLETT data (ar28 1975-1992)

1. Original data from 2004.03.02_AR28_CTD_HOLLIDAY
No quality flags.
2. Justin Fields & Danie Kinkade converted to Exchange format:

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2006.06.16_AR28_CTD_RFMT_DBK (ar28_1975a)
2006.08.04_RFMT_AR28_CTD_DBK (ar28_1975b)
2006.08.06_RFMT_AR28_CTD_DBK (ar28_1975c)
2006.08.08_RFMT_AR28_CTD_DBK (ar28_1976a - ar28_1977a)
2006.08.10_RFMT_AR28_CTD_DBK (ar28_1977c - ar28_1992a)

2007.07.12_AR28_CTD_RFMT_JFIELDS (ar28_1975a - ar28_1992a)

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Added quality flags: "2"
CTDPRS formatted F9.1
CTDTMP      "      F9.4
THETA      "      F9.4

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3. dm modified July-August 2007:

- a) Changed Expocodes to new format (CCSSYYYYMMDD)
See n) for list of Expocodes.
- b) Left originator's THETA in file. Normally not in CTD Exchange files.
Compared to theta calculated with JOA. Near surface values vary +/- .003
and deep values vary +/- .001
- c) Changed quality flags for ar28_1975c_00008_00001_ct1.csv:

```

CTDPRS,      CTDSAL,      CTDTMP,      THETA,
1111.0,2,    35.2266,2,    7.4700,2,    7.3549,2
1113.0,2,    35.2270,2,    7.4700,2,    7.3547,2
1115.0,2,    35.2285,2,    7.4650,2,    7.3495,2
1117.0,2,    35.2237,2,    7.4567,2,    7.3411,2
1119.0,2,    35.2193,2,    7.4483,2,    7.3326,2
1121.0,2,    35.2150,2,    7.4400,2,    7.3241,2
1123.0,2,    35.4610,3,    7.4300,2,    7.3135,2 CTDSAL FLAG 3 vs 2
1125.0,2,    35.3800,3,    7.4267,2,    7.3101,2 CTDSAL FLAG 3 vs 2
1127.0,2,    35.2990,3,    7.4233,2,    7.3068,2 CTDSAL FLAG 3 vs 2
1129.0,2,    35.2180,2,    7.4200,2,    7.3034,2
1131.0,2,    35.2165,2,    7.3950,2,    7.2784,2
1133.0,2,    33.9363,4,    7.3792,2,    7.2646,2 CTDSAL FLAG 4 vs 2
1135.0,2,    32.6560,4,    7.3633,2,    7.2509,2 CTDSAL FLAG 4 vs 2
1137.0,2,    35.2110,3,    7.3200,2,    7.2033,2 CTDSAL FLAG 3 vs 2
1139.0,2,    35.2180,2,    7.3200,2,    7.2031,2
1141.0,2,    35.2170,2,    7.2967,2,    7.1797,2
1143.0,2,    35.2177,2,    7.2833,2,    7.1663,2
1145.0,2,    35.2185,2,    7.2700,2,    7.1528,2

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1147.0,2,	35.2173,2,	7.2700,2,	7.1526,2
1149.0,2,	35.2160,2,	7.2700,2,	7.1524,2

d) Changed quality flags for ar28_1976a_00007_00001_ct1.csv:

217.5,2,	35.3047,2,	9.3400,2,	9.3157,2	
222.5,2,	35.3015,2,	9.3300,2,	9.3051,2	
227.5,2,	35.2990,2,	9.3300,2,	9.3046,2	
232.5,2,	33.4022,4,	9.3300,2,	9.3047,2	CTDSAL FLAG 4 vs 2
237.5,2,	35.2930,2,	9.3300,2,	9.3034,2	
242.5,2,	35.3020,2,	9.3000,2,	9.2729,2	
247.5,2,	35.2995,2,	9.2900,2,	9.2624,2	
252.5,2,	34.8453,4,	9.2700,2,	9.2420,2	CTDSAL FLAG 4 vs 2
257.5,2,	35.2923,2,	9.2500,2,	9.2213,2	
262.5,2,	35.2923,2,	9.2367,2,	9.2075,2	
267.5,2,	35.2907,2,	9.2267,2,	9.1969,2	
272.5,2,	35.2860,2,	9.2000,2,	9.1697,2	
277.5,2,	35.2910,2,	9.1850,2,	9.1542,2	
282.5,2,	35.2920,2,	9.1800,2,	9.1486,2	

597.5,2,	35.2660,2,	8.6900,2,	8.6247,2	
602.5,2,	35.2690,2,	8.6800,2,	8.6142,2	
607.5,2,	35.2620,2,	8.6700,2,	8.6037,2	
612.5,2,	34.8323,4,	8.6533,2,	8.5869,2	CTDSAL FLAG 4 vs 2
617.5,2,	35.2630,2,	8.6233,2,	8.5561,2	
