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Quality Evaluation Section

**FORTY-EIGHTH QUARTERLY REPORT
ON DRIFTING BUOYS
IN THE NORTH ATLANTIC**

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2nd March 1999

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1. INTRODUCTION

Drifting buoys operated by European countries, the United States, Canada and E.G.O.S. (European Group on Ocean Stations) provide valuable meteorological data in the North Atlantic Ocean. This report is a summary of the performance of these buoys giving information on the number of buoys operating, the accuracy of reported locations and data quality, timeliness and availability. It is compiled by looking at observations received in the Met. Office Meteorological Data Bank (Met.D.B.) and by comparisons of observations with background fields from the Met. Office forecast model. Additional information on buoy operations and data quality is extracted from E.G.O.S. Technical Secretariat reports.

2. GENERAL PERFORMANCE

The following few sub-sections describe the general performance of the drifting buoys throughout the quarter.

(a) Location Accuracy

The location accuracy was good with 64 out of 69 of the buoys reporting having a '% of observations with acceptable positions' greater than 95% (compared to 73 out of 77 last quarter).

(b) Data timeliness

(see note 9 of section 6 for definition of terms.)

Timeliness	Last quarter.	This quarter
Very Good	60	50
Good	4	6
Satisfactory	7	3
Poor	0	1
Very poor	6	9
Total no. of buoys	77	69

(c) Data availability

(see note 9 of section 6 for definition of terms.)

Availability	South of 50 deg N		North of 50 deg N	
	Previous Quarter	Present Quarter	Previous Quarter	Present Quarter
Very Good	5	5	20	19
Good	11	15	12	8
Satisfactory	9	6	7	4
Poor	9	8	3	2
Very Poor	0	0	1	2

The total number of buoy days in the quarter was 5259 [obtained by summing the number of reporting days for each buoy] (last quarter the total was 5058) and the number of 'buoy hours' with at least one observation was 79898 (compared with 77353 last quarter). Thus, the mean number of hours per day, for days with at least one observation (averaged over all buoys operating in the area) was 15.19 (last quarter the figure was 15.29).

3. SUMMARY OF PRESSURE PERFORMANCE

(a) Buoy deployments, etc.

North of 50deg N

There were 32 buoys reporting pressure at the beginning of the period. 25 buoys were operating at the end of the period. 3 new buoys were deployed (44760, 44764 and 47556). 11 buoys ceased reporting pressure (44603 (this buoy ceased reporting pressure on 28/12 but continued to report other elements), 44606, 44617, 44767, 44770, 44773, 44775, 44912, 48518, 62514 and 64563).

South of 50deg N

There were 30 buoys reporting pressure at the beginning of the period. 23 buoys were reporting at the end of the period. 4 new buoys were deployed (33503, 44762, 61521 and 61523). 11 buoys ceased reporting (13906, 33503, 41635, 44743, 44776, 44779, 61521, 62506, 62510, 62516 and 64561).

(NOTE : Buoy 62758 reported pressure throughout the period. However, only a small number of Ob-Bg values were available for this buoy (see Annex A).)

(e) Data Quality - Pressure

Revised RMS Differences

The technique used to assess the quality of pressure data in this report is based on the Revised RMS differences between the observations and the background field from the Global Forecast Model (see note 8 in Explanatory Notes). For buoys south of 50°N the Revised RMS differences should be less than 2.0 hPa and for buoys north of 50°N they should be below 3.0 hPa. The buoys whose revised RMS difference were found to lie outside these limits have had their performance described as 'suspect' and are included in the section below. Examination of the time-series plots (see Annex B) indicates the performance of these buoys:-

- 33503 - This buoy reported a bias of -3.2 for most of its reporting life.
- 41598 - Data from this buoy was erroneous at the beginning and the end of the period.
- 41635 - This buoy reported a bias of +1.0 from the beginning of the period until the end of its life (10/11/98)
- 44603 - Pressure data from this buoy showed a larger than normal scatter during the second half of the period.

44604 - Pressure data from this buoy showed a larger than normal scatter during the second half of the period.

- 44772 - Pressure data from this buoy showed a larger than normal scatter throughout the period.
- 44925 - Pressure data from this buoy showed a larger than normal scatter throughout the period.
- 62511 - This buoy reported a bias of +0.6 for the period. The data also showed a larger than normal scatter during October, and again at the end of the period.
- 62512 - Pressure data from this buoy showed a larger than normal scatter during October, and again at the end of the period.
- 62513 - Pressure data from this buoy showed a larger than normal scatter during October, and again at the end of the period.
- 62516 - The limited number of reports from this buoy became increasingly erroneous during its short life.
- 62517 - Pressure data from this buoy showed a larger than normal scatter during the second half of the period, with an increasingly positive bias developing.
- 62518 - Pressure data from this buoy was erroneous throughout the period.
- 62519 - Pressure data from this buoy showed a larger than normal scatter during October, and again at the end of the period.
- 65571 - Pressure data from this buoy showed a larger than normal scatter, particularly during the second half of the period.

Biases

Eighteen buoys (excluding those mentioned in the previous section) showed pressure biases greater than 0.5 hPa (pressure biases are determined using the mean value for unflagged data from Annex A). Those buoys whose pressure data showed a bias of greater than 0.5 hPa have also had their performance described as 'suspect'.

WMO No.	Buoy bias (hPa)	Period of reports
44601	0.6	01/10 – 31/12
44602	0.7	01/10 – 31/12
44606	0.6	01/10 – 15/12
44743	-0.7	01/10 – 30/11
44760	-0.7	06/11 – 31/12
44764	-0.6	02/10 – 31/12
44767	-0.6	01/10 – 23/10
44770	-0.8	01/10 – 17/11
44774	-0.6	01/10 – 31/12
44778	-0.6	01/10 – 31/12
44912	0.7	01/10 – 26/12
47556	-0.6	30/10 – 31/12
62514	0.9	01/10 – 10/10
64529	-0.7	01/10 – 31/12
64563	-0.9	01/10 – 17/12
65581	-0.7	01/10 – 31/12
65591	-0.7	01/10 – 31/12
65592	-0.6	01/10 – 31/12

Summary of Pressure Performance

Pressure Summary	Last Quarter	This Quarter
Acceptable	64	36
Suspect - RMS	7	15
Suspect - Bias	6	18
Total no. of buoys	77	69

(4) Air Temperatures

The following table shows the mean and standard deviation of observation minus background differences for air temperatures.

(Note : The calculations below exclude the majority of gross errors. However, gross errors within ± 20 °C of the background value are included. Therefore, in some instances, the figures may be slightly misleading.)

Air Temperature				Air Temperature			
WMO No.	Mean	St. Dev	No. of Obs	WMO No.	Mean	St. Dev	No. of Obs
13906	---	---	---	33503	---	---	---
41504	0.74	1.02	810	41505	---	---	---
41521	0.79	1.34	839	41528	---	---	---
41597	---	---	---	41598	---	---	---
41599	---	---	---	41625	0.62	1.16	797
41629	0.60	1.14	811	41635	---	---	---
44601	---	---	---	44602	---	---	---
44603	---	---	---	44604	---	---	---
44606	---	---	---	44613	0.07	1.29	2277
44617	0.16	1.27	1263	44726	---	---	---
44742	-0.10	1.45	2454	44743	---	---	---
44760	-0.21	1.27	1862	44762	---	---	---
44764	-0.15	1.31	1732	44767	---	---	---
44768	---	---	---	44770	---	---	---
44772	---	---	---	44773	-0.67	1.56	1320
44774	-0.03	1.19	3026	44775	-0.08	1.39	2782

Air Temperature				Air Temperature			
WMO No.	Mean	St. Dev	No. of Obs	WMO No.	Mean	St. Dev	No. of Obs
44776	---	---	---	44778	4.65	7.90	803
44779	---	---	---	44780	-0.03	0.84	3999
44901	---	---	---	44912	---	---	---
44925	---	---	---	47556	---	---	---
48518	4.12	5.02	675	61521	1.36	2.23	716
61523	0.85	1.59	1299	62506	0.06	0.70	645
62510	---	---	---	62511	---	---	---
62512	---	---	---	62513	---	---	---
62514	---	---	---	62515	---	---	---
62516	---	---	---	62517	-1.15	1.76	1948
62518	---	---	---	62519	---	---	---
62520	---	---	---	62554	---	---	---
62674	0.61	1.93	809	62758	---	---	---
64528	-0.45	1.04	4073	64529	-0.43	1.06	3548
64561	---	---	---	64563	-0.74	2.28	451
65562	-0.22	1.16	5071	65571	0.22	1.79	4343
65581	-0.26	0.90	1841	65591	0.00	1.13	2501
65592	-0.21	1.75	4049	65597	-0.60	1.48	2687
65599	8.70	7.55	723				

Summary

Buoys 61521 (+1.36) and 62517 (-1.15) showed significant air temperature biases.

Data from buoys 44778 (+4.65) and 65599 (+8.70) became totally erratic from mid October.

Data from buoy 48518 (+4.12) showed a larger than normal scatter from the beginning of the period until the end of its reporting life (23/11/98).

(5) Winds

The following table shows the mean and standard deviation of observation minus background differences for wind speed and direction.

(Note : All wind speeds reported by buoy 62674 were less than 5 knots. Subsequently, no analysis was carried out on this buoy.)

WMO No.	Period	Wind Speed (kt)			Wind Direction (deg)		
		Mean	St. Dev.	No. of Obs	Mean	St. Dev.	No. of Obs
41504	01/10 31/12	0.14	3.12	770	11.79	21.94	707
41521	01/10 31/12	-0.74	3.31	816	-11.78	24.27	725
41598	01/10 31/12	-0.26	3.29	564	-3.35	35.21	497
41599	01/10 31/12	0.02	3.40	1102	3.51	40.13	996
41625	01/10 31/12	-0.77	3.13	759	5.91	18.74	662
41629	01/10 31/12	-1.39	3.20	780	4.47	21.56	704
44601	01/10 31/12	1.09	5.69	1286	-16.02	45.59	1276
44602	01/10 31/12	-0.21	6.02	1139	9.05	46.03	1128
44762	02/11 31/12	5.80	5.99	895	-9.71	27.69	894
44773	01/10 05/11	-6.02	5.12	1085	-8.51	18.17	904
62517	01/10 31/12	-1.08	3.59	2109	-5.60	23.17	1974
65599	01/10 31/12	-1.06	5.71	3334	6.85	37.52	3116

Buoys 44762 (+5.80) and 44773 (-6.02) showed significant wind speed biases.

Buoys 41504 (+11.79) and 41521 (-11.78) all showed significant wind direction biases throughout the period. Also, buoy 44601 (-16.02) showed a significant bias during the second half of the period.

6. EXPLANATORY NOTES:

1. Buoy owners are as follows,

CA	- Canada	P	- Portugal
F	- France	UK	- United Kingdom
D	- Germany	US	- United States
N	- Norway	IC	- Iceland
NL	- Netherlands	EG	- EGOS
IR	- Ireland	??	- unknown

2. Number of observations received is the number received at Bracknell in the Meteorological Data Bank (Met.DB). If identical reports are received which have originated at different Collecting Centres, the earliest one received at Bracknell is stored in the Met.DB.
3. An observation with valid Time and Date is one that contains no coding errors in the Date/Time group.
4. An acceptable position for an observation is within a distance d of the last acceptable position where $d=vt$ and,
 v = maximum drift speed = 1/4 knot
 t = time between observations.
5. The percentage of elements present is calculated from the total number of observations received.
6. The delay is (Time of Receipt at Bracknell) - (Time of Observation).
7. The mean number of observations per day is calculated from the total number of observations received divided by the number of days in the period. It therefore includes 'quasi-identical' observations, i.e. those made within a few minutes of one another. For this reason the mean number of hours per day with at least one observation and the % of hour periods without an observation has been included, where an 'hour period' is defined as the period from HH-30 to HH+29 minutes.

8. Mean (OB-BG) is the mean value of (Observation-Background) Pressure, where the Background is the 6-hour forecast from the Global Forecast Model. RMS (OB-BG) is the Root Mean Square value of (Observation-Background) Pressure differences.

Unflagged data are those data used in model analyses.

Flagged data (i.e. unused observations) are those observations of suspect quality and all observations reported by a buoy at a frequency greater than 5 times every 6 hours, with accepted observations being at least one hour apart. Thus, those buoys which report most frequently have a higher percentage of flagged data.

The Mean calculated over Unflagged Data gives an indication of the instrument bias, since any gross errors have been excluded from the calculation.

The Revised RMS is based on all data except for the few that contain gross errors (as indicated on the time-series graphs - see Annex B).

9. The performance categories are defined in the table below.

Performance	Availability (mean no. of obs/day)	Timeliness (median delay in mins)
Very Good	> 35	< 60
Good	25 - 35	60 - 119
Satisfactory	15 - 24	120 - 179
Poor	5 - 14	180 - 239
Very Poor	< 5	> 240

(N.B. WMO requirements state the need for only 4 observations per day from marine stations.)

The pressure quality is assessed from the Revised RMS and the Mean (for unflagged data).

Performance	Pressure Quality (in hPa)			
	North of 50 degN		South of 50 degN	
	RMS	MEAN	RMS	MEAN
Acceptable	≤ 3.0	≤ 0.5	≤ 2.0	≤ 0.5
Suspect	> 3.0	> 0.5	> 2.0	> 0.5

Annex A - TABLE OF STATISTICS

WMO No./Country	13906	33503	41504
Argos Id No.	??	??	??
Period Within Area	01/10 - 26/12	25/10 - 30/11	01/10 - 31/12
Mean Latitude	24.5	44.2	26.1
Mean Longitude	-49.9	-65.6	-65.2
No. of Obs Received	785	210	863
% of obs with Acceptable Position	100.0	61.9	100.0
% of Present Pressure	100.0	77.6	97.8
P. Tendency	31.7	24.3	0.0
Air Temperature	0.0	0.0	97.5
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	92.9/ 97.3
Sea-Surface Temp.	31.7	27.1	98.1
Median delay (min)	74.5	70	29
Number of days	87	37	92
Mean No. of obs/day	9.0	5.7	9.4
No. of Hours with obs	713	196	784
Mean no. of hours/day with obs	8.2	5.3	8.5
% of hour periods without an ob	65.4	77.6	64.2
Mean (Ob-Bg)	-0.2	-3.2	0.2
RMS (Ob-Bg) unflagged data	0.9	4.1	0.9
Mean (Ob-Bg)	-0.3	-4.7	0.2
RMS (Ob-Bg) all data	0.9	7.5	0.9
Revised RMS (Ob-Bg)	0.9	5.0	0.9
% of data flagged	15	24	9
Operating at end of period	NO	NO	YES
Performance			
Availability	Poor	Poor	Poor
Pressure Quality	Acceptable	Suspect	Acceptable
Timeliness	Good	Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	41505	41521	41528
Argos Id No.	??	??	??
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	29.1	26.6	28.9
Mean Longitude	-63.9	-59.3	-68.7
No. of Obs Received	864	893	854
% of obs with Acceptable Position	100.0	100.0	100.0
% of Present Pressure	98.1	97.6	97.9
P. Tendency	0.0	0.0	0.0
Air Temperature	0.0	97.6	0.0
Wind Speed/Dir	0.0/ 0.0	95.5/ 97.4	0.0/ 0.0
Sea-Surface Temp.	99.4	97.5	99.3
Median delay (min)	29	30	28
Number of days	92	92	92
Mean No. of obs/day	9.4	9.7	9.3
No. of Hours with obs	797	804	787
Mean no. of hours/day with obs	8.7	8.7	8.6
% of hour periods without an ob	63.6	63.3	64.1
Mean (Ob-Bg)	0.2	0.0	0.3
RMS (Ob-Bg) unflagged data	0.9	0.8	0.9
Mean (Ob-Bg)	0.2	0.0	0.3
RMS (Ob-Bg) all data	0.9	0.8	0.9
Revised RMS (Ob-Bg)	0.9	0.8	1.0
% of data flagged	10	12	10
Operating at end of period	YES	YES	YES
Performance			
Availability	Poor	Poor	Poor
Pressure Quality	Acceptable	Acceptable	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	41597/F	41598	41599
Argos Id No.	6753	??	??
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	30.9	26.4	24.8
Mean Longitude	-26.9	-44.7	-39.3
No. of Obs Received	1910	4684	2664
% of obs with Acceptable Position	100.0	100.0	100.0
% of Present Pressure	99.5	97.3	96.5
P. Tendency	9.4	0.0	0.0
Air Temperature	0.0	0.0	0.0
Wind Speed/Dir	0.0/ 0.0	14.7/ 59.5	52.0/ 55.9
Sea-Surface Temp.	99.7	59.6	56.2
Median delay (min)	52	269	353
Number of days	92	92	92
Mean No. of obs/day	20.8	50.9	29.0
No. of Hours with obs	1295	2081	1742
Mean no. of hours/day with obs	14.1	22.6	18.9
% of hour periods without an ob	41.2	5.8	20.9
Mean (Ob-Bg)	-0.2	0.3	-0.5
RMS (Ob-Bg) unflagged data	0.8	0.9	1.0
Mean (Ob-Bg)	-0.1	-0.1	-0.6
RMS (Ob-Bg) all data	0.8	3.4	2.1
Revised RMS (Ob-Bg)	0.8	2.5	1.2
% of data flagged	39	53	34
Operating at end of period	YES	YES	YES
Performance			
Availability	Acceptable	Very Good	Good
Pressure Quality	Acceptable	Suspect	Acceptable
Timeliness	Very Good	Very Poor	Very Poor
Comments			

Annex A - cont'd

WMO No./Country	41625	41629	41635
Argos Id No.	??	??	??
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 10/11
Mean Latitude	28.8	28.2	25.7
Mean Longitude	-69.1	-69.1	-53.5
No. of Obs Received	857	875	1273
% of obs with Acceptable Position	100.0	100.0	100.0
% of Present Pressure	96.8	96.7	62.5
P. Tendency	0.0	0.0	0.0
Air Temperature	96.6	96.3	0.0
Wind Speed/Dir	93.3/ 95.8	94.3/ 95.4	0.0/ 0.0
Sea-Surface Temp.	97.0	40.0	0.0
Median delay (min)	28	28	274
Number of days	92	92	41
Mean No. of obs/day	9.3	9.5	31.0
No. of Hours with obs	781	798	777
Mean no. of hours/day with obs	8.5	8.7	19.0
% of hour periods without an ob	64.3	63.6	21.0
Mean (Ob-Bg)	0.2	0.2	1.0
RMS (Ob-Bg) unflagged data	0.9	0.9	1.5
Mean (Ob-Bg)	0.2	0.1	0.3
RMS (Ob-Bg) all data	0.9	0.9	4.1
Revised RMS (Ob-Bg)	0.9	0.9	3.1
% of data flagged	10	10	47
Operating at end of period	YES	YES	NO
Performance			
Availability	Poor	Poor	Good
Pressure Quality	Acceptable	Acceptable	Suspect
Timeliness	Very Good	Very Good	Very Poor
Comments			

Annex A - cont'd

WMO No./Country	44601/F	44602/F	44603/F
Argos Id No.	5878	5883	6571
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	53.0	53.9	52.3
Mean Longitude	-41.1	-29.1	-34.5
No. of Obs Received	2539	2372	2599
% of obs with Acceptable Position	100.0	100.0	100.0
% of Present Pressure	98.6	98.3	96.2
P. Tendency	0.0	0.0	10.5
Air Temperature	0.0	0.0	0.0
Wind Speed/Dir	56.2/ 59.5	53.6/ 56.7	0.0/ 0.0
Sea-Surface Temp.	59.8	57.7	99.5
Median delay (min)	128.5	188.5	43
Number of days	92	92	92
Mean No. of obs/day	27.6	25.8	28.3
No. of Hours with obs	1981	1886	1582
Mean no. of hours/day with obs	21.5	20.5	17.2
% of hour periods without an ob	10.2	14.4	28.3
Mean (Ob-Bg)	0.6	0.7	-0.5
RMS (Ob-Bg) unflagged data	2.2	2.2	2.2
Mean (Ob-Bg)	44.4	21.8	-1.2
RMS (Ob-Bg) all data	138.0	96.1	4.3
Revised RMS (Ob-Bg)	3.0	2.5	4.3
% of data flagged	29	23	54
Operating at end of period	YES	YES	YES
Performance			
Availability	Good	Good	Good
Pressure Quality	Suspect	Suspect	Suspect
Timeliness	Acceptable	Poor	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44604/F	44606/F	44613/UK
Argos Id No.	6572	6148	28467
Period Within Area	01/10 - 31/12	01/10 - 15/12	01/10 - 31/12
Mean Latitude	45.3	53.1	42.7
Mean Longitude	-31.5	-37.3	-29.2
No. of Obs Received	1832	2873	2387
% of obs with Acceptable Position	100.0	100.0	99.5
% of Present Pressure	99.4	98.5	98.6
P. Tendency	7.4	15.0	94.9
Air Temperature	0.0	0.0	98.7
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	99.9	70.2	10.0
Median delay (min)	44	45	22
Number of days	92	76	92
Mean No. of obs/day	19.9	37.8	25.9
No. of Hours with obs	1332	1443	1208
Mean no. of hours/day with obs	14.5	19.0	13.1
% of hour periods without an ob	39.6	20.5	45.2
Mean (Ob-Bg)	0.4	0.6	-0.2
RMS (Ob-Bg) unflagged data	1.9	2.2	1.5
Mean (Ob-Bg)	0.4	0.6	-0.5
RMS (Ob-Bg) all data	2.2	2.5	6.3
Revised RMS (Ob-Bg)	2.2	2.5	1.7
% of data flagged	39	56	60
Operating at end of period	YES	NO	YES
Performance			
Availability	Acceptable	Very Good	Good
Pressure Quality	Suspect	Suspect	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44617/UK	44726/UK	44742/UK
Argos Id No.	27644	12539	28471
Period Within Area	01/10 - 03/11	01/10 - 31/12	01/10 - 31/12
Mean Latitude	56.0	57.1	46.2
Mean Longitude	-8.4	-27.8	-16.6
No. of Obs Received	1395	3592	2601
% of obs with Acceptable Position	99.7	99.9	99.4
% of Present Pressure	98.7	97.8	97.9
P. Tendency	95.3	94.7	93.7
Air Temperature	98.3	0.0	97.9
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	5.7	98.1	98.4
Median delay (min)	22	25	22
Number of days	34	92	92
Mean No. of obs/day	41.0	39.0	28.3
No. of Hours with obs	566	1593	1282
Mean no. of hours/day with obs	16.6	17.3	13.9
% of hour periods without an ob	30.0	27.7	41.8
Mean (Ob-Bg)	0.3	-0.1	-0.2
RMS (Ob-Bg) unflagged data	1.7	2.1	1.3
Mean (Ob-Bg)	-0.3	-0.4	-0.7
RMS (Ob-Bg) all data	8.4	5.8	6.7
Revised RMS (Ob-Bg)	1.9	2.3	1.3
% of data flagged	67	64	61
Operating at end of period	NO	YES	YES
Performance			
Availability	Very Good	Very Good	Good
Pressure Quality	Acceptable	Acceptable	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44743/UK	44760/UK	44762/UK
Argos Id No.	12541	28469	12594
Period Within Area	01/10 - 30/11	06/11 - 31/12	02/11 - 31/12
Mean Latitude	44.3	52.7	43.3
Mean Longitude	-50.4	-34.5	-51.3
No. of Obs Received	1539	1978	1119
% of obs with Acceptable Position	99.7	99.6	99.8
% of Present Pressure	99.1	97.0	88.8
P. Tendency	95.0	93.3	85.1
Air Temperature	0.0	97.0	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	87.4/ 87.5
Sea-Surface Temp.	97.7	98.2	51.8
Median delay (min)	21	22	43
Number of days	61	56	60
Mean No. of obs/day	25.2	35.3	18.6
No. of Hours with obs	790	921	793
Mean no. of hours/day with obs	13.0	16.4	13.2
% of hour periods without an ob	45.4	31.2	44.9
Mean (Ob-Bg)	-0.7	-0.7	0.3
RMS (Ob-Bg) unflagged data	1.5	2.1	1.6
Mean (Ob-Bg)	-0.7	-3.0	0.3
RMS (Ob-Bg) all data	2.4	13.3	1.8
Revised RMS (Ob-Bg)	1.6	2.8	1.8
% of data flagged	59	66	49
Operating at end of period	NO	YES	YES
Performance			
Availability	Good	Very Good	Acceptable
Pressure Quality	Suspect	Suspect	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44764/UK	44767UK	44768/UK
Argos Id No.	28464	12576	26746
Period Within Area	02/10 - 31/12	01/10 - 23/10	01/10 - 31/12
Mean Latitude	51.0	53.5	59.7
Mean Longitude	-43.4	-45.6	-5.8
No. of Obs Received	1887	804	4289
% of obs with Acceptable Position	100.0	99.8	99.6
% of Present Pressure	96.3	98.4	97.9
P. Tendency	91.9	93.8	94.2
Air Temperature	96.1	0.0	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	97.1	98.8	80.3
Median delay (min)	26	21	24
Number of days	91	23	92
Mean No. of obs/day	20.7	35.0	46.6
No. of Hours with obs	1272	370	1674
Mean no. of hours/day with obs	14.0	16.1	18.2
% of hour periods without an ob	41.5	31.2	24.0
Mean (Ob-Bg)	-0.6	-0.6	0.1
RMS (Ob-Bg) unflagged data	1.9	1.6	1.6
Mean (Ob-Bg)	-1.0	-0.8	-0.1
RMS (Ob-Bg) all data	6.3	3.7	4.9
Revised RMS (Ob-Bg)	2.1	1.7	1.7
% of data flagged	44	64	68
Operating at end of period	YES	NO	YES
Performance			
Availability	Acceptable	Very Good	Very Good
Pressure Quality	Suspect	Suspect	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44770/UK	44772/UK	44773/UK
Argos Id No.	12542	12577	26751
Period Within Area	01/10 - 17/11	01/10 - 31/12	01/10 - 05/11
Mean Latitude	56.6	51.6	57.1
Mean Longitude	-38.5	-29.2	-9.6
No. of Obs Received	2339	3268	1453
% of obs with Acceptable Position	100.0	77.0	99.8
% of Present Pressure	98.9	97.8	98.4
P. Tendency	95.3	94.8	94.8
Air Temperature	0.0	0.0	98.1
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	84.4/ 89.7
Sea-Surface Temp.	99.1	98.8	97.9
Median delay (min)	21	21	23
Number of days	48	92	36
Mean No. of obs/day	48.7	35.5	40.4
No. of Hours with obs	846	1469	591
Mean no. of hours/day with obs	17.6	16.0	16.4
% of hour periods without an ob	26.1	33.3	30.4
Mean (Ob-Bg)	-0.8	-0.4	-0.1
RMS (Ob-Bg) unflagged data	1.7	2.1	1.5
Mean (Ob-Bg)	-0.8	-0.3	-0.2
RMS (Ob-Bg) all data	2.8	5.0	3.3
Revised RMS (Ob-Bg)	1.7	3.3	1.6
% of data flagged	72	67	66
Operating at end of period	NO	YES	NO
Performance			
Availability	Very Good	Very Good	Very Good
Pressure Quality	Suspect	Suspect	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44774/UK	44775/UK	44776/UK
Argos Id No.	28472	26741	12540
Period Within Area	01/10 - 31/12	01/10 - 11/12	01/10 - 26/10
Mean Latitude	52.3	55.9	49.4
Mean Longitude	-20.5	-29.5	-45.6
No. of Obs Received	3233	3067	760
% of obs with Acceptable Position	99.8	99.8	99.5
% of Present Pressure	97.6	97.6	97.9
P. Tendency	92.5	93.3	93.3
Air Temperature	97.8	96.9	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	97.4	83.4	98.3
Median delay (min)	22	22	21
Number of days	92	72	26
Mean No. of obs/day	35.1	42.6	29.2
No. of Hours with obs	1452	1225	371
Mean no. of hours/day with obs	15.8	17.0	14.3
% of hour periods without an ob	34.1	28.9	38.7
Mean (Ob-Bg)	-0.6	0.1	-0.1
RMS (Ob-Bg) unflagged data	2.0	1.9	1.6
Mean (Ob-Bg)	-1.1	-0.1	-0.4
RMS (Ob-Bg) all data	6.7	5.1	6.1
Revised RMS (Ob-Bg)	2.3	2.0	1.7
% of data flagged	64	68	61
Operating at end of period	YES	NO	NO
Performance			
Availability	Very Good	Very Good	Good
Pressure Quality	Suspect	Acceptable	Acceptable
Timeliness	Very Good	Very Good	Very Good .
Comments			

