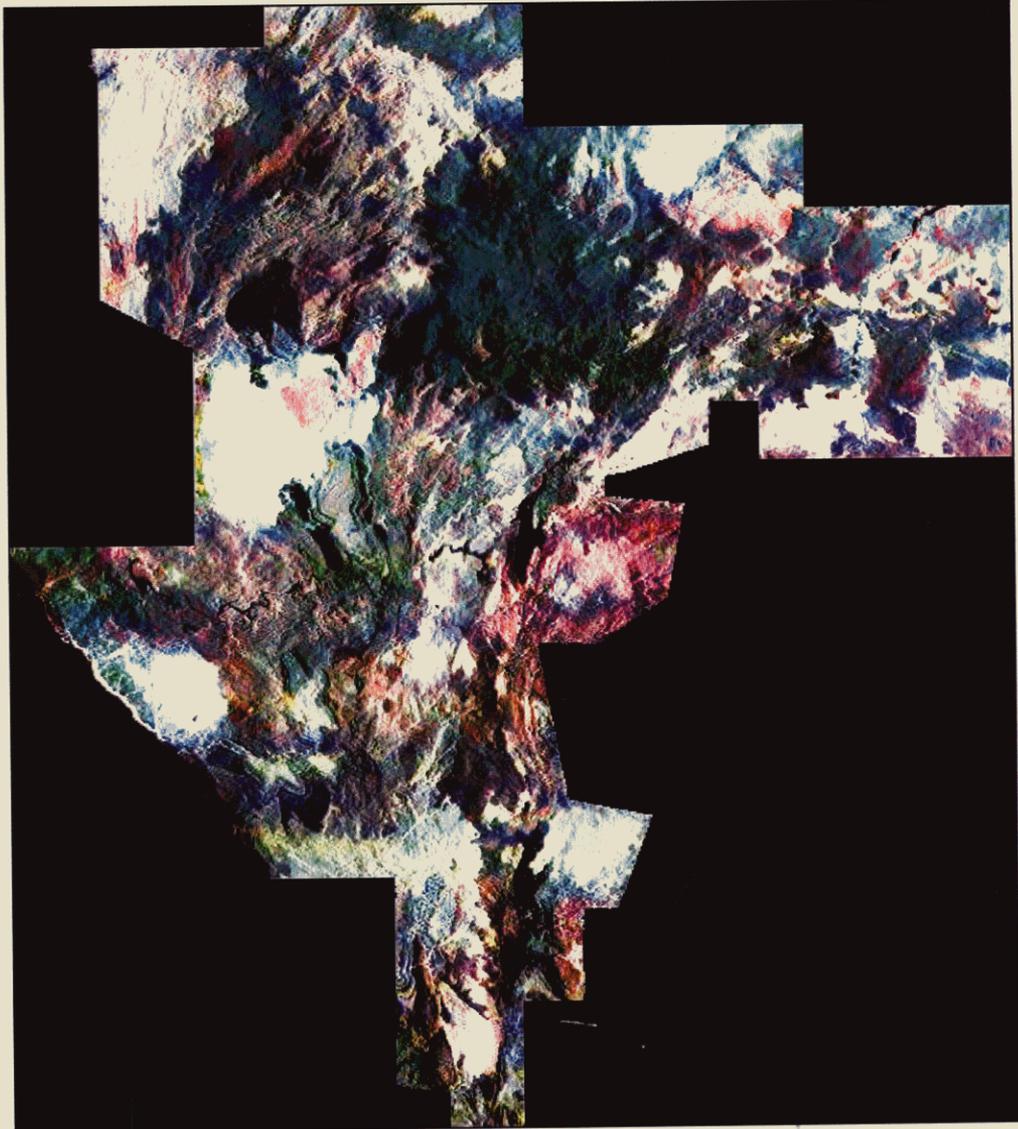


# Logistics Report



## **Area C, Western Tasmania and Area E, D'Aguiar Range Airborne Geophysical Survey January – March 2001**

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## 1. INTRODUCTION

This Logistics Report describes the operations for a helicopter geophysical survey covering Areas C and E, Northwest Tasmania, for Mineral Resources Tasmania, a division of the Department of Infrastructure, Energy and Resources. The project was undertaken under Tender MRT 01/2000 for the Acquisition and Processing of Airborne Magnetic and Radiometric Data. The survey totalled 44 773 kilometres, and yielded grids of the fully processed geophysical parameters at a 50 m grid cell size.

The two survey areas are located in northwest Tasmania and total approximately 7 890 square kilometres in area. The crew operated from bases at Queenstown, Zeehan and Sheffield between the dates of 3 January to 22 March using a Bell 206B3 "Jet Ranger" helicopter. A field data processing centre with large format plotter was established at each base.

Traverse lines for the project are oriented east-west at 200 m line spacing. Tie lines are north-south at 2 km spacing. All geophysical sensors were carried in, or on the helicopter, which flew at 80 metres mean terrain clearance.

Staff of the Mineral Resources Tasmania provided technical supervision of the geophysical operations and data processing. Geo Instruments Pty Ltd provided the survey personnel, instrumentation and data processing geophysicists. Heli-Aust Pty Ltd of Bankstown NSW was contracted to provide the aircraft and pilots.

## 2. SURVEY SPECIFICATIONS

The project comprises airborne geophysical mapping of two areas located in western and northwestern Tasmania designated Areas C (Western Tasmania) and E (D'Aguilar Range), (refer to map in Appendix 1 and table of boundaries in Appendix 2). Data acquisition totalled 44 773 line kilometres of airborne magnetic, gamma-ray spectrometer, elevation, temperature and barometric pressure data. The magnetic and gamma ray spectrometer data were collected in such a manner as to allow comprehensive reprocessing with the advent of new technology. Details of the formats of the raw data and post-processed data records are given in Appendix 14.

### 2.1 LINE SPECIFICATIONS

Traverse Line Direction	Constant AMG Easting in AGD66
Traverse Line Spacing	200 m +/- 20 m
Tie Line Direction	Constant AMG Northing in AGD66
Tie Line Spacing	2000 m +/- 20 m
Sensor Altitude	80 m +/- 10 m radar altitude

Traverse lines extend 1000 m beyond the eastern and western boundaries of the area and 4 lines (800 m) to the north and south of the designated survey area (see map in Appendix 2). Tie lines extend 1000 m to the north of the northern boundary of the area and 1000 m to the south of the southern boundary of the area.

### 2.2 INSTRUMENTAL SPECIFICATIONS

<b>Magnetics</b>	
Sampling Interval	0.1 s
Manoeuvre Noise	Compensated to 0.2nT peak to peak for 10° manoeuvres
Total Noise	0.2 nT
Heading Error	Corrected by calibration

<b>Base Station Magnetometers</b>	
Sampling Interval	1 s
Noise Level	0.2 nT
Resolution	Better than or equal to 0.1 nT

<b>Radiometrics</b>	
Sampling Interval	1 s (= 30 m at 30 m/s average speed)
Dead Time	<15%
Detector Volume	16.8 lt
Detector Resolution	Better than 7% based on full width at half amplitude of the <sup>208</sup> Tl peak at 2.615 MeV

Radar Altimeter	Output 13.1 mV/m
Barometer	Output 2.2 mV/m
Thermometer	Precision of 0.1°C

### **3. SURVEY OPERATIONS**

#### **3.1 SURVEY BASES**

The helicopter survey crew arrived in Queenstown on 3 January 2001 in the Bell 206 "Jet Ranger" helicopter VH-JWF leased from Heli-Aust Pty Ltd. Calibration of the radiometric system was accomplished at Bairnsdale on 2 January. Surveying commenced out of the Zeehan base on 25 January. The crew moved to Sheffield on 14 February and survey operations were completed from that base on 22 March.

The quality control (QC) and field data processing were carried out at each base. The helicopter was always parked at the same location in each base to ensure consistency in ground calibrations, and a test line was established close to each survey base. A summary of survey progress is contained in Appendix 3.

#### **3.2 FLIGHT PLANNING**

Flight planning for each of the survey areas was implemented using proprietary software and reviewed with MRT's representative prior to commencement of operations. A flight path plan for the project is contained in Appendix 2.

All traverses and tie-lines were flight planned using MRT supplied co-ordinates referenced to the AGD66 Datum. The resultant co-ordinates were converted to the WGS84 datum using the Molodensky transform. Flying was conducted with reference to the WGS84 co-ordinate set. Co-ordinates written to the aircraft digital records were referenced to WGS84 datum while co-ordinates written to the video records were converted to AGD66 datum using a seven point transformation. The final line numbering system adopted to ensure each flight line and each tie line had a unique number is shown below:

- 00000 - 69999 are traverse lines
- 70000 - 79999 are tie lines
- 80000 - 89999 are calibration data
- 90000 - 99999 are test lines

A complete catalogue of survey lines is presented in Appendix 4 showing line length, start and end fiducial, and start and end X, Y coordinates.

#### **3.3 FLIGHT PATH CONTROL**

Navigation was determined in flight, based on real time differential GPS, by using a Ashtech G12 receiver and Geo Instruments software for pilot guidance. The position solution from the receiver was obtained using signals from the U.S. Global Positioning System (GPS) with differential corrections supplied by the Omnistar differential service. Altitude control was derived from the radar altimeter.

Navigation solutions from the Ashtech receiver are sent at 38 kb/s to the logging computer once every half second. The logging computer then calculates the cross track error, the distance between the intended flight path and the helicopter position, and displays this deviation from the required path on an analogue and digital position display directly in front of the pilot. An analogue display of the radar altitude is also mounted in front of the pilot.

The flight navigation data recorded in the helicopter were post processed at the survey base using the commercial software "GRAFNAV" by Waypoint Consulting. The GPS base stations were surveyed with reference to the Victorian Dept. of Lands GPS Base Station located at Melbourne, Victoria. Positional data recorded at a GPS base are used to differentially correct the helicopter's navigation data. This new positional information is accurate to one metre for X and Y and 5 metres for Z, and is the basis for the further data processing.

### **3.4 SURVEY PLATFORM**

**Helicopter:** Bell Helicopter 206B3 "Jet Ranger"  
**Registration:** VH-JWF  
**Contracted From:** Heli-Aust Pty Ltd, Bankstown Airport NSW  
**Endurance:** 3.2 hr  
**Survey Speed:** 30 m/s average

### **3.5 WEATHER DETAILS**

The survey areas experienced periods of predominantly clear weather, while strong winds, rain and low cloud or fog restricted or precluded flying on many days. Daily comments on weather are given in the "Remarks" column of Appendix 3.

Diurnal magnetic field variations effected operations on other days as discussed in Section 5.7.

### **3.6 SAFETY MANAGEMENT**

Geo Instruments considers that flying safety results from the conscientious application of the Air Navigation Regulations in regard to Rules of the Air and observance of aircraft maintenance requirements.

The helicopter carries an Emergency Location Transmitter (ELT). In addition the pilot and any other person in the aircraft carried a personal Emergency Position Identification Radio Beacon (EPIRB) which can be activated manually.

Two types of fire extinguisher were available at each refuelling base. Safety meetings were held during the project to complement the daily SAR briefings.

Heli-Aust is required by law to have an Operations Manual approved by the relevant Civil Aviation Authority before any flying operation can be carried out and this document is available for inspection at the company's office. Routine checks by the Civil Aviation Authority ensure that all operations and maintenance meet the requirements of the law. Further, each pilot has been extensively trained in low level and instrument flying. Pilots are only employed after comprehensive assessment of experience and ability.

There were no aviation incidents during the implementation of the MRT airborne survey of the Areas C and E.

Vehicle usage and driving habits are constantly under review by the company's management and particular attention is paid to remote area survival techniques. Geo Instruments believes there is no substitute for experience, and no inexperienced staff are used in any phase of the operations unless they are accompanied by an experienced equivalent. There were no vehicle-related incidents during this program.

### **3.7 ENVIRONMENTAL MANAGEMENT**

The aircraft operations are generally non-polluting except for noise associated with take-off and landing. All operations were conducted during normal day time and no complaints were received regarding noise. Extreme care was maintained during all refuelling operations to eliminate the risk of fuel spillage or fire.

Ground operations are minor, usually focused around the survey bases. Common sense rules apply to these tasks with particular reference to public facilities, residential areas, access paths, etc. Any staff responsible for damaging property or land are liable for dismissal.

There were no environmental incidents during this survey program.



Jet Ranger Helicopter VH-JWF with Boom Magnetometer,  
GPS and Radar Altimeter Installation

## 4. PERSONNEL

Survey management and geophysical personnel were provided by Geo Instruments Pty Ltd. All helicopter survey pilots were provided by Heli-Aust Pty Ltd of Bankstown. In-field quality control was undertaken at Queenstown, Zeehan and Sheffield. Data corrections, and image processing were undertaken by Geo Instruments Pty Ltd in the field and in Sydney.

### Field Operations

Field Project Managers	Zoltan Beldi Pat Healy
Pilots	Tony Feller Sam Borg Hamish Robertson

### Data Processing

Data Processing Manager	
Data Processor/ Field QC	Anton Rada

### Supervision

Client's Representatives	Bob Richardson
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## 5. GEOPHYSICAL EQUIPMENT

### 5.1 MAGNETOMETER

The helicopter survey was flown using a Geometrics G-822A ultra-high sensitivity Cesium Vapour Magnetometer sensor system. This sensor provides a Larmor signal that is processed by high precision counters embedded within the automatic digital compensator (which is described in 5.2 below) to provide an operating range of 20 000 to 100 000 nT.

The sensor, pre-amplifier and three axis fluxgate magnetometer for compensation were mounted in a "boom", made entirely from aluminium, attached to the front of the helicopter. The distance from the sensor to the forward extremity of the helicopter was 3m. Real time compensation for the aircraft's magnetic field was achieved with the automatic digital compensation described below.

Magnetometer specifications:

Resolution	0.001 nT
Still Air RMS Noise	0.05 nT
Digital Recording Resolution	0.001 nT
Magnetic Gradient Tolerance	>20 000 nT / m
Sample Time	0.1 s
Sample Distance	2-4 m

### 5.2 AUTOMATIC COMPENSATOR

An RMS Instruments, automatic digital compensator, model AADCII, was used to correct for the magnetic interference caused by the aircraft itself and the effects of it manoeuvring in the earth's magnetic field. The signal from the magnetometer is compensated in real time and preserved without aliasing or phase distortion. The raw, uncompensated magnetic data also are recorded.

### 5.3 SPECTROMETER

An Exploranium GR-820 Gamma Ray Spectrometer was used to sample the full energy spectrum by 256 channels in addition to the standard energy windows (regions of interest or ROI's) for the gamma radiation from  $Tl^{208}$ ,  $Bi^{214}$ ,  $K^{40}$ , Total Count and Cosmic sources. Values were recorded at the end of each second, corresponding to each fiducial.

The gamma ray spectrometer was interfaced to a NaI (TI) thermally insulated detecting crystal pack with a total volume of 16.8 litres. The detector pack was mounted in the rear baggage compartment of the "Jet Ranger".

The GR-820 measures the pulses generated by the crystal detector and controls the gain of each individual detector element by reference to the natural radiation emanating from the ground. The isotope selected for the gain control is determined during the survey and depends on the concentration observed during flights covering tie lines. Thorium was chosen as the stabilising element for the spectrometer in the helicopter.

All 256 channels of radiometric data are recorded, and in addition, five differential ROI windows are recorded, defined as follows:

Element	Energy Level (MeV)
Total Count	0.41 - 2.81
K - 40	1.37 - 1.57
Bi - 214	1.66 - 1.86
Tl - 208	2.41 - 2.81
Cosmic	3.00 - >6.00

The ROI window data and the raw 256 channel spectrum are not corrected for instrument dead time. Note that the ROI window data are only used to determine the validity of the hand sample checks. All other radiometric processing uses ROI data that are derived from the 256 channel spectral information which has been subject to prior energy calibration.

#### 5.4 ALTIMETER, BAROMETER AND THERMOMETER

A Collins ALT-50 radar altimeter system was installed in the helicopter. This controls the pilot's analogue indicator and provides a terrain clearance display from 0 to 750 metres (0 to 2,500 feet) above ground level. This is the primary instrument used to maintain a consistent terrain clearance. The output of the altimeter is 13.1 mV/m and it can be read to a resolution of 1 mV for 0.076 metres.