622.5,2,	35.2660,2,	8.6200,2,	8.5522,2	
627.5,2,	35.2580,2,	8.6033,2,	8.5350,2	
632.5,2,	35.2640,2,	8.5900,2,	8.5212,2	
637.5,2,	35.2603,2,	8.5775,2,	8.5082,2	
642.5,2,	35.2600,2,	8.5500,2,	8.4803,2	

e) ar28_1976a_00012_00001_ct1.csv has different T-S pattern from adjacent stations. Is on slope and was done on April 2. May be spring time effect. Left as is.

f) ar28_1978b 2006.08.10_RFMT_AR28_CTD_DBK has file names with 1987b instead of 1978b. Left original files as is and corrected on-line files.

g) ar28_1978c and ar28_1978d have same cruise dates in HOLLIDAY 00_README files, July 11 - Sept 17, 1978. First has originator expocode of 74c11b78 (Stations 167-187, Aug 9-11) and second has 74c11d78 (Sta 369-380, Sept 11-13).
Cannot find a cruise report in Documentation directory.

Combined into one cruise with new Expocode 74CH19780711.

h) ar28_1981b cruise report(ch6_81.pdf) says this cruise departed April 6 and returned to Stornoway April 15 at 0740(called Leg A in cruise report) and departed April 16 at 1130(called Leg B). Personnel changes were made. This cruise was originally reported with one expocode (74c681) for Stations 2-11 and 37-56. I split them into 2 cruises with expocodes: 74CH19810406 for Stations 2-11 and 74CH19810416 for Stations 37-56

i) Changed file names for ar28_1981c and ar28_1983b from ar18_198..... to ar28_198..... to match all other exchange file names.

j) ar28_1983a has cruise dates "11 May - 30 Jun 1983" in HOLLIDAY 00_README.
Cruise report ch7_83.pdf has Leg A "May 11-23, 1983"
Leg B "May 23-June 2, 1983"
All ctd data is from Leg B so used 74CH19830523 for EXPCODE.

k) Changed quality flags for ar28_1983b_00066_00001_ct1.csv:

602.5,2,	35.3925,2,	9.3000,2,	9.2313,2	
607.5,2,	35.3860,2,	9.2900,2,	9.2208,2	
612.5,2,	35.3660,3,	9.2700,2,	9.2003,2	CTDSAL FLAG 3 vs 2
617.5,2,	50.9697,4,	9.2500,2,	9.1656,2	CTDSAL FLAG 4 vs 2
622.5,2,	35.3725,3,	9.2350,2,	9.1643,2	CTDSAL FLAG 3 vs 2
627.5,2,	35.3745,2,	9.2200,2,	9.1488,2	
632.5,2,	35.3730,2,	9.2200,2,	9.1482,2	

l) ar28_1983b Stations 55 and 56 have exactly the same date, time position and bottom depth. Sta 55 20-115db and Sta 56 45-745db. Left as is.

m) ar28_1992a Stations have 1 decibar intervals. All previous data was 2 decibar data. Left as is for now.

ar28_1992a Station 30 has temperature but no salinity for 2-6db. Used quality flag 9 for CTDSAL & THETA.

3.0,2,-999.0000,9,	10.8565,2,-999.0000,9	
4.0,2,-999.0000,9,	10.8515,2,-999.0000,9	
5.0,2,-999.0000,9,	10.8535,2,-999.0000,9	
6.0,2,-999.0000,9,	10.8511,2,-999.0000,9	
7.0,2, 35.2356,2,	10.8517,2, 10.8508,2	

00_README file in ar28_1992a/original/2004.03.02_AR28_CTD_HOLLIDAY has info from a Feb 1991 cruise, not ar28_1992a.

n) Following is a comparison of cruise indentifiers:

ELLETT name comparisons 20070824/dm

Vessel	Cruise Dates	Cruise Names			EXPOCODE		Cruise Report	Missing Info
		CCHDO	Cruise Report	00_README	CCHDO	HOLLIDAY		
Challenger Leg	May 1-6, 1975	ar28_1975a	7A/1975	C775	74CH19750501	74c775	ch7a_75.pdf	
"	Jul 4-10, 1975	ar28_1975b	10A/1975	C1075	74CH19750704	74c1075	ch10a_75.pdf	
"	Nov 7-12, 1975	ar28_1975c	14B/1978	C1475	74CH19751107	74c1475	ch14b_75.pdf	