Annex A - cont'd

WMO No./Country	44778/UK	44779/UK	44780/UK
Argos Id No.	28473	12543	26742
Period Within Area	01/10 - 31/12	01/10 - 28/12	01/10 - 31/12
Mean Latitude	50.6	46.4	60.7
Mean Longitude	-48.3	-33.2	-5.1
No. of Obs Received	2867	2624	4361
% of obs with Acceptable Position	99.3	99.7	99.7
% of Present Pressure	97.7	98.6	97.5
P. Tendency	94.2	94.3	93.8
Air Temperature	32.2	0.0	97.2
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	98.8	98.1	98.1
Median delay (min)	21	22	24
Number of days	92	89	92
Mean No. of obs/day	31.2	29.5	47.4
No. of Hours with obs	1400	1277	1684
Mean no. of hours/day with obs	15.2	14.3	18.3
% of hour periods without an ob	36.5	40.0	23.6
Mean (Ob-Bg)	-0.6	-0.1	0.1
RMS (Ob-Bg) unflagged data	1.9	1.7	1.6
Mean (Ob-Bg)	-0.9	-0.3	0.0
RMS (Ob-Bg) all data	6.2	6.0	3.9
Revised RMS (Ob-Bg)	1.9	1.9	1.6
% of data flagged	62	62	68
Operating at end of period	YES	NO	YES
Performance			
Availability	Good	Good	Very Good
Pressure Quality	Suspect	Acceptable	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	44901	44912	44925
Argos Id No.	??	??	??
Period Within Area	01/10 - 31/12	01/10 - 26/12	01/10 - 31/12
Mean Latitude	55.4	53.0	53.7
Mean Longitude	-41.3	-19.7	-45.3
No. of Obs Received	1157	420	425
% of obs with Acceptable Position	99.8	99.5	97.4
% of Present Pressure	34.9	84.3	71.3
P. Tendency	20.7	36.7	56.2
Air Temperature	0.0	0.0	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	95.3	95.5	0.0
Median delay (min)	77	90.5	77
Number of days	92	87	92
Mean No. of obs/day	12.6	4.8	4.6
No. of Hours with obs	890	338	350
Mean no. of hours/day with obs	9.7	3.9	3.8
% of hour periods without an ob	59.4	83.6	84.0
Mean (Ob-Bg)	0.4	0.7	0.8
RMS (Ob-Bg) unflagged data	1.6	1.4	2.6
Mean (Ob-Bg)	0.4	0.7	1.2
RMS (Ob-Bg) all data	1.5	1.5	3.8
Revised RMS (Ob-Bg)	1.5	1.5	3.8
% of data flagged	26	19	31
Operating at end of period	YES	NO	YES
Performance			
Availability	Poor	Very Poor	Very Poor
Pressure Quality	Acceptable	Suspect	Suspect
Timeliness	Good	Good	Good
Comments			

Annex A - cont'd

WMO No./Country	47556	48518	61521
Argos Id No.	??	??	??
Period Within Area	30/10 - 31/12	01/10 - 23/11	04/11 - 07/12
Mean Latitude	72.6	70.6	35.9
Mean Longitude	-73.0	-22.7	-3.9
No. of Obs Received	1199	1151	943
% of obs with Acceptable Position	95.2	100.0	99.5
% of Present Pressure	100.0	98.2	96.8
P. Tendency	0.0	0.0	0.0
Air Temperature	0.0	62.8	96.5
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	0.0	0.0	98.0
Median delay (min)	13	84	283
Number of days	63	54	34
Mean No. of obs/day	19.0	21.3	27.7
No. of Hours with obs	880	887	694
Mean no. of hours/day with obs	14.0	16.4	20.4
% of hour periods without an ob	41.1	30.4	11.7
Mean (Ob-Bg)	-0.6	-0.5	-0.5
RMS (Ob-Bg) unflagged data	1.4	1.3	1.2
Mean (Ob-Bg)	-0.6	-0.5	-0.6
RMS (Ob-Bg) all data	1.4	1.3	1.2
Revised RMS (Ob-Bg)	1.4	1.3	1.2
% of data flagged	41	40	25
Operating at end of period	YES	NO	NO
Performance			
Availability	Acceptable	Acceptable	Good
Pressure Quality	Suspect	Acceptable	Acceptable
Timeliness	Very Good	Good	Very Poor
Comments			

Annex A - cont'd

WMO No./Country	61523	62506/F	62510
Argos Id No.	??	5826	??
Period Within Area	04/11 - 31/12	01/10 - 10/11	01/10 - 04/10
Mean Latitude	39.2	45.7	45.0
Mean Longitude	14.9	-6.0	-4.8
No. of Obs Received	1863	823	128
% of obs with Acceptable Position	100.0	100.0	100.0
% of Present Pressure	98.1	88.6	54.7
P. Tendency	0.0	78.6	0.0
Air Temperature	98.2	85.7	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	98.7	90.2	54.7
Median delay (min)	290.5	26	36
Number of days	58	41	4
Mean No. of obs/day	32.1	20.1	32.0
No. of Hours with obs	1307	601	53
Mean no. of hours/day with obs	22.5	14.7	13.3
% of hour periods without an ob	5.4	38.7	39.8
Mean (Ob-Bg)	-0.3	0.1	0.5
RMS (Ob-Bg) unflagged data	1.1	1.1	1.1
Mean (Ob-Bg)	-0.3	0.2	1.0
RMS (Ob-Bg) all data	1.1	1.1	2.2
Revised RMS (Ob-Bg)	1.1	1.1	0.9
% of data flagged	27	38	58
Operating at end of period	YES	NO	NO
Performance			
Availability	Good	Acceptable	Good
Pressure Quality	Acceptable	Acceptable	Acceptable
Timeliness	Very Poor	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	62511/F	62512/F	62513/F
Argos Id No.	12729	12730	12731
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	46.5	46.5	47.5
Mean Longitude	-17.3	-17.8	-16.5
No. of Obs Received	4715	2772	4307
% of obs with Acceptable Position	97.2	99.8	96.6
% of Present Pressure	81.4	85.8	81.1
P. Tendency	0.0	0.0	0.0
Air Temperature	0.0	0.0	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	49.7	48.1	54.1
Median delay (min)	293	421	298
Number of days	92	92	92
Mean No. of obs/day	51.3	30.1	46.8
No. of Hours with obs	1920	1452	1778
Mean no. of hours/day with obs	20.9	15.8	19.3
% of hour periods without an ob	13.0	34.2	19.3
Mean (Ob-Bg)	0.6	0.3	0.2
RMS (Ob-Bg) unflagged data	1.5	1.2	1.4
Mean (Ob-Bg)	9.8	1.5	1.5
RMS (Ob-Bg) all data	32.7	19.9	18.8
Revised RMS (Ob-Bg)	3.7	4.8	5.3
% of data flagged	76	49	64
Operating at end of period	YES	YES	YES
Performance			
Availability	Very Good	Good	Very Good
Pressure Quality	Suspect	Suspect	Suspect
Timeliness	Very Poor	Very Poor	Very Poor
Comments			

Annex A - cont'd

WMO No./Country	62514/F	62515/F	62516/F
Argos Id No.	6151	6569	1363
Period Within Area	01/10 - 10/10	01/10 - 31/12	01/10 - 02/10
Mean Latitude	53.9	58.5	45.5
Mean Longitude	-32.7	-26.3	-11.8
No. of Obs Received	256	6185	31
% of obs with Acceptable Position	91.0	97.1	100.0
% of Present Pressure	95.3	93.8	100.0
P. Tendency	3.9	7.1	0.0
Air Temperature	0.0	0.0	0.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	98.8	79.6	96.8
Median delay (min)	53.5	38	149
Number of days	10	92	2
Mean No. of obs/day	25.6	67.2	15.5
No. of Hours with obs	157	1955	20
Mean no. of hours/day with obs	15.7	21.3	10.0
% of hour periods without an ob	31.1	11.4	42.9
Mean (Ob-Bg)	0.9	0.3	-3.1
RMS (Ob-Bg) unflagged data	2.0	2.1	3.5
Mean (Ob-Bg)	2.2	0.1	-4.6
RMS (Ob-Bg) all data	14.1	5.7	5.0
Revised RMS (Ob-Bg)	2.6	3.0	5.0
% of data flagged	55	74	62
Operating at end of period	NO	YES	NO
Performance			
Availability	Good	Very Good	Acceptable
Pressure Quality	Suspect	Acceptable	Suspect
Timeliness	Very Good	Very Good	Acceptable
Comments			

Annex A - cont'd

WMO No./Country	62517/F	62518/F	62519/F
Argos Id No.	5823	6149	6570
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	49.5	44.6	42.5
Mean Longitude	-16.8	-16.0	-21.1
No. of Obs Received	2843	3458	3820
% of obs with Acceptable Position	99.9	96.7	97.4
% of Present Pressure	73.3	32.0	94.1
P. Tendency	81.6	3.5	9.6
Air Temperature	69.6	0.0	0.0
Wind Speed/Dir	83.0/ 82.2	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	92.4	84.1	6.3
Median delay (min)	28	32	34
Number of days	92	92	92
Mean No. of obs/day	30.9	37.6	41.5
No. of Hours with obs	1618	1652	1744
Mean no. of hours/day with obs	17.6	18.0	19.0
% of hour periods without an ob	26.6	25.1	20.9
Mean (Ob-Bg)	0.8	0.8	0.2
RMS (Ob-Bg) unflagged data	2.6	1.5	1.1
Mean (Ob-Bg)	2.1	-33.4	0.6
RMS (Ob-Bg) all data	5.5	98.4	8.4
Revised RMS (Ob-Bg)	4.8	9.9	3.3
% of data flagged	58	77	64
Operating at end of period	YES	YES	YES
Performance			
Availability	Good	Very Good	Very Good
Pressure Quality	Suspect	Suspect	Suspect
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	62520/F	62554/F	62674
Argos Id No.	14431	14430	??
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	44.3	46.0	63.4
Mean Longitude	-19.0	-16.5	-20.3
No. of Obs Received	2516	2616	881
% of obs with Acceptable Position	99.7	99.9	100.0
% of Present Pressure	94.0	93.2	98.6
P. Tendency	84.7	83.9	0.0
Air Temperature	0.0	0.0	99.1
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	4.4/ 4.4
Sea-Surface Temp.	93.7	93.4	4.5
Median delay (min)	28	28	140
Number of days	92	92	92
Mean No. of obs/day	27.3	28.4	9.6
No. of Hours with obs	1529	1586	798
Mean no. of hours/day with obs	16.6	17.2	8.7
% of hour periods without an ob	30.6	28.0	63.5
Mean (Ob-Bg)	-0.3	0.3	0.1
RMS (Ob-Bg) unflagged data	1.2	1.2	2.0
Mean (Ob-Bg)	-0.4	0.3	0.1
RMS (Ob-Bg) all data	2.4	1.3	2.1
Revised RMS (Ob-Bg)	1.3	1.3	2.1
% of data flagged	48	50	17
Operating at end of period	YES	YES	YES
Performance			
Availability	Good	Good	Poor
Pressure Quality	Acceptable	Acceptable	Acceptable
Timeliness	Very Good	Very Good	Acceptable
Comments			

Annex A - cont'd

WMO No./Country	62758/F	64528/NL	64529/D
Argos Id No.	15516	4274	6669
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	42.8	60.8	60.8
Mean Longitude	-17.8	-3.0	-32.4
No. of Obs Received	1975	5006	4125
% of obs with Acceptable Position	100.0	99.7	98.6
% of Present			
Pressure	31.7	89.9	90.9
P. Tendency	0.0	73.6	67.5
Air Temperature	0.0	90.8	90.3
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	94.6	65.0	65.2
Median delay (min)	916	22	23
Number of days	92	92	92
Mean No. of obs/day	21.5	54.4	44.8
No. of Hours with obs	1972	1644	1522
Mean no. of hours/day with obs	21.4	17.9	16.5
% of hour periods without an ob	10.6	25.5	30.9
Mean (Ob-Bg)	-0.3	-0.4	-0.7
RMS (Ob-Bg) unflagged data	1.5	1.5	2.1
Mean (Ob-Bg)	-0.3	-4.1	-0.9
RMS (Ob-Bg) all data	1.5	17.0	3.1
Revised RMS (Ob-Bg)	1.5	1.6	2.3
% of data flagged	0	76	71
Operating at end of period	YES	YES	YES
Performance			
Availability	Acceptable	Very Good	Very Good
Pressure Quality	Acceptable	Acceptable	Suspect
Timeliness	Very Poor	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	64561/UK	64563/NL	65562/D
Argos Id No.	1247	3679	4270
Period Within Area	01/10 - 04/11	01/10 - 17/12	01/10 - 31/12
Mean Latitude	47.7	59.5	62.8
Mean Longitude	-4.6	-20.7	2.3
No. of Obs Received	909	1529	5521
% of obs with Acceptable Position	97.9	99.7	99.6
% of Present Pressure	98.5	30.7	98.0
P. Tendency	94.1	62.3	76.4
Air Temperature	0.0	35.5	98.0
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	98.9	28.8	67.9
Median delay (min)	23	26	24
Number of days	35	78	92
Mean No. of obs/day	26.0	19.6	60.0
No. of Hours with obs	457	853	1693
Mean no. of hours/day with obs	13.1	10.9	18.4
% of hour periods without an ob	44.3	54.1	23.2
Mean (Ob-Bg)	0.2	-0.9	-0.4
RMS (Ob-Bg) unflagged data	1.4	2.4	1.5
Mean (Ob-Bg)	0.0	-7.7	-0.4
RMS (Ob-Bg) all data	3.3	23.3	2.7
Revised RMS (Ob-Bg)	1.7	2.3	1.5
% of data flagged	57	75	75
Operating at end of period	NO	NO	YES
Performance			
Availability	Good	Acceptable	Very Good
Pressure Quality	Acceptable	Suspect	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

Annex A - cont'd

WMO No./Country	65571/IR	65581/D	65591/UK
Argos Id No.	4275	2294	26748
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	60.9	57.4	55.8
Mean Longitude	-22.8	-32.3	-40.3
No. of Obs Received	4867	2380	2750
% of obs with Acceptable Position	99.6	100.0	99.9
% of Present			
Pressure	94.3	83.3	96.0
P. Tendency	78.0	62.9	92.2
Air Temperature	94.1	81.8	96.1
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	0.0/ 0.0
Sea-Surface Temp.	72.9	66.8	0.9
Median delay (min)	22	29	27
Number of days	92	92	92
Mean No. of obs/day	52.9	25.9	29.9
No. of Hours with obs	1642	1379	1500
Mean no. of hours/day with obs	17.8	15.0	16.3
% of hour periods without an ob	25.6	37.4	31.9
Mean (Ob-Bg)	-0.6	-0.7	-0.7
RMS (Ob-Bg) unflagged data	2.2	2.1	2.0
Mean (Ob-Bg)	-0.9	-0.7	-0.8
RMS (Ob-Bg) all data	5.6	2.2	3.6
Revised RMS (Ob-Bg)	3.6	2.2	2.1
% of data flagged	74	52	56
Operating at end of period	YES	YES	YES
Performance			
Availability	Very Good	Good	Good
Pressure Quality	Suspect	Suspect	Suspect
Timeliness	Very Good	Very Good	Very Good
Comments			

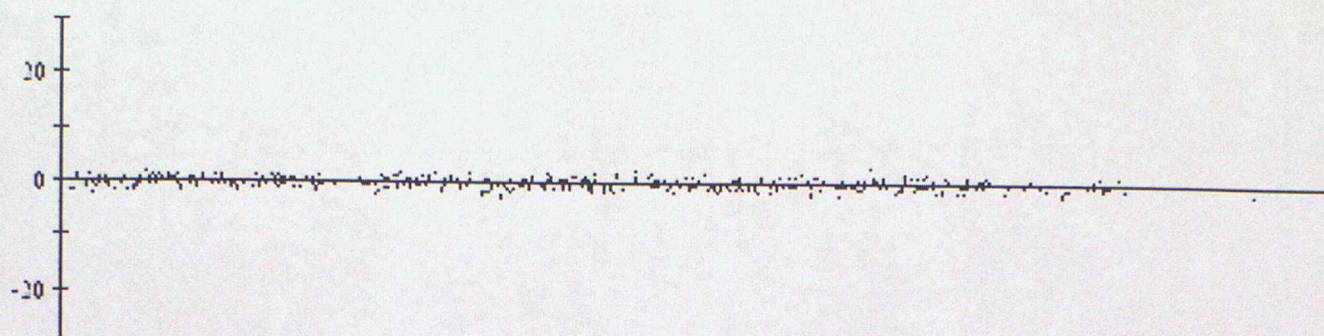
Annex A - cont'd

WMO No./Country	65592/NL	65597/NL	65599/UK
Argos Id No.	3675	4273	28477
Period Within Area	01/10 - 31/12	01/10 - 31/12	01/10 - 31/12
Mean Latitude	62.0	55.4	61.3
Mean Longitude	-36.2	-9.6	-32.2
No. of Obs Received	4477	2916	4217
% of obs with Acceptable Position	99.1	94.7	93.9
% of Present Pressure	95.6	95.6	96.7
P. Tendency	73.6	82.0	92.5
Air Temperature	95.1	95.6	30.2
Wind Speed/Dir	0.0/ 0.0	0.0/ 0.0	85.5/ 85.4
Sea-Surface Temp.	76.0	65.4	97.0
Median delay (min)	22	23	22
Number of days	92	92	92
Mean No. of obs/day	48.7	31.7	45.8
No. of Hours with obs	1663	1170	1631
Mean no. of hours/day with obs	18.1	12.7	17.7
% of hour periods without an ob	24.6	46.9	26.0
Mean (Ob-Bg)	-0.6	-0.3	0.0
RMS (Ob-Bg) unflagged data	2.0	1.6	1.9
Mean (Ob-Bg)	-0.6	-0.3	-0.2
RMS (Ob-Bg) all data	3.6	2.8	4.7
Revised RMS (Ob-Bg)	2.1	1.7	2.3
% of data flagged	70	69	69
Operating at end of period	YES	YES	YES
Performance			
Availability	Very Good	Good	Very Good
Pressure Quality	Suspect	Acceptable	Acceptable
Timeliness	Very Good	Very Good	Very Good
Comments			