The reference height above the geoid (WGS84) used for data purposes, was derived from the differentially corrected height value provided by the GPS receiver.

The GPS altitude was recorded in digital format by the acquisition system, in synchronisation with the spectrometer, every second. The radar altimeter height was recorded every 0.1 second.

Barometric pressure was recorded every 0.1 second using a Vaisala pressure transducer with a range of 600 to 1600 Hpa and a resolution of 0.04 Hpa (equivalent to 0.4 metres).

A Geo Instruments thermometer with a resolution of 0.1°C was mounted underneath the helicopter cowling. Temperature was recorded every 0.1 second.

#### 5.5 GPS NAVIGATION SYSTEM

An Ashtech G12 receiver integrated with an Omnistar Model LR3000 virtual base station was used for navigation. This unit is capable of tracking and receiving up to 12 GPS satellites simultaneously and deriving positions from the satellites in view. The accuracy is better than 5 m rms using differential GPS post processing. Positions are generated at 0.2 second intervals for the pilot indicator and are recorded at 0.5 second intervals. The GPS antenna was mounted approximately one metre behind the cesium vapour magnetometer sensor on the boom.

A real time differential solution was obtained through the use of the Fugro "Omnistar" virtual base station differential GPS service. Corrections are transmitted via a geo-stationary satellite to the helicopter navigation and position displays.

Navigation data recorded at a GPS base site at 1 second intervals were used to differentially correct the aircraft's positional data.

GPS co-ordinates were referenced to the WGS84 spheroid and converted to AGD66 coordinates during data processing.

## **5.6 DATA ACQUISITION SYSTEM**

The Geo Instruments G2002 digital acquisition system is based on the IBM PC AT architecture. The system is fitted with several modules tailored to condition the input data from the various sensing instruments. A custom written software package facilitates the following;

- (a) Correct synchronisation of the data streams,
- (b) Formatting of all data received,
- (c) Extended error checking of all parameters,
- (d) Visual data presentation for monitoring purposes,
- (e) Generation and distribution of synchronising fiducial numbers,
- (f) Recording of data to magnetic media,
- (g) Calculation of position and provision of steering display for pilot.

## **5.7 BASE STATION MAGNETOMETER**

Two Geometrics G-823 cesium vapour magnetometers and a Geometrics G-856 magnetometer were available for use as base station magnetometers. At Queenstown, the primary base station was run on a hill immediately behind the football oval and the data were telemetered to the survey base at the motel. The secondary base station was the Wynyard base station operated by Kevron Geophysics.

At Zeeham, the primary base station was located in an open area adjacent to the N-S runway at Zeehan airport, and telemetered to the Heemskirk Motor Inn. The secondary base station was set up 200m from the primary station in an open area.

At Sheffield, the primary base station was set up on a rise NNE of the motel, between the motel and a trout dam, and results were telemetered to the office. The secondary diurnal station was approximately 40m from the primary.

Maps showing the locations of the magnetometer base stations are included in Appendix 8.

Throughout much of the program, a tertiary diurnal base station was available from the concurrent fixed wing survey operations of Kevron Geophysics Pty. Ltd.

These instruments were used to record the diurnal variations in the earth's magnetic field, and were run continuously throughout periods of survey flying. Power for each base magnetometer was provided by a bank of external batteries and solar panels.

Digital recordings from this instrument were made every 1 second with a resolution of 0.001 nT. The base station time was synchronised with the airborne magnetometer which in turn was synchronised to GPS UTC time and adjusted to display local time.

Diurnal activity was classed as quiet to active throughout much of the survey, however there were several periods of out of specification diurnal magnetic field variation. Line segments surveyed during these periods were re flown. Magnetic storms precluded any data acquisition on 13 February (half day), 5 March and 6 March (half day). This level of activity reflects the peak of the diurnal magnetic field cycle at this time.

Two examples of a diurnal base magnetometer record are presented in Appendix 8, one showing a relatively quiet day, while the other shows a magnetic storm. A full set of diurnal records is provided separately in digital form.

## **6. CALIBRATIONS**

### **6.1 MAGNETOMETER**

The Geometrics G-822A cesium vapour magnetometer operates on a split-beam principle with a constant relationship between the earth's magnetic field and the Larmor frequency (the frequency with which gyromagnetic moments precess in a magnetic field). It is therefore not subject to instrumental drift and does not require calibration.

Post flight analysis indicated that the mean fourth difference noise level achieved was less than 0.000001nT, with a standard deviation of 0.0014 nT over the survey program.

### **6.2 HEADING AND PARALLAX ERRORS**

The heading error correction has been assessed for towed bird systems by flying a clover leaf pattern, on survey line headings, at high altitude (nominally 2,500 feet), using the GPS to control precise line positioning. For boom-mounted systems, heading error is automatically removed by the operation of the AADC, and any small residual heading error is removed in tie line levelling. The parallax errors are determined and subsequently refined for a particular acquisition system by empirical assessment during data processing. For this survey, the applied parallax corrections are:

- Magnetic data            4 records (0.4 sec.)
- Radar altimeter data    7 records (0.7 sec.)
- Radiometric data        1.3 records (1.3 sec.)

### **6.3 MAGNETIC COMPENSATION PROCEDURE**

Magnetic compensation was undertaken prior to the start of the survey and after any equipment was changed. The procedure for deriving the compensation for the automatic airborne digital compensator (AADC) is as follows:

The aircraft is configured in the mode used for the survey, that is, all survey equipment is switched on. The aircraft battery must be in fully charged state and no extraneous objects must be on board which may affect the magnetic signature of the aircraft. The aircraft is flown at altitude in an area which ensures a geomagnetic gradient of less than 20 nT/km. Once this parameter is achieved the aircraft is manoeuvred in the pitch, roll and yaw planes successively whilst heading in all four cardinal directions. During these manoeuvres, the AADC acquires the data from the magnetometer sensor and the three component fluxgate magnetometer in a special calibration mode. At the conclusion of the manoeuvres, the AADC performs a series of calculations and derives a set of coefficients which are then applied to all

successive magnetometer readings on survey to remove the varying effect of the aircraft's manoeuvres in the earth's magnetic field.

A final set of 10° pitch, roll and yaw manoeuvres is flown for 30 seconds on each heading, in the opposing flight directions of both the survey traverse lines and the tie lines in order to verify the improvement provided by the compensation.

A typical compensation box is presented in Appendix 7.

## **6.4 RADIOMETRICS**

### **6.4.1 Calibration Factors**

The spectrometer system was calibrated over the CSIRO calibration pads at Londonderry, NSW, on 15 December 2000. The Bairnsdale Hover Range in Victoria was used as the hover calibration site on 2 January 2001. Details of all calibration procedures and results are presented in Appendix 6.

### **6.4.2 Daily, Pre Flight and Post Flight Checks**

Markers were placed at each survey base so that the aircraft could park in the same place each day to ensure consistency between daily pre flight and post flight checks. The detector was aligned prior to each day's flight using a thorium source and checked for drift at the conclusion of the day. In flight, drift is kept to a minimum by the automatic gain control mechanism built into the GR-820 spectrometer. This constantly monitors the selected reference peak and adjusts the gains of the crystal detectors. An alarm is generated whenever the gain drift exceeds nominal tolerances and the GR-820 is unable to correct the drift.

Pre flight and post flight checks of sensitivity and stability were undertaken using pure uranium and pure thorium samples. The background was recorded first with the samples well out of detection range, then with the thorium and uranium sources in range in turn, and then background again. The background-corrected thorium sample responses were reviewed each day to confirm compliance with the survey specifications.

The complete set of sample test results are presented in Appendix 11.

Test line data were subjected to full radiometric processing prior to assessment, including NASVD noise reduction, energy calibration, cosmic and aircraft background removal, radon removal, Compton stripping and height attenuation.

The windowed thorium results for all test lines flown are presented in Appendix 12.

### 6.4.3 Daily Test Line

A test line of at least 100 seconds duration was established on the outskirts of each operating base. The start and end WGS84 coordinates of the test lines are given below:

Base	Start		End	
	Easting	Northing	Easting	Northing
Queenstown	379140	5340605	375555	5341410
Zeehan	363010	5361750	365470	5364770
Sheffield	444520	5413825	449500	5415770

The test line was flown before and following each day's surveying to assess the repeatability of the system pre- and post- data collection. The helicopter test line data files are prefixed by "E" for the pre-survey test line and "G" for the post-survey test line.

Test line statistics are presented in Appendix II.

## 6.5 POSITION

### 6.5.1 Positional Control of Survey Data

At Queenstown, it was not possible to maintain a precision GPS base antenna at the survey base because the surrounding hills blocked satellite transmissions. Accordingly the Department of Lands GPS base station in Melbourne provided the required data for differential corrections. The Melbourne base coordinates are:

-37:48:28.97920S 144:57:48.22380E 82.05 metres (WGS 84).

At Zeehan, the GPS base station was positioned on an outside wall near Room 36 of the Heemskirk Hotel. The coordinates of the base station are:

-41:53:33.76539S 145:20:41.89141 166.628 metres (WGS 84).

At Sheffield, the GPS base station was located on the outside wall of Room 4 at the Kentish Hills Retreat, WGS 84 coordinates:

- 41:22:38.7171S 146:19:07.4178E 259.61 metres.

The successful operation of the GPS positioning system is confirmed by the presentation of a cumulative plot of the parked position of each helicopter at marked ground locations. Examples of the plotted easting, northing and elevation of VH-JWF as recorded during on-ground radiometric calibrations are presented in Appendix 9.

## 6.5.2 Altimeters

The radar altimeter and barometric altimeter were calibrated against GPS height by multi-level flights over Lake King near Bairnsdale prior to mobilising to the project area (see Appendix 6).

## 7. DATA PROCESSING

### 7.1 IN-FIELD DATA VERIFICATION AND POST-FLIGHT PROCESSING

The geophysicist / data processor at the survey base conducted an analysis of the most recently acquired data using both proprietary company software and commercial software including Intrepid and ERMapper.

The field processing facility was capable of the following activities :/

- post flight verification of all acquired data
- making backup copies of the field data
- reading and listing sections of the digital data
- merging location data with magnetics and radiometrics
- assessing profiles of all data on a line by line basis
- displaying spectra data from digital records
- assessing diurnal magnetic data
- correcting compensated magnetic data for diurnal variations
- gridding magnetic data at 40 or 50 m cell size
- conversion of radar altimeter data to STP
- NASVD noise reduction of 256 channel data
- dead time correction
- aircraft and cosmic background removal
- radon removal
- stripping
- region of interest selection for potassium, uranium and thorium
- generation of field located data files.
- production and plotting of contracted quality control maps, including:
  - flight path and ground clearance map
  - flight path and line specification map
  - stacked profile compensated magnetic noise map
  - diurnal monitor plots
  - test line gamma plots
  - source and background gamma plots
  - raw navigation precision and gap map
  - tie line and flight line cross-over map
  - radiometric summed spectra plots for each line
  - grids of raw parameters

## 7.2 FINAL PROCESSING

The final data processing was undertaken by Geo Instruments Pty Ltd using Intrepid software. Intrepid is a geophysical processing system developed by Desmond Fitzgerald and Associates Pty Ltd in association with AGSO and various Australian industry groups. The Intrepid system used was Version V3.5 cut 75, which was the most advanced edition of the software available at the time of this survey.

### 7.2.1 Flight Path Recovery

Processing of the differential GPS location data entails the following steps:

- a) Post-flight differential GPS corrections using "Grafnav" differential position processing software.
- b) No fiducial synchronisation is required as both range data and fiducials are synchronised to GPS time.
- c) Merging of positional data with geophysical data.

### 7.2.2 Magnetic Processing

The final magnetic data processing entails the following steps:

- a) System parallax removal
- b) Diurnal variation removal.
- c) IGRF removal.
- d) Addition of the mean diurnal value.
- e) Addition of mean IGRF value.
- f) Tie line levelling.
- g) Micro levelling.
- h) Gridding using a 40 m cell size.

The magnetic data have been corrected for regional gradient by subtraction of the IGRF Model for 2001.2 derived from the secular variation model 2000-2005. The IGRF was calculated at 30 m intervals along the lines with respect to GPS height and interpolated for each data observation.

Diurnal variations and system parallax have been removed. Tie line levelling and microlevelling has been applied as described below. The mean diurnal field value is 61,870nT. Gridding was accomplished using a 40 metre cell size and the Akima spline gridding algorithm.

The magnetic data were levelled using standard tie line levelling procedures in the Intrepid software. The steps involved in the tie line levelling were as follows:

- a) A primary tie line was chosen as a reference tie.
- b) All other ties were levelled to this tie line using 2<sup>nd</sup> degree polynomial adjustments.
- c) Lines were adjusted on a flight by flight basis to minimise the differences at line/tie crossover points, using 2<sup>nd</sup> degree polynomial adjustments.
- d) Finally the lines were adjusted individually to minimise crossover differences, using 2<sup>nd</sup> degree polynomial adjustments.

### 7.2.3 Radiometric Data Processing

#### 7.2.3.1 Processing of 256 Channel Spectral Data

Correction of radiometric data involves the reduction of the 256 channels of raw gamma spectrometer data using the guidelines of Grasty and Minty (1995) and the Noise-Adjusted Singular Value Decomposition (NASVD) noise reduction method. The specific processing steps are described below:

(a) Noise-Adjusted Singular Value Decomposition (NASVD) Smoothing

The signal to noise ratio of the multi channel spectra can be substantially enhanced using Noise-Adjusted Singular Value Decomposition (NASVD) as described by Hovgaard and Grasty (1997), Schneider (1998) and Minty (1998). This method involves a general linear transformation of groups of spectra (a whole line or flight), using NASVD to compute the different spectral shapes that make up the measured multi-channel spectra. New multi-channel spectra are created by recombining the statistically significant spectral components. Each spectral component contributes an unequal amount to the features observed in the measured multi-channel spectrum, until a point is reached where the spectral components represent only noise. Six components were used for processing Area C and Area E.

The 1<sup>st</sup> spectral component is the spectral shape that represents most of the features in the measured multi-channel spectra. The 2<sup>nd</sup> spectral component represents those features not described by the 1<sup>st</sup> spectral component, etc. By excluding from the recombination those spectral components that do not represent significant features in the measured multi-channel spectra, the resulting reconstructed multi-channel spectra have a much larger signal to noise ratio than the measured multi-channel spectra.

(b) Dead Time Corrections

The raw 256 channel spectra were corrected for spectrometer dead time using the recorded live time and the standard formula:

$$N = n / (1 - t)$$

$N$  = corrected counts in each second;

- $n$  = all counts processed in each second by the ADC; and  
 $t$  = the recorded dead time, the time taken to process all pulses reaching the detector in one second.

Where the live time ( $L$ ) is recorded, the dead time  $t$  is replaced by  $(1 - L)$ .

(c) Energy Calibration

Energy calibration was undertaken line by line using a maximum of 3 calibration peaks; and a minimum of 2 calibration peaks dependent upon their clear identification in the spectra. The 3 calibration peaks used were Bi 214 at 0.609 Mev, K-40 at 1.46 Mev and Tl-208 at 2.615 Mev

(d) Cosmic and Aircraft Background Correction

Cosmic and aircraft background removal utilised the data recorded in Bairnsdale and required smoothing of the cosmic channel using a 20 point moving average filtered version of the cosmic channel. The combined correction is calculated using:

$$N = a + bC,$$

where:

- $N$  = the combined cosmic and aircraft background in each spectral window;  
 $a$  = the aircraft background in the window  
 $C$  = the cosmic channel count; and  
 $b$  = the cosmic stripping factor for the window.

The values of  $a$  and  $b$  for each window are determined from the calibration flights over the sea. Cosmic coefficients and aircraft background coefficients were derived using INTREPID CAL256 program which produces a 256 channel spectra for aircraft background corrections and a 256 channel spectra for cosmic background corrections (see Appendix 13).