"	Mar 29-Apr 5, 1976	ar28_1976a	5a/1976	C5a76	74CH19760329	74c5a76	ch5a_76.pdf	
"	May 19-Jun 1, 1976	ar28_1976b	8/1976	C876	74CH19760519	74c876	ch8_76.pdf	
"	Feb 25-Mar 11, 1977	ar28_1977a	4/1977	C477	74CH19770225	74c477	ch4_77.pdf	
"	Apr 14-19, 1977	ar28_1977b	6B/1977	C677	74CH19770414	74c677	ch6b_77.pdf	
"	Aug 20-Sep 3, 1977	ar28_1977c	13/1977	C1377	74CH19770820	74c1377	ch13_77.pdf	
"	Apr 11-21, 1978	ar28_1978a	6/1978	C678	74CH19780411	74c678	ch6_78.pdf	
"	May 31-Jun 10, 1978	ar28_1978b	9/1978	C978(?)	74CH19780531	74c978	ch9_78.pdf	
"	Jul 11-Sep 17, 1978	ar28_1978c	NONE	11B78	74CH19780711	74c11b78	NONE	YES
"	Jul 11-Sep 17, 1978	ar28_1978d	NONE	11D78	74CH19780711	74c11d78	NONE	YES
"	Nov 4-11, 1978	ar28_1978e	14B/1978	C1478	74CH19781104	74c1478	ch14b_78.pdf	
"	May 10-23, 1979	ar28_1979a	7/1979	C779	74CH19790510	74c779	ch7_79.pdf	
"	Sep 11-16, 1979	ar28_1979b	13/1979	C1379	74CH19790911	74c1379	ch13_79.pdf	
"	Oct 28-Nov 11, 1979	ar28_1979c	16/1979	C1679	74CH19791028	74c1679	ch16_79.pdf	
"	Apr 21-May 6, 1980	ar28_1980a	7/1980	C780	74CH19800421	74c780	ch7_80.pdf	
"	Jan 26-Feb 4, 1981	ar28_1981a	2/1981	C281	74CH19810126	74c281	ch2_81.pdf	
"	A Apr 6-15, 1981	ar28_1981b_leg_a	6/1981	C681	74CH19810406	74c681	ch6_81.pdf	
"	B Apr 16-21, 1981	ar28_1981b_leg_b	6/1981	C681	74CH19810416	74c681	ch6_81.pdf	
"	Jul 4-14, 1981	ar28_1981c	NONE	C1081	74CH19810704	74c1081	NONE	YES
"	Oct 6-20, 1981	ar28_1981d	15/81	C1581	74CH19811006	74c1581	ch15_81.pdf	
"	A May 11-23, 1983	ar28_1983a	7/1983	C783	no data	74c783	ch7_83.pdf	
"	B May 23-Jun 2, 1983	ar28_1983a	7/1983	C783	74CH19830523	74c783	ch7_83.pdf	
"	Aug 10-24, 1983	ar28_1983b	NONE	C1183	74CH19830810	74c1183	NONE	YES
"	Nov 16-Dec 6, 1984	ar28_1984a	NONE	C1084	74CH19841116	74c1084	NONE	YES
"	Jan 20-Feb 5, 1985	ar28_1985a	1/1985	C185	74CH19850120	74c185	ch1_85.pdf	
"	May 2-16, 1985	ar28_1985b	4/1985	C485	74CH19850502	74c485	ch4_85.pdf	
"	Aug 14-28, 1985	ar28_1985c	8/1985	C885	74CH19850814	74c885	ch8_85.pdf	
"	Jan 8-22, 1987	ar28_1987a	9/87	C987	74CH19870108	74c987	ch9_87.pdf	
"	Apr 24-May 7, 1987	ar28_1987b	14/1987	C1487	74CH19870424	74c1487	ch14_87.pdf	
"	Nov 23-Dec 5, 1987	ar28_1987c	22/1987	C2287	74CH19871123	74c2287	ch22_87.pdf	
"	Jun 6-23, 1988	ar28_1988a	30/1988	C3088	74CH19880606	74c3088	ch30_88.pdf	

ELLETT name comparisons 20070824/dm

Vessel	Cruise Dates	Cruise Names			EXPOCODE		Cruise Report	Missing Info
		CCHDO	Cruise Report	00_README	CCHDO	HOLLIDAY		
Discovery	Jan 20-Feb 4, 1989	ar28_1989a	180	D18089	74E319890120	74d18089	d180.pdf	
Lough Foyle	May 5-11, 1989	ar28_1989b	1/1989	LF189	74_19890505	741f189	lf1_89.pdf	YES
" "	UNK (Sta:Aug5-6,1989)	ar28_1989c	NONE	LF289	74_1989____	741f289	NONE	YES
NODC says 74LF is "Loch Fada". No NODC shipcode for Lough Foyle								
Charles Darwin	Nov 24-Dec 2, 1989	ar28_1989d	44/89	CD4489	74AB19891124	74cd4489	cd44.pdf	
Challenger	Jun 21-Jul 5, 1990	ar28_1990a	67/1990	C6790	74CH19900621	74c6790	ch67_90.pdf	
"	Aug 29-Sep 17, 1990	ar28_1990b	71/1990	C7190	74CH19900829	74c7190	ch71_90.pdf	
"	Sep 25-Oct 6, 1992	ar28_1992a	97/92	_____	74CH19920925	74c9792	ch97_92.pdf	YES