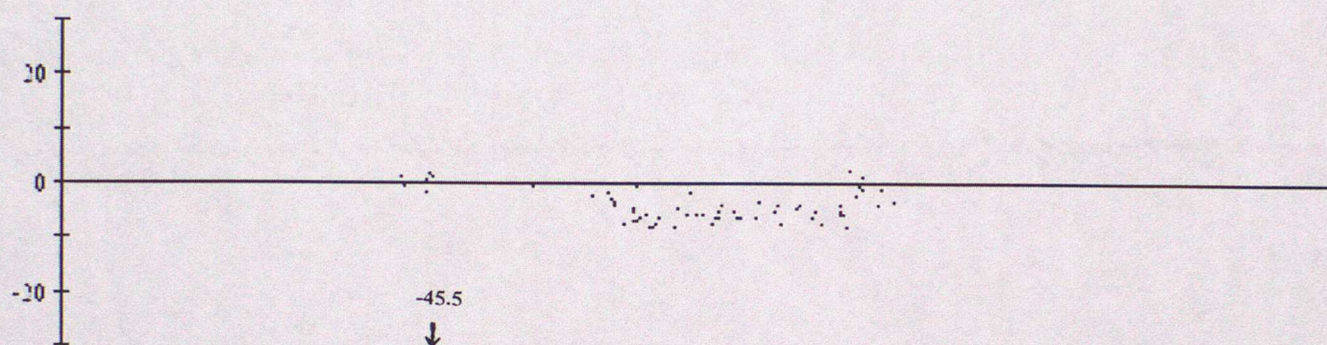
ANNEX B - TIME SERIES PLOTS OF PRESSURE

Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

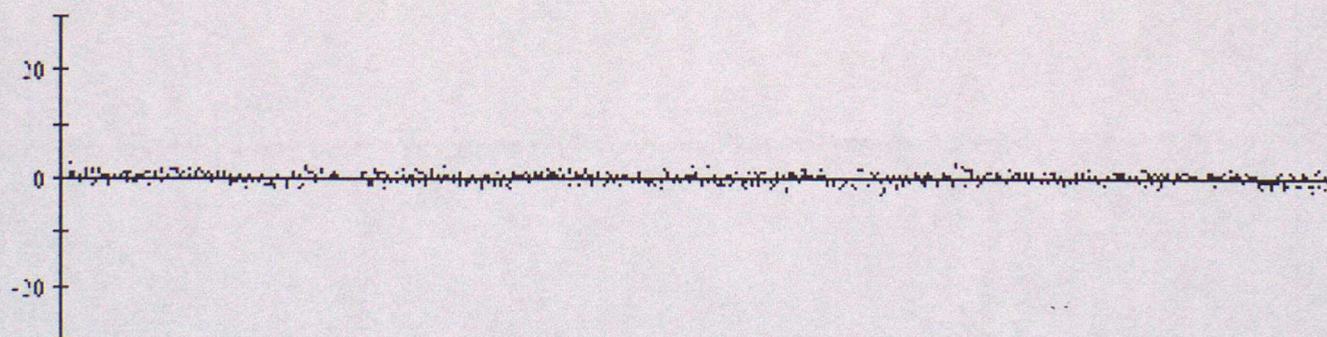
13906 Pressure



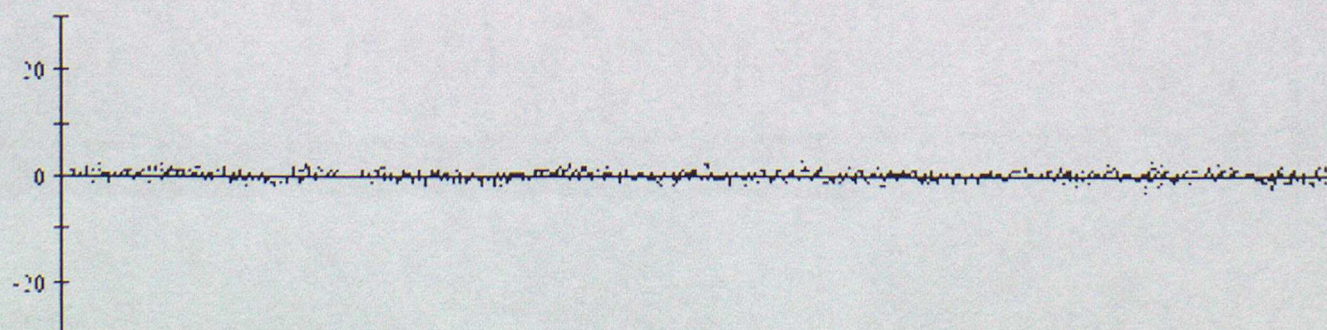
33503 Pressure



41504 Pressure

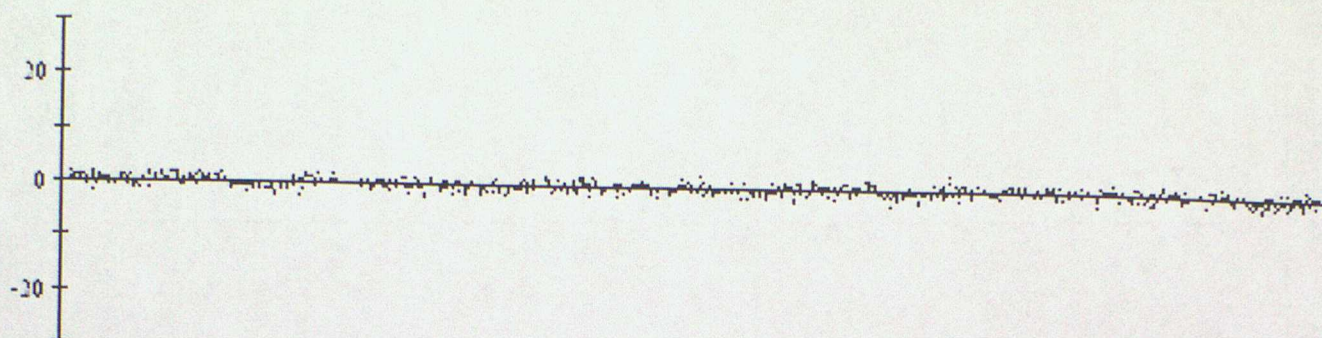


41505 Pressure

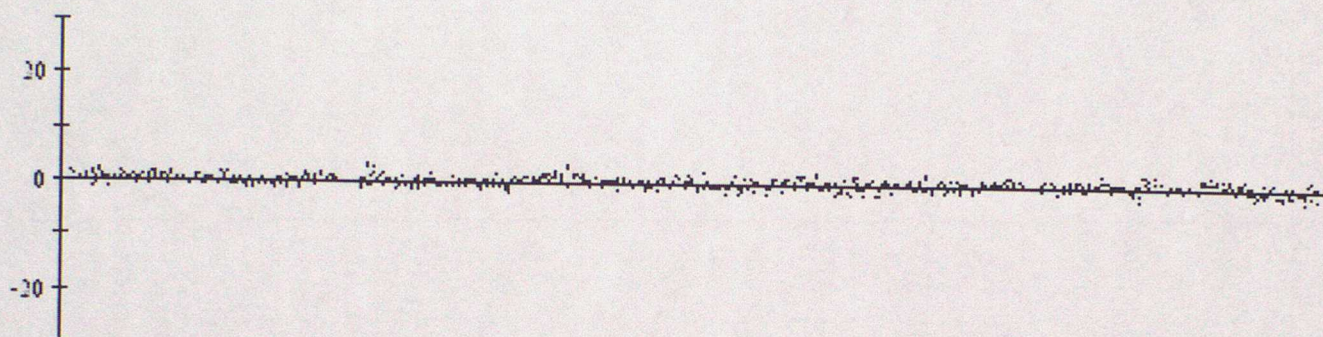


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

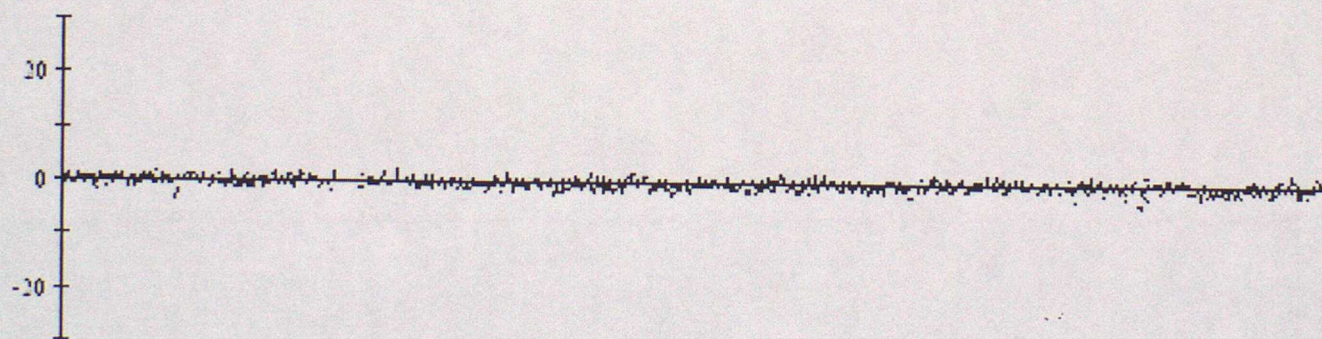
41521 Pressure



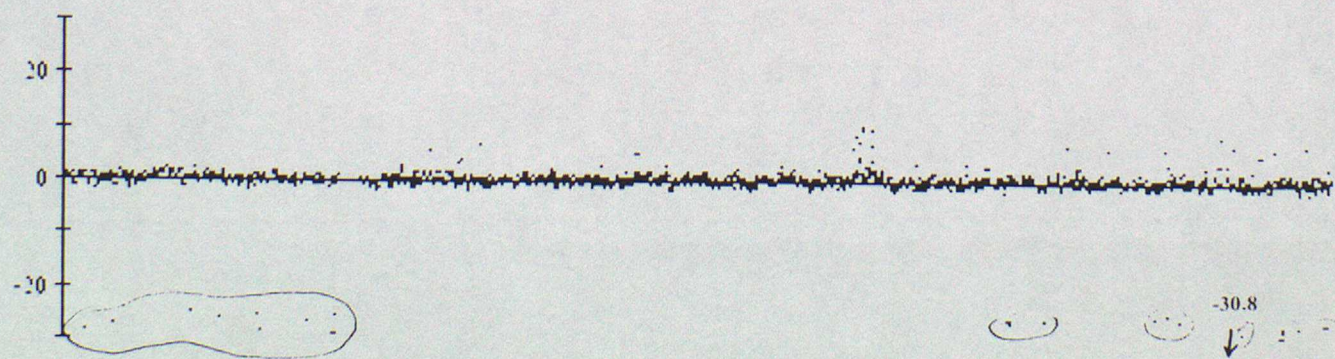
41528 Pressure



41597 Pressure

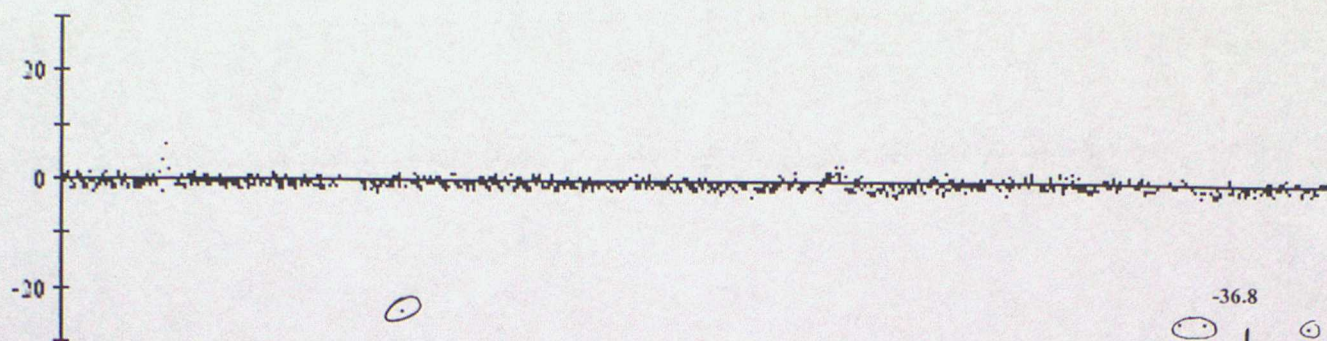


41598 Pressure

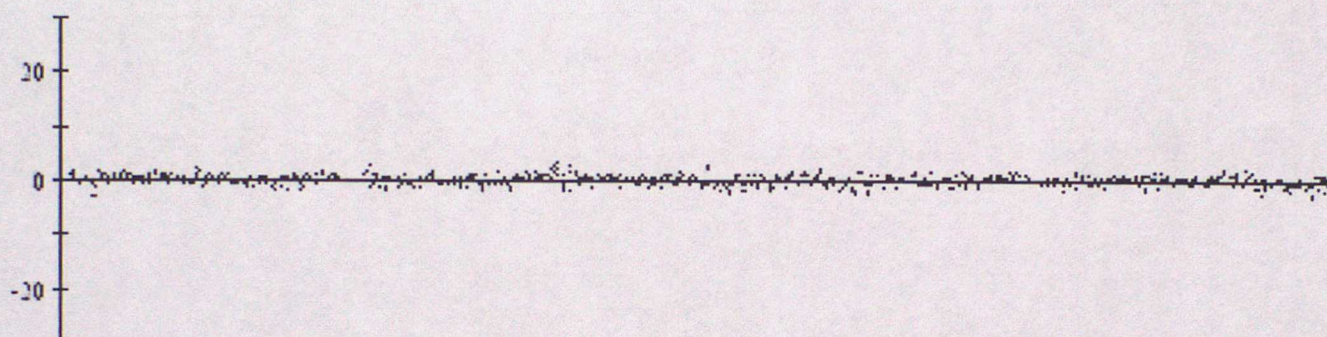


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

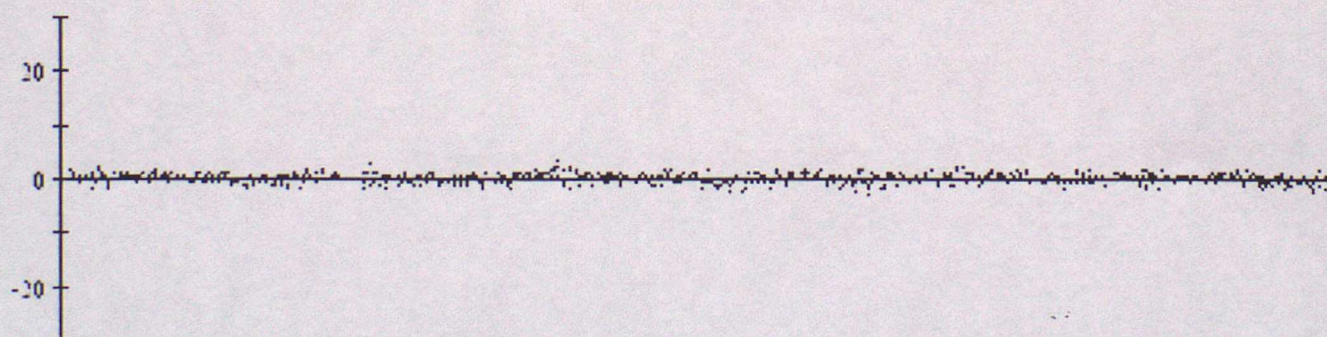
41599 Pressure



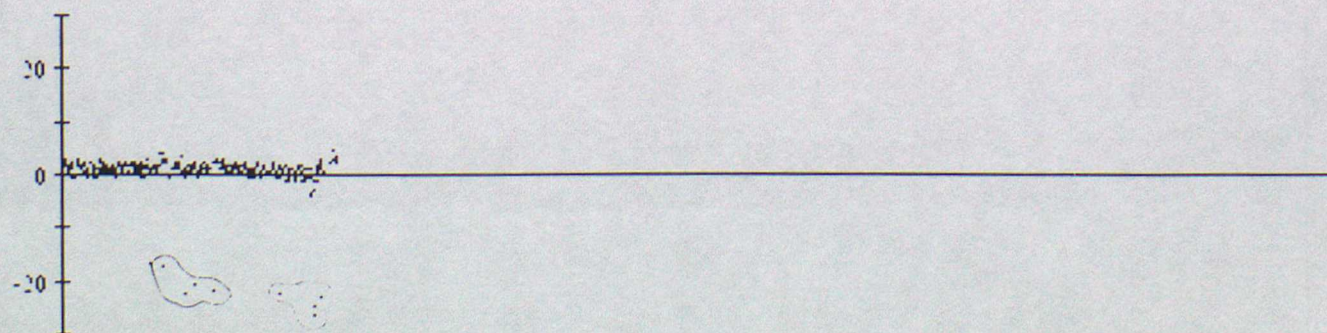
41625 Pressure



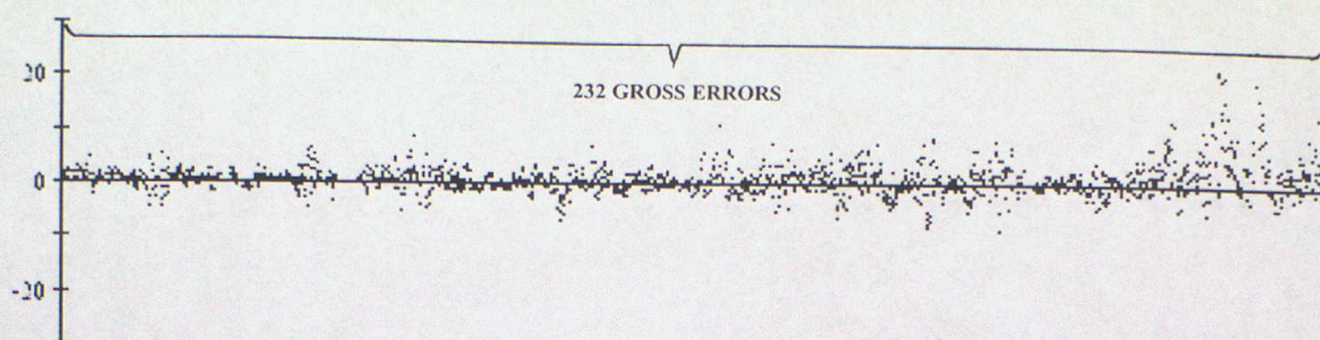
41629 Pressure



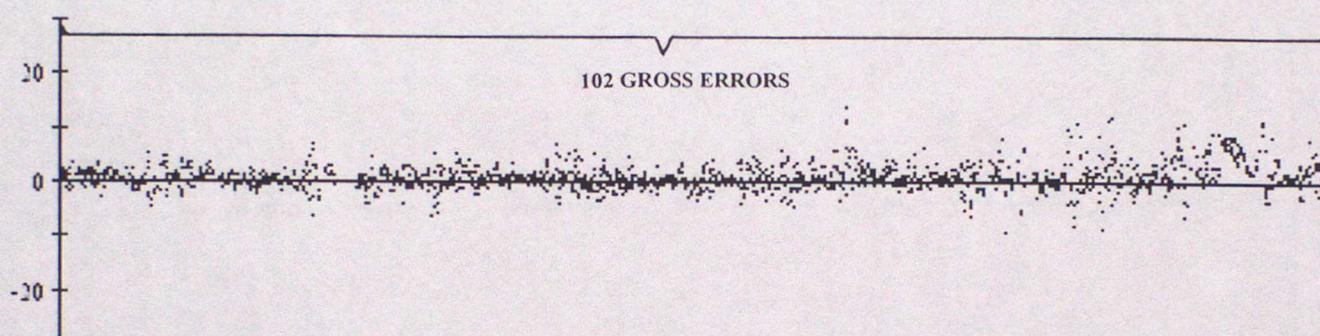
41635 Pressure



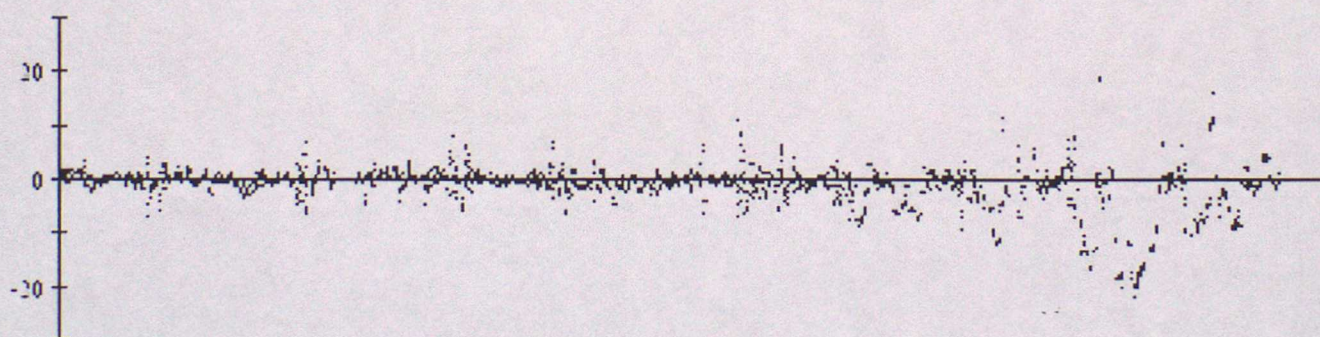
44601 Pressure



44602 Pressure



44603 Pressure

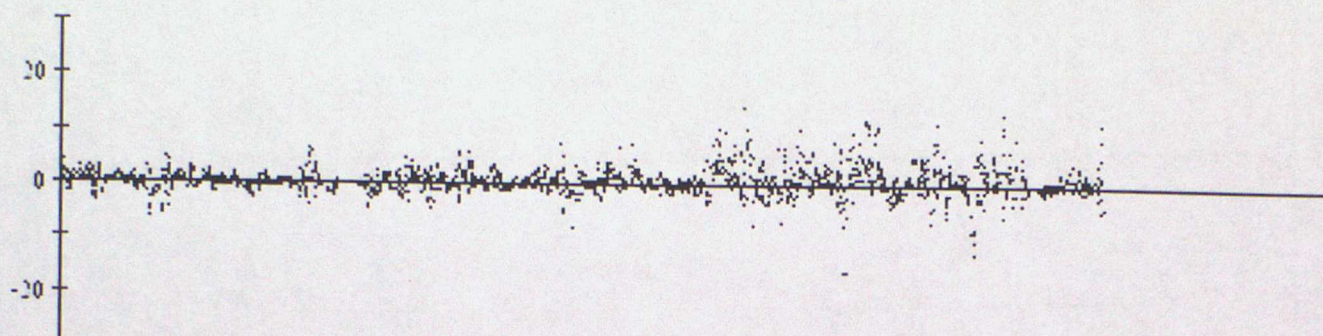


44604 Pressure

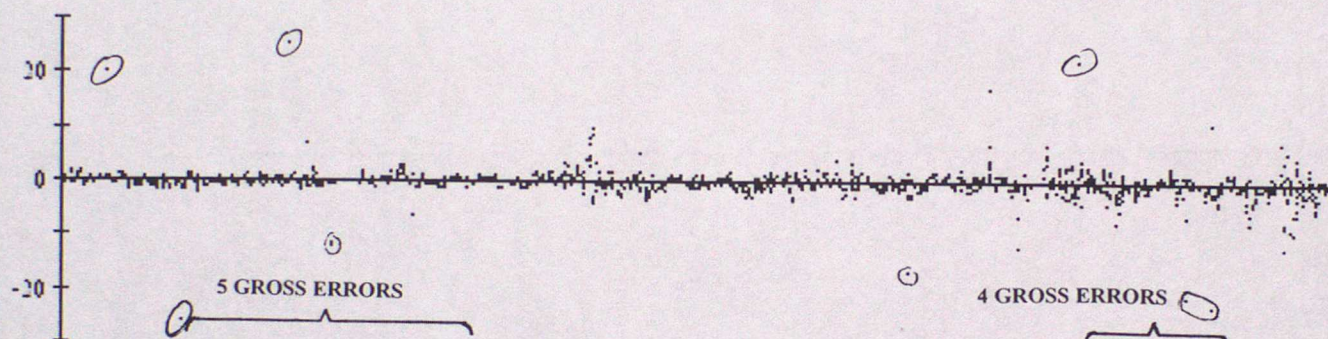


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

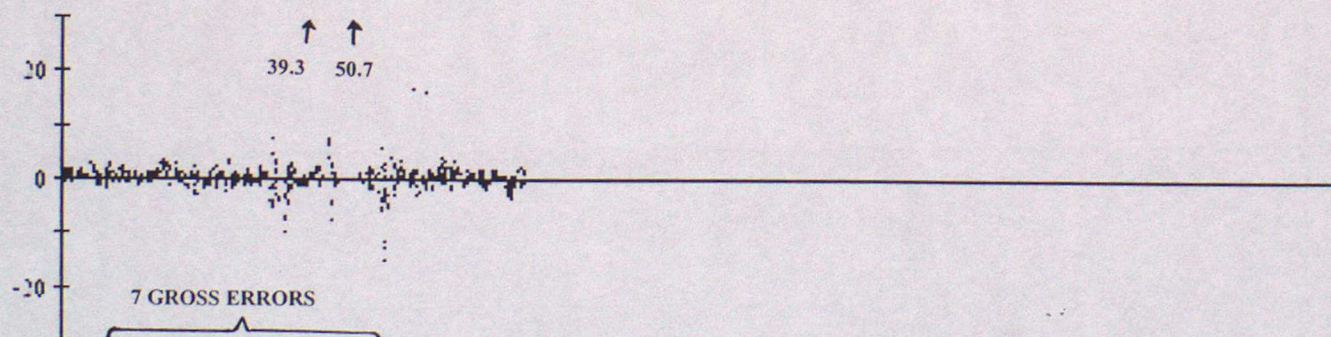
44606 Pressure



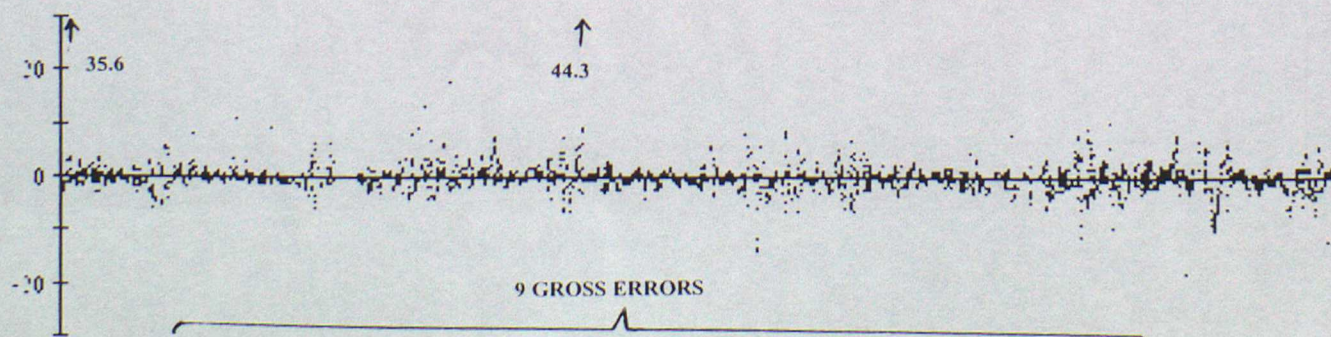
44613 Pressure



44617 Pressure

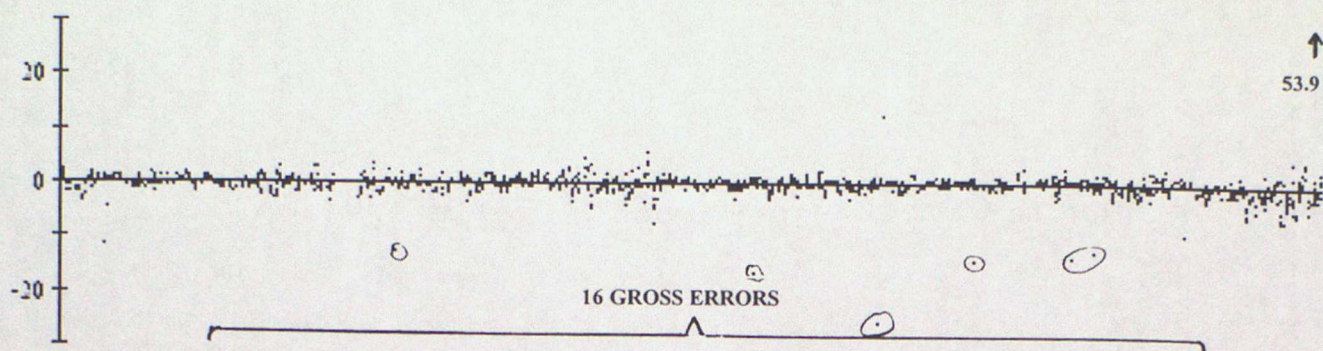


44726 Pressure

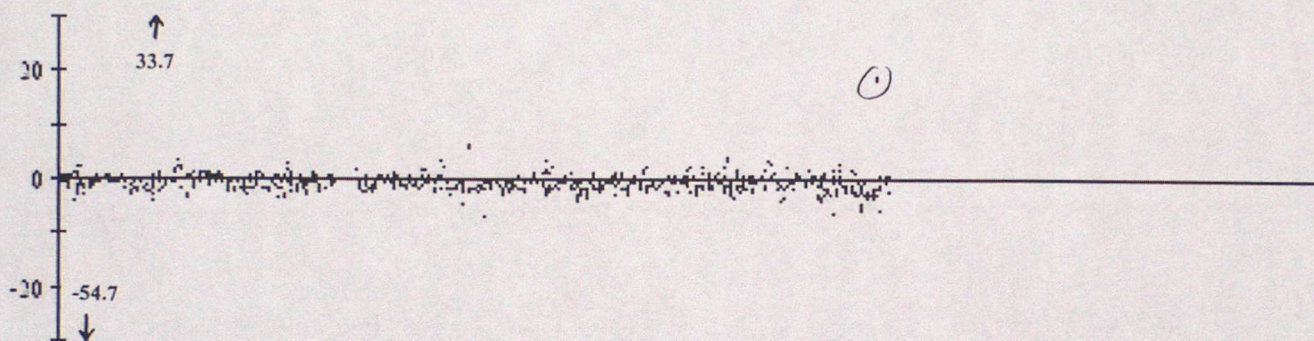


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

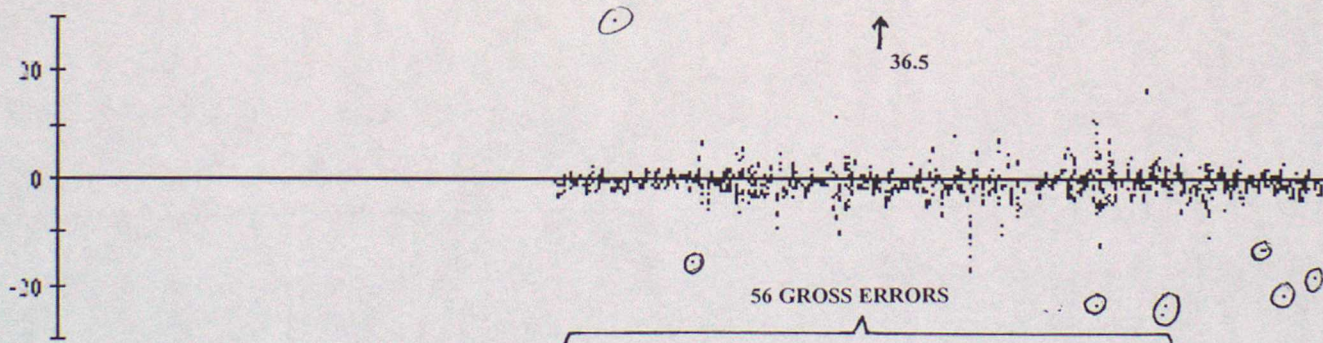
44742 Pressure



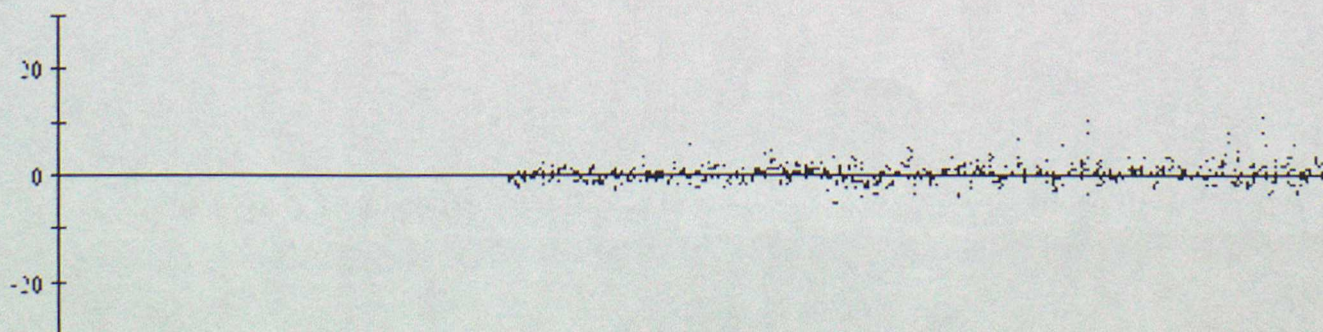
44743 Pressure



44760 Pressure

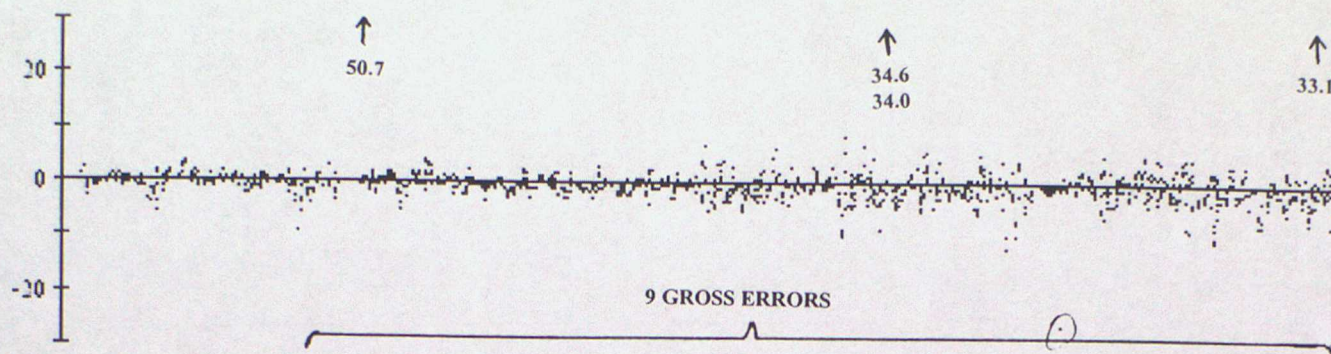