(e) Atmospheric Radon

The influence of atmospheric radon has been minimised using the spectral ratio method described by Minty (1992). The radon coefficients used in the Minty method were:

Calibration Constant C1	Calibration Constant C2	Integration Time
1.90	0.65	100

(f) Extraction of Four Standard Windows

The fully processed 256 channel spectra were reduced to the four IAEA (1991) standard windows or Regions of Interest (ROI):

Total Count	0.41 to 2.81 Mev (channels 34 to 233)
Potassium	1.37 to 1.57 Mev (channels 115 to 131)
Uranium	1.66 to 1.86 Mev (channels 139 to 155)
Thorium	2.41 to 2.81 Mev (channels 202 to 233)

### 7.2.3.2 Standard IAEA Window Processing

#### (a) Spectral Stripping of Standard Window Data

Corrections for Compton stripping and height attenuation (to 55 m AGL) were applied to the windowed data using constants derived from the pad tests in Canberra and the hover test in Victoria and calculated STP-height.

The stripping coefficients were determined by measurement over the AGSO calibration pads and are presented below and in Appendix 6 of this report. Due to scattering of gamma rays in the air, the three principle stripping ratios ( $\alpha$ ,  $\beta$  and  $\gamma$ ) increase with altitude above the ground. The rates of increase are based on both theory and experiment:

Stripping Ratio	Increase at STP per metre
$\alpha$	0.00049
$\beta$	0.00065
$\gamma$	0.00069

Following adjustment of the stripping ratios for altitude, the corrected (stripped) count rates in the potassium, uranium and thorium channels ( $N_{Kc}$ ,  $N_{Uc}$  and  $N_{Thc}$ ) are given by Grasty and Minty (1995) as follows:

$$N_{Kc} = [N_{Th}(\alpha\gamma - \beta) + N_U(a\beta - \gamma) + N_K(1 - \alpha)] / A$$

$$N_{Uc} = [N_{Th}(g\beta - \alpha) + N_U - N_{Kg}] / A$$

$$N_{Thc} = [N_{Th}(1 - g\gamma) - N_Ua + N_{Kag}] / A$$

$$\text{Where } A = 1 - g\gamma - a(\alpha - g\beta).$$

and  $N_{Th}$ ,  $N_U$  and  $N_K$  are counts measured in the thorium, uranium and potassium channels respectively.

The Compton coefficients were:

alpha	0.2728	a	0.0633
beta	0.4435	b	0.0000
gamma	0.7861	g	0.0014

#### (b) Height Corrections

The stripped count rates vary exponentially with aircraft altitude. Adjustments for variation in altitude were made using the formula:

$$N_c = N_o e^{-\mu(H-h)}$$

Where  $N_o$  = uncorrected counts,

$N_c$  = count rate normalised to height H,

h = measured height above the tree canopy,

H = nominal flight height,

$\mu$  = attenuation coefficient for the channel being corrected.

The height attenuation factors per metre were:

Total Count	0.00630
Potassium	0.00910
Uranium	0.00510
Thorium	0.00730

(c) Conversion to Ground Radioelement Concentrations

The corrected windowed counts were converted to equivalent ground concentrations of potassium, uranium and thorium using the following expression:

$$C = N / S$$

where:

- $C$  = equivalent concentration of the radioelement (Nanograys/hr, K%, eU ppm or eTh ppm);  
 $S$  = broad source sensitivity for the window; and  
 $N$  = count rate for each window, after deadtime, background stripping and height correction.

The broad source sensitivities were derived from the hover measurements conducted in Bairnsdale on 2 January, 2001. The factors for 73m mean survey elevation are:

Total Count	1 nanoGray/hr	19.97cps
Potassium	1% =	76.00 cps
Uranium	1 ppm =	6.88 cps
Thorium	1 ppm =	4.20 cps

(d) Gridding and Microlevelling

The MRT 2001 data were gridded at 40 m mesh size for all areas using the Akima spline gridding algorithm. These grids were viewed in ERMMapper to detect and rectify any residual levelling problems. Where appropriate the grids were decorrugated to remove double line busts. The line data were then microlevelled.

### 7.2.3.3 Ancillary Processing

(a) Calculation of Effective Height

The Effective Height, which is the aircraft terrain clearance corrected to Standard Temperature and Pressure was determined as follows:

- Filtering of the temperature field was applied to remove spikes and smooth out the instrument noise.
- Filtering of the barometric pressure field was applied to remove spikes and to smooth out the instrument noise.

- Filtering of the radar altimeter was applied to remove spikes, spurious reflections from groups of tree and very narrow gullies and to smooth out the instrument noise.
- The formula option in the spread sheet editor was used to combine the terrain clearance, pressure and temperature.

$$h_e = \frac{h \times P \times 273}{1013 \times (T + 273)}$$

where:

- $h_e$  = the effective height;
- $h$  = the observed radar altitude in metres;
- $T$  = the measured air temperature in degrees C;
- $P$  = the barometric pressure in millibars.

## 7.2.4 Digital Terrain Model (DTM) Processing

The digital terrain model is computed from the difference in the height of the aircraft above the ellipsoid as measured by GPS and the height above the ground as measured by the radar altimeter.

The raw GPS range data recorded internally every one second and ground GPS receivers were post-processed on a daily basis using Waypoint Consulting's "GRAFNAV" software. "GRAFNAV" calculates the position of the aircraft GPS antenna, including longitude, latitude and height relative to the WGS84 reference ellipsoid for each set of range data (every one second).

No fiducial synchronisation correction is required as the fiducials and GPS are synchronised to GPS time.

A radar altimeter provided the aircraft's ground clearance, the altimeter data being sampled every tenth of a second. The radar altimeter results are lightly smoothed to remove any spikes, spurious reflections or instrument noise.

The raw ground elevation data were then calculated as the difference between the height of the aircraft above the ellipsoid and the height of the aircraft above the ground. These raw elevation data calculated every one second are relative to the WGS84 reference ellipsoid and are converted to the Australian Height Datum (AHD) by applying N value corrections obtained from Auslig.

The elevation data did not require correction for the vertical separation between the antenna of the aircraft's GPS receiver and the radar altimeter as the GPS antenna and the radar altimeter sensor are both located on the boom.

The digital terrain model information was gridded using the bi-cubic spline gridding algorithm, and 40 metre grid cell size.

**DISCLAIMER Not to be used for navigation**

This digital terrain model (DTM) has been computed from data generated during the course of an airborne geophysical survey flown at a nominal line spacings and data has been interpolated/gridded between such lines. Every effort has been made to make the model a useful general reference. No guarantee can be made that this model is a true representation of height above sea level and it contains radar altimeter responses from buildings and dense timber.

Users of this product should be aware of the topographic limitations mapped here within. **Do not use this DTM for navigation purposes.**

## 8. DELIVERED ITEMS

### 8.1. MAP PRODUCTS

All hard copies and digital data show datum co-ordinates in the Australian Geodetic Datum 1966 (AGD66).

Compilation of the data involved the production of quality control products as detailed below:

#### 1:100 000 scale Quality Control maps (also supplied as HPGL plot files)

- Flight path and ground clearance as colour QC products
- Flight path and line specification map
- Stacked profile compensated magnetic noise map
- Raw navigation precision and gap map
- Tie line and flight line cross-over map

In addition, diurnal monitor plots, test line gamma plots, source and background gamma plots, radiometric summed spectra plots for each line and grid files of raw parameters were supplied.

### 8.2 DIGITAL DATA

Raw Field Data - All raw field data were transferred to CD-ROM suitable for archiving.

Field Corrected Located Data Tapes (one copy), containing fully merged data were delivered on CD-ROM containing the following;

- raw field data as .ref files
- flight path interpolated to fit time of magnetometer readings as .ref files
- the partly levelled magnetic data and appropriate parallax correction, raw and smoothed magnetic base station data
- corrected four channel gamma data and appropriate parallax corrections
- a file listing all accepted lines (fid to fid) and tie lines.

Preliminary Grid Files in ER Mapper format, produced from the Field Corrected Located Data Tape were available for evaluation.

Calibration Data are included in the located data files

Located Data on CDROM comprising:

- Item 1: 0.1 second final magnetics with all raw variables carried through such as to allow full reprocessing.
- Item 2: 1.0 second final 4 channel gamma spectrometric and a 1.0 second final magnetic channel and all relevant variables carried through such as to allow full reprocessing.
- Item 3: 1.0 second final gamma spectrometric including 256 channel raw gamma data and a 1.0 second final magnetic channel and all relevant variables carried through such as to allow full reprocessing.

Final Grid Tape ER Mapper format on CDROM:

The grids at 40 m mesh include:

- (a) Final magnetics
- (b) First vertical gradient of magnetics calculated from the TMI profiles
- (c) Total count nanograys per hour
- (d) Equivalent potassium percent
- (e) Equivalent uranium ppm
- (f) Equivalent thorium ppm
- (g) Digital terrain model generated from GPS data
- (h) Terrain clearance

### 8.3 ANALOGUE DATA

Field Quality Control results were provided to facilitate an objective assessment of the quality of the survey data. The weekly field logistics reports have provided succinct descriptions of survey progress and problems.

Plots of Total Count, Potassium, Uranium and Thorium include pre and post flight calibrations for background, Thorium and the test line. The plots show minimum, maximum and mean values for each day, and show all of the data collected to date.

Verification plots were provided regularly to illustrate the magnetometer noise levels, navigational accuracy and terrain clearance.

A table which shows the relationships between flights, line numbers, start of line coordinates and fiducials, and also end of line coordinates and fiducials, is given in Appendix 4.

## 8.4 LOGISTICS REPORT

This Logistics Report describes the following aspects of the acquisition and processing undertaken for this project:

- Survey location (flight path locality map)
- Description of equipment and aircraft used
- Description of personnel employed on job
- Summary of survey parameters and tolerances
- Flying schedules/dates and operators flight logs
- Test flight details and results
- Description of calibration range and data from calibration range
- Calibration methods for all navigational, environmental and geophysical data collected and methods used
- Pre and post flight calibration results showing flight, U, Th, K, Total Count giving min, max and mean values
- Flight line/fiducial range, line length, calibration numbers, field tape number and date summary table
- Operational information
- Sample base station plots
- Navigational methods
- Description of data processing/reduction procedures
- A comprehensive description of the located data
- Full description of field and processed data tape formats

## 9. REFERENCES

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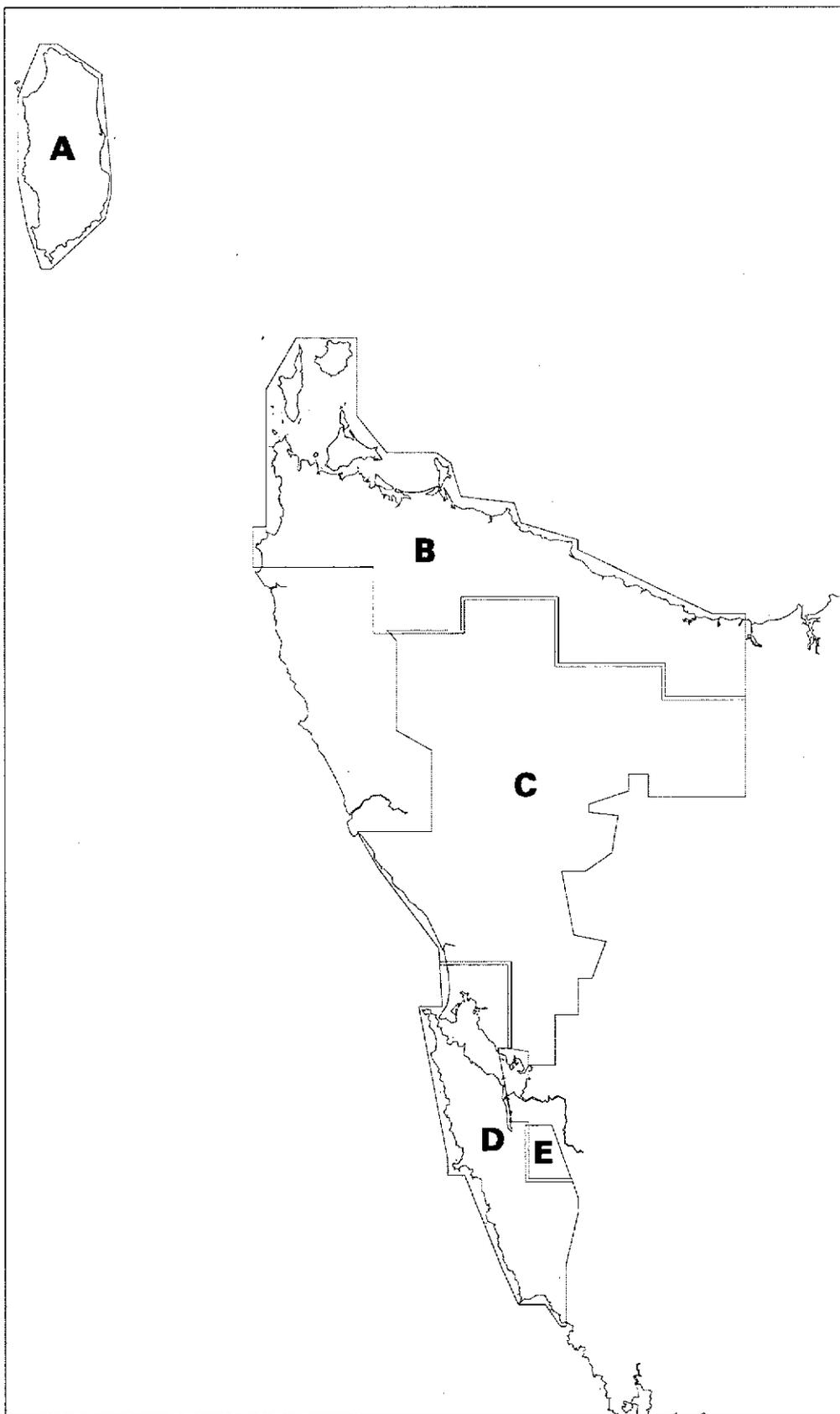
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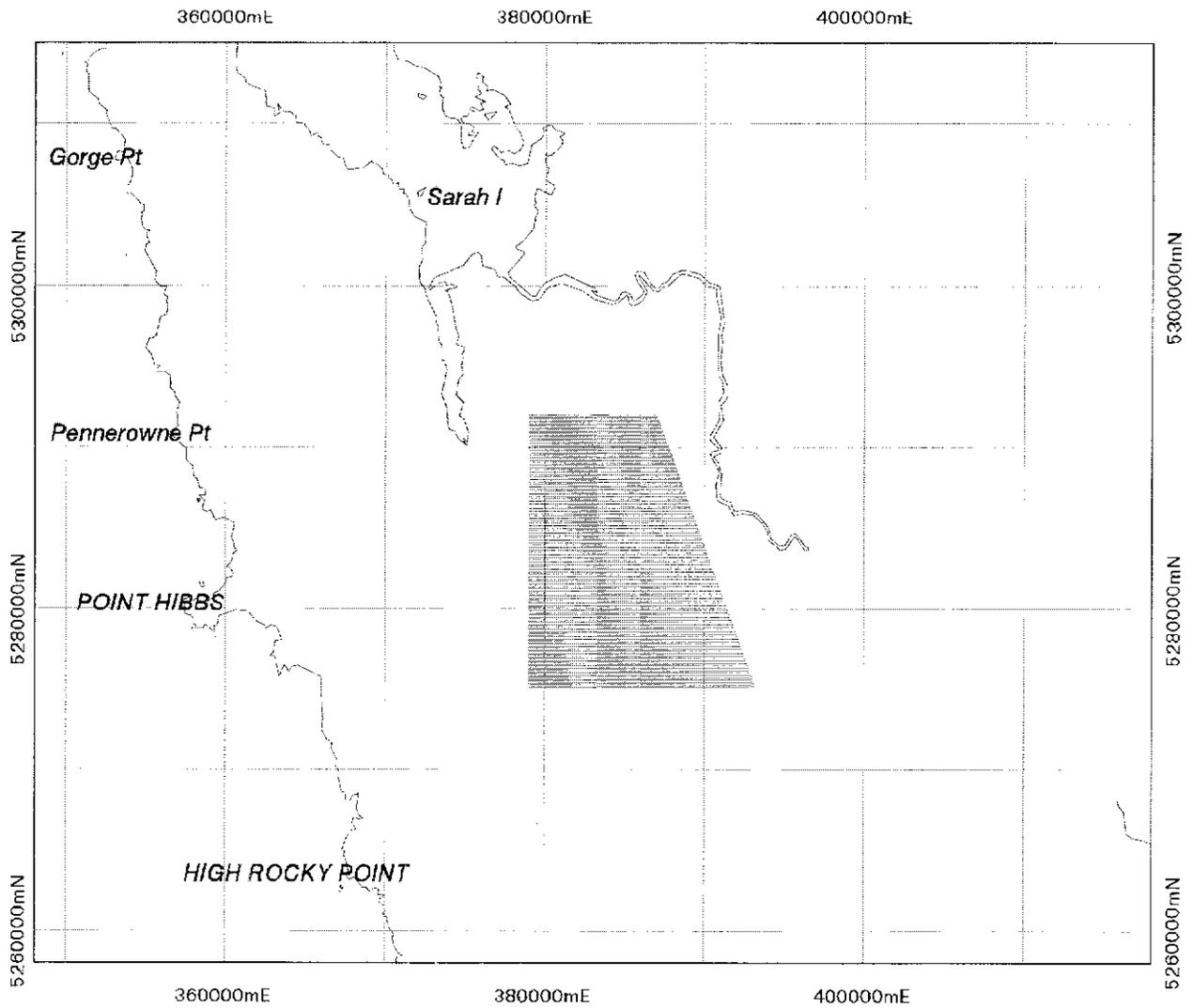
## **APPENDIX 1**