44762 Pressure

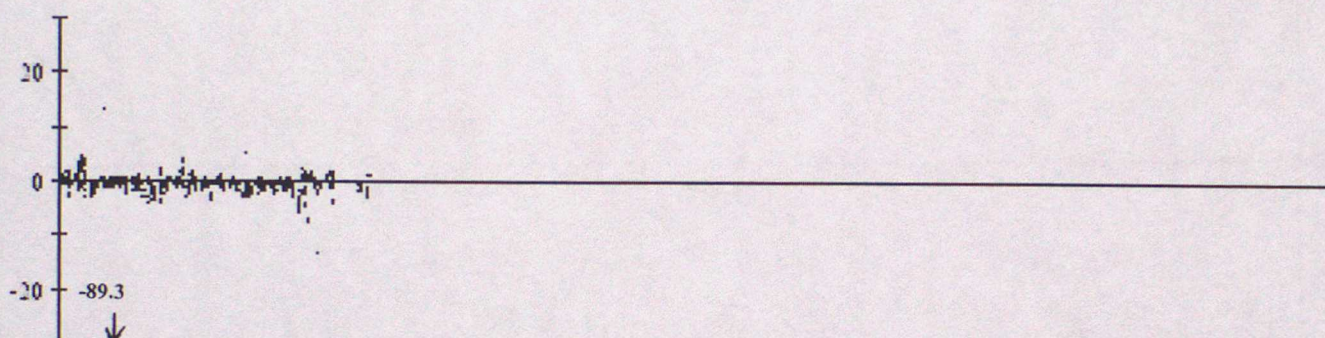


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

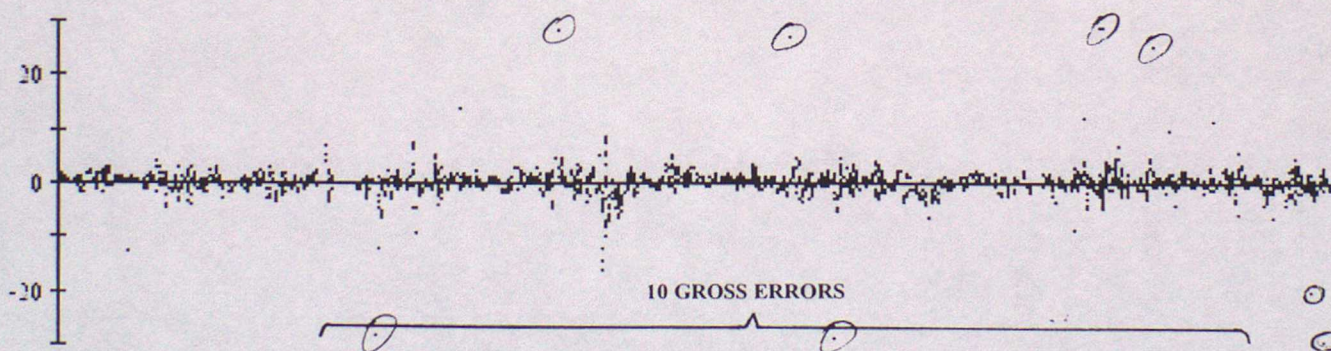
44764 Pressure



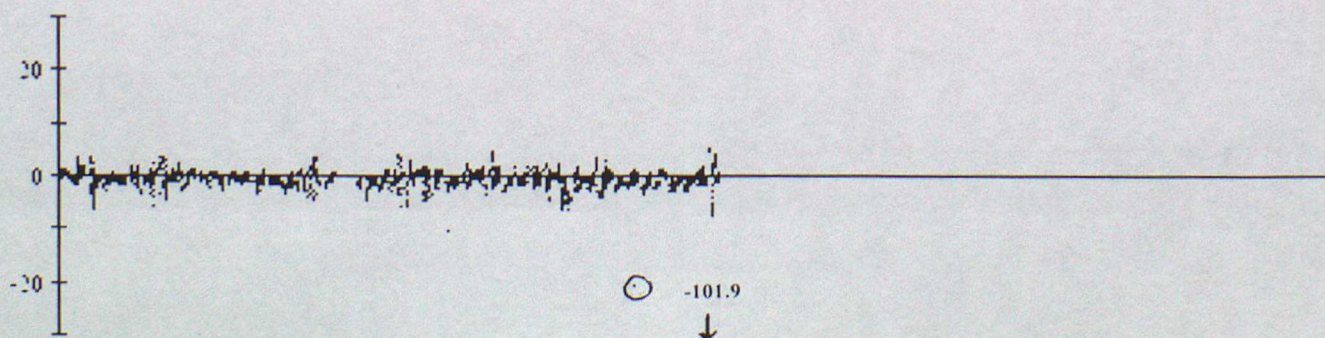
44767 Pressure



44768 Pressure

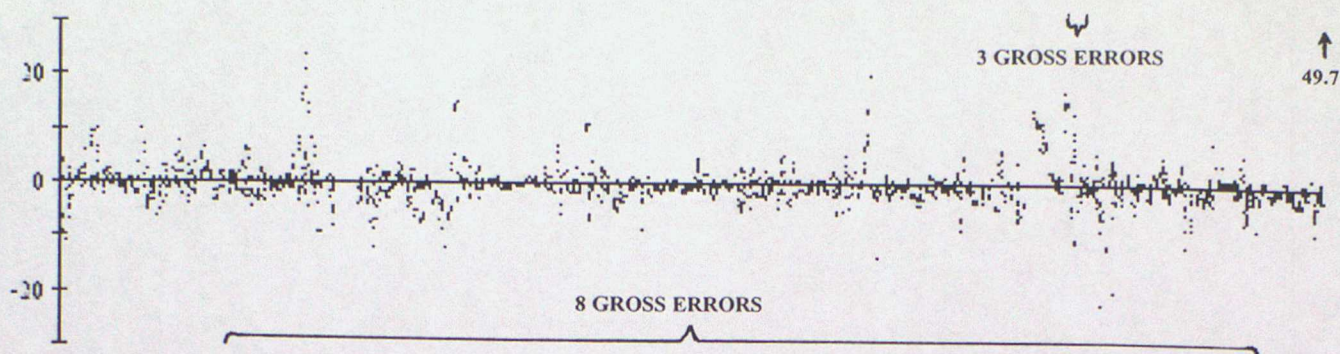


44770 Pressure

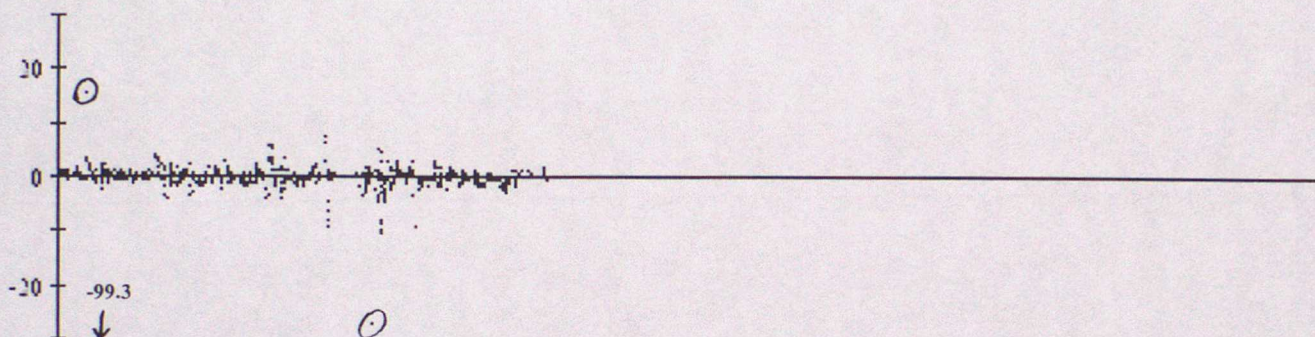


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

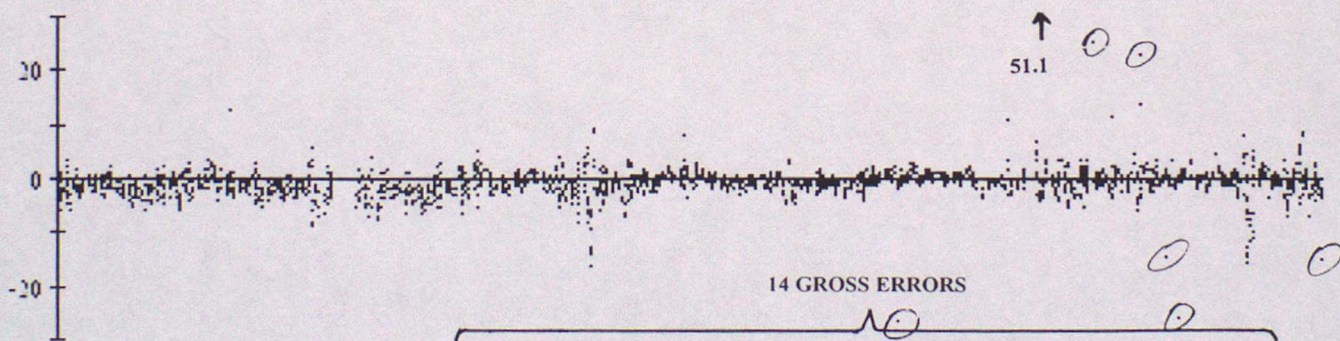
44772 Pressure



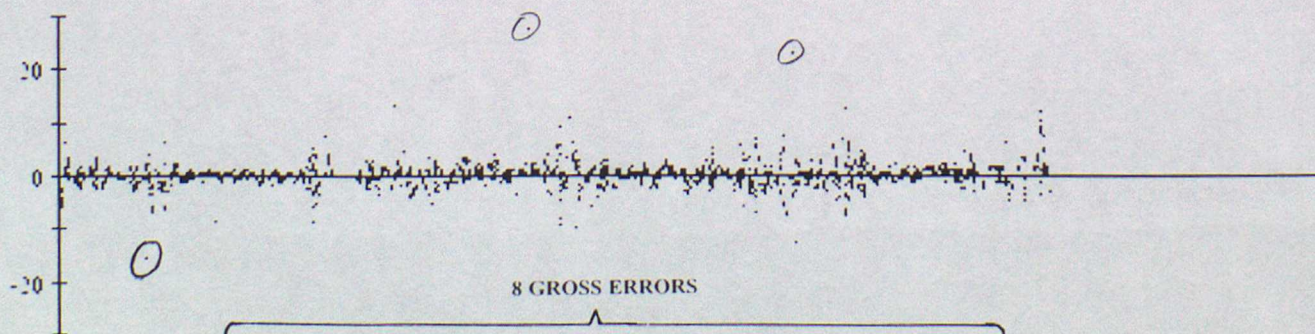
44773 Pressure



44774 Pressure

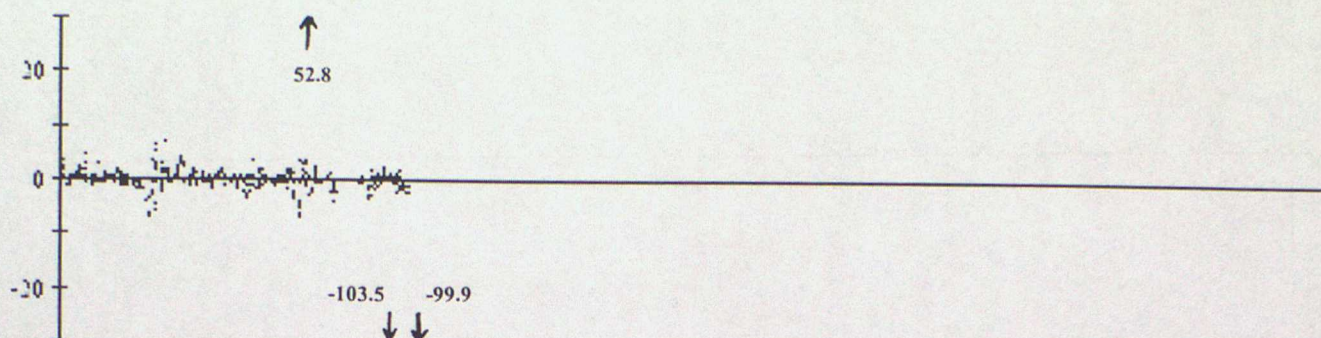


44775 Pressure

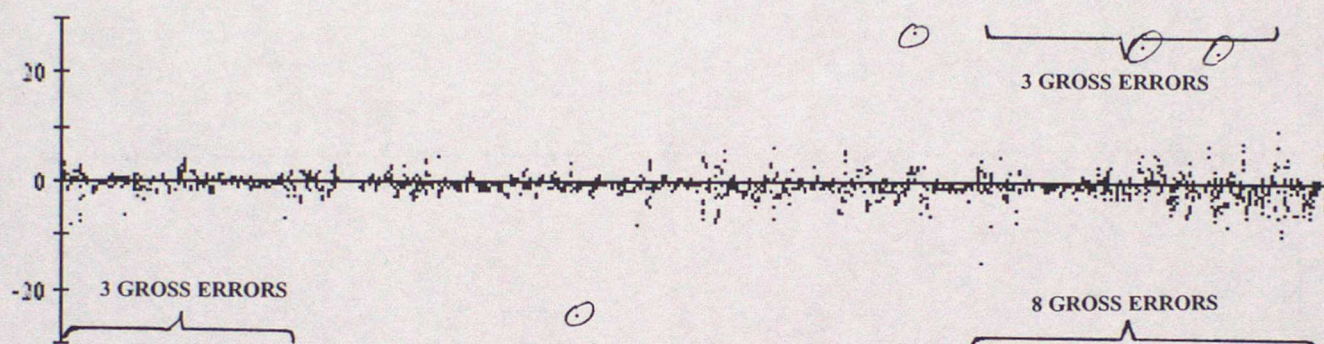


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

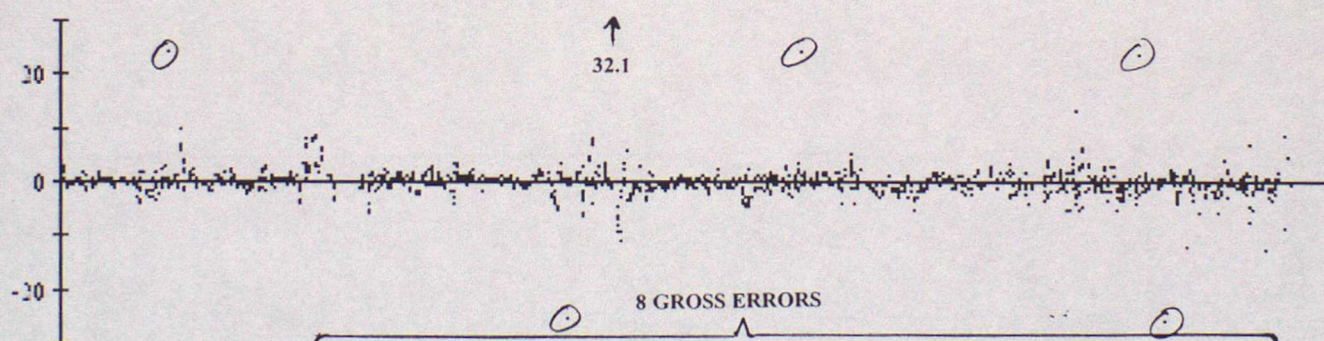
44776 Pressure



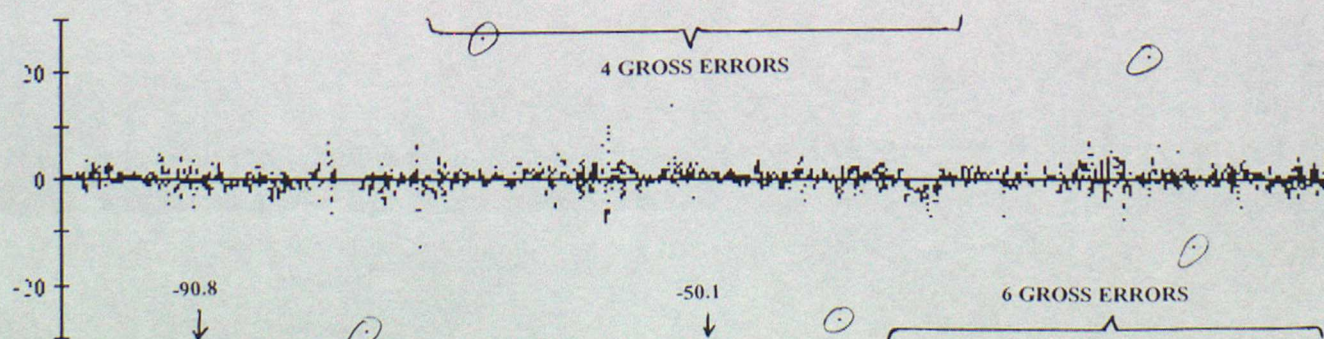
44778 Pressure



44779 Pressure

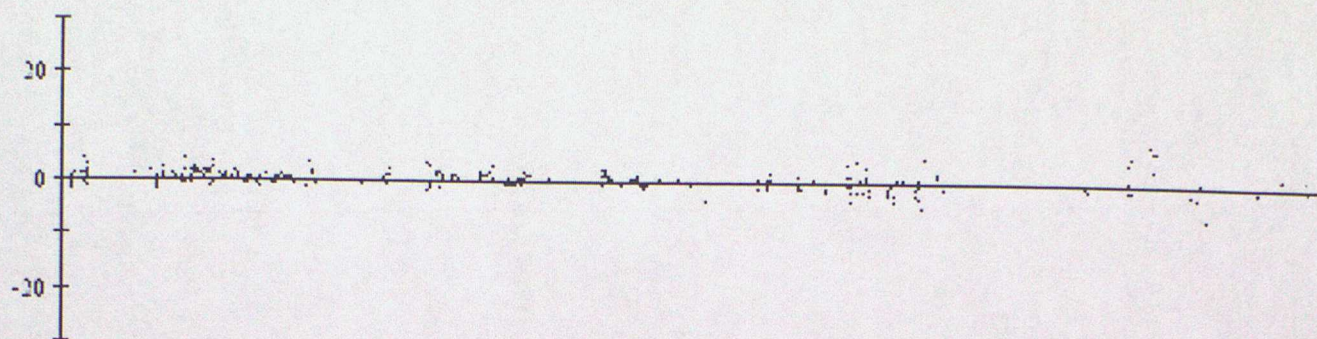


44780 Pressure

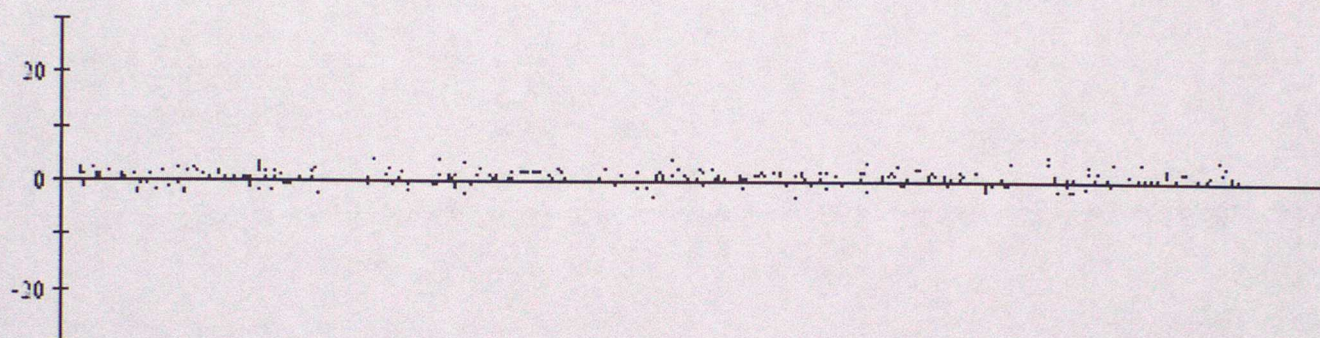


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

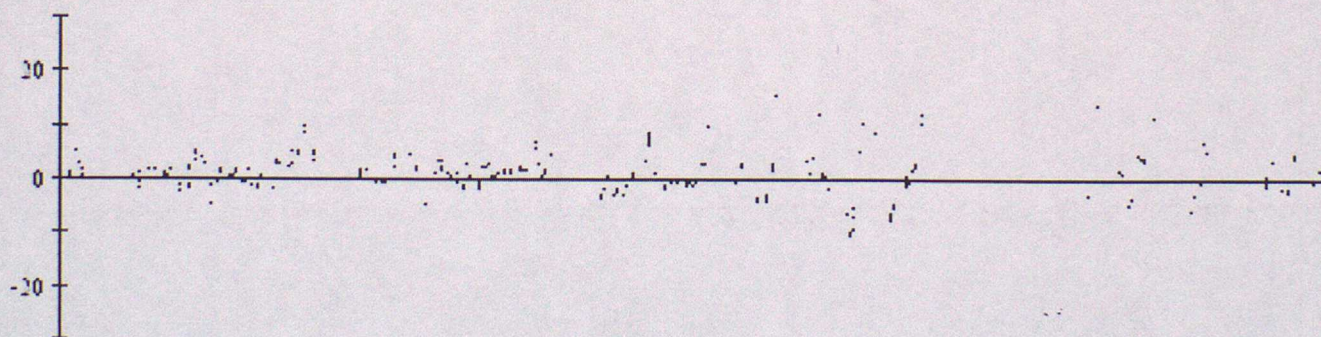
44901 Pressure



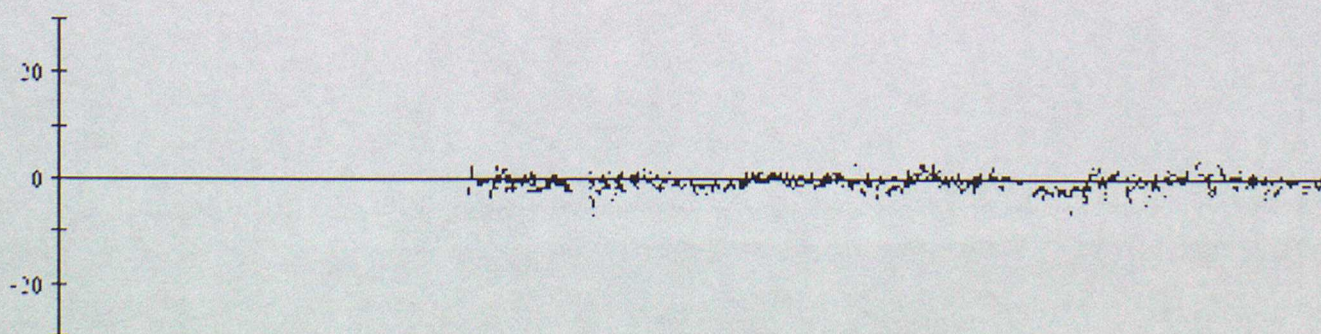
44912 Pressure



44925 Pressure

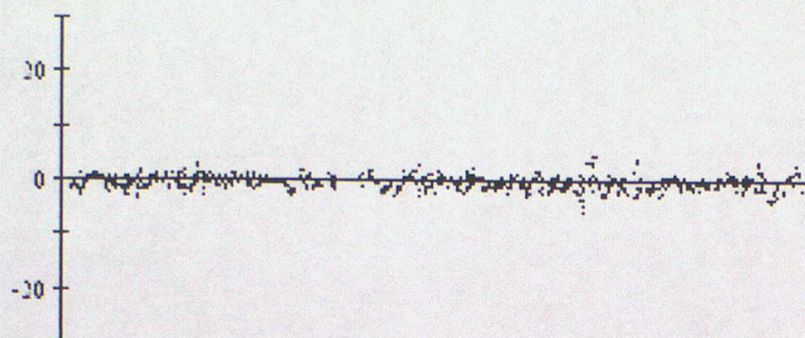


47556 Pressure

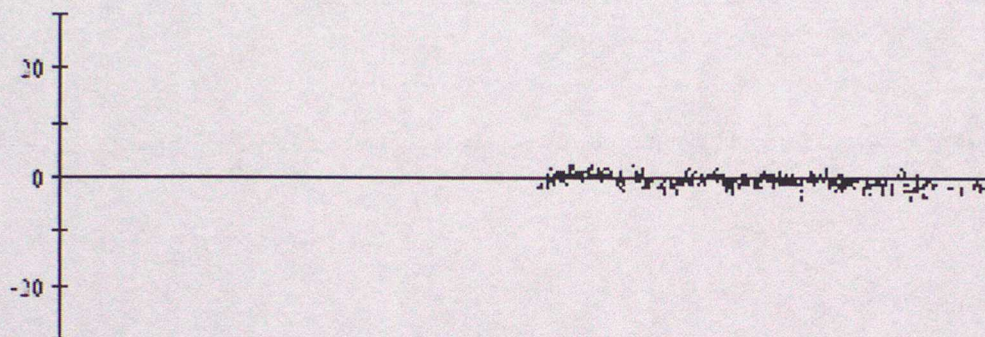


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

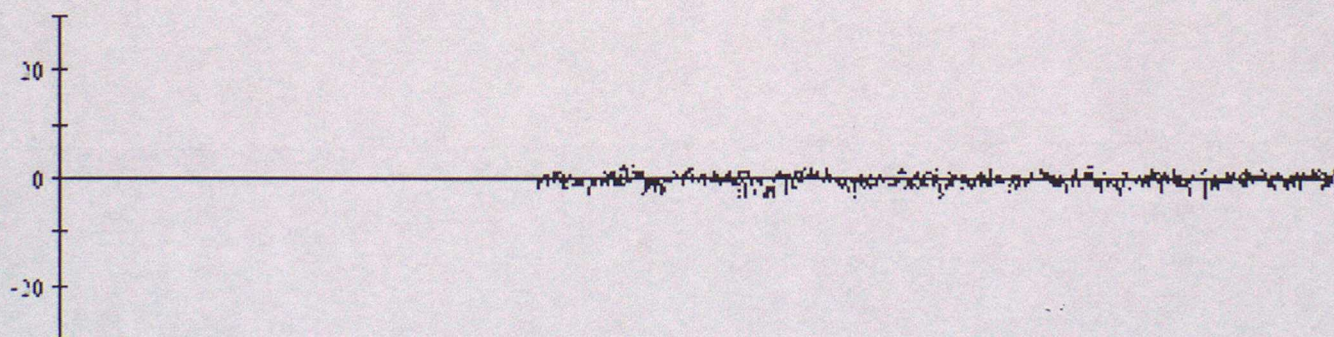
48518 Pressure



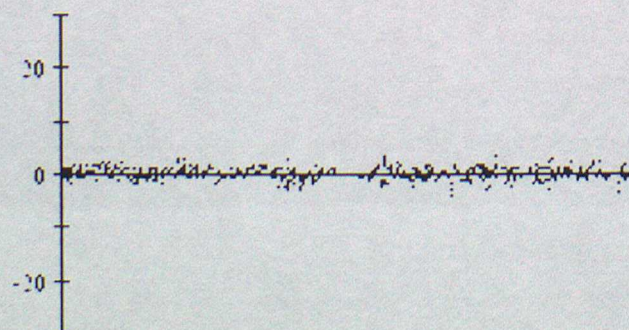
61521 Pressure



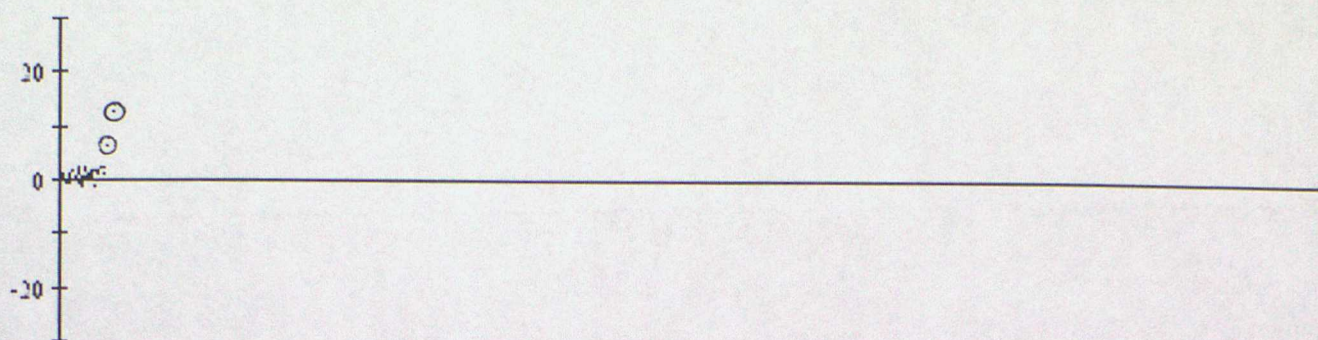
61523 Pressure



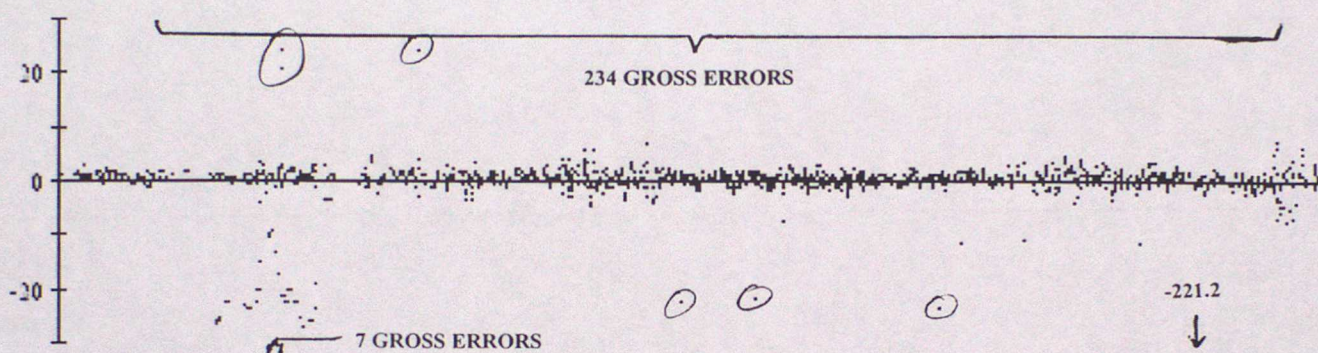
62506 Pressure



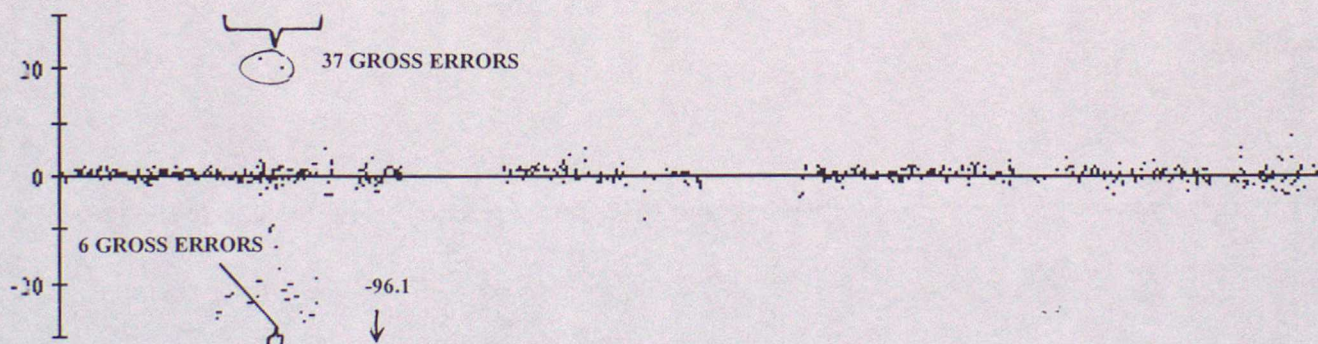
62510 Pressure



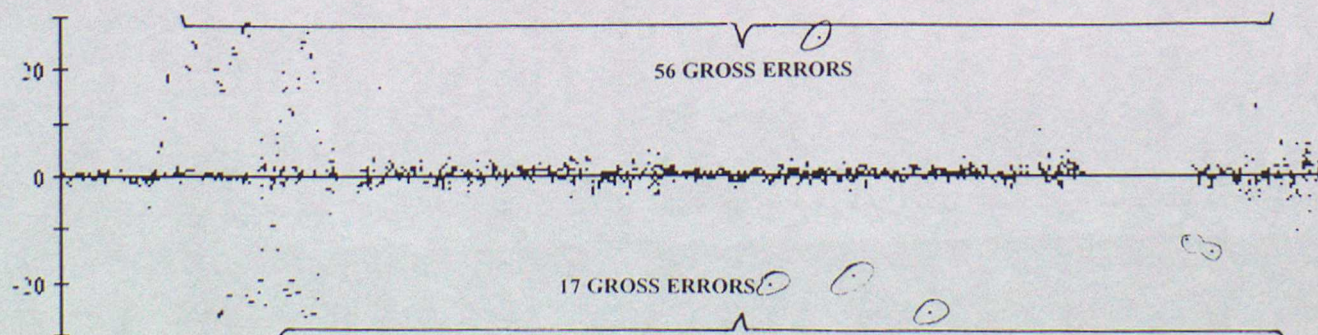
62511 Pressure



62512 Pressure

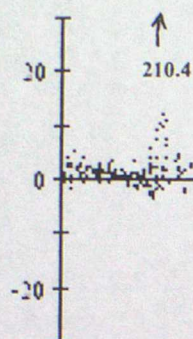