### **Location of Areas C and E Northwest Tasmania**



**MRT MAGNETIC AND RADIOMETRIC SURVEY AREAS 2000**  
(Note: Only areas C and E are helicopter, A, B and D are fixed wing)





### Area E - D'Aguiar Range

## **APPENDIX 2**

### **Tables of Area Boundary Lines and Flight Plans**

## TABLE OF AREA BOUNDARY LINES

**Table 1 Co-ordinates of the vertices of Area C Western Tasmania**

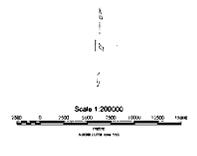
**Projection: TMAMG55, Datum AGD66**

mE	mN	mE	mN
360000.0	5440000.0	403000.0	5347000.0
360000.0	5450000.0	399000.0	5336000.0
389000.0	5450000.0	395000.0	5336000.0
389000.0	5430000.0	395000.0	5325000.0
421000.0	5430000.0	388000.0	5325000.0
421000.0	5420000.0	388000.0	5310000.0
445000.0	5420000.0	380000.0	5310000.0
445000.0	5390000.0	380000.0	5314000.0
416000.0	5390000.0	374000.0	5315091.0
416000.0	5397000.0	374000.0	5340000.0
410000.0	5397000.0	353787.0	5340000.0
410000.0	5392000.0	353500.0	5345000.0
398000.0	5388000.0	335500.0	5369000.0
398000.0	5385600.0	329000.0	5380000.0
407000.0	5384600.0	351500.0	5380000.0
405000.0	5373600.0	351500.0	5404000.0
397000.0	5368000.0	341000.0	5410000.0
390000.0	5368000.0	341000.0	5437000.0
393500.0	5349000.0	338000.0	5440000.0
		360000.0	5440000.0

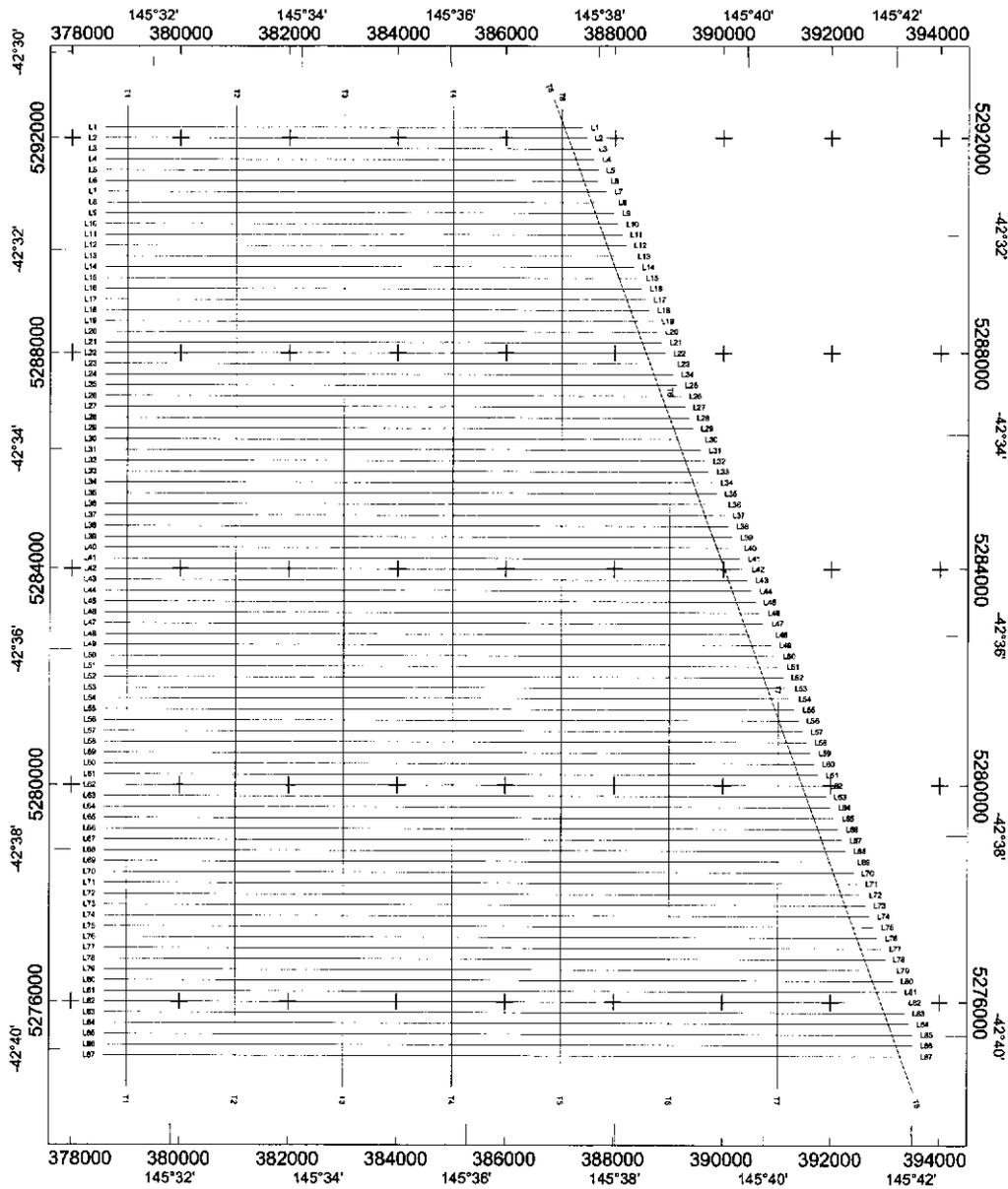
**Table 2 Co-ordinates of the vertices of Area E D'Aquilar Range**

**Projection: TMAMG55, Datum AGD66**

mE	mN
379000.0	5292000.0
387000.0	5292000.0
393181.0	5275000.0
379000.0	5275000.0
379000.0	5292000.0



Dept of Mineral Resources Tasmania  
 MagSpec Area C - MRT2001  
 Jan 2000 Western Tasmania  
 Flight Plan Map  
 Geosystems Pty Ltd



**Mineral Resources Tasmania**

Mag/Radiometrics Area-E  
Flight Plan Map Jan 2001

Geolnstruments Pty Ltd

## **APPENDIX 3**

### **Survey Progress Summary**

## SURVEY PROGRESS SUMMARY

DOY	DATE	FLIGHT	KMS	REMARKS
01	1/1	-	-	Mobilisation to Bruthen hover range
02	2/1	1	Nil	Calibrations on hover range
03	3/1	-	-	Ferry to Queenstown
04	4/1	-	-	Set up operating base
05	5/1	2,3	184	Cosmic calibration, low cloud ½ standby day
06	6/1	4,5	686	Fog and low cloud in AM
07	7/1	6,7	651	Fog and low cloud in PM
08	8/1	8	995	Fog and low cloud to late AM
09	9/1	9,10	735	
10	10/1	11,12	830	
11	11/1	13,14	393	One pilot only available
12	12/1	15,16	682	
13	13/1	17,18	753	
14	14/1	19	-	Flight aborted due high wind/rain – standby day
15	15/1	-	-	No flight due to weather – standby day
16	16/1	20,21	914	
17	17/1	22	400	Helicopter 100 hourly
18	18/1	23,24	833	
19	19/1	25,26	783	
20	20/1	-	-	No flight due weather – standby day
21	21/1	27,28,29	944	
22	22/1	30,31	764	Fog in a.m.
23	23/1	32,33	912	Move base to Zeehan
24	24/1	-	-	Standby due to weather and diurnal
25	25/1	34	351	Bad weather in a.m.
26	26/1	35	220	Aborted due to weather - ½ day standby
27	27/1	36,37	562	Rain in a.m. First flight aborted.
28	28/1	38,39	377	Rain in a.m. First flight aborted
29	29/1	-	-	Bad weather, standby day
30	30/1	40,41	1,111	
31	31/1	42,43	794	
32	1/2	44	215	100 hourly service on helicopter
33	2/2	45,46	1,147	
34	3/2	47,48	1,120	
35	4/2	49,50	806	
36	5/2	51,52	988.9	
37	6/2	53,54	914.8	
38	7/2	55	117.8	Standby due to weather
39	8/2	56,57	304.8	High wind restricted production

## SURVEY PROGRESS SUMMARY (Continued)

40	9/2	58	362.8	Late start due to weather
41	10/2	-	-	No production due to weather, standby day
42	11/2	59,60	1,112.6	
43	12/2	61,62	1,042	
44	13/2	63	213	Bad weather and diurnal - ½ standby day
45	14/2	-	-	Move base to Sheffield
46	15/2	64,65	1482	
47	16/2	66,67	1,445	
48	17/2	68,69,70	1,258	
49	18/2	71,72	1,226	
50	19/2	73,74	1,193	
51	20/2	75	585	
52	21/2	76	701	
53	22/2	77,78	1,229	
54	23/2	79,80	979	
55	24/2	81,82	752	Flight aborted due to diurnal
56	25/2	83,84	774	
57	26/2	-	-	100 hour helicopter service
58	27/2	85	203.6	Service completed in morning
59	28/2	86,87	179.2	Operations abandoned due to high wind, ½ standby day
60	1/3	88,89	1,040.0	
61	2/3	90,91	690.8	
62	3/3	92,93	987.8	
63	4/3	94	321.7	Flying abandoned due to base mag
64	5/3	-	-	No survey ops due base mag
65	6/3	95	322.0	Survey ops aborted due base mag
66	7/3	96,97	1197.8	773.4 kilometres of reflies from F075
67	8/3	98,99	508.2	Survey Ops suspended due to base mag
68	9/3	100	482.4	Surveys ops aborted due to rain
69	10/3	102,103	240.8	Plus 160.8km of reflies due base mag. Raining ½ standb day
70	11/3	104,105	1028.4	Plus 111.8km of reflies due base mag
71	12/3	-	-	Raining – standby day
72	13/3	106,107	439.2	
73	14/3	108,109	670.1	

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**SURVEY PROGRESS SUMMARY (Continued)**

<b>74</b>	15/3	110	498.0	
<b>75</b>	16/3	111	319.8	
<b>76</b>	17/3	-	-	Bad weather – standby day
<b>77</b>	18/3	112	532.4	
<b>78</b>	19/3	113	681.4	
<b>79</b>	20/3	-	-	Intense magnetic storm – standby day
<b>80</b>	21/3	114	314.1	Flying suspended due to weather
<b>81</b>	22/3	115,116	317.4	Final production and calibrations
<b>Total: 44,473 kilometres</b>			<b>Percentage completed:</b>	<b>100%</b>

## **APPENDIX 4**

### **Catalogue of Survey Lines**

**Catalogue of Lines Within TAS2001 DataBase AREA C Western Tasmania**  
 ( 972 flight lines in dataset )

Flights : 3 to 115 Lines : 10011 to 71051

Flight	Line	Dist	Gaps	Dist	StartFID	EndFID	StartX	EndX	StartY	EndY
98	10011	29.418	0	0	7372	21560	389187	359776	5450204	5450198
107	10021	29.436	0	0	12	18160	389202	359778	5450001	5450000
107	10031	29.515	0	0	18172	33160	359796	389303	5449810	5449800
107	10041	29.452	0	0	33172	51360	389184	359744	5449601	5449599
107	10051	29.474	0	0	51372	66460	359798	389263	5449410	5449400
107	10061	29.492	0	0	66472	84610	389188	359707	5449206	5449201
107	10071	29.492	0	0	84622	99360	359814	389298	5449006	5449005
107	10081	29.51	0	0	99372	117210	389197	359699	5448803	5448803
107	10091	29.5	0	0	117222	133210	359797	389286	5448605	5448604
107	10101	29.488	0	0	133222	150710	389201	359724	5448402	5448399
107	10111	29.404	0	0	150722	165460	359812	389209	5448203	5448199
108	10121	29.465	0	0	20272	36260	389175	359720	5448005	5448002
108	10131	29.45	0	0	36272	52160	359796	389237	5447806	5447804
108	10141	29.453	0	0	52172	69360	389173	359732	5447604	5447603
108	10151	29.438	0	0	69372	87210	359809	389235	5447405	5447404
108	10161	29.479	0	0	87222	105910	389191	359728	5447202	5447196
110	10174	29.412	0	0	88372	104660	359808	389210	5447001	5447003
110	10182	29.443	0	0	119222	134960	359798	389233	5446804	5446801
110	10192	29.386	0	0	134972	148910	389166	359787	5446604	5446602
108	10201	29.456	0	0	173372	189010	359792	389240	5446403	5446405
108	10211	29.481	0	0	157822	173360	389191	359718	5446206	5446199
108	10221	29.445	0	0	141972	157810	359797	389233	5446005	5446006
108	10231	29.394	0	0	124922	141960	389174	359790	5445801	5445801
108	10241	29.477	0	0	108272	124910	359806	389273	5445605	5445606
110	10251	29.428	0	0	7272	22660	389163	359744	5445398	5445402
110	10261	29.449	0	0	22672	39410	359800	389237	5445204	5445203
110	10271	29.48	0	0	39422	54760	389179	359710	5445003	5445000
110	10281	29.503	0	0	54772	72510	359793	389285	5444802	5444799
110	10291	29.448	0	0	72522	88360	389194	359756	5444602	5444606
110	10301	29.456	0	0	104672	119210	389176	359728	5444400	5444403
110	10311	29.448	0	0	148922	164760	359796	389234	5444202	5444201
115	10321	29.418	0	0	7222	22460	389171	359762	5443999	5444002
115	10331	29.423	0	0	22472	37560	359785	389200	5443804	5443804
115	10341	29.526	0	0	37572	53460	389192	359679	5443604	5443602
115	10351	29.434	0	0	53472	68410	359799	389224	5443404	5443402
115	10361	29.489	0	0	68422	83460	389203	359723	5443203	5443200
114	10371	29.402	0	0	50922	66760	359808	389200	5443006	5443004
114	10381	29.394	0	0	36372	50910	389169	359784	5442804	5442797
114	10391	29.469	0	0	21422	36360	359795	389256	5442601	5442600
114	10401	29.411	0	0	7172	21410	389153	359750	5442405	5442400
113	10411	29.471	0	0	318972	331560	359816	389282	5442208	5442199
113	10421	29.444	0	0	305422	318960	389200	359762	5441998	5442002
113	10431	29.41	0	0	198672	212610	359795	389199	5441797	5441800
113	10441	29.425	0	0	185022	198660	389167	359749	5441602	5441605
113	10451	29.499	0	0	170722	185010	359796	389288	5441400	5441398

113	10461	29.452	0	0	157172	170710	389177	359731	5441204	5441204
109	10471	29.511	0	0	89822	103310	359793	389297	5441004	5440999
109	10481	29.472	0	0	75722	89810	389181	359716	5440800	5440798
109	10491	29.425	0	0	62722	75710	359802	389221	5440602	5440599
109	10501	29.429	0	0	48772	62710	389170	359747	5440404	5440401
109	10511	51.468	0	0	103322	127810	389163	337708	5440199	5440201
109	10521	51.426	0	0	127822	151060	337830	389246	5440002	5439999
113	10531	51.407	0	0	13072	37210	389162	337765	5439798	5439799
113	10541	51.275	0	0	37222	62760	338000	389264	5439601	5439600
113	10552	51.059	0	0	62872	86610	389168	338119	5439404	5439403
113	10561	50.862	0	0	86622	110660	338419	389270	5439204	5439203
113	10571	50.616	0	0	110672	133510	389185	338579	5439004	5439002
113	10581	50.444	0	0	133522	157160	338827	389261	5438804	5438801
113	10591	50.293	0	0	212622	235860	389177	338894	5438601	5438603
113	10601	50.066	0	0	235872	259010	339211	389267	5438404	5438410
113	10611	49.896	0	0	259022	282210	389186	339300	5438203	5438201
113	10621	49.693	0	0	282222	305410	339632	389315	5438003	5438001
114	10631	49.513	0	0	66772	90910	389197	339697	5437802	5437802
114	10641	49.241	0	0	90922	116260	340000	389228	5437602	5437603
114	10651	49.037	0	0	116272	139860	389143	340120	5437403	5437403
114	10661	48.531	0	0	139872	164510	340408	388897	5437198	5437237
114	10662	5.612	0	0	164522	167210	383665	389275	5437202	5437200
115	10671	48.632	0	0	83472	106460	340612	389232	5437001	5437004
115	10681	48.474	0	0	106472	129260	389163	340702	5436788	5436798
115	10692	48.453	0	0	129272	151660	340812	389254	5436608	5436601
112	10701	48.487	0	0	256672	281360	389187	340716	5436406	5436401
112	10711	48.434	0	0	233522	256660	340823	389246	5436203	5436199
112	10721	48.469	0	0	208972	233510	389174	340719	5436003	5436002
112	10731	48.436	0	0	183972	208960	340795	389216	5435805	5435807
112	10741	48.396	0	0	158072	183960	389166	340785	5435600	5435600
112	10751	48.466	0	0	132872	158060	340818	389268	5435409	5435399
112	10761	48.513	0	0	106172	132860	389193	340697	5435202	5435200
112	10771	48.421	0	0	80222	106160	340806	389210	5435005	5434999
112	10781	48.469	0	0	53322	80210	389168	340715	5434806	5434803
112	10791	31.247	0	0	34872	53310	340814	372049	5434606	5434599
115	10792	24.948	0	0	151672	165010	364337	389275	5434608	5434597
112	10801	48.437	0	0	7272	34860	389167	340748	5434401	5434395
111	10811	48.454	0	0	158772	188060	340799	389229	5434195	5434202
111	10821	48.472	0	0	134222	158760	389197	340742	5434011	5433994
111	10831	48.438	0	0	104322	134210	340794	389212	5433806	5433801
111	10841	48.391	0	0	80322	104310	389158	340781	5433608	5433603
111	10851	48.436	0	0	51572	80310	340806	389223	5433401	5433403
111	10861	48.494	0	0	26072	51560	389178	340700	5433206	5433200
109	10871	48.401	0	0	24822	48760	340815	389205	5433002	5432998
109	10881	48.454	0	0	12	24810	389198	340759	5432805	5432803
112	10892	48.481	0	0	281372	306360	340814	389282	5432605	5432606
106	10902	48.443	0	0	104672	129660	340798	389225	5432400	5432398
106	10912	48.413	0	0	76372	104560	389180	340784	5432208	5432199
105	10921	48.457	0	0	245322	274310	389194	340759	5432005	5432003
106	10932	48.419	0	0	51672	76360	340804	389209	5431802	5431802
105	10941	48.478	0	0	189872	216560	389173	340711	5431598	5431599
79	10951	48.531	0	0	168822	193860	340807	389316	5431413	5431403
79	10961	48.446	0	0	142322	168810	389173	340752	5431196	5431199

79	10971	48.45	0	0	115422	142310	340810	389234	5431006	5431001
79	10981	48.451	0	0	87472	115410	389175	340748	5430796	5430802
79	10991	48.431	0	0	59322	87460	340822	389230	5430606	5430605
79	11001	48.529	0	0	30872	59310	389195	340689	5430398	5430397
80	11011	80.5	0	0	12	42960	421182	340714	5430207	5430201
80	11021	80.463	0	0	42972	86160	340807	421242	5430004	5430000
80	11031	80.515	0	0	86172	130510	421193	340707	5429801	5429802
80	11041	80.511	0	0	130522	172910	340821	421304	5429604	5429602
83	11051	80.466	0	0	7422	52610	421191	340768	5429412	5429402
83	11061	80.44	0	0	52622	102460	340810	421205	5429201	5429193
83	11071	80.5	0	0	102472	148160	421194	340735	5429004	5428998
83	11081	80.497	0	0	148172	192860	340787	421234	5428803	5428807
94	11091	80.525	0	0	7322	52310	421199	340703	5428604	5428601
94	11101	80.507	0	0	52322	96860	340809	421291	5428403	5428399
94	11111	80.482	0	0	96872	139160	421183	340725	5428204	5428200
94	11121	80.514	0	0	139172	181310	340794	421286	5428006	5427998
95	11131	80.494	0	0	2872	47110	421176	340709	5427806	5427802
95	11141	80.475	0	0	47122	96810	340803	421243	5427605	5427606
102	11152	80.441	0	0	7422	50710	421170	340758	5427408	5427401
102	11162	80.525	0	0	50722	98010	340794	421284	5427206	5427207
102	11171	80.513	0	0	98022	141310	421173	340691	5427006	5427003
102	11181	80.444	0	0	141322	189560	340805	421213	5426799	5426802
103	11191	47.143	0	0	12	25760	421179	374052	5426604	5426596
104	11192	39.785	0	0	117972	137660	380546	340770	5426604	5426601
103	11201	45.345	0	0	25772	51060	375905	421229	5426405	5426399
104	11202	42.889	0	0	137672	159410	340820	383698	5426405	5426401
104	11211	80.497	0	0	159422	198360	421182	340705	5426204	5426199
104	11221	80.478	0	0	198372	240910	340785	421240	5426004	5426007
104	11231	80.457	0	0	240922	280110	421172	340735	5425804	5425804
104	11241	80.383	0	0	280122	319010	340831	421192	5425601	5425598
105	11252	80.512	0	0	222	45410	421188	340707	5425401	5425404
106	11262	80.423	0	0	7172	51660	421187	340791	5425209	5425202
101	11271	80.508	0	0	223022	267910	340814	421290	5425008	5425001
101	11281	80.411	0	0	183172	223010	421156	340767	5424803	5424796
101	11291	80.478	0	0	137422	183160	340793	421241	5424605	5424599
101	11301	80.521	0	0	97122	137410	421175	340677	5424402	5424401
101	11311	80.424	0	0	47872	97110	340810	421198	5424201	5424200
101	11321	80.473	0	0	7472	47860	421185	340734	5423999	5424001
99	11331	80.464	0	0	86772	126610	421178	340737	5423803	5423803
99	11341	80.433	0	0	39572	86760	340805	421204	5423607	5423603
99	11351	80.484	0	0	12	39560	421171	340710	5423400	5423403
97	11361	40.834	0	0	320272	341210	380380	421202	5423207	5423203
105	11362	45.841	0	0	45422	71110	340790	386615	5423201	5423204
97	11371	40.516	0	0	300322	320260	421190	380686	5423003	5423001
105	11372	46.039	0	0	71122	96110	386754	340730	5423005	5423003
97	11381	80.457	0	0	256972	300310	340815	421248	5422805	5422800
97	11391	80.458	0	0	215472	256960	421188	340754	5422600	5422601
97	11401	80.441	0	0	170272	215460	340804	421218	5422404	5422402
93	11411	80.469	0	0	329172	371310	340787	421235	5422206	5422205
93	11421	80.482	0	0	287322	329160	421195	340736	5422003	5422002
93	11431	80.41	0	0	242372	287310	340816	421201	5421801	5421804
92	11441	80.485	0	0	140322	189610	340800	421248	5421607	5421605
92	11451	80.466	0	0	97022	140310	421201	340763	5421406	5421397

92	11461	80.495	0	0	48922	97010	340785	421245	5421201	5421204
92	11471	80.424	0	0	7172	48910	421161	340764	5420999	5421000
91	11481	80.501	0	0	116672	159360	340799	421267	5420802	5420800
90	11491	80.482	0	0	190072	236810	421189	340738	5420602	5420599
93	11502	80.51	0	0	197572	242360	421190	340708	5420404	5420403
93	11512	104.499	0	0	12	62110	445174	340719	5420202	5420203
88	11521	54.55	0	0	235222	266160	445192	390668	5420000	5420000
91	11522	55.324	0	0	87322	116660	396031	340726	5419999	5420001
88	11531	55.242	0	0	266172	296760	390076	445276	5419753	5419802
91	11532	55.224	0	0	58422	87310	340790	395998	5419804	5419808
91	11541	104.443	0	0	12	58410	445179	340772	5419605	5419599
86	11551	30.35	0	0	112672	132260	414946	445280	5419399	5419402
93	11552	79.551	0	0	62122	110110	340777	420297	5419403	5419400
86	11561	30.311	0	0	89672	112660	445196	414904	5419206	5419197
89	11562	79.942	0	0	26	45810	420674	340765	5419204	5419201
86	11571	30.661	0	0	71522	89660	414640	445290	5419007	5419005
89	11572	79.567	0	0	60322	106460	340783	420319	5419004	5418997
79	11581	28.825	0	0	4772	24210	445200	416394	5418804	5418804
90	11582	84.425	0	0	7372	57260	425093	340700	5418803	5418800
86	11591	88.248	0	0	7522	71510	445174	356977	5418605	5418597
89	11592	23.117	0	0	45822	60310	363860	340753	5418597	5418600
99	11602	104.43	0	0	126622	187610	340807	445196	5418401	5418397
80	11611	59.613	0	0	261822	292710	400372	340778	5418200	5418201
81	11612	49.524	0	0	17972	47160	445190	395689	5418203	5418204
80	11621	59.449	0	0	230672	261810	340795	400225	5418006	5418010
81	11622	49.892	0	0	47172	75110	395389	445259	5418005	5417993
80	11631	104.452	0	0	172922	230660	445184	340775	5417807	5417802
77	11641	104.438	0	0	121822	175860	445190	340784	5417606	5417599
77	11651	104.521	0	0	63222	121810	340794	445278	5417401	5417400
77	11661	104.45	0	0	7672	63210	445197	340784	5417201	5417200
66	11671	104.532	0	0	251172	302714	340808	445305	5417009	5417003
66	11681	104.51	0	0	195922	251160	445200	340739	5416801	5416800
66	11691	104.446	0	0	140872	195910	340803	445210	5416603	5416600
66	11701	104.517	0	0	86522	140860	445203	340720	5416404	5416399
66	11711	83.571	0	0	44822	86510	361745	445288	5416188	5416201
78	11712	30.959	0	0	204622	224160	340796	371734	5416199	5416201
64	11721	104.485	0	0	76172	130610	340806	445239	5416009	5416007
64	11731	72.177	0	0	34572	76160	412918	340783	5415803	5415797
64	11732	37.539	0	0	130622	154610	445207	407694	5415796	5415794
64	11741	104.535	0	0	198422	252310	340799	445277	5415610	5415608
64	11751	104.548	0	0	252322	313860	445202	340734	5415405	5415395
64	11761	104.475	0	0	313872	367110	340807	445218	5415202	5415206
65	11771	104.435	0	0	12	59360	445176	340788	5415005	5414999
65	11781	104.522	0	0	59372	113310	340809	445288	5414804	5414800
65	11791	104.491	0	0	113322	171260	445166	340715	5414602	5414601
65	11801	104.443	0	0	171272	226410	340786	445193	5414403	5414398
65	11811	104.474	0	0	226422	284510	445182	340749	5414203	5414201
65	11821	104.531	0	0	284522	338860	340794	445288	5414004	5414000
65	11831	104.443	0	0	338872	394660	445190	340788	5413805	5413799
65	11841	104.445	0	0	394672	445810	340799	445213	5413607	5413598
66	11851	66.511	0	0	7472	44810	445172	378692	5413401	5413411
78	11852	50.988	0	0	177422	204610	391679	340715	5413403	5413400
108	11853	20.059	0	0	7822	20260	420750	400700	5413402	5413401

71	11861	104.532	0	0	7672	70610	445198	340710	5413202	5413198
71	11871	104.505	0	0	70622	135560	340784	445242	5413003	5412999
96	11882	104.496	0	0	7322	62160	445193	340729	5412804	5412796
96	11892	104.494	0	0	62172	118310	340813	445273	5412603	5412600
96	11902	104.497	0	0	201722	257260	445194	340731	5412401	5412400
96	11912	104.524	0	0	257272	315860	340812	445294	5412203	5412202
97	11922	104.451	0	0	12	58210	445176	340763	5412002	5412001
97	11932	104.533	0	0	58222	117460	340785	445283	5411802	5411798
77	11941	43.384	0	0	175872	202960	340813	384179	5411605	5411600
77	11942	67.195	0	0	202972	241310	378091	445262	5411596	5411603
71	11951	43.31	0	0	190072	215060	340803	384096	5411405	5411402
71	11952	66.725	0	0	215072	250632	378567	445266	5411406	5411401
71	11961	104.457	0	0	135572	190060	445200	340775	5411203	5411205
70	11971	104.474	0	0	61972	120810	340785	445221	5411005	5410999
70	11981	104.507	0	0	12	61960	445183	340725	5410801	5410797
68	11991	104.549	0	0	7272	65310	445209	340707	5410603	5410602
64	12001	31.153	0	0	13622	34560	445204	414078	5410412	5410412
64	12002	37.102	0	0	154622	175710	406650	369570	5410386	5410391
64	12003	34.569	0	0	175722	198410	375276	340747	5410380	5410399
76	12004	22.888	0	0	14772	28110	422944	400072	5410408	5410395
68	12011	104.509	0	0	65322	125710	340789	445245	5410207	5410208
68	12021	104.497	0	0	125722	185660	445203	340762	5410015	5410000
69	12031	104.442	0	0	153222	212660	340827	445227	5409805	5409800
71	12041	104.144	0	0	251272	314060	445171	341078	5409601	5409603
71	12051	103.746	0	0	314072	377210	341504	445197	5409403	5409406
72	12062	103.505	0	0	62222	122110	341841	445278	5409211	5409195
72	12071	103.118	0	0	122122	177060	445198	342131	5408997	5409003
81	12082	102.707	0	0	75122	134960	445200	342543	5408804	5408800
81	12091	102.364	0	0	320622	376060	342926	445242	5408604	5408603
85	12101	102.105	0	0	2922	69110	445207	343159	5408403	5408401
85	12111	101.653	0	0	69122	129360	343598	445206	5408200	5408201
90	12121	101.288	0	0	135422	190060	343955	445203	5408003	5408004
93	12131	100.944	0	0	141022	197560	344315	445223	5407802	5407805
97	12141	100.643	0	0	117472	170260	445181	344581	5407606	5407601
82	12151	52.151	0	0	66072	102560	445189	393089	5407399	5407404
93	12152	60.204	0	0	110122	141010	405096	344911	5407401	5407400
81	12161	62.207	0	0	286422	320610	407446	345269	5407206	5407201
82	12162	18.03	0	0	12	15160	445191	427194	5407201	5407191
82	12163	30.397	0	0	15172	37560	431817	401456	5407207	5407198
81	12171	61.679	0	0	253472	286410	345702	407355	5407003	5407024
82	12172	45.134	0	0	37572	66060	400159	445254	5407005	5406992
81	12181	99.208	0	0	191022	253460	445189	346033	5406804	5406800
81	12192	98.912	0	0	134972	191010	346408	445265	5406602	5406599
78	12201	33.562	0	0	155922	177410	346758	380296	5406394	5406400
78	12202	72.822	0	0	224172	269360	372464	445237	5406413	5406400
78	12211	98.212	0	0	99172	155910	445200	347047	5406205	5406203
78	12221	67.053	0	0	34622	74760	347438	414442	5406002	5405978
78	12222	36.54	0	0	74772	99160	408703	445210	5406003	5406005
78	12231	67.047	0	0	12	34610	414779	347764	5405809	5405802
78	12232	35.85	0	0	269372	296910	445194	409374	5405809	5405801
77	12241	97.141	0	0	295322	351360	348142	445237	5405599	5405609
77	12251	96.777	0	0	241322	295310	445178	348439	5405404	5405398
76	12261	96.445	0	0	374322	424132	348844	445227	5405191	5405200