62513 Pressure

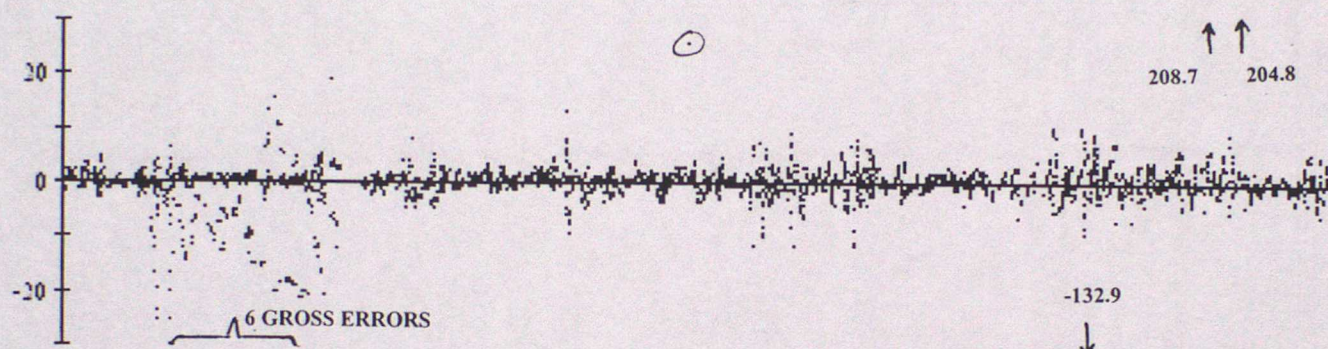


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

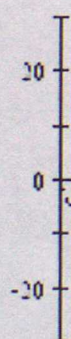
62514 Pressure



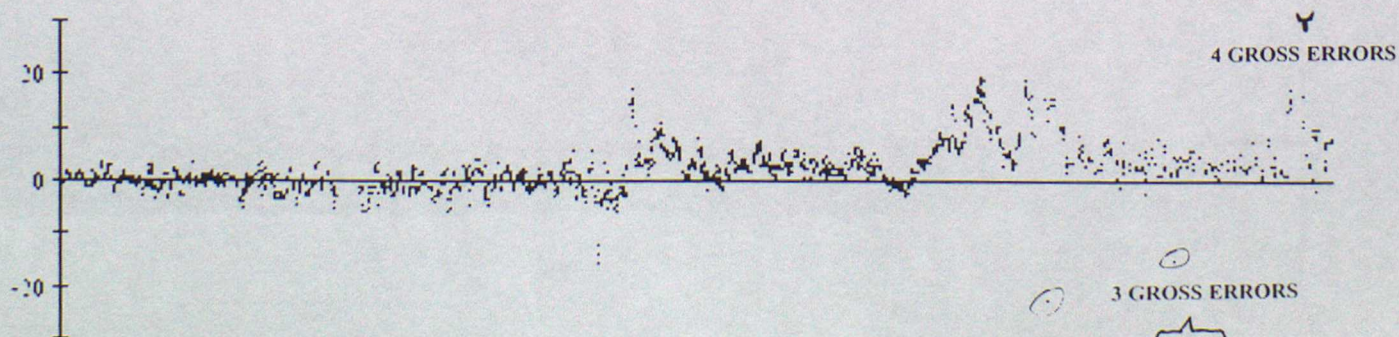
62515 Pressure



62516 Pressure

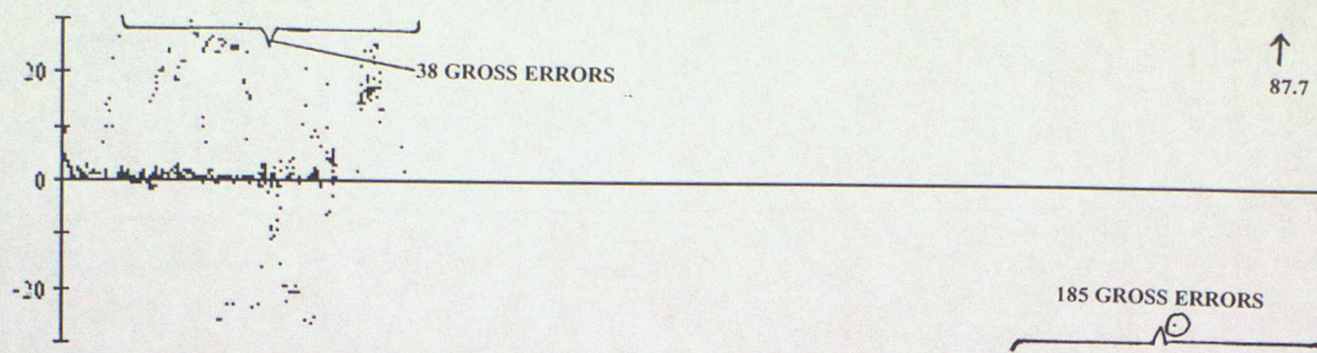


62517 Pressure

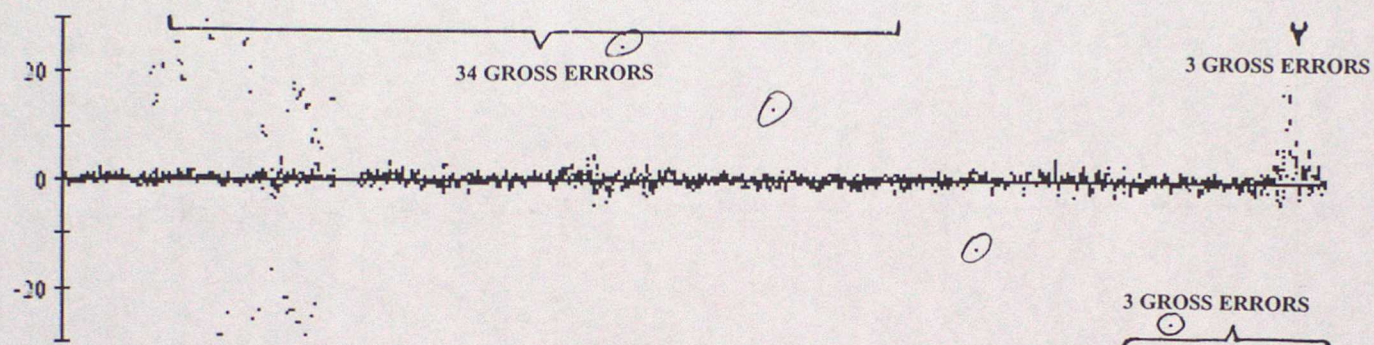


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

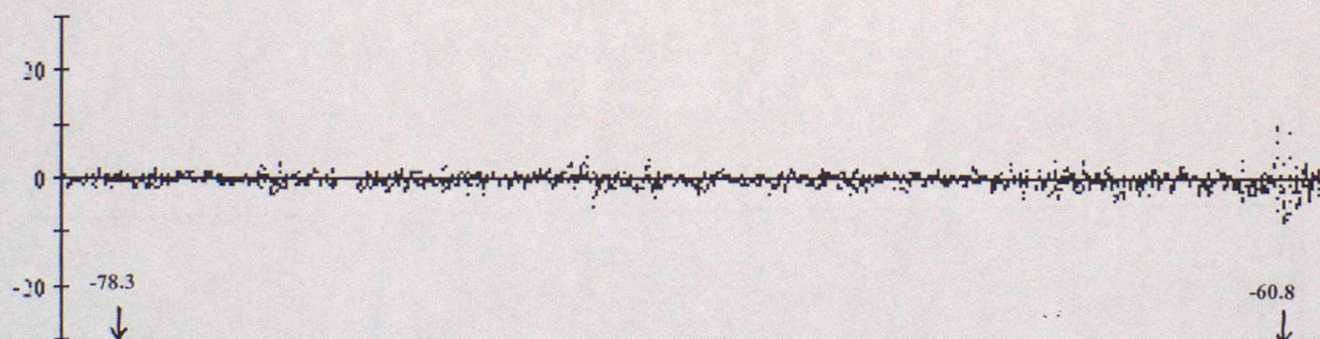
62518 Pressure



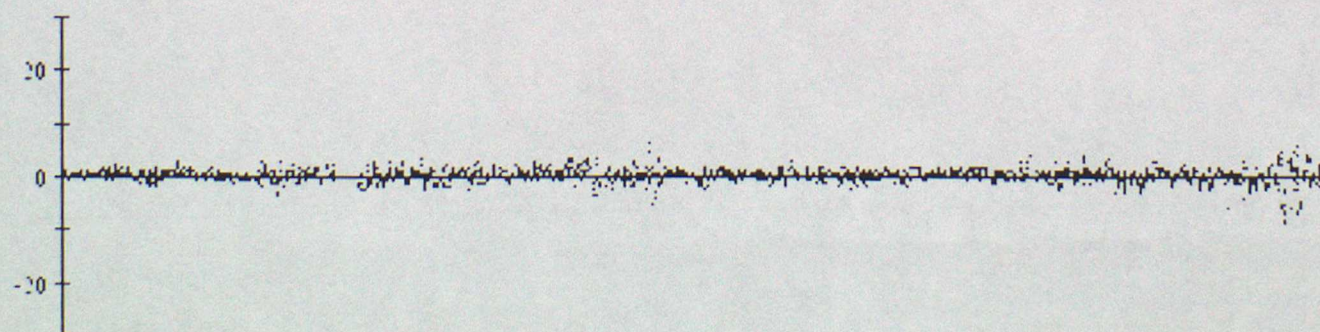
62519 Pressure



62520 Pressure

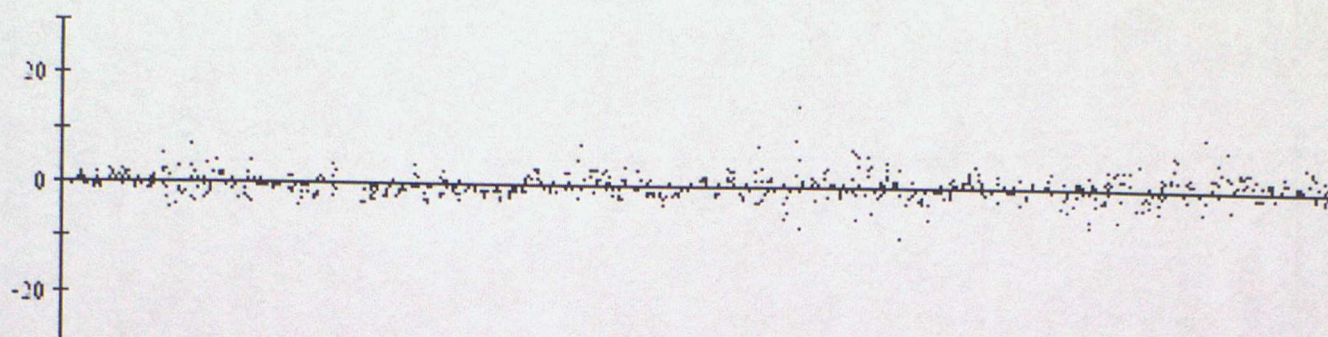


62554 Pressure

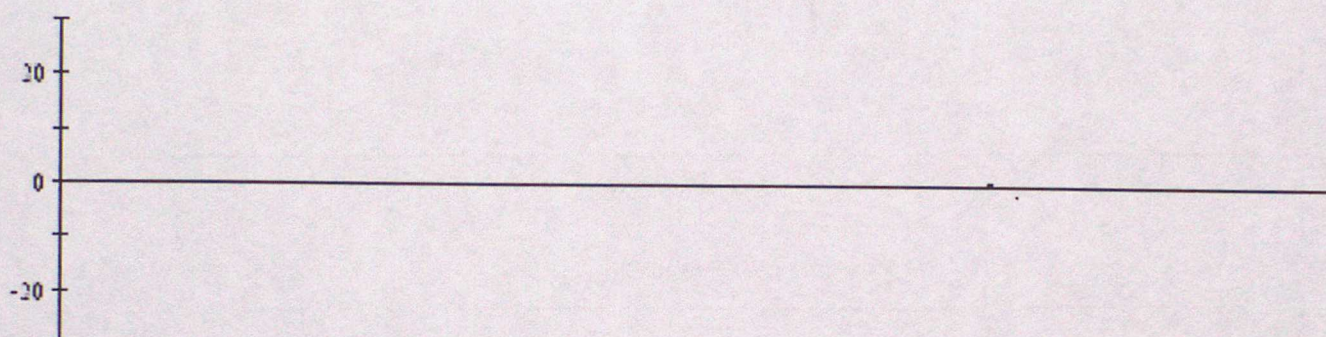


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

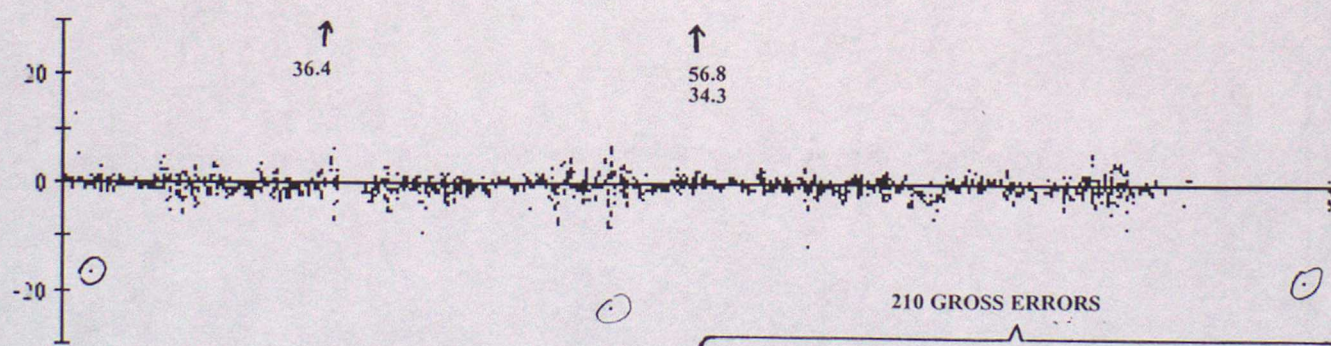
62674 Pressure



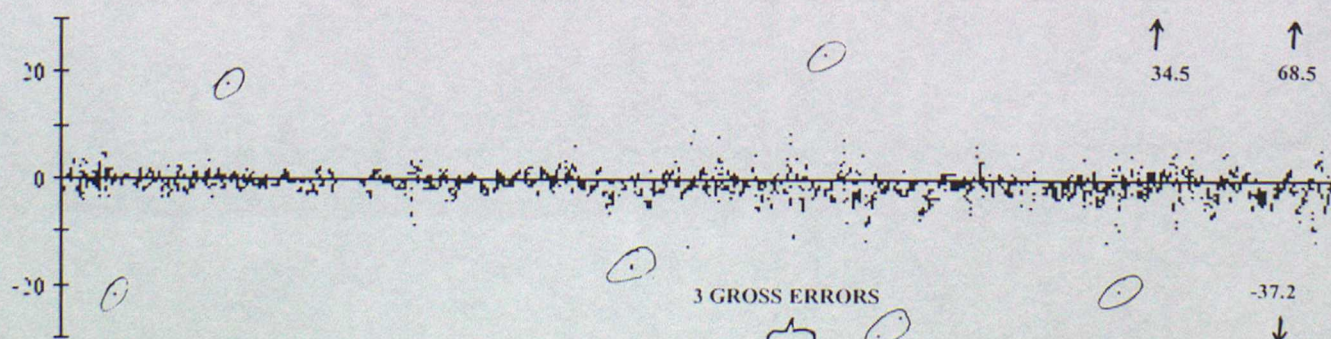
62758 Pressure



64528 Pressure

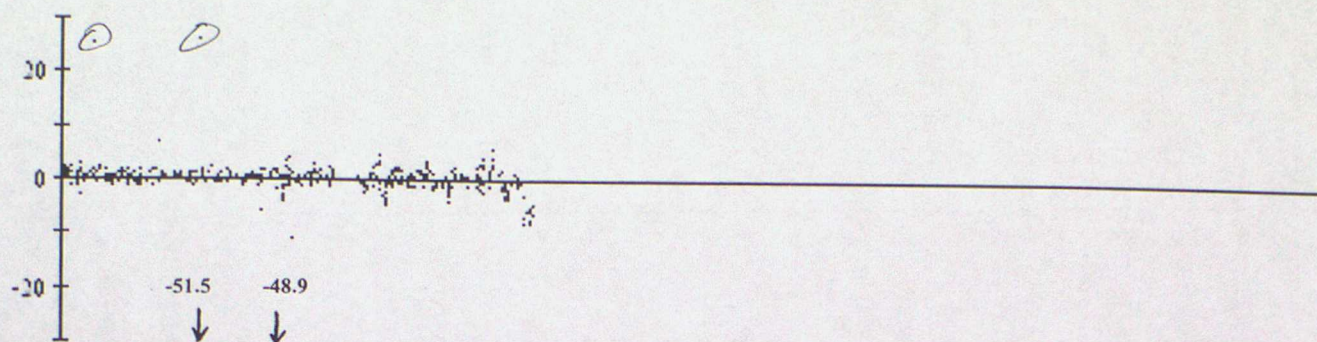


64529 Pressure

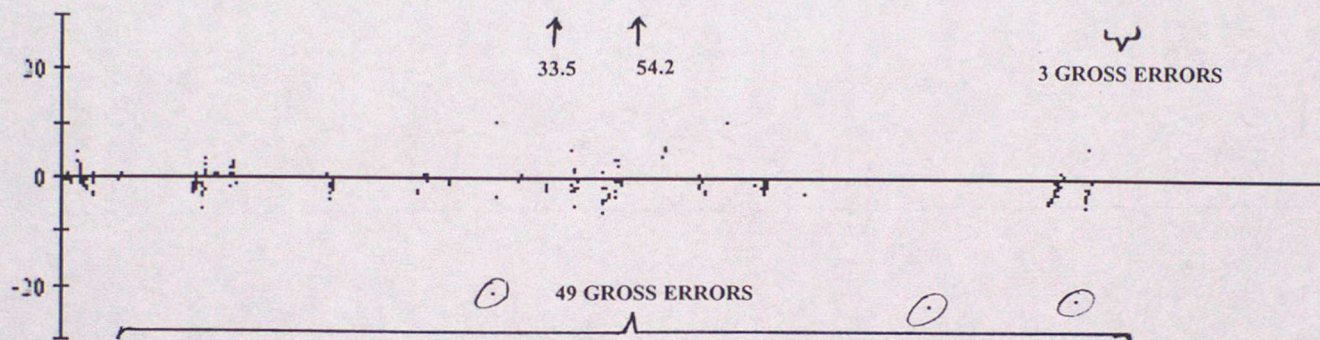


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

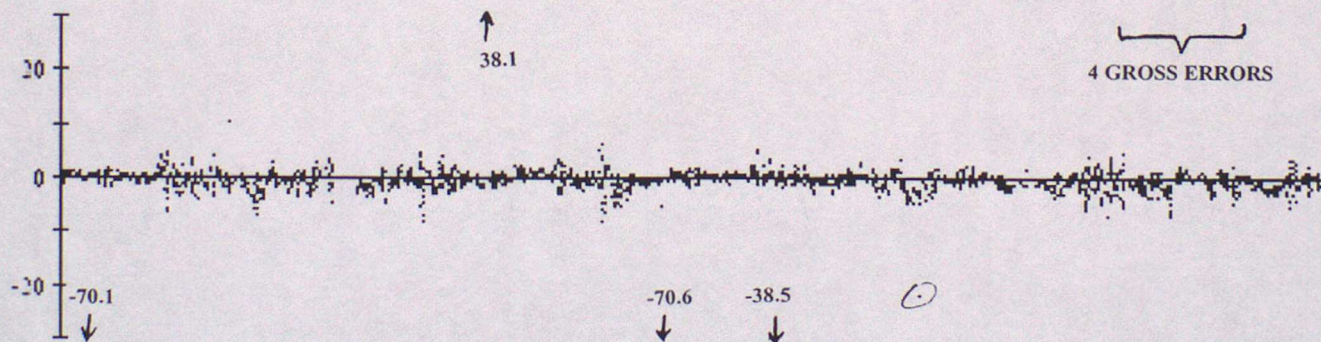
64561 Pressure



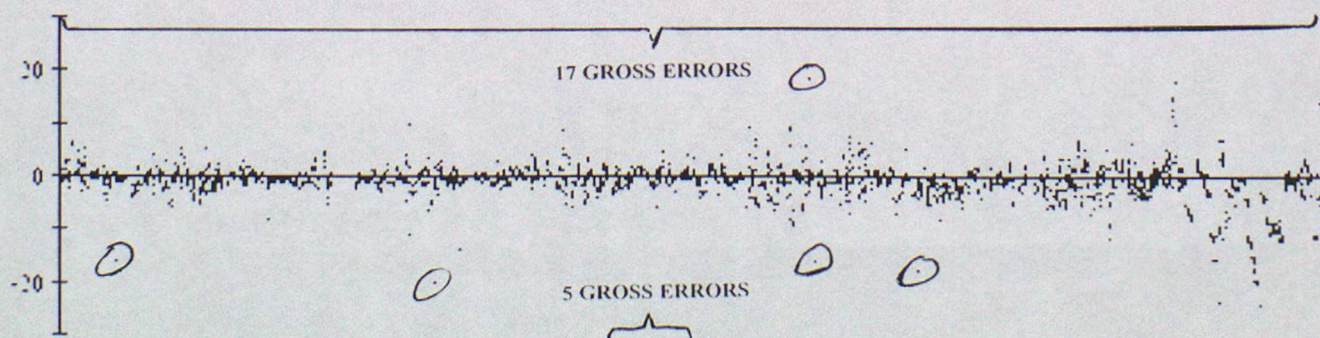
64563 Pressure



65562 Pressure

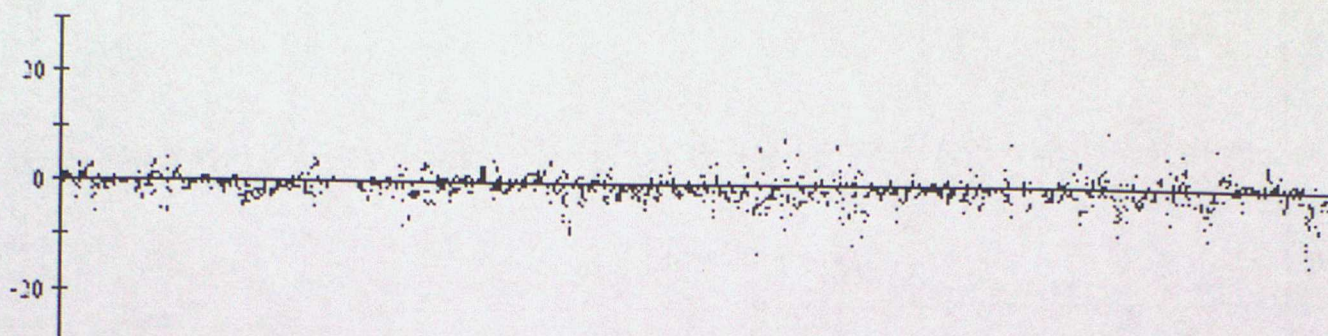


65571 Pressure

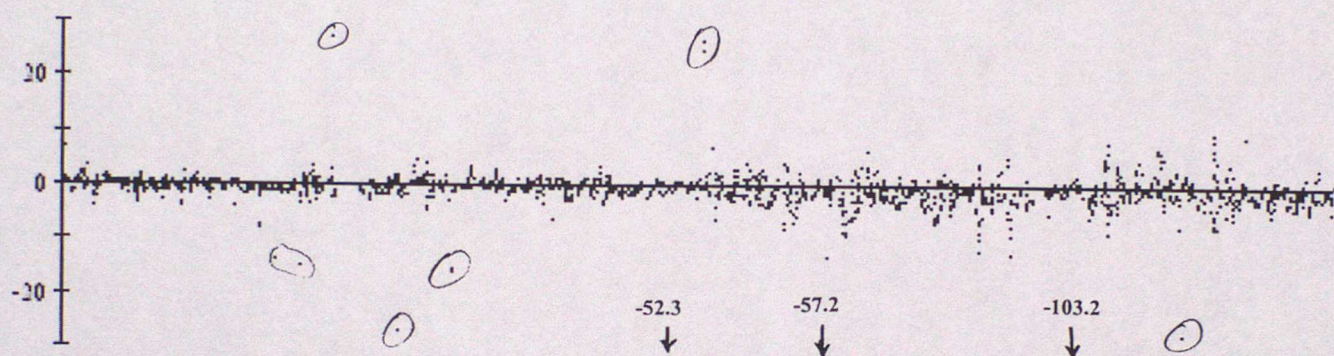


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

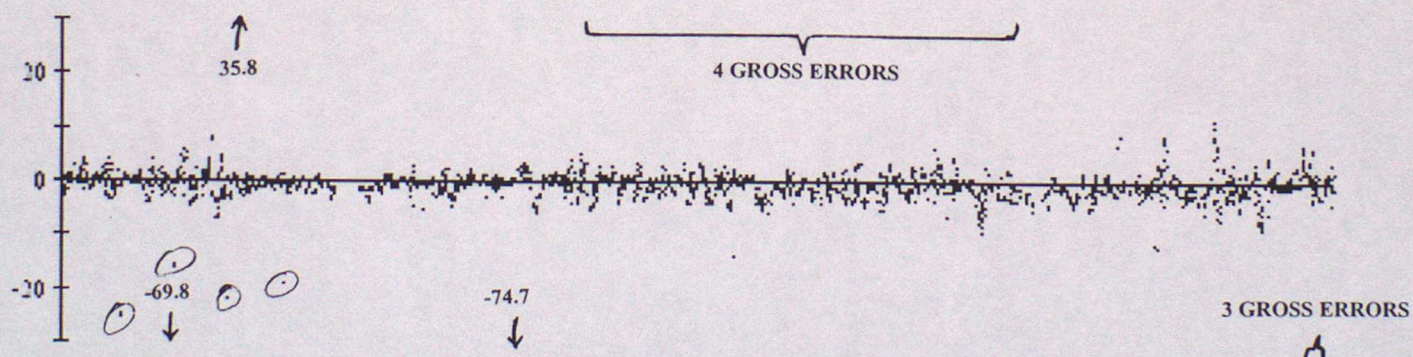
65581 Pressure



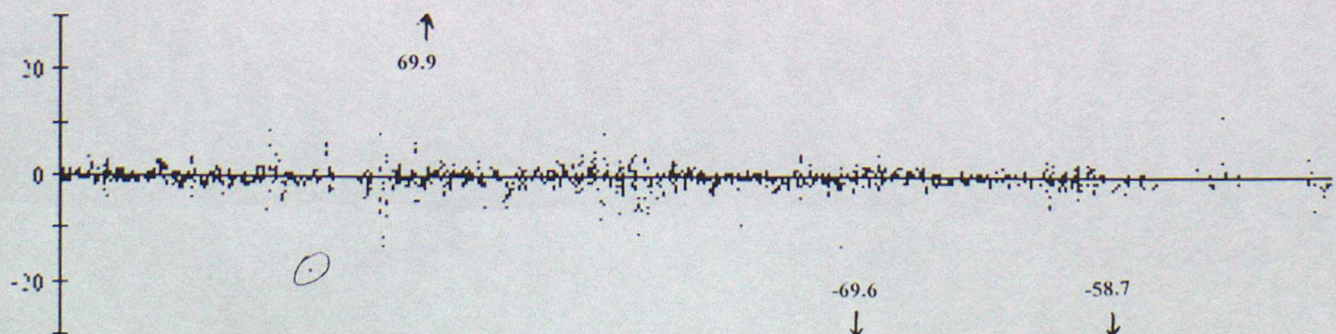
65591 Pressure



65592 Pressure

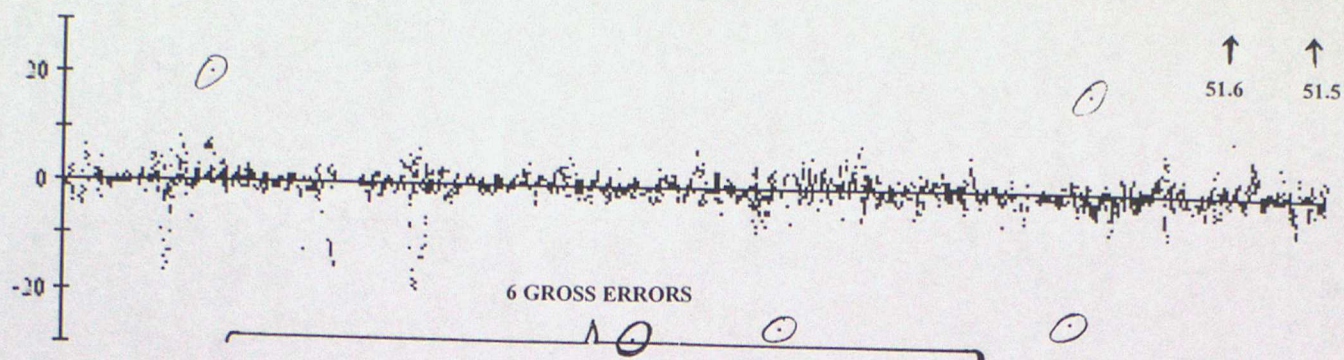


65597 Pressure



Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

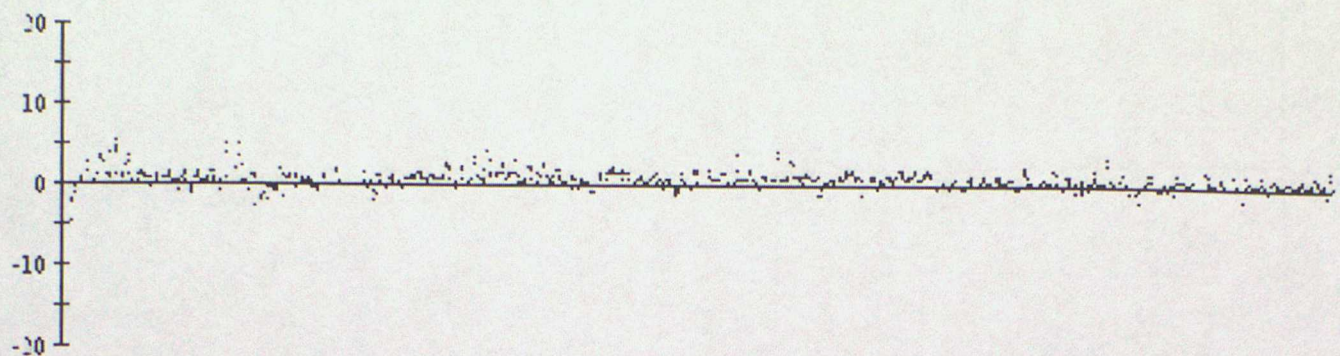
65599 Pressure



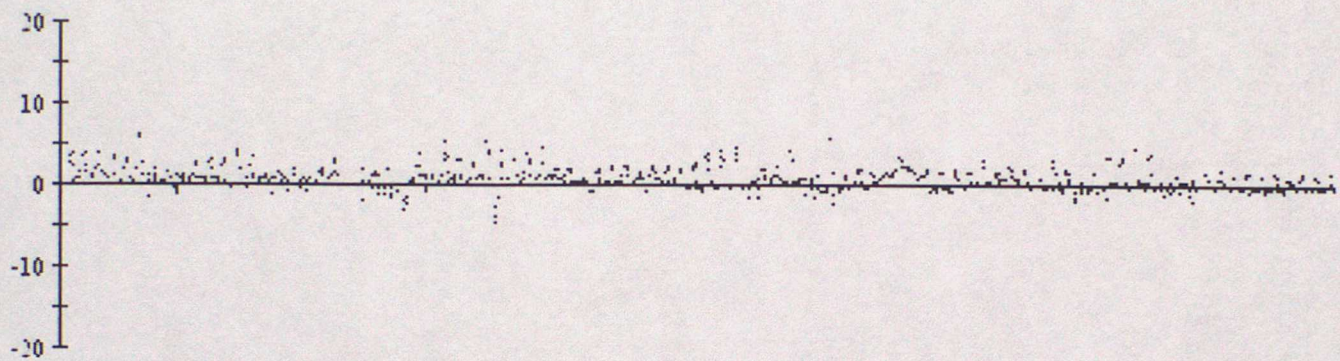
ANNEX C - TIME SERIES PLOTS OF AIR TEMPERATURE

Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

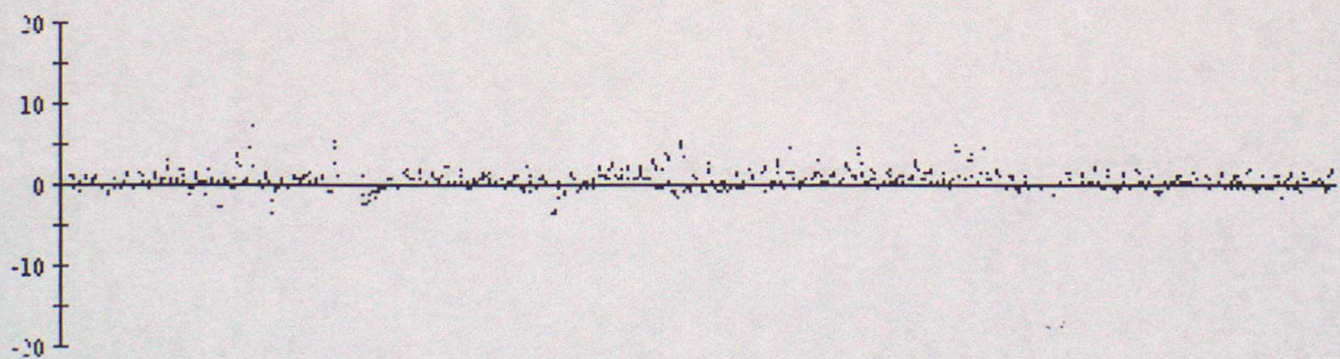
41504 Air Temperature



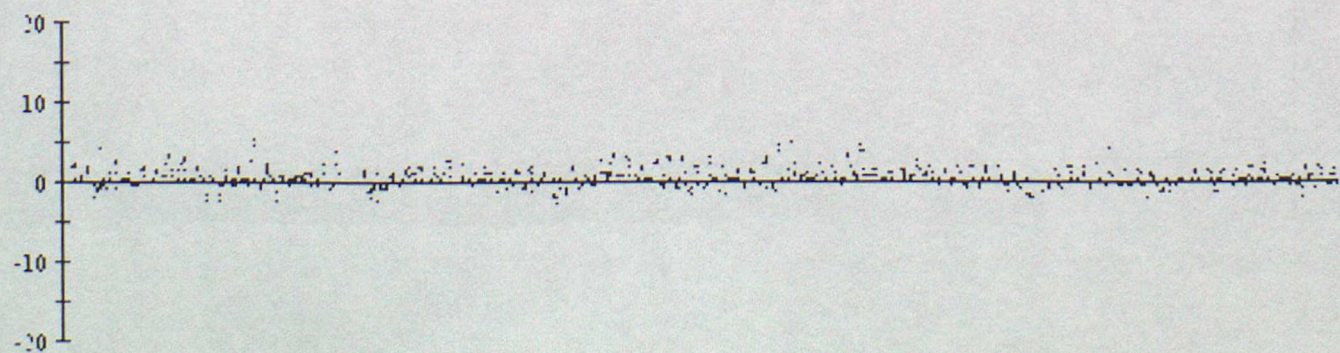
41521 Air Temperature



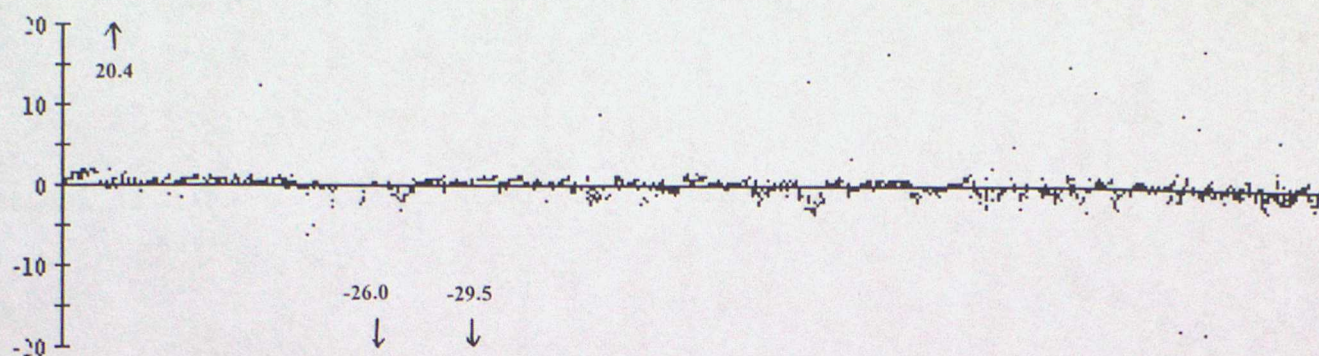
41625 Air Temperature



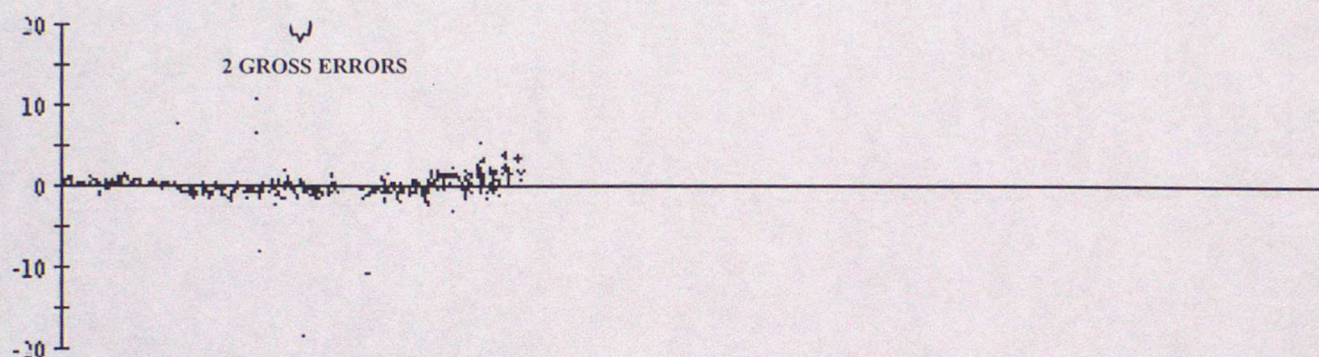
41629 Air Temperature



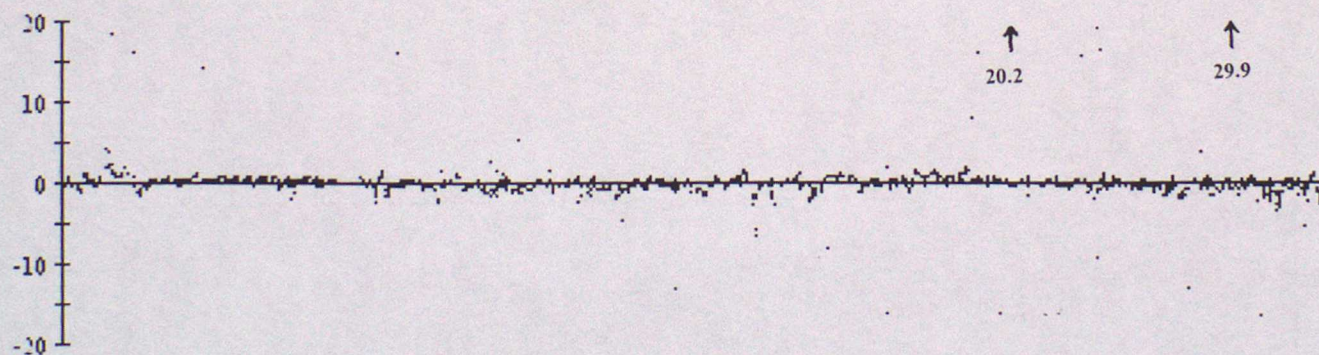
44613 Air Temperature



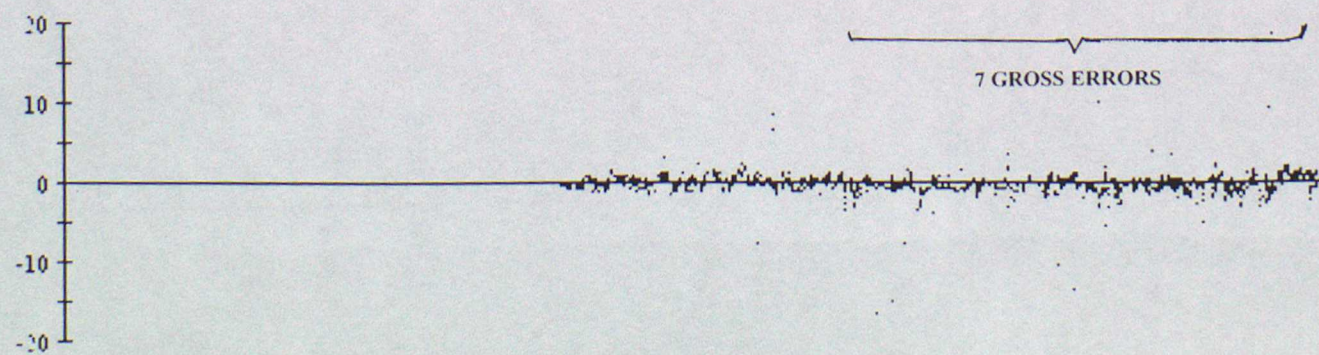
44617 Air Temperature



44742 Air Temperature

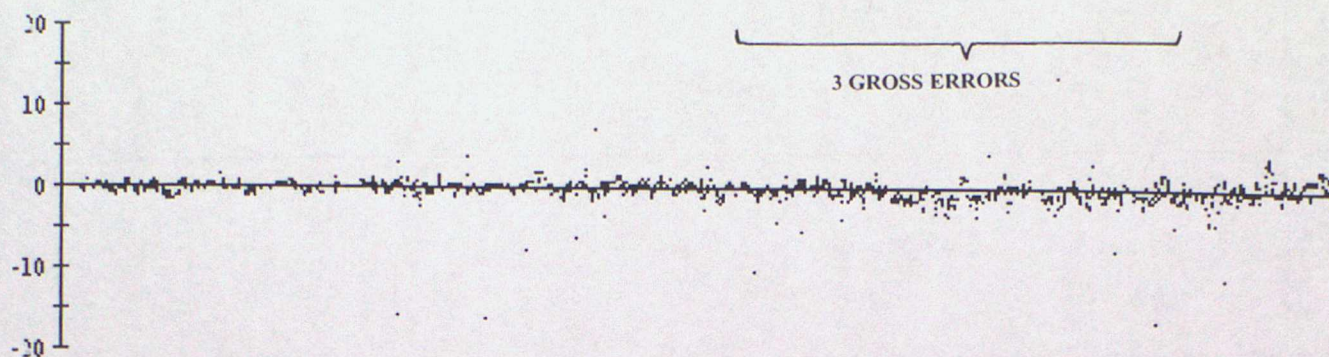


44760 Air Temperature

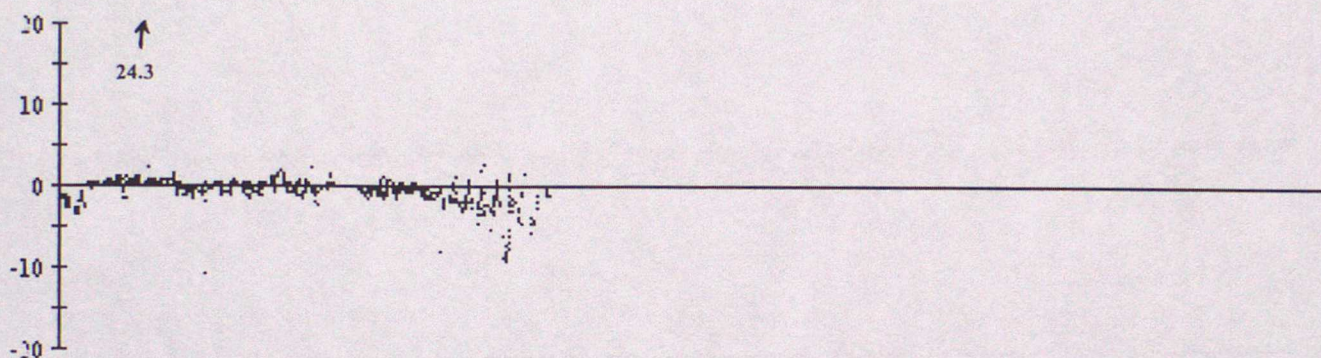


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

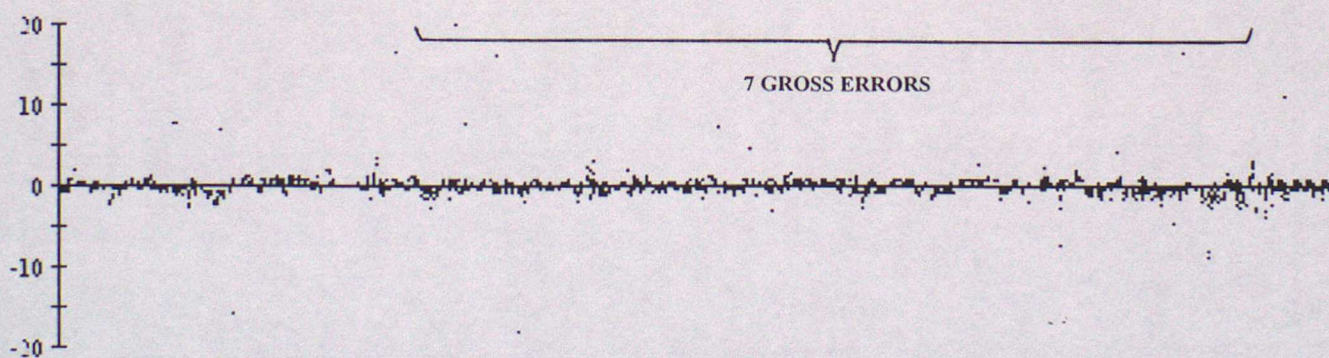
44764 Air Temperature



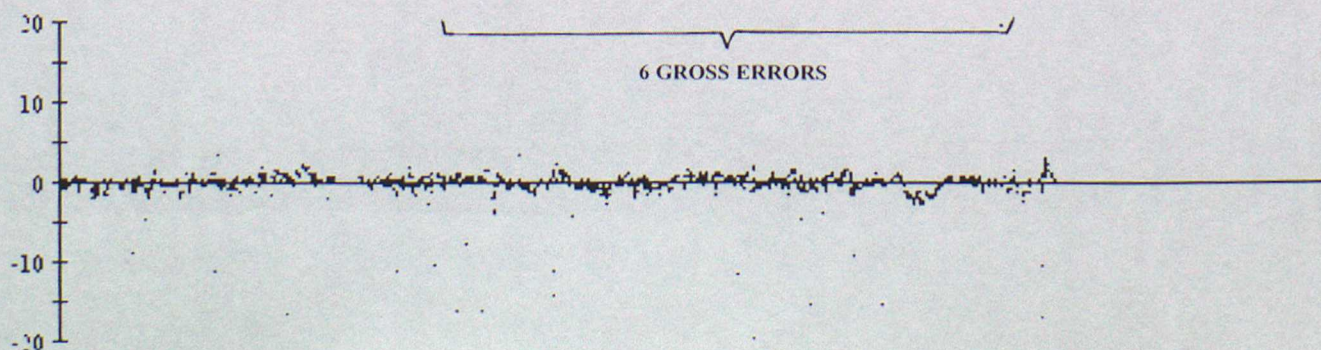
44773 Air Temperature



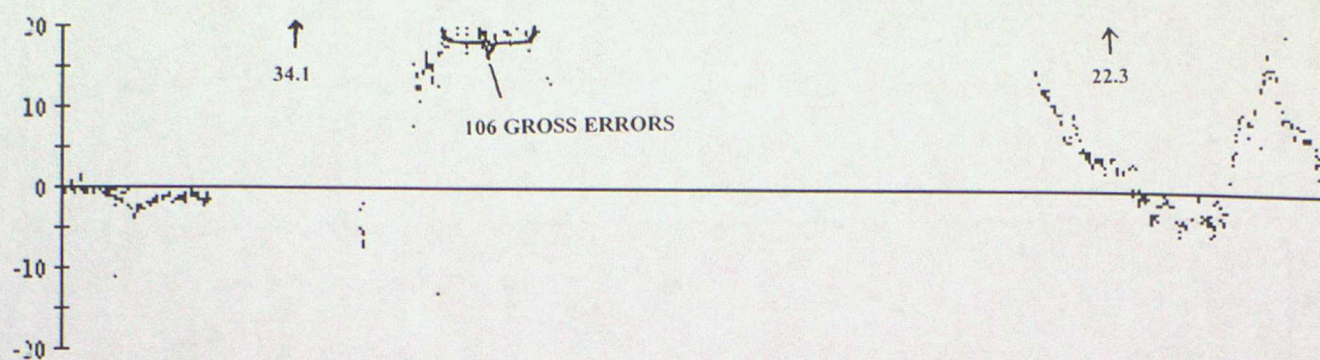
44774 Air Temperature



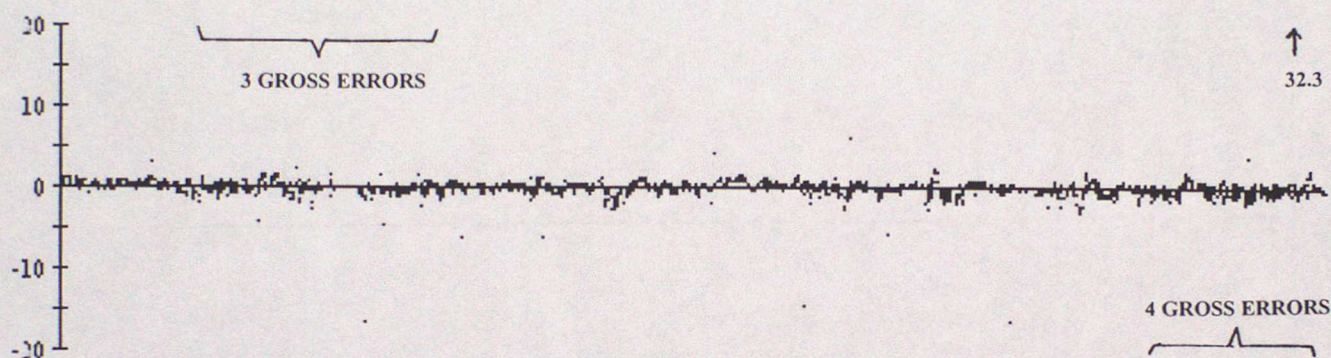
44775 Air Temperature



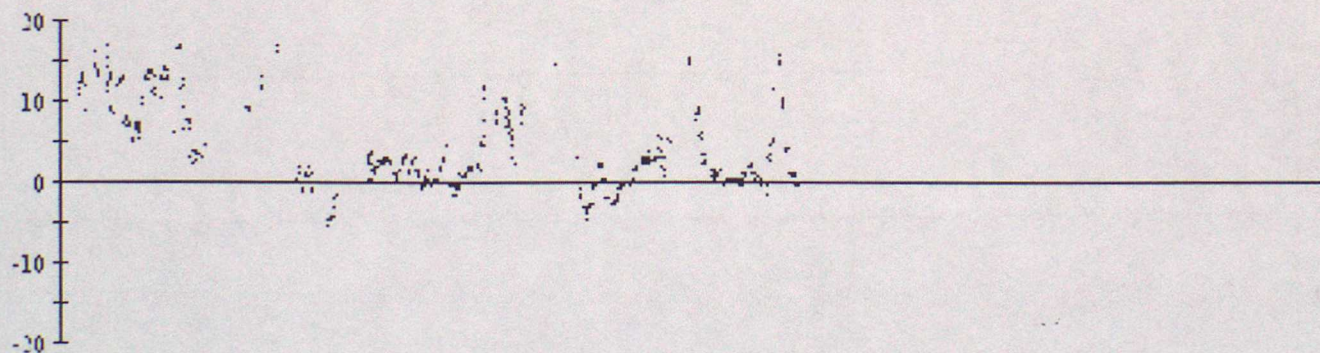
44778 Air Temperature



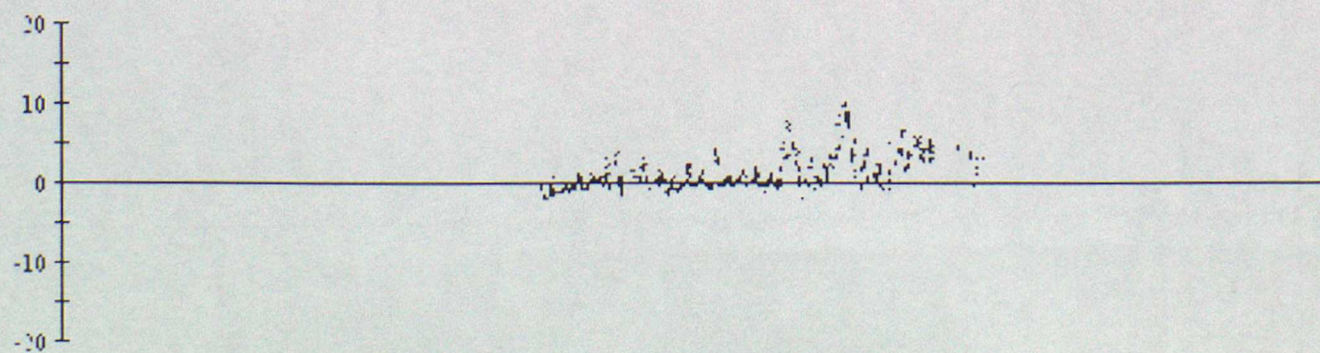
44780 Air Temperature



48518 Air Temperature

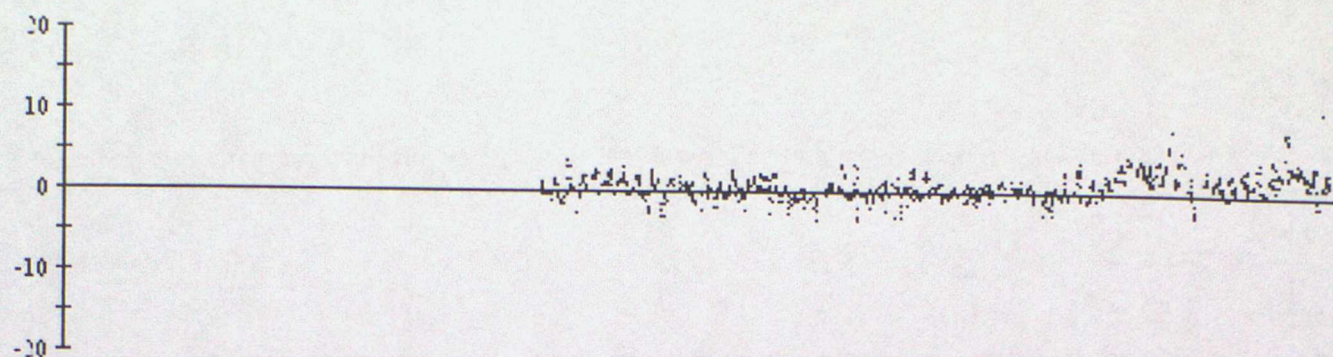


61521 Air Temperature

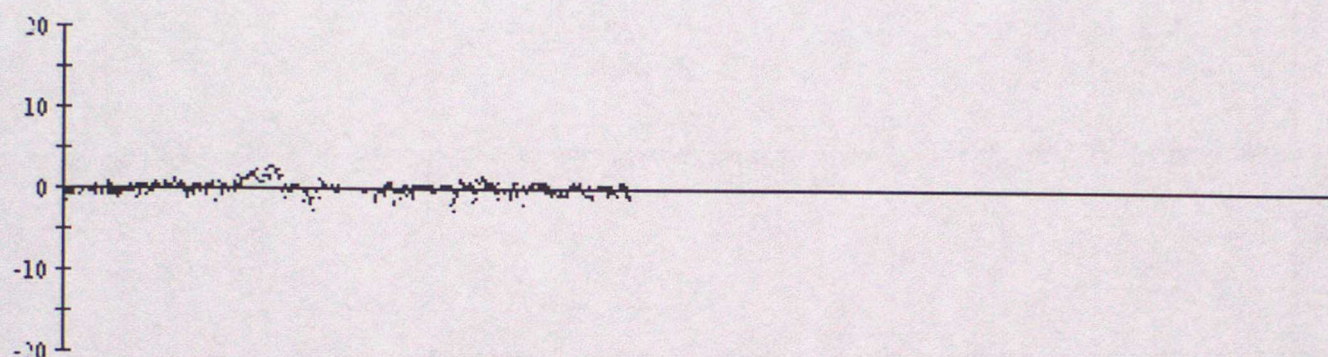