76	12271	96.15	0	0	314522	374310	445192	349111	5405001	5404993
76	12282	95.73	0	0	263272	314510	349539	445212	5404798	5404803
76	12291	95.388	0	0	204572	263110	445174	349849	5404610	5404600
73	12301	94.995	0	0	7672	58210	445165	350211	5404399	5404398
72	12311	94.708	0	0	11222	61460	445190	350530	5404205	5404198
73	12321	94.308	0	0	58222	104910	350981	445251	5404003	5404002
74	12331	38.065	0	0	154672	173410	351298	389353	5403806	5403806
74	12332	61.382	0	0	173422	208560	383868	445224	5403803	5403803
74	12341	93.905	0	0	104322	154660	445167	351291	5403602	5403600
74	12351	94.006	0	0	54022	104310	351320	445293	5403400	5403403
74	12361	93.987	0	0	12	54010	445183	351245	5403206	5403198
73	12371	93.971	0	0	330522	376610	351286	445219	5403011	5402998
73	12381	94.004	0	0	283472	330510	445192	351223	5402815	5402799
73	12391	93.98	0	0	235572	283460	351279	445219	5402592	5402609
73	12403	69.025	0	0	185072	219010	445180	376186	5402407	5402404
73	12404	30.937	0	0	219022	235560	382133	351208	5402399	5402396
69	12411	93.954	0	0	102022	153210	445164	351244	5402202	5402197
69	12421	93.985	0	0	52072	102010	351298	445248	5402003	5401978
69	12431	93.951	0	0	12	52060	445174	351266	5401808	5401799
68	12441	64.207	0	0	286072	319560	351275	415447	5401596	5401606
68	12442	35.105	0	0	319572	338010	410159	445247	5401598	5401607
68	12451	93.967	0	0	235772	286060	445184	351265	5401404	5401402
68	12462	94.069	0	0	185822	235760	351278	445293	5401233	5401198
67	12471	93.983	0	0	355222	399110	351279	445224	5401010	5401010
67	12481	94.011	0	0	301922	355210	445201	351240	5400800	5400792
67	12491	93.963	0	0	254222	301910	351283	445203	5400584	5400599
67	12501	93.99	0	0	200372	254210	445181	351239	5400408	5400395
67	12511	94.003	0	0	153372	200360	351305	445268	5400205	5400204
67	12521	94.042	0	0	100672	153360	445190	351203	5400001	5400000
67	12531	93.94	0	0	52222	100660	351310	445209	5399802	5399804
67	12541	93.988	0	0	12	52210	445185	351247	5399612	5399597
76	12552	94.045	0	0	109922	159010	351277	445280	5399419	5399401
63	12561	81.087	0	0	63672	109810	445192	364131	5399204	5399201
76	12562	28.424	0	0	92722	109910	379681	351274	5399195	5399201
63	12571	80.314	0	0	18522	63660	364971	445257	5399006	5399001
76	12572	28.609	0	0	76122	92710	351281	379876	5399005	5399005
62	12581	20.443	0	0	279822	291810	445174	424741	5398808	5398800
76	12582	84.726	0	0	28122	76110	435934	351254	5398810	5398795
62	12591	93.946	0	0	223222	279810	351291	445195	5398597	5398600
62	12601	66.941	0	0	170572	205460	445190	378272	5398406	5398401
62	12602	29.633	0	0	205472	223210	380901	351279	5398401	5398401
62	12611	94.045	0	0	113922	170560	351280	445286	5398201	5398199
62	12621	93.94	0	0	60972	113910	445176	351274	5398005	5398003
62	12631	94.016	0	0	12	60960	351297	445263	5397807	5397798
61	12641	94.054	0	0	277172	337160	351295	445270	5397610	5397604
61	12651	94	0	0	220722	277160	445187	351253	5397404	5397400
61	12661	94.001	0	0	158422	220710	351289	445212	5397202	5397199
72	12671	94.03	0	0	177072	234310	351276	445241	5397002	5397000
57	12681	27.995	0	0	39122	58560	410187	382213	5396804	5396800
61	12682	38.699	0	0	7372	30760	389955	351279	5396803	5396795
72	12691	29.453	0	0	234322	254910	445193	415763	5396791	5396804
60	12701	59.013	0	0	298222	329310	351304	410288	5396606	5396605
72	12711	29.539	0	0	254922	275710	415786	445297	5396611	5396599

60	12721	58.982	0	0	261022	298210	410188	351245	5396399	5396400
72	12731	29.459	0	0	275722	297160	445200	415771	5396405	5396394
60	12741	58.963	0	0	225922	261010	351284	410211	5396202	5396205
72	12751	29.426	0	0	297172	319110	415811	445204	5396217	5396201
60	12761	21.124	0	0	186372	199660	410197	389089	5396017	5396006
60	12762	41.63	0	0	199672	225910	392878	351276	5396005	5395999
72	12771	29.471	0	0	319122	341460	445203	415770	5395991	5396006
60	12781	59.006	0	0	151872	186360	351289	410248	5395796	5395793
72	12791	29.527	0	0	341472	363860	415791	445276	5395807	5395804
60	12801	58.999	0	0	113122	151860	410202	351251	5395603	5395601
73	12812	29.412	0	0	104922	126710	445174	415784	5395606	5395599
60	12821	59.064	0	0	77972	113110	351288	410301	5395407	5395401
73	12831	29.512	0	0	126722	146760	415801	445285	5395400	5395398
60	12841	59.006	0	0	37422	77960	410199	351252	5395214	5395202
73	12851	29.441	0	0	146772	167210	445193	415778	5395220	5395204
60	12861	59.034	0	0	12	37410	351293	410281	5395010	5395002
73	12871	29.458	0	0	167222	185060	415785	445223	5394995	5395005
59	12881	58.934	0	0	356522	393060	410198	351289	5394797	5394800
74	12891	29.474	0	0	208572	229610	445156	415699	5394807	5394800
59	12901	58.998	0	0	320572	356510	351297	410269	5394604	5394610
74	12911	29.497	0	0	229622	249360	415818	445299	5394606	5394601
59	12921	59.027	0	0	281122	320560	410205	351212	5394369	5394401
74	12931	29.439	0	0	249372	269410	445187	415765	5394403	5394403
59	12941	58.883	0	0	238572	281110	351285	410133	5394203	5394199
74	12951	29.532	0	0	269422	289610	415779	445296	5394205	5394208
59	12961	23.186	0	0	195772	210010	410198	387023	5394010	5394000
59	12962	38.411	0	0	210022	238560	389659	351271	5394006	5394000
74	12971	29.432	0	0	289622	309960	445194	415781	5394006	5394000
59	12981	58.952	0	0	156922	195760	351300	410224	5393800	5393797
74	12991	18.62	0	0	309972	321698	415799	434409	5393803	5393797
74	12992	16.807	0	0	326922	337560	428439	445239	5393805	5393801
59	13001	58.975	0	0	120322	156910	410192	351241	5393601	5393597
96	13013	29.438	0	0	118322	134060	445185	415761	5393605	5393602
59	13021	58.969	0	0	80372	120310	351303	410243	5393406	5393405
96	13032	29.519	0	0	134072	150410	415789	445297	5393400	5393401
58	13041	59.039	0	0	118222	157510	410211	351228	5393207	5393203
96	13052	29.431	0	0	150422	167810	445178	415760	5393207	5393203
58	13061	58.965	0	0	85372	118210	351300	410219	5393025	5393001
96	13072	29.489	0	0	167822	185460	415780	445257	5393004	5393005
58	13081	58.97	0	0	44822	85360	410187	351274	5392805	5392803
96	13092	29.404	0	0	185472	201710	445170	415777	5392801	5392800
58	13101	58.964	0	0	7022	44810	351310	410216	5392604	5392606
76	13111	29.469	0	0	159022	183610	445189	415756	5392608	5392596
57	13121	58.939	0	0	12	39110	351305	410203	5392403	5392401
76	13131	29.472	0	0	183622	204560	415796	445245	5392403	5392410
56	13142	58.954	0	0	121272	159910	410176	351259	5392205	5392197
77	13151	29.474	0	0	351372	370260	445194	415738	5392207	5392199
55	13161	58.996	0	0	49722	86760	410174	351209	5392007	5391999
84	13171	29.501	0	0	88222	108410	445197	415714	5392007	5391997
105	13172	13.004	0	0	140872	151110	428741	415747	5392017	5391999
55	13181	58.981	0	0	7322	49710	351326	410271	5391803	5391803
84	13191	29.414	0	0	67922	88210	415796	445194	5391805	5391806
54	13201	58.382	0	0	228172	265610	409582	351258	5391614	5391595

111	13213	29.458	0	0	7322	26060	445207	415764	5391606	5391601
54	13221	57.773	0	0	188272	228160	351293	409001	5391401	5391404
105	13232	29.473	0	0	171572	189860	445201	415743	5391404	5391400
54	13241	57.225	0	0	149972	188260	351299	408457	5391202	5391201
83	13251	29.485	0	0	305672	326060	445194	415734	5391202	5391202
54	13261	56.564	0	0	114972	149960	407790	351272	5391009	5391005
83	13271	29.424	0	0	283622	305660	415805	445201	5391006	5391009
54	13281	55.967	0	0	77122	114960	351320	407230	5390806	5390800
83	13291	29.46	0	0	262272	283610	445183	415750	5390813	5390803
54	13301	55.419	0	0	42172	77110	406588	351209	5390614	5390599
83	13311	29.504	0	0	240972	262260	415813	445284	5390605	5390599
54	13321	53.691	0	0	12	38360	351296	404936	5390402	5390434
54	13322	4.693	0	0	38372	42160	401373	406060	5390411	5390399
78	13331	29.563	0	0	339872	360310	415783	445315	5390405	5390400
53	13341	54.189	0	0	250472	282760	405376	351214	5390203	5390201
78	13351	29.463	0	0	318272	339860	445205	415764	5390187	5390202
53	13361	53.585	0	0	213572	250460	351292	404846	5390002	5390004
78	13371	29.519	0	0	296922	318260	415791	445270	5390023	5390001
53	13381	21.905	0	0	179822	193060	404196	382301	5389806	5389801
53	13382	33.536	0	0	193072	213560	384751	351231	5389802	5389794
53	13391	52.377	0	0	144272	179810	351301	403650	5389604	5389602
53	13401	51.74	0	0	113122	144260	402973	351255	5389406	5389399
53	13411	51.162	0	0	75672	113110	351307	402434	5389206	5389203
53	13421	50.567	0	0	44072	75660	401794	351251	5389008	5388999
53	13431	49.938	0	0	7272	44060	351310	401212	5388805	5388804
52	13441	49.351	0	0	310172	340960	351298	400626	5388599	5388609
52	13451	48.75	0	0	277622	310160	399976	351254	5388403	5388397
52	13461	48.115	0	0	249122	277610	351303	399397	5388204	5388200
52	13471	47.149	0	0	217754	249110	398383	351258	5388011	5388000
52	13481	47.001	0	0	186622	217560	351292	398269	5387804	5387803
52	13491	46.945	0	0	154372	186610	398189	351276	5387602	5387601
52	13501	46.988	0	0	123022	154360	351298	398249	5387404	5387404
52	13511	46.932	0	0	91322	123010	398191	351286	5387202	5387196
52	13521	46.959	0	0	60022	91310	351294	398230	5387009	5387013
52	13531	47.015	0	0	30672	60010	398192	351207	5386803	5386799
52	13542	46.97	0	0	12	30660	351286	398232	5386605	5386600
51	13551	46.936	0	0	288122	318760	398187	351294	5386395	5386393
51	13561	47.029	0	0	256422	288110	351291	398265	5386202	5386196
51	13571	46.957	0	0	223172	256410	398185	351286	5386011	5385995
51	13581	46.973	0	0	191572	223160	351296	398223	5385795	5385799
51	13591	48.793	0	0	119972	151960	351311	400053	5385604	5385610
51	13601	50.625	0	0	86322	119960	401814	351248	5385399	5385402
50	13612	52.396	0	0	340272	378060	403608	351264	5385205	5385197
50	13621	54.203	0	0	302822	340160	351279	405435	5385021	5385006
50	13631	56.007	0	0	258422	302810	407207	351261	5384798	5384799
50	13641	56.027	0	0	219122	258410	351277	407245	5384603	5384605
50	13651	29.009	0	0	176622	195260	407207	378229	5384403	5384397
50	13652	30.601	0	0	195272	219110	381816	351253	5384398	5384398
50	13661	55.962	0	0	138672	176610	351309	407205	5384211	5384206
50	13671	55.958	0	0	97822	138660	407122	351230	5383998	5384001
50	13681	55.872	0	0	59872	97810	351291	407108	5383802	5383809
50	13691	55.873	0	0	19222	59860	407065	351251	5383584	5383597
49	13701	29.654	0	0	169672	188010	351298	380939	5383403	5383405

50	13702	29.803	0	0	12	19210	377252	407032	5383402	5383406
49	13711	55.738	0	0	133472	169660	406967	351257	5383205	5383200
49	13721	55.668	0	0	99872	133460	351310	406955	5383002	5383001
49	13731	55.701	0	0	61722	99860	406895	351223	5382802	5382800
49	13741	55.691	0	0	23222	61710	351303	406964	5382603	5382597
48	13751	27.596	0	0	324922	350610	406830	379267	5382403	5382403
49	13752	31.039	0	0	12	23210	382282	351261	5382409	5382399
48	13761	55.56	0	0	288622	324910	351287	406810	5382203	5382206
48	13771	55.528	0	0	249622	288610	406768	351273	5381991	5382002
48	13781	55.523	0	0	215422	249610	351306	406803	5381801	5381806
48	13791	25.498	0	0	177622	193260	406680	381194	5381604	5381599
48	13792	33.379	0	0	193272	215410	384562	351198	5381603	5381603
48	13801	55.435	0	0	147022	177610	351290	406702	5381402	5381396
48	13811	55.392	0	0	110972	147010	406613	351253	5381201	5381203
48	13822	55.383	0	0	77522	110960	351288	406640	5381008	5381000
48	13831	55.327	0	0	35422	77360	406539	351259	5380808	5380801
48	13841	55.322	0	0	12	35410	351307	406593	5380600	5380601
47	13851	55.326	0	0	348172	382160	351291	406566	5380403	5380403
47	13861	77.727	0	0	291572	348160	406422	328780	5380192	5380200
47	13871	77.742	0	0	239872	291560	328811	406465	5379997	5380003
47	13881	26.247	0	0	223122	239860	355002	328777	5379803	5379807
47	13882	51.87	0	0	382172	416510	406351	354534	5379786	5379801
47	13891	77.504	0	0	135372	187860	328909	406336	5379608	5379599
47	13901	77.44	0	0	84972	135360	406290	328932	5379409	5379396
47	13911	77.211	0	0	27222	84960	329147	406276	5379202	5379204
47	13921	30.479	0	0	8122	27210	359678	329218	5378998	5378998
47	13922	45.198	0	0	187872	216110	406217	361060	5379014	5379001
47	13923	9.282	0	0	216122	223110	365195	355931	5379001	5379003
46	13931	76.843	0	0	287522	337110	329414	406195	5378811	5378808
46	13941	76.758	0	0	237522	287510	406149	329450	5378577	5378599
46	13951	76.568	0	0	183572	237510	329648	406128	5378406	5378407
46	13961	50.786	0	0	128822	165310	406060	355321	5378202	5378208
46	13962	28.469	0	0	165322	183560	358138	329691	5378205	5378199
46	13971	70.46	0	0	78122	121610	329859	400235	5378008	5377944
46	13972	9.585	0	0	121622	128810	396510	406083	5378000	5378001
46	13981	25.624	0	0	63922	78110	355577	329969	5377802	5377800
46	13982	53.041	0	0	337122	368260	406009	353006	5377799	5377799
45	13992	75.934	0	0	331572	378360	330086	405980	5377603	5377607
45	14001	75.859	0	0	284422	331360	405935	330114	5377406	5377398
45	14011	75.669	0	0	233022	284410	330329	405952	5377201	5377204
45	14021	37.59	0	0	211822	233010	367939	330363	5376999	5377001
45	14022	40.501	0	0	378372	403410	405854	365374	5377000	5377001
45	14031	75.297	0	0	131422	182960	330590	405846	5376803	5376808
45	14041	75.164	0	0	85772	131410	405783	330663	5376604	5376599
45	14051	74.997	0	0	32772	85760	330801	405752	5376403	5376401
45	14061	43.003	0	0	7372	32760	373867	330882	5376205	5376206
45	14062	46.339	0	0	182972	211810	405671	359354	5376200	5376203
44	14071	38.02	0	0	130272	161210	331055	369005	5376002	5375989
46	14072	42.919	0	0	12	28560	362868	405742	5376010	5376001
44	14081	74.585	0	0	87022	130260	405604	331072	5375800	5375794
44	14091	74.504	0	0	24522	87010	331273	405629	5375604	5375606
44	14101	29.633	0	0	7822	24510	361009	331390	5375399	5375402
46	14102	48.01	0	0	28572	63910	405559	357617	5375397	5375394

43	14111	74.105	0	0	171972	227310	331511	405550	5375212	5375204
43	14121	29.842	0	0	151872	171960	361363	331542	5375001	5374995
43	14122	48.122	0	0	227322	268410	405486	357427	5375008	5374998
40	14131	73.879	0	0	35722	86710	405455	331654	5374803	5374797
39	14142	44.854	0	0	91422	113810	331871	376714	5374608	5374602
40	14144	39.201	0	0	7372	35710	366298	405449	5374602	5374606
38	14151	42.782	0	0	102522	133160	362640	405393	5374405	5374402
39	14152	44.437	0	0	67572	91410	376315	331889	5374404	5374399
38	14161	51.26	0	0	64022	102510	405346	354503	5374198	5374090
40	14162	27.271	0	0	86722	101060	332136	359393	5374204	5374211
38	14172	73.142	0	0	13422	62460	332223	405322	5374003	5374002
36	14181	41.525	0	0	240972	267210	405253	363747	5373803	5373794
37	14182	29.294	0	0	46272	68150	370121	340861	5373807	5373800
38	14183	12.306	0	0	6722	13410	344564	332260	5373800	5373801
36	14191	40.008	0	0	217572	240960	365271	405263	5373602	5373604
37	14192	38.117	0	0	23972	46260	332457	370543	5373603	5373604
32	14201	43.97	0	0	7372	33860	376503	332548	5373404	5373403
32	14202	31.703	0	0	81722	102360	405192	373504	5373401	5373398
32	14211	72.311	0	0	33872	81710	332695	404970	5373204	5373203
35	14221	71.964	0	0	45722	88310	404627	332741	5372997	5372997
35	14231	71.481	0	0	88322	140260	332944	404347	5372797	5372805
35	14241	41.094	0	0	140272	167160	404037	362991	5372607	5372596
37	14242	34.666	0	0	12	23960	367638	333000	5372605	5372598
40	14251	43.937	0	0	101072	129010	359901	403795	5372407	5372406
40	14252	30.743	0	0	176522	191810	333196	363924	5372401	5372410
40	14261	70.342	0	0	129022	176510	403478	333227	5372199	5372203
40	14271	30.935	0	0	209922	229560	364290	333384	5372005	5372001
40	14272	41.921	0	0	362672	393310	403164	361309	5371991	5372000
40	14281	69.513	0	0	229572	272110	333542	402990	5371809	5371805
40	14291	69.144	0	0	272122	320960	402606	333569	5371590	5371600
40	14301	68.688	0	0	320972	362660	333777	402395	5371407	5371405
41	14311	31.751	0	0	12	21560	365524	333787	5371204	5371202
41	14313	31.094	0	0	341522	362560	402030	370954	5371199	5371196
42	14314	12.485	0	0	186422	193760	374301	361821	5371200	5371202
41	14321	67.859	0	0	21572	70410	333995	401813	5371007	5370998
41	14331	67.481	0	0	70422	120210	401488	334054	5370804	5370803
41	14341	67.077	0	0	120222	166010	334232	401265	5370602	5370600
41	14351	28.648	0	0	166022	189410	400912	372290	5370403	5370399
41	14352	40.621	0	0	189422	213860	374928	334322	5370401	5370403
41	14361	66.227	0	0	213872	256310	334473	400664	5370200	5370201
41	14371	65.803	0	0	256322	300510	400342	334582	5369998	5370004
41	14381	65.446	0	0	300522	341310	334711	400105	5369804	5369803
42	14391	33.851	0	0	2372	20560	368628	334785	5369600	5369599
51	14392	39.363	0	0	165722	191560	399754	360454	5369599	5369581
42	14401	64.579	0	0	20572	65210	334960	399495	5369405	5369400
42	14411	64.178	0	0	65222	104560	399197	335049	5369201	5369196
42	14421	63.818	0	0	104572	146610	335176	398960	5369002	5369002
42	14432	63.384	0	0	146622	186410	398624	335270	5368801	5368798
34	14441	27.063	0	0	232622	247710	335445	362496	5368603	5368600
35	14442	10.814	0	0	8122	16160	358074	368872	5368597	5368614
35	14443	33.106	0	0	16172	45610	365358	398397	5368609	5368602
34	14452	62.59	0	0	190372	232610	398038	335510	5368398	5368396
34	14462	29.416	0	0	147272	163210	335770	365172	5368197	5368196

34	14463	37.795	0	0	163222	190260	360058	397810	5368207	5368205
34	14474	61.644	0	0	106672	147260	397475	335891	5368016	5368004
34	14481	8.364	0	0	68672	72960	336044	344393	5367804	5367907
34	14482	48.673	0	0	73272	106510	341671	390301	5367804	5367805
34	14491	54.256	0	0	32322	68660	390316	336123	5367606	5367604
33	14501	24.148	0	0	340572	353260	336350	360489	5367408	5367405
34	14502	32.476	0	0	6922	32310	357939	390364	5367415	5367405
33	14511	54.053	0	0	307472	340560	390391	336413	5367206	5367204
33	14521	53.845	0	0	270372	307460	336654	390439	5367005	5366999
33	14531	12.499	0	0	232222	242910	390445	378016	5366792	5366799
33	14532	44.004	0	0	242922	270360	380679	336721	5366801	5366791
33	14541	53.665	0	0	196222	232210	336962	390576	5366604	5366612
33	14551	26.763	0	0	158822	180210	390529	363815	5366385	5366395
33	14552	29.864	0	0	180222	196210	366943	337094	5366403	5366393
33	14562	53.409	0	0	122672	158810	337256	390618	5366205	5366202
33	14571	16.683	0	0	77172	93010	390592	373983	5365992	5365986
33	14572	39.718	0	0	93022	119510	376961	337290	5365993	5366004
33	14581	53.154	0	0	39672	77160	337574	390680	5365804	5365801
32	14591	53.047	0	0	239122	275110	337710	390729	5365612	5365602
32	14601	26.381	0	0	222922	239110	364202	337832	5365404	5365403
32	14602	29.34	0	0	275122	296710	390698	361375	5365403	5365402
32	14611	26.374	0	0	208122	222910	338002	364368	5365198	5365205
32	14612	29.368	0	0	296722	317060	361433	390784	5365206	5365201
32	14621	52.739	0	0	172472	208110	390792	338080	5365000	5365001
32	14631	52.591	0	0	138472	172460	338323	390889	5364804	5364805
32	14641	52.448	0	0	102372	138460	390854	338433	5364604	5364602
31	14651	52.368	0	0	298122	331360	338604	390947	5364406	5364400
31	14661	52.295	0	0	261322	298110	390938	338673	5364205	5364202
31	14671	52.097	0	0	228172	261310	338910	390985	5364008	5364001
31	14681	52.013	0	0	191322	228160	391003	339023	5363801	5363804
31	14691	29.866	0	0	154172	170960	339223	369076	5363599	5363600
31	14692	26.745	0	0	170972	191310	364392	391118	5363601	5363603
31	14701	51.845	0	0	117422	154160	391085	339270	5363403	5363401
31	14711	51.701	0	0	83872	117410	339505	391184	5363204	5363199
31	14721	51.601	0	0	47822	83860	391143	339575	5363001	5363000
31	14731	51.452	0	0	15172	47810	339826	391252	5362803	5362804
30	14741	31.967	0	0	219872	246810	391222	359296	5362601	5362595
31	14742	23.989	0	0	12	15160	363913	339935	5362601	5362600
30	14751	51.22	0	0	183572	219860	340112	391284	5362412	5362396
33	14762	51.109	0	0	12	39660	391295	340241	5362198	5362202
29	14771	51.055	0	0	239722	273360	340396	391385	5362006	5362017
29	14781	50.983	0	0	202822	239710	391366	340458	5361811	5361797
29	14791	27.863	0	0	164672	181460	340694	368527	5361604	5361606
29	14792	27.22	0	0	181472	202810	364295	391474	5361605	5361595
29	14801	50.781	0	0	127572	164660	391458	340787	5361420	5361403
29	14812	50.59	0	0	94322	127560	341021	391499	5361199	5361207
29	14821	50.512	0	0	58522	94260	391525	341108	5361000	5361004
29	14831	50.37	0	0	21472	58510	341317	391581	5360814	5360804
28	14841	25.198	0	0	124572	142160	391611	366427	5360595	5360602
29	14842	28.479	0	0	12	21460	369825	341379	5360601	5360590
28	14851	50.08	0	0	95322	124560	341611	391670	5360404	5360406
28	14861	50.002	0	0	63022	95310	391673	341695	5360192	5360202
28	14871	49.876	0	0	31972	63010	341900	391751	5360004	5360008

28	14881	49.742	0	0	12	31960	391749	342031	5359804	5359803
23	14891	49.709	0	0	296972	332110	391782	342173	5359584	5359601
23	14901	49.636	0	0	264372	296960	342356	391899	5359397	5359401
23	14911	49.471	0	0	231322	264360	391826	342415	5359187	5359201
23	14921	49.42	0	0	196072	231310	342650	391961	5358999	5358988
23	14931	8.81	0	0	159872	166560	391934	383138	5358807	5358796
23	14932	45.334	0	0	166572	196060	387986	342690	5358802	5358802
23	14941	49.173	0	0	127322	159860	342946	392059	5358605	5358599
23	14952	49.009	0	0	91472	127310	391995	343037	5358411	5358405
23	14961	48.914	0	0	56022	91260	343253	392103	5358205	5358204
22	14971	48.812	0	0	284072	314360	343421	392164	5358009	5358001
22	14983	48.719	0	0	249572	284060	392097	343448	5357798	5357804
22	14991	48.602	0	0	213472	249260	343696	392199	5357618	5357601
22	15001	13.17	0	0	173022	186510	392190	379090	5357393	5357368
22	15002	38.997	0	0	186522	213460	382739	343782	5357384	5357394
22	15011	48.35	0	0	138272	173010	343999	392264	5357213	5357198
22	15021	48.292	0	0	98522	138260	392261	344077	5356989	5357003
22	15031	48.101	0	0	62822	98510	344310	392312	5356808	5356800
22	15041	48.102	0	0	22922	62810	392336	344400	5356593	5356608
21	15051	47.879	0	0	309272	343060	344589	392432	5356406	5356403
21	15061	47.74	0	0	274322	309260	392397	344697	5356203	5356201
21	15071	47.62	0	0	243122	274310	344908	392500	5356003	5355998
21	15081	47.514	0	0	210372	243110	392469	344986	5355803	5355800
21	15091	36.43	0	0	177972	199710	345210	381623	5355606	5355604
21	15092	13.612	0	0	199722	210360	378922	392523	5355603	5355599
21	15101	47.318	0	0	146372	177960	392553	345271	5355401	5355401
21	15111	47.164	0	0	117022	146360	345505	392643	5355200	5355201
21	15121	47.049	0	0	85422	117010	392633	345610	5355004	5354998
8	15131	35.477	0	0	655072	682060	345828	381169	5354801	5354744
22	15132	14.139	0	0	11872	22910	378581	392693	5354801	5354794
8	15141	46.896	0	0	621622	655060	392717	345934	5354594	5354608
8	15151	46.739	0	0	591172	621610	346133	392774	5354413	5354411
8	15161	14.454	0	0	555872	567610	392790	378410	5354202	5354187
8	15162	35.923	0	0	567622	591160	382003	346153	5354205	5354201
8	15171	46.54	0	0	526322	555860	346410	392829	5353997	5354007
8	15181	46.574	0	0	490422	526310	392845	346524	5353797	5353809
8	15191	46.288	0	0	456872	490410	346709	392916	5353597	5353598
8	15201	46.276	0	0	421722	456860	392914	346773	5353388	5353408
8	15211	46.118	0	0	388272	421710	347002	392981	5353204	5353196
8	15221	15.355	0	0	350172	360410	392987	377644	5352997	5353001
8	15222	33.698	0	0	360422	388260	380676	347050	5353002	5353004
8	15231	45.789	0	0	323472	350160	347291	393059	5352801	5352798
8	15241	45.671	0	0	294672	323460	393078	347428	5352600	5352601
8	15251	45.539	0	0	266822	294660	347623	393142	5352404	5352405
8	15261	45.455	0	0	167422	195760	393150	347713	5352200	5352204
8	15271	45.355	0	0	140322	167410	347886	393223	5352007	5352005
8	15281	45.252	0	0	112422	140310	393226	347994	5351794	5351801
8	15291	45.142	0	0	83172	112410	348199	393320	5351604	5351608
8	15301	45.036	0	0	51472	83160	393308	348297	5351403	5351400
8	15311	44.846	0	0	21172	51460	348520	393345	5351204	5351200
7	15321	24.802	0	0	277372	294510	393370	368587	5351003	5350998
8	15322	23.166	0	0	7022	21160	371777	348619	5351000	5350998
7	15331	44.641	0	0	249572	277360	348815	393437	5350806	5350804

3	15342	35.713	0	0	32772	54560	348957	384623	5350604	5350542
21	15343	14.876	0	0	74372	85410	378966	393834	5350601	5350598
3	15351	44.497	0	0	12	32760	393480	349025	5350400	5350400
7	15361	44.344	0	0	221022	249560	393519	349202	5350201	5350198
7	15371	44.198	0	0	192772	221010	349415	393590	5349998	5350007
7	15381	25.089	0	0	161872	181060	393578	368511	5349800	5349799
7	15382	21.567	0	0	181072	192760	371014	349453	5349800	5349801
7	15391	43.947	0	0	133922	161860	349711	393636	5349600	5349603
7	15401	43.861	0	0	103322	133910	393666	349831	5349403	5349399
7	15411	43.758	0	0	74422	103310	350003	393729	5349205	5349203
7	15421	44.595	0	0	44522	74410	394644	350076	5348999	5349002
7	15431	45.427	0	0	14572	44510	350291	395696	5348804	5348799
5	15441	26.227	0	0	173972	192310	396552	370343	5348600	5348602
7	15443	21.066	0	0	3572	14560	371418	350357	5348604	5348602
5	15451	46.959	0	0	146572	173960	350585	397525	5348414	5348403
5	15461	47.788	0	0	115972	146560	398455	350694	5348201	5348199
5	15471	48.598	0	0	85172	115960	350889	399462	5347999	5348006
5	15481	49.439	0	0	51022	85160	400352	350950	5347802	5347800
5	15491	50.164	0	0	19972	51010	351206	401334	5347607	5347611
3	15501	19.838	0	0	54572	72010	402247	382435	5347406	5347381
3	15502	30.138	0	0	72022	90010	381415	351293	5347405	5347400
21	15504	6.393	0	0	68572	74360	385093	378705	5347403	5347403
8	15512	51.783	0	0	230722	266810	403186	351435	5347203	5347200
8	15522	30.051	0	0	195772	212260	351649	381689	5347001	5347007
8	15523	24.159	0	0	212272	230710	379076	403219	5347004	5347005
4	15531	34.533	0	0	101222	126010	403207	368698	5346793	5346800
4	15532	19.998	0	0	126022	137610	371679	351722	5346811	5346803
4	15541	51.224	0	0	71072	101210	351933	403133	5346621	5346612
3	15551	50.961	0	0	90022	116710	352122	403052	5346405	5346408
4	15561	50.837	0	0	2522	38310	352262	403069	5346202	5346201
4	15571	50.617	0	0	38322	71060	402902	352312	5346000	5346002
4	15581	50.49	0	0	137772	178110	352540	402839	5345777	5345808
4	15591	50.345	0	0	178122	223810	402776	352667	5345638	5345615
4	15601	50.082	0	0	223822	265510	352870	402701	5345398	5345407
4	15611	28.399	0	0	265522	292910	402622	374432	5345200	5345237
5	15612	26.426	0	0	12	19960	379345	352936	5345204	5345201
15	15621	24.278	0	0	7222	24210	377369	353106	5344999	5345003
16	15622	28.428	0	0	205422	223860	402550	374140	5345001	5345000
15	15631	49.258	0	0	24222	60660	353305	402527	5344802	5344805
15	15641	49.173	0	0	60672	92160	402378	353230	5344603	5344600
15	15651	49.052	0	0	92172	123710	353331	402360	5344398	5344405
15	15661	48.973	0	0	123722	156910	402252	353306	5344198	5344202
15	15671	48.85	0	0	156922	188660	353368	402193	5344005	5344000
15	15681	48.833	0	0	188672	221410	402103	353298	5343803	5343799
15	15691	32.145	0	0	221422	240510	353398	385530	5343607	5343602
16	15692	19.352	0	0	12	14560	382740	402081	5343598	5343599
16	15701	48.63	0	0	14572	48910	401966	353363	5343406	5343395
16	15711	48.544	0	0	48922	79560	353402	401920	5343207	5343202
16	15721	48.459	0	0	79572	112610	401800	353366	5343005	5342996
16	15731	48.387	0	0	112622	143810	353398	401760	5342801	5342803
16	15741	48.375	0	0	143822	177510	401674	353326	5342603	5342598
16	15751	48.254	0	0	177522	205410	353440	401675	5342402	5342400
20	15762	47.746	0	0	472	33860	401012	353342	5342153	5342194