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

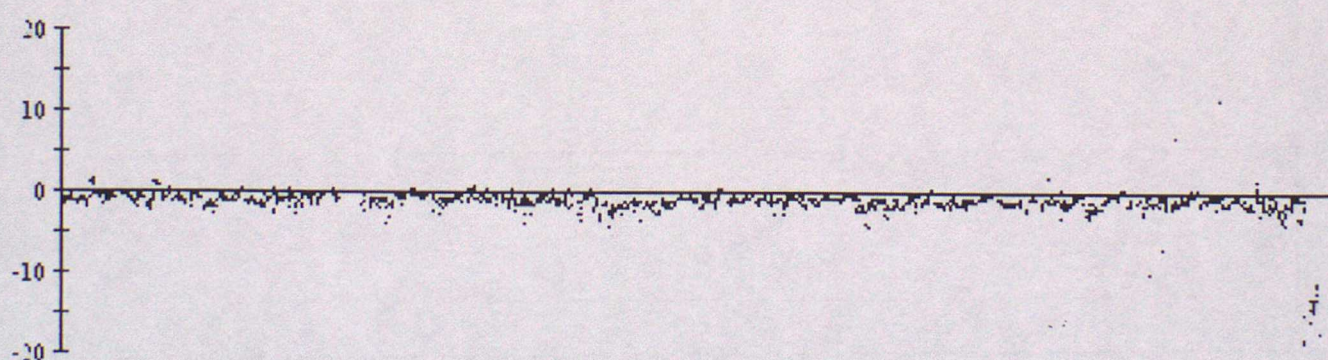
61523 Air Temperature



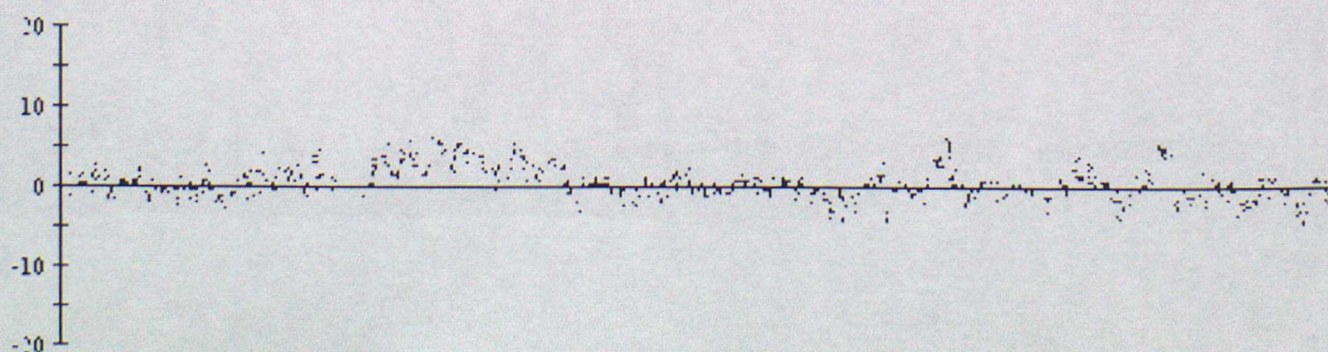
62506 Air Temperature



62517 Air Temperature

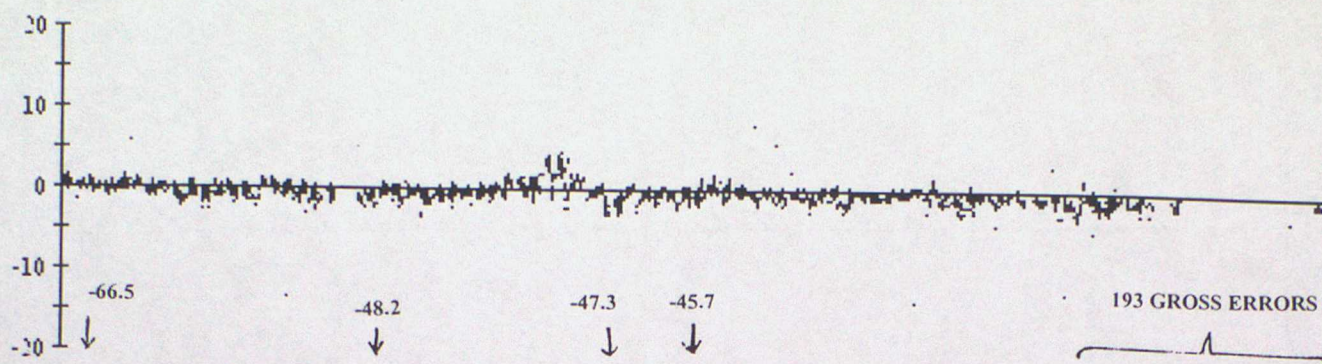


62674 Air Temperature

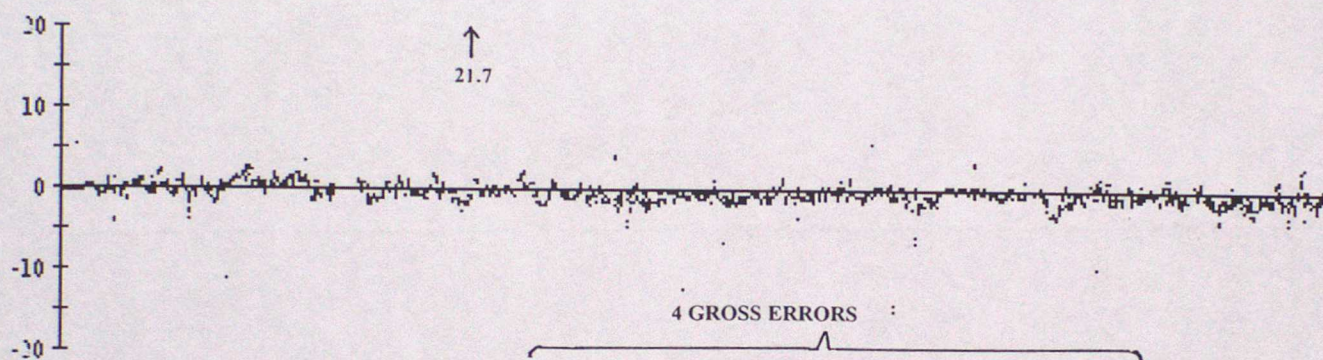


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

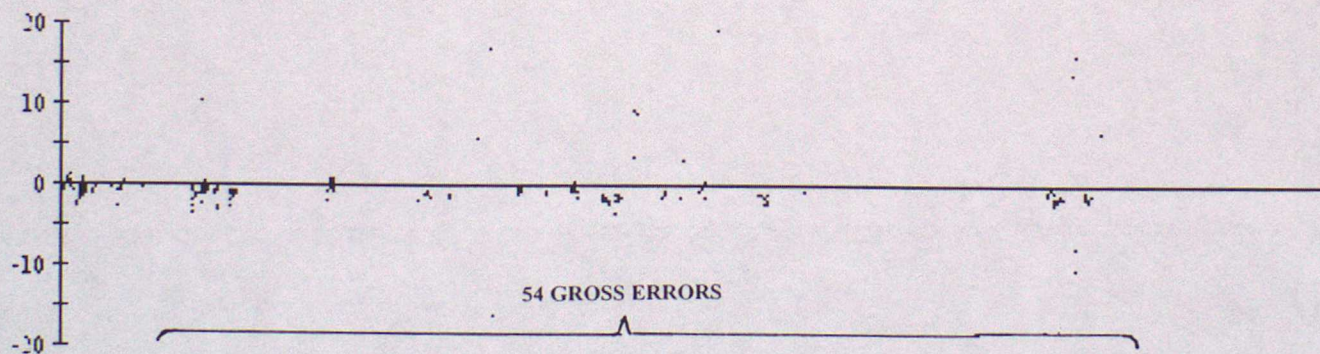
64528 Air Temperature



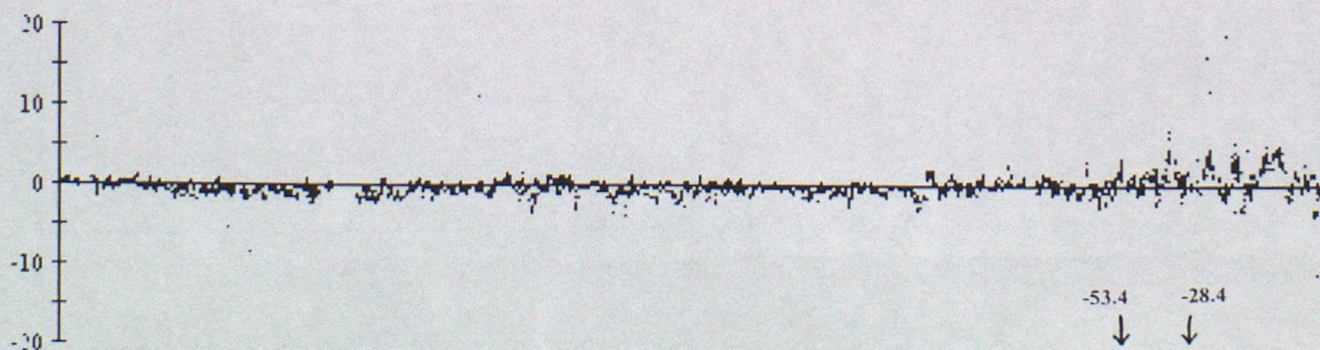
64529 Air Temperature



64563 Air Temperature

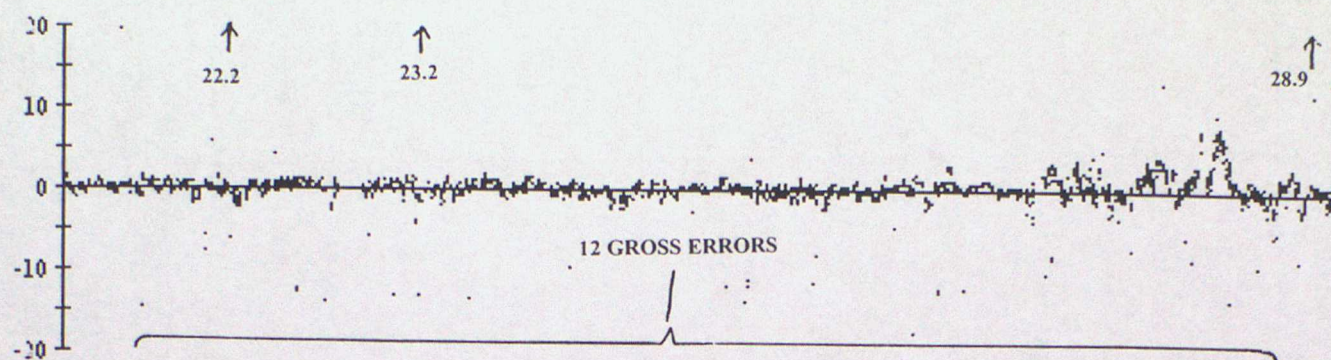


65562 Air Temperature

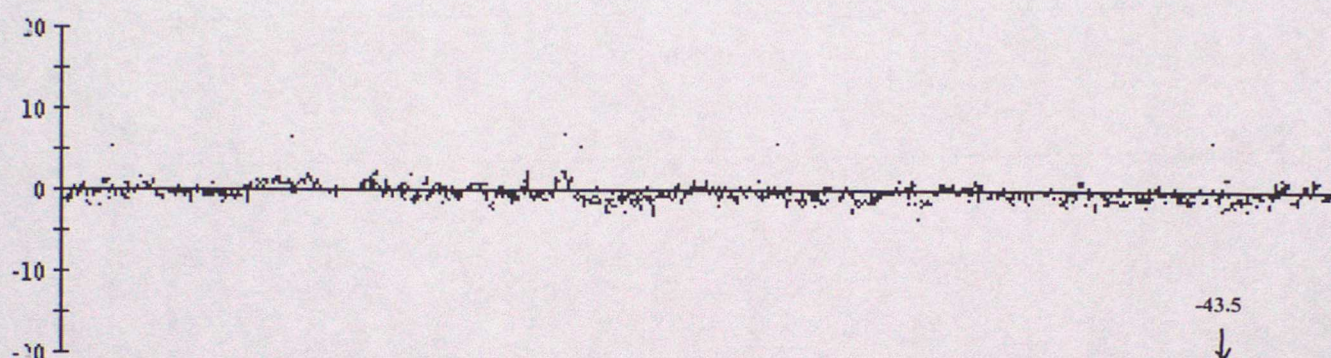


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

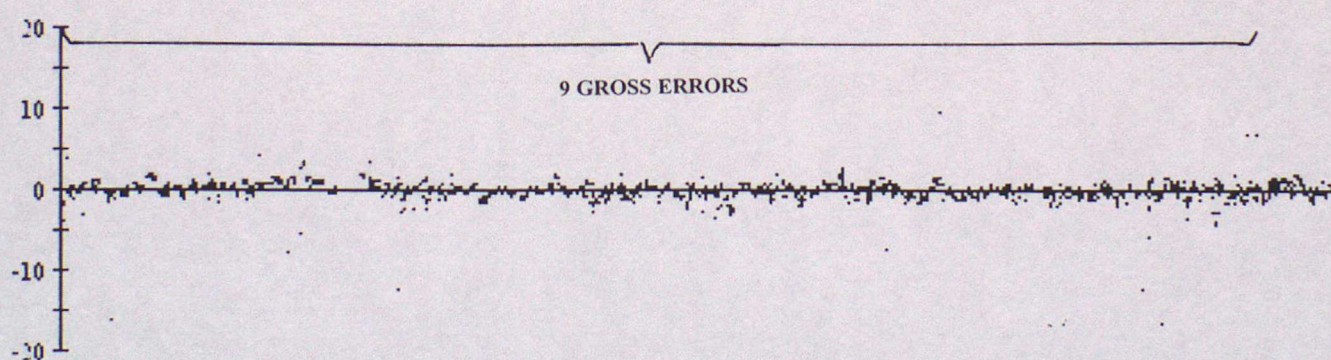
65571 Air Temperature



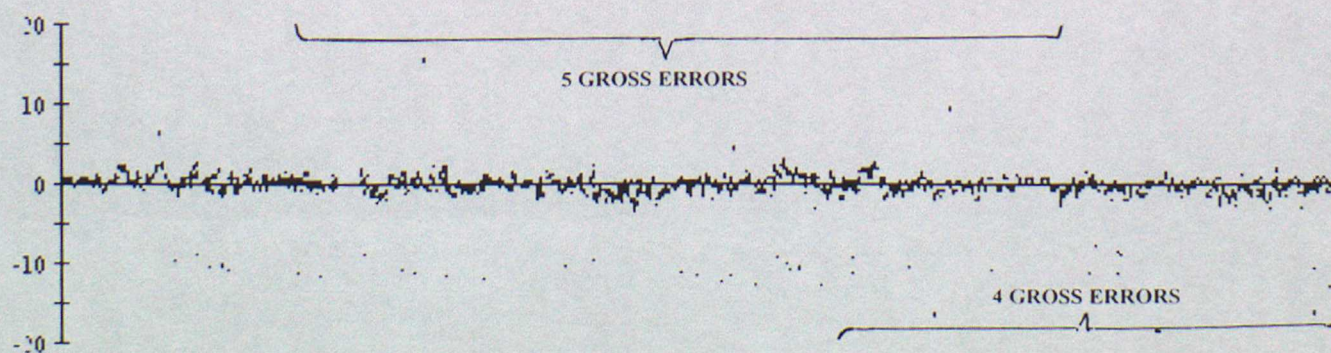
65581 Air Temperature



65591 Air Temperature

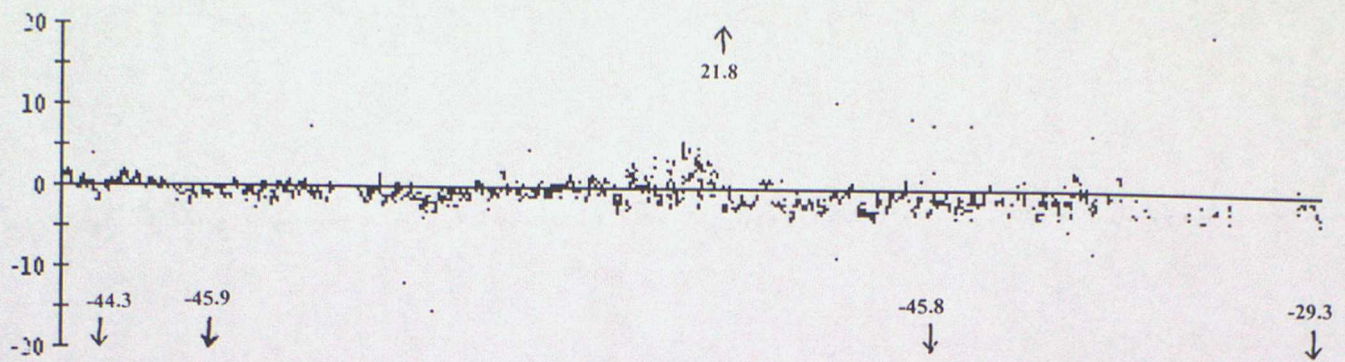


65592 Air Temperature

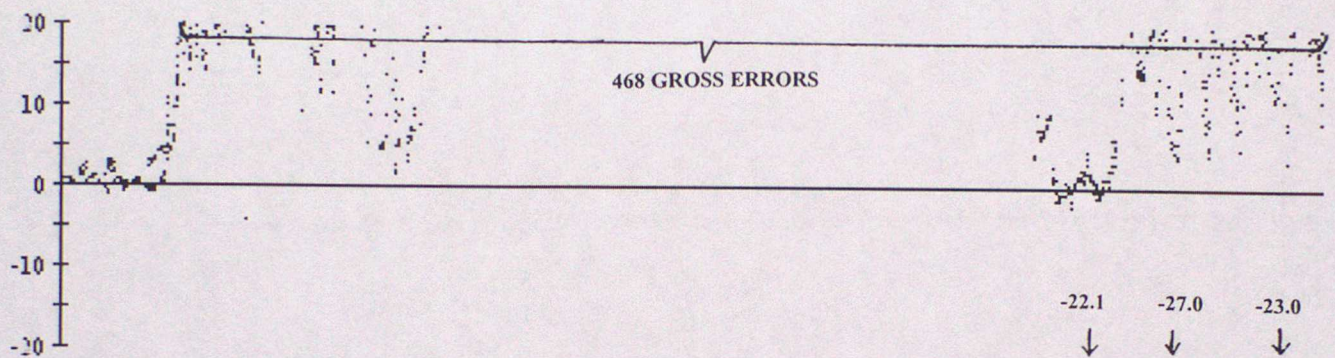


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

65597 Air Temperature



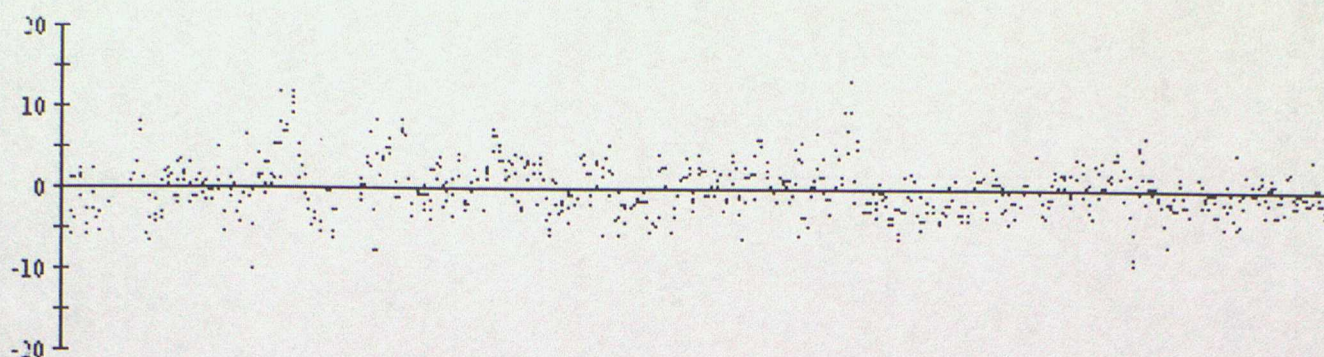
65599 Air Temperature



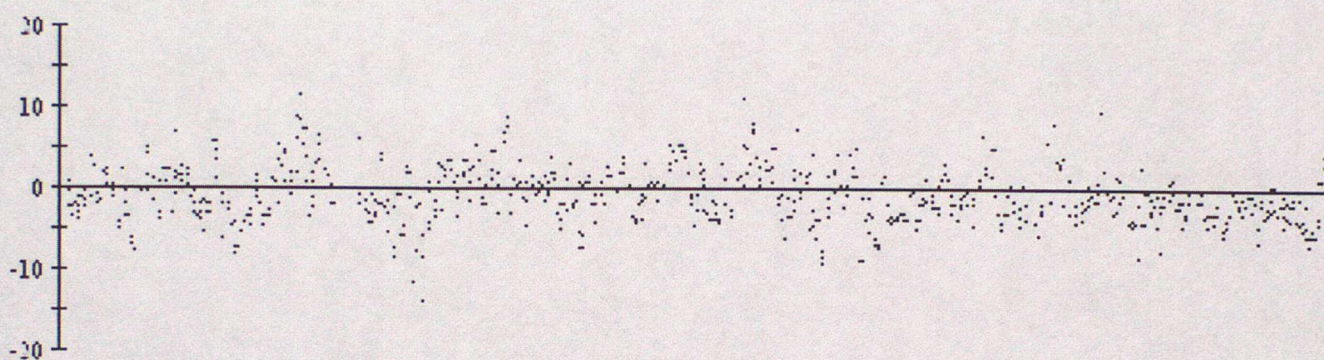
ANNEX D - TIME SERIES PLOTS OF WIND SPEED

Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

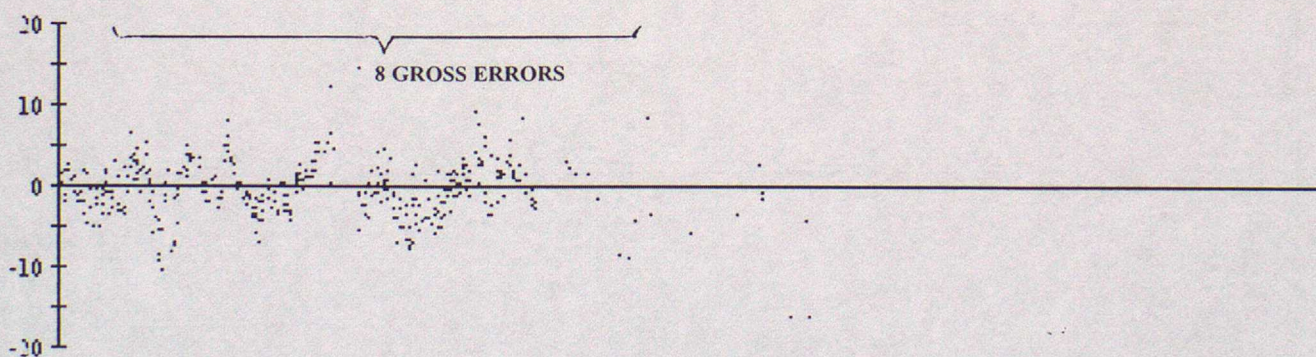
41504 Wind speed



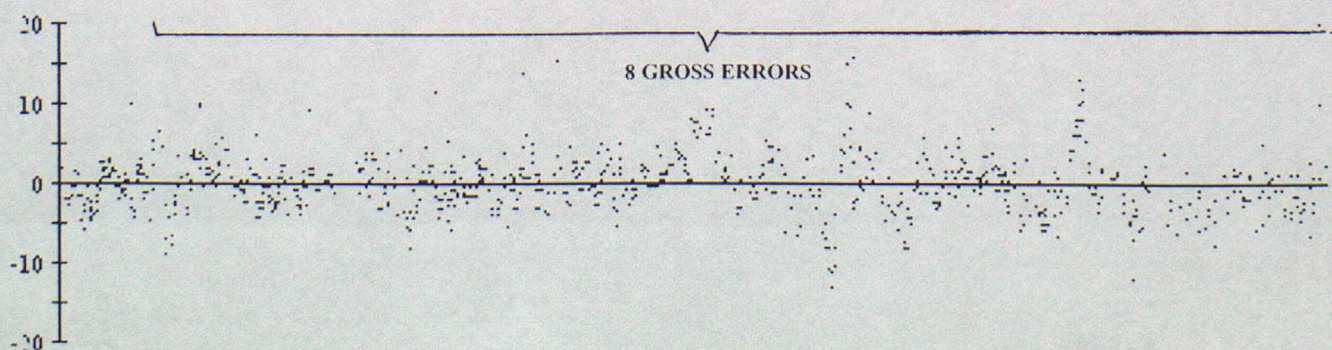
41521 Wind speed



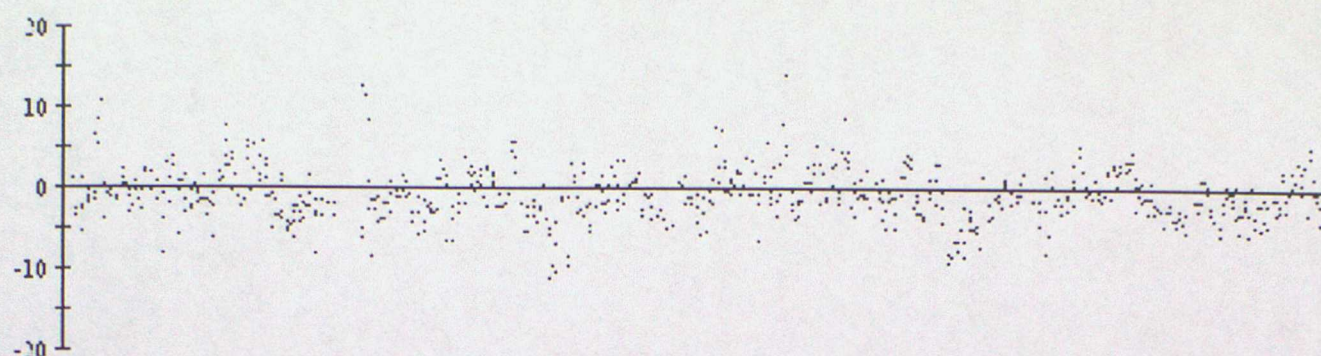
41598 Wind speed



41599 Wind speed



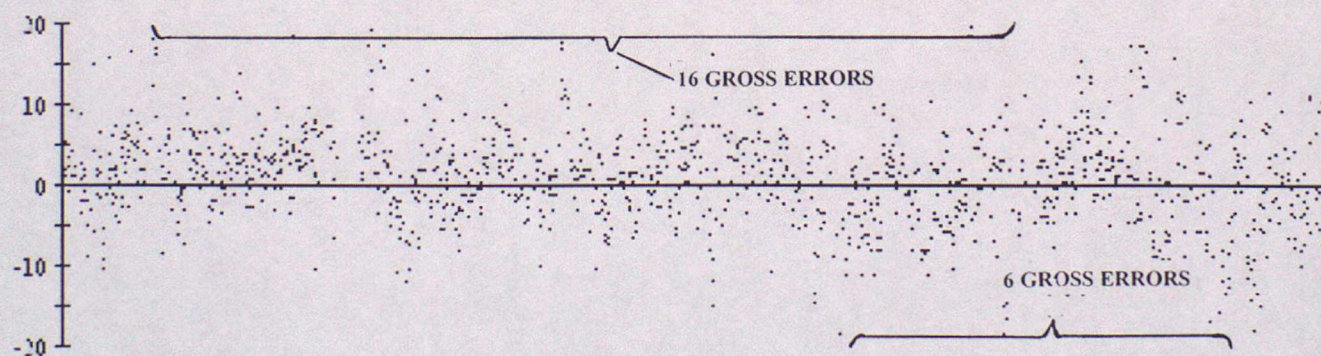
41625 Wind speed



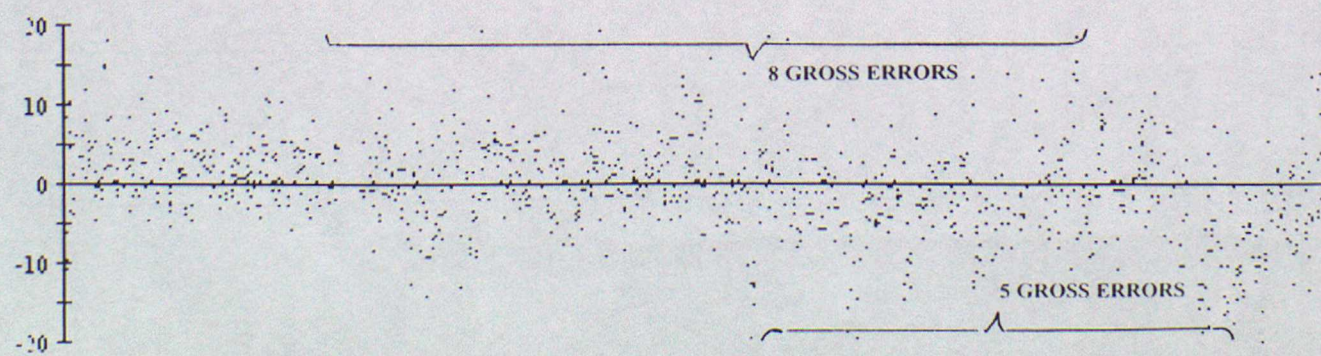
41629 Wind speed



44601 Wind speed

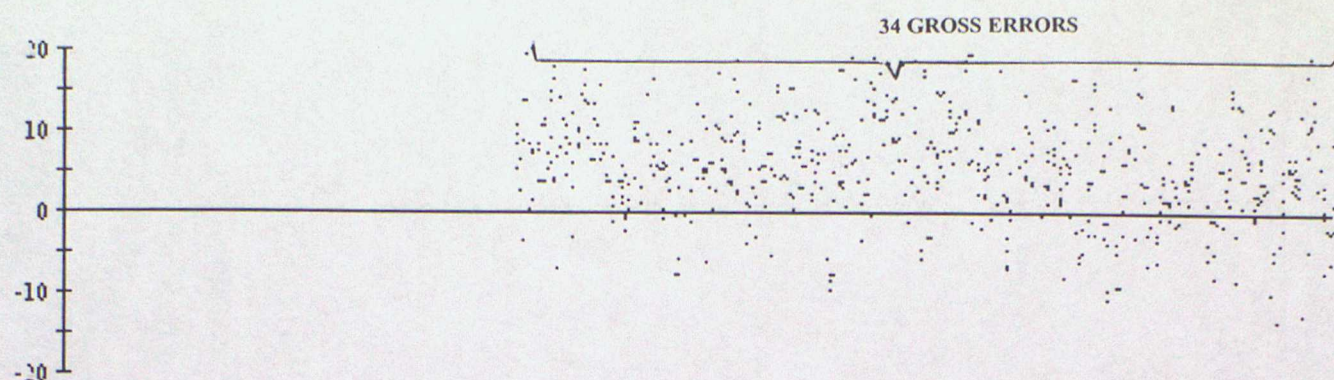


44602 Wind speed

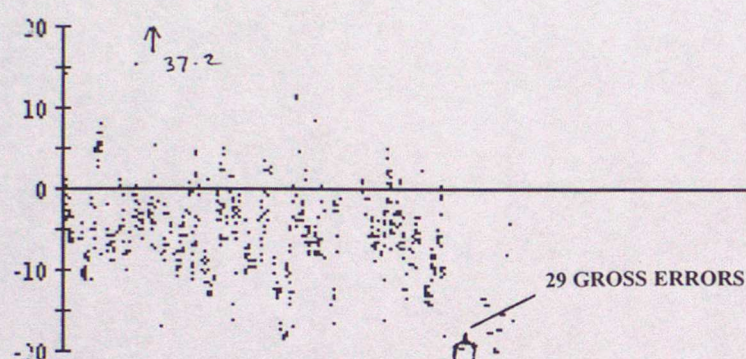


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

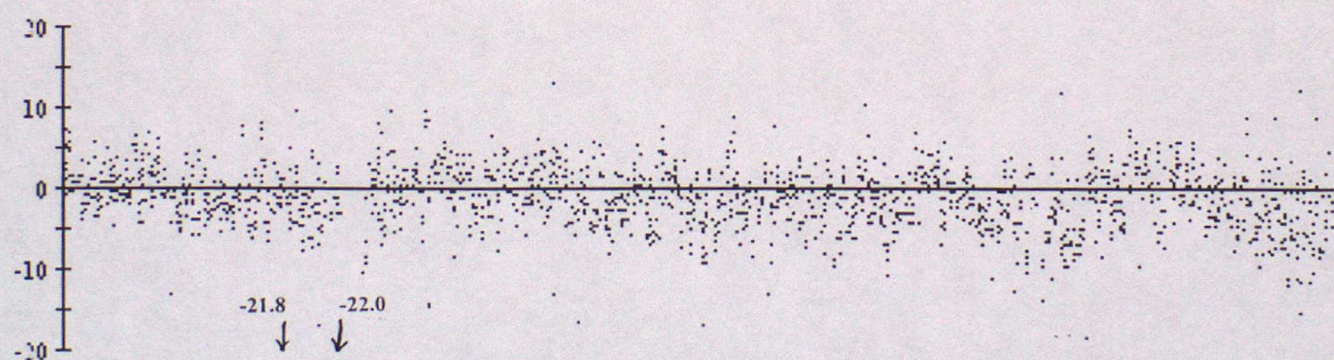
44762 Wind speed



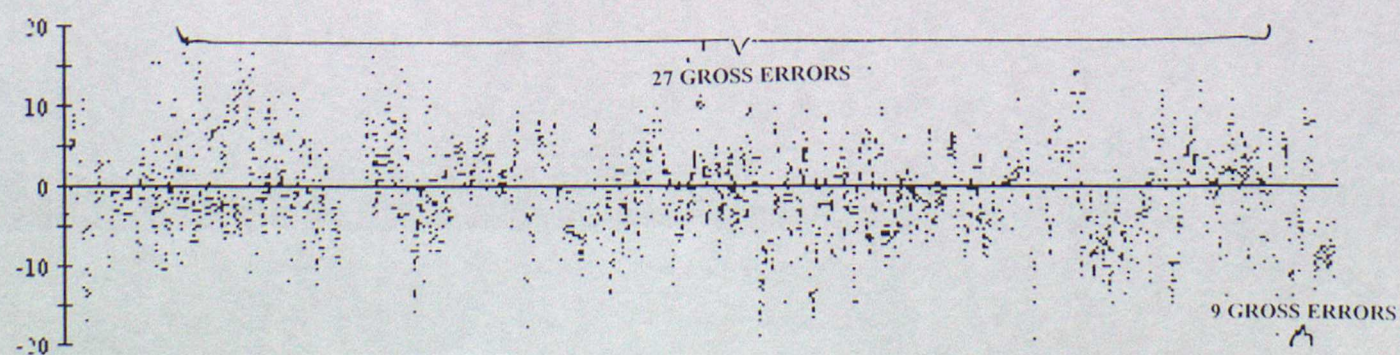
44773 Wind speed



62517 Wind speed



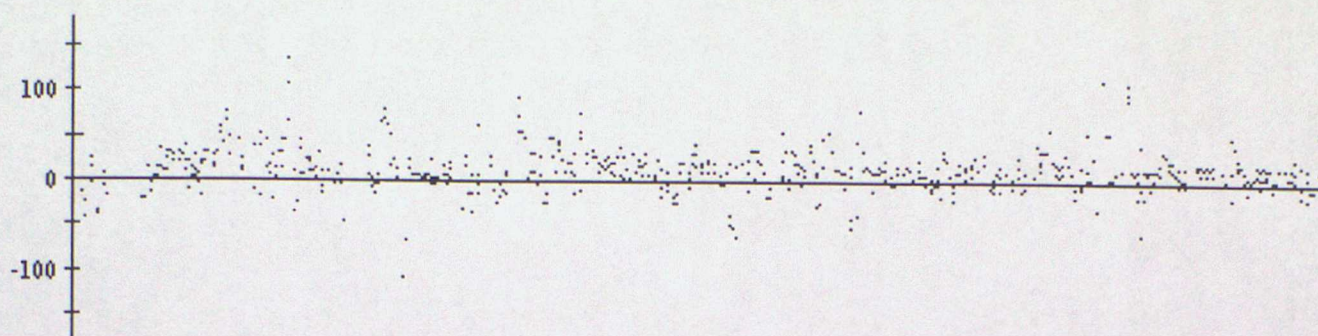
65599 Wind speed



ANNEX E - TIME SERIES PLOTS OF WIND DIRECTION

Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

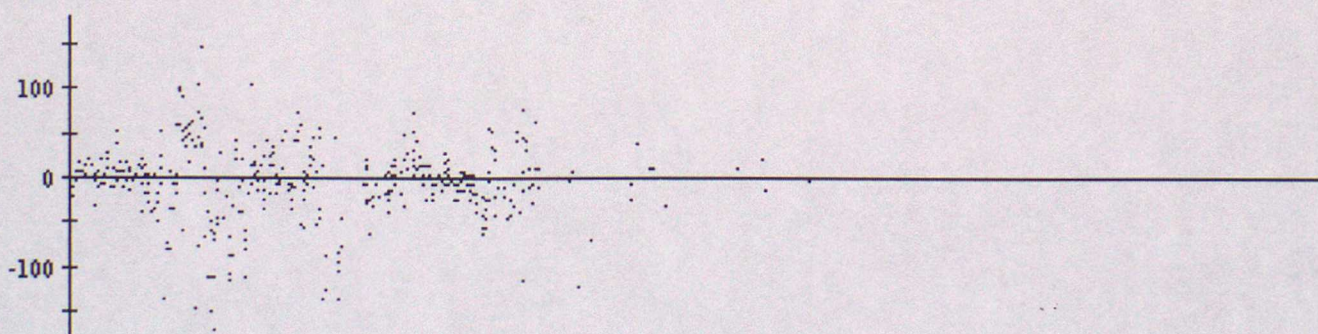
41504 Wind direction



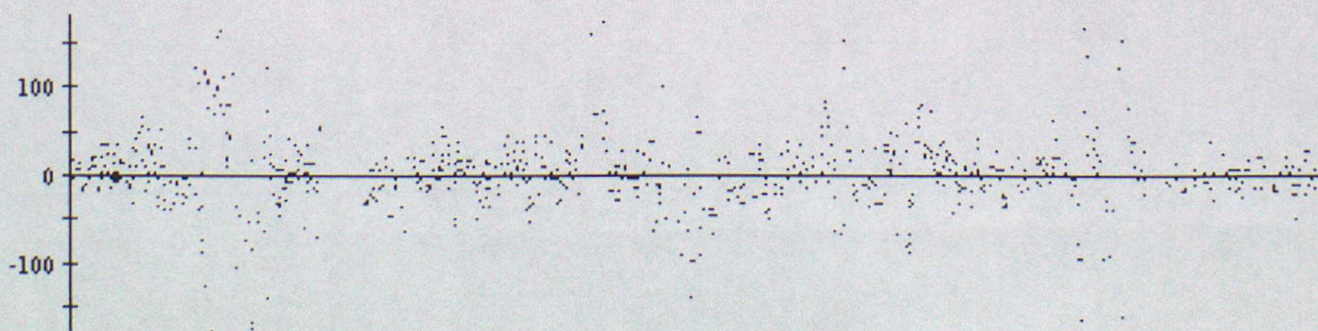
41521 Wind direction



41598 Wind direction

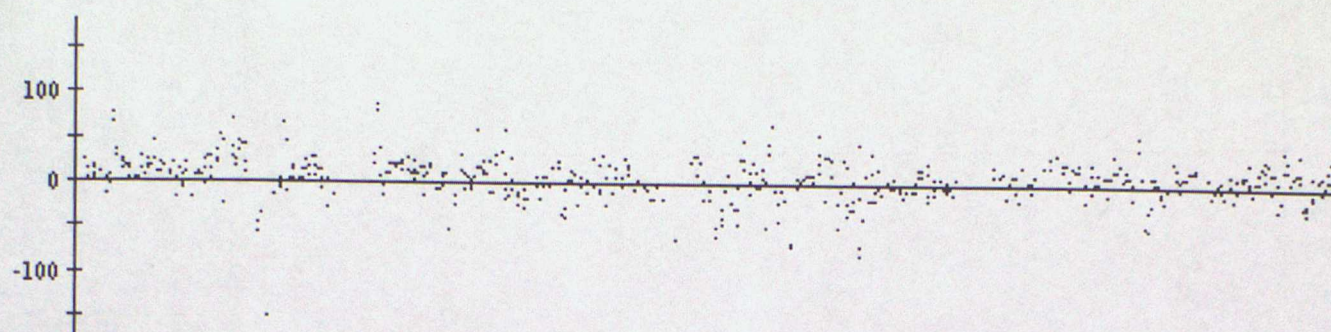


41599 Wind direction



Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

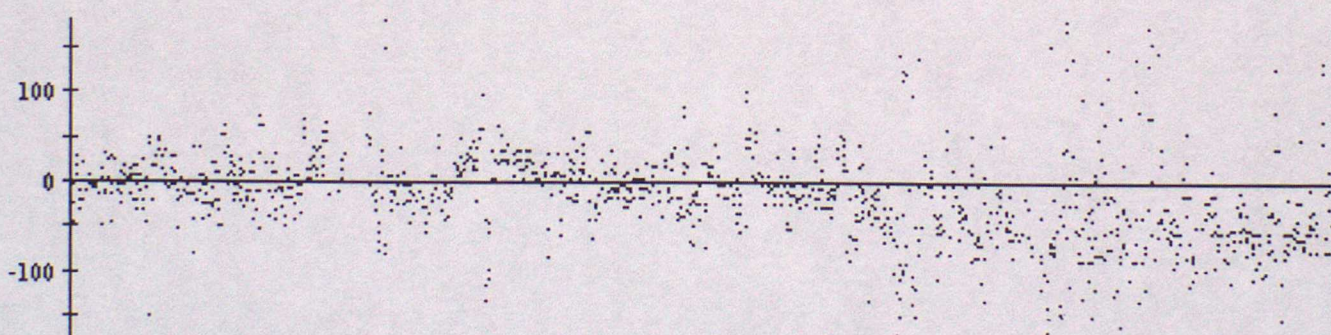
41625 Wind direction



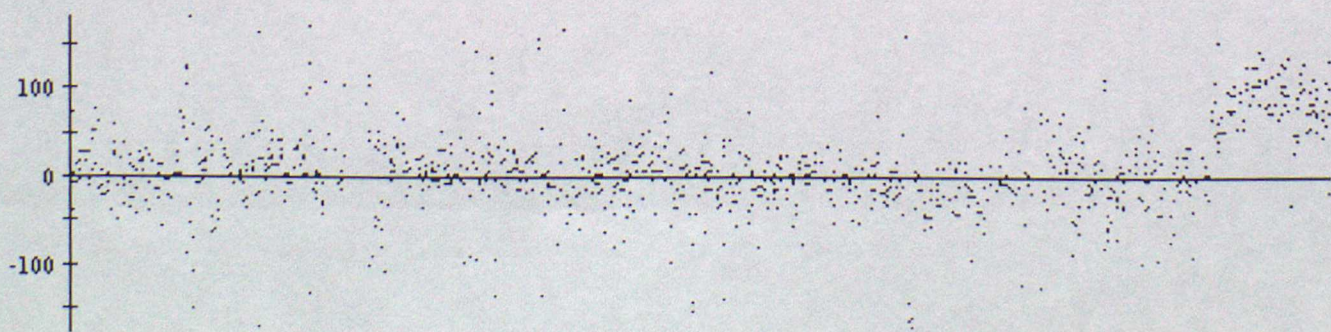
41629 Wind direction



44601 Wind direction

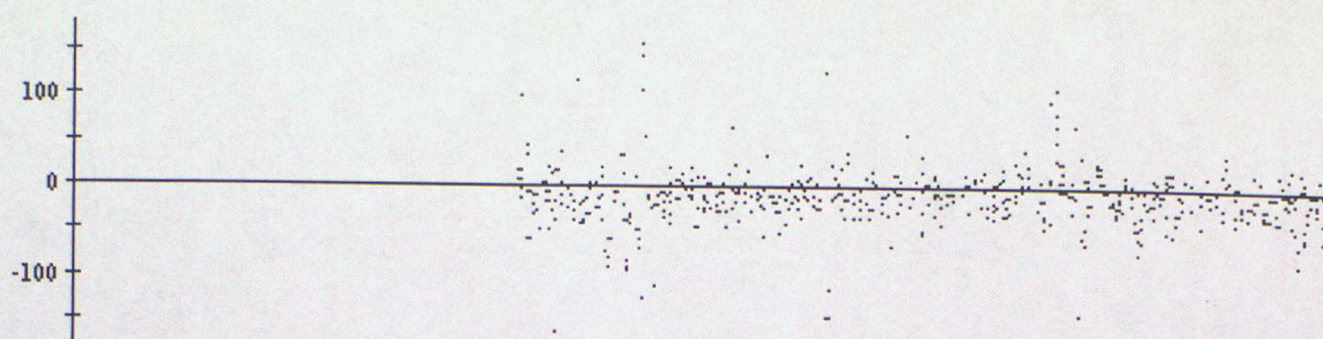


44602 Wind direction

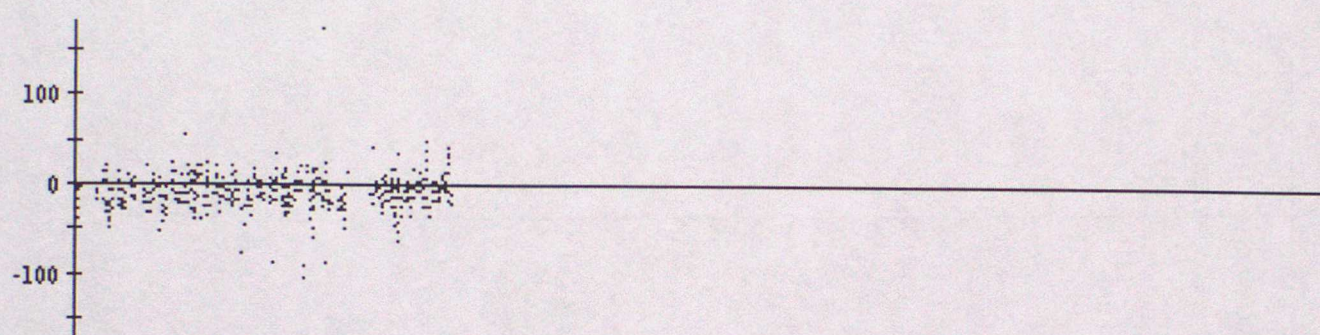


Data from 00z on 01/10/1998 to 23z on 31/12/1998 (OBS - Background field)

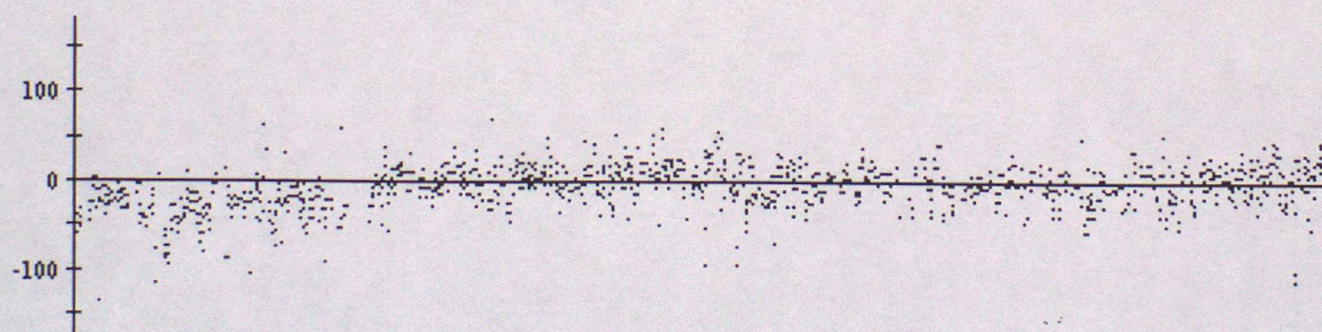
44762 Wind direction



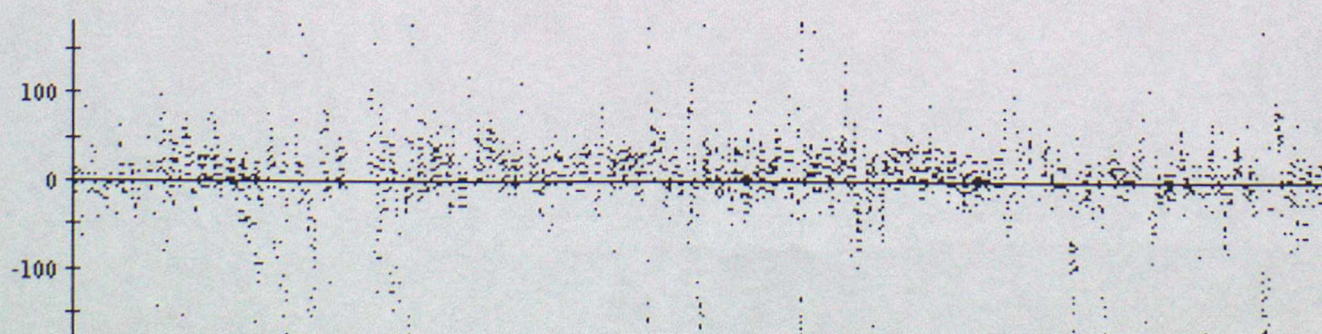
44773 Wind direction



62517 Wind direction



65599 Wind direction



ANNEX F - SUMMARY TABLE OF OPERATIONAL DRIFTING BUOYS

WMO No.	Argos No.	Owner	Elements Reported						Reporting Period
			PP	Pt	TT	FF	DD	SST	
13906			*	*				*	01/10 - 26/12
33503			*	*				*	25/10 - 30/11
41504			*		*	*	*	*	01/10 - 31/12
41505			*					*	01/10 - 31/12
41521			*		*	*	*	*	01/10 - 31/12
41528			*					*	01/10 - 31/12
41597	6753	F	*	*				*	01/10 - 31/12
41598			*			*	*	*	01/10 - 31/12
41599			*			*	*	*	01/10 - 31/12
41625			*		*	*	*	*	01/10 - 31/12
41629			*		*	*	*	*	01/10 - 31/12
41635			*						01/10 - 10/11
44601	5878	F	*			*	*	*	01/10 - 31/12
44602	5883	F	*			*	*	*	01/10 - 31/12
44603	6571	F	*	*				*	01/10 - 31/12 +
44604	6572	F	*	*				*	01/10 - 31/12
44606	6184	F	*	*				*	01/10 - 15/12
44613	28467	UK	*	*	*			*	01/10 - 31/12
44617	27644	UK	*	*	*			*	01/10 - 03/11
44726	12539	UK	*	*				*	01/10 - 31/12
44742	28471	UK	*	*	*			*	01/10 - 31/12
44743	12541	UK	*	*				*	01/10 - 30/11
44760	28469	UK	*	*	*			*	06/11 - 31/12
44762	12594	UK	*	*		*	*	*	02/11 - 31/12
44764	28464	UK	*	*	*			*	02/10 - 31/12
44767	12576	UK	*	*				*	01/10 - 23/10
44768	26746	UK	*	*				*	01/10 - 31/12
44770	12542	UK	*	*				*	01/10 - 17/11
44772	12577	UK	*	*				*	01/10 - 31/12
44773	26751	UK	*	*	*	*	*	*	01/10 - 05/11
44774	28472	UK	*	*	*			*	01/10 - 31/12
44775	26741	UK	*	*	*			*	01/10 - 11/12
44776	12540	UK	*	*				*	01/10 - 26/10
44778	28473	UK	*	*	*			*	01/10 - 31/12
44779	12543	UK	*	*				*	01/10 - 28/12
44780	26742	UK	*	*	*			*	01/10 - 31/12

+ - Pressure ceased reporting before the end of the period but other elements continued to report.

ANNEX F - CONT'd

WMO No.	Argos No.	Owner	Elements Reported						Reporting Period
			PP	Pt	TT	FF	DD	SST	
44901			*	*				*	01/10 - 31/12
44912			*	*				*	01/10 - 26/12
44925			*	*					01/10 - 31/12
47556			*						30/10 - 31/12
48518			*		*				01/10 - 23/11
61521			*		*			*	04/11 - 07/12
61523			*		*			*	04/11 - 31/12
62506	5826	F	*	*	*			*	01/10 - 10/11
62510			*					*	01/10 - 04/10
62511	12729	F	*					*	01/10 - 31/12
62512	12730	F	*					*	01/10 - 31/12
62513	12731	F	*					*	01/10 - 31/12
62514	6151	F	*	*				*	01/10 - 10/10
62515	6569	F	*	*				*	01/10 - 31/12
62516	1363	F	*					*	01/10 - 02/10
62517	5823	F	*	*	*	*	*	*	01/10 - 31/12
62518	6149	F	*	*				*	01/10 - 31/12
62519	6570	F	*	*				*	01/10 - 31/12
62520	14431	F	*	*				*	01/10 - 31/12
62554	14430	F	*	*				*	01/10 - 31/12
62674			*		*	*	*	*	01/10 - 31/12
62758	15516	F	*					*	01/10 - 31/12
64528	4274	NL	*	*	*			*	01/10 - 31/12
64529	6669	D	*	*	*			*	01/10 - 31/12
64561	1247	UK	*	*				*	01/10 - 04/11
64563	3679	NL	*	*	*			*	01/10 - 17/12
65562	4270	D	*	*	*			*	01/10 - 31/12
65571	4275	IR	*	*	*			*	01/10 - 31/12
65581	2294	D	*	*	*			*	01/10 - 31/12
65591	26748	UK	*	*	*			*	01/10 - 31/12
65592	3675	NL	*	*	*			*	01/10 - 31/12
65597	4273	NL	*	*	*			*	01/10 - 31/12
65599	28477	UK	*	*	*	*	*	*	01/10 - 31/12