20	15771	48.077	0	0	33872	64310	353463	401484	5342014	5342007
20	15781	48.057	0	0	64322	96960	401386	353389	5341798	5341805
20	15791	47.922	0	0	96972	126560	353475	401353	5341595	5341590
20	15801	47.807	0	0	126572	156560	401230	353470	5341412	5341408
20	15811	27.714	0	0	156572	171610	353500	381194	5341213	5341199
21	15813	23.037	0	0	12	15010	378158	401184	5341210	5341199
21	15821	47.665	0	0	15022	42660	401094	353447	5341004	5341004
21	15831	47.529	0	0	42672	68560	353538	401050	5340803	5340800
11	15841	47.484	0	0	292222	320960	400948	353486	5340589	5340604
11	15851	47.382	0	0	262922	292210	353556	400915	5340400	5340402
11	15861	47.334	0	0	233272	262910	400800	353487	5340202	5340201
11	15871	23.986	0	0	215072	233260	376794	400760	5339996	5340002
11	15872	27.164	0	0	320972	337410	353561	380714	5340003	5339999
11	15881	26.896	0	0	197922	215060	400650	373767	5339795	5339800
11	15891	26.804	0	0	180472	197910	373817	400607	5339602	5339604
11	15901	26.825	0	0	163472	180460	400507	373694	5339405	5339400
10	15911	26.749	0	0	362622	379360	400434	373698	5339201	5339204
10	15921	26.609	0	0	344972	362610	373821	400414	5339005	5339001
10	15931	26.524	0	0	325072	344960	400295	373793	5338800	5338803
10	15941	26.51	0	0	305272	325060	373809	400298	5338605	5338597
10	15951	26.442	0	0	283372	305260	400120	373701	5338400	5338404
10	15961	26.358	0	0	262922	283360	373826	400161	5338204	5338199
10	15971	26.226	0	0	242672	262910	399982	373776	5337997	5338003
10	15981	26.206	0	0	224672	242660	373811	400001	5337803	5337806
10	15991	26.091	0	0	205222	224660	399826	373760	5337595	5337604
10	16001	25.978	0	0	187322	205210	373817	399778	5337402	5337399
10	16011	25.993	0	0	168272	187310	399674	373706	5337204	5337202
10	16021	25.922	0	0	149972	168260	373799	399706	5337003	5336998
10	16031	25.831	0	0	130622	149960	399539	373727	5336809	5336802
10	16041	25.703	0	0	112672	130610	373807	399494	5336610	5336604
10	16051	25.651	0	0	92772	112660	399391	373759	5336407	5336405
10	16061	25.573	0	0	73472	92760	373829	399371	5336201	5336202
10	16071	25.507	0	0	52622	73460	399249	373769	5336000	5336000
10	16081	21.455	0	0	36222	52610	373806	395246	5335805	5335799
10	16091	21.497	0	0	18372	36210	395211	373732	5335599	5335602
10	16101	21.462	0	0	12	18360	373804	395247	5335400	5335408
12	16113	21.518	0	0	27222	45960	373804	395222	5335195	5335210
11	16121	21.459	0	0	26272	43810	395203	373760	5334995	5335002
11	16131	21.442	0	0	43822	61960	373799	395224	5334799	5334807
11	16141	21.444	0	0	61972	78660	395201	373773	5334604	5334601
11	16151	21.464	0	0	78672	95360	373798	395249	5334401	5334405
11	16161	21.515	0	0	95372	110560	395204	373701	5334193	5334196
11	16171	21.46	0	0	110572	127710	373807	395249	5334004	5334006
11	16181	21.453	0	0	127722	144860	395189	373752	5333798	5333801
11	16191	21.447	0	0	144872	163460	373811	395241	5333602	5333607
9	16201	13.681	0	0	196022	211460	373790	387421	5333406	5333411
12	16203	11.669	0	0	49422	60010	383631	395249	5333403	5333400
9	16211	21.527	0	0	173622	196010	395205	373787	5333204	5333219
9	16221	21.579	0	0	153372	173610	373786	395272	5333000	5333010
9	16232	21.524	0	0	133422	153360	395192	373764	5332801	5332809
9	16241	21.519	0	0	114172	132910	373785	395250	5332600	5332609
9	16251	21.488	0	0	95922	114160	395192	373757	5332399	5332404
9	16261	21.486	0	0	76972	95910	373799	395222	5332203	5332190

9	16271	21.501	0	0	58772	76960	395196	373763	5331993	5332007
9	16282	21.454	0	0	41472	58760	373799	395202	5331799	5331812
9	16291	21.504	0	0	23372	41160	395199	373742	5331597	5331605
9	16301	21.528	0	0	6622	23360	373783	395257	5331384	5331408
12	16311	21.509	0	0	60022	77610	395197	373731	5331198	5331205
12	16321	21.503	0	0	77622	97160	373812	395240	5331020	5330997
12	16331	21.596	0	0	97172	114460	395182	373694	5330792	5330789
12	16341	21.479	0	0	114472	131260	373825	395224	5330598	5330607
12	16351	21.566	0	0	131272	148560	395189	373683	5330388	5330406
12	16361	21.465	0	0	148572	165460	373812	395215	5330205	5330193
20	16371	21.439	0	0	142172	159160	395196	373795	5329995	5330001
24	16382	21.453	0	0	12	19760	373801	395230	5329803	5329802
20	16392	21.454	0	0	125122	142160	373811	395230	5329600	5329607
24	16403	21.494	0	0	19772	41760	395193	373729	5329400	5329406
13	16411	21.6	0	0	192122	212110	395182	373717	5329234	5329219
13	16421	21.49	0	0	176272	192110	373816	395214	5329032	5329027
13	16431	21.509	0	0	156822	176260	395192	373769	5328786	5328807
13	16441	21.555	0	0	117822	139310	395200	373727	5328599	5328593
13	16452	21.684	0	0	139322	156810	373796	395305	5328394	5328382
12	16461	21.494	0	0	317172	335060	395188	373763	5328180	5328210
12	16471	21.591	0	0	297672	317160	373781	395267	5327996	5327997
12	16481	21.47	0	0	278522	297660	395188	373783	5327783	5327823
12	16491	21.484	0	0	260272	278510	373796	395200	5327614	5327578
12	16501	21.583	0	0	189872	207310	373788	395321	5327414	5327374
12	16511	21.413	0	0	207322	224060	395168	373789	5327186	5327198
12	16521	21.479	0	0	224072	241710	373785	395213	5327012	5326995
12	16531	21.549	0	0	241722	260260	395190	373700	5326789	5326814
13	16542	21.575	0	0	101172	117810	373798	395280	5326590	5326613
13	16551	21.49	0	0	13222	31310	395197	373757	5326395	5326411
13	16561	21.502	0	0	31322	48310	373799	395249	5326189	5326203
13	16571	21.467	0	0	48322	64860	395177	373753	5326001	5326010
13	16581	21.569	0	0	64872	83460	373781	395266	5325804	5325804
13	16591	21.518	0	0	83472	101160	395186	373740	5325600	5325590
14	16602	15.028	0	0	12	11760	373803	388771	5325414	5325397
18	16603	12.051	0	0	12222	20160	383172	395217	5325398	5325403
14	16615	8.197	0	0	15322	21560	387050	395232	5325215	5325202
18	16616	13.265	0	0	12	12210	373794	387046	5325204	5325210
13	16621	21.537	0	0	231472	248560	395173	373723	5325003	5325012
18	16635	14.466	0	0	20172	32810	388173	373721	5324799	5324799
14	16642	14.49	0	0	22072	31760	373797	388229	5324609	5324593
14	16652	14.502	0	0	31772	45360	388182	373724	5324403	5324402
14	16662	14.463	0	0	45372	56960	373802	388233	5324192	5324205
14	16671	14.5	0	0	56972	71360	388181	373778	5323999	5324001
14	16682	14.53	0	0	71722	84260	373789	388263	5323807	5323808
14	16691	14.514	0	0	84272	98210	388199	373762	5323620	5323591
14	16701	14.536	0	0	98222	109560	373783	388278	5323426	5323413
14	16711	14.46	0	0	109572	121760	388172	373762	5323195	5323213
17	16721	14.461	0	0	7022	19810	373786	388223	5322996	5323002
17	16731	14.468	0	0	19822	30810	388204	373769	5322798	5322801
17	16741	14.431	0	0	30822	42110	373815	388215	5322604	5322610
17	16751	14.484	0	0	42122	54010	388202	373758	5322394	5322402
17	16761	14.465	0	0	186922	198210	373799	388230	5322201	5322205
17	16771	14.518	0	0	198222	211010	388195	373724	5322011	5321988

17	16781	14.51	0	0	211022	224260	373787	388261	5321802	5321811
17	16791	14.424	0	0	224272	236910	388177	373787	5321606	5321600
17	16801	14.441	0	0	236922	248610	373812	388226	5321416	5321406
17	16811	14.495	0	0	248622	261210	388192	373749	5321193	5321202
17	16821	14.485	0	0	261222	274960	373785	388214	5321007	5320995
17	16831	14.503	0	0	274972	288660	388199	373740	5320823	5320795
17	16841	14.498	0	0	288672	302010	373790	388235	5320595	5320606
17	16851	14.489	0	0	302022	316110	388182	373765	5320400	5320397
18	16861	14.435	0	0	32822	45210	373792	388212	5320200	5320205
18	16871	14.463	0	0	45222	59110	388198	373751	5320002	5319998
18	16881	14.478	0	0	59122	70360	373792	388256	5319783	5319805
18	16891	7.969	0	0	70372	78510	388198	380242	5319605	5319604
18	16892	9.945	0	0	317472	325210	383727	373788	5319601	5319601
18	16901	14.486	0	0	306372	317460	373790	388266	5319399	5319406
18	16911	14.485	0	0	295122	306360	388201	373726	5319201	5319204
18	16921	14.433	0	0	282172	295110	373793	388213	5319000	5319004
18	16931	14.443	0	0	269072	282160	388185	373756	5318799	5318800
18	16941	14.411	0	0	256122	269060	373809	388208	5318605	5318606
18	16951	14.494	0	0	244622	256110	388203	373719	5318402	5318405
18	16961	14.444	0	0	233622	244610	373794	388228	5318206	5318204
18	16971	14.453	0	0	221022	233610	388202	373764	5318004	5318004
18	16981	14.471	0	0	208872	221010	373809	388267	5317807	5317805
18	16991	14.483	0	0	168622	181260	373792	388258	5317609	5317592
18	17001	14.502	0	0	156922	168610	388179	373688	5317398	5317403
18	17011	14.423	0	0	146322	156910	373820	388233	5317200	5317203
18	17021	14.475	0	0	134272	146310	388203	373741	5317000	5317003
18	17031	14.465	0	0	124472	134260	373788	388244	5316783	5316807
18	17041	14.504	0	0	112072	124460	388204	373717	5316597	5316602
18	17051	14.446	0	0	101922	112060	373808	388245	5316405	5316402
18	17061	14.486	0	0	88972	101910	388182	373710	5316196	5316204
18	17071	14.442	0	0	78522	88960	373796	388229	5316004	5316003
17	17081	14.521	0	0	158872	170410	373783	388274	5315790	5315804
17	17091	14.47	0	0	148672	158860	388198	373748	5315598	5315601
17	17101	14.449	0	0	137572	148660	373800	388229	5315407	5315403
17	17111	14.493	0	0	126022	137560	388206	373733	5315210	5315199
17	17122	14.473	0	0	114572	126010	373787	388230	5315006	5314998
18	17131	13.942	0	0	181272	190810	388193	374259	5314800	5314803
18	17141	12.796	0	0	190822	200560	375441	388228	5314600	5314600
20	17152	11.738	0	0	6772	17210	376532	388244	5314399	5314401
20	17161	10.704	0	0	17222	26960	388202	377518	5314208	5314200
20	17171	9.557	0	0	26972	36510	378697	388225	5314006	5313997
20	17181	8.455	0	0	67722	74460	388201	379760	5313803	5313806
20	17193	8.46	0	0	59772	67710	379809	388254	5313594	5313603
20	17201	8.506	0	0	44072	51560	379798	388279	5313409	5313401
20	17211	8.446	0	0	51572	58910	388195	379761	5313214	5313202
25	17222	8.455	0	0	12	6710	379803	388253	5313002	5313004
24	17233	8.484	0	0	79972	85460	379810	388289	5312803	5312799
17	17241	8.457	0	0	99222	107060	379802	388240	5312597	5312599
17	17251	8.448	0	0	92322	99210	388189	379758	5312398	5312395
17	17261	8.463	0	0	83472	92310	379782	388211	5312195	5312201
17	17271	8.481	0	0	75222	83460	388201	379738	5311996	5311999
17	17281	8.455	0	0	67072	75210	379802	388241	5311805	5311806
17	17291	8.511	0	0	60472	67060	388186	379693	5311618	5311605

24	17303	8.445	0	0	85472	92010	388185	379746	5311405	5311401
20	17311	8.489	0	0	110822	118460	388198	379724	5311208	5311195
20	17321	8.464	0	0	103922	110810	379799	388250	5311004	5311004
20	17331	8.486	0	0	97172	103910	388191	379717	5310793	5310796
20	17342	8.436	0	0	89772	97160	379809	388234	5310603	5310609
20	17353	8.44	0	0	82372	89760	388180	379767	5310402	5310405
20	17364	8.453	0	0	74622	82260	379780	388215	5310208	5310205
25	17375	8.454	0	0	6722	13360	388197	379748	5310002	5310003
6	70021	4.438	0	0	24072	26910	331007	331005	5380494	5376062
6	70031	7.873	0	0	26922	30560	333000	333009	5372706	5380572
6	70041	11.266	0	0	30572	39410	335014	335015	5380515	5369279
6	70052	12.661	0	0	39772	47318	336982	337017	5367803	5380393
33	70053	6.28	0	0	119572	122660	337005	337006	5366500	5372776
6	70062	16.785	0	0	52422	64060	339007	339008	5380500	5363749
6	70083	19.421	0	0	64522	73610	341014	341002	5361182	5380584
54	70091	31.086	0	0	12	16760	341009	341016	5409515	5440578
6	70102	22.138	0	0	73622	92860	343008	343006	5380503	5358427
58	70111	32.215	0	0	157522	172860	343020	343004	5408381	5440573
6	70121	24.745	0	0	92872	108310	345007	345025	5355829	5380527
58	70131	33.364	0	0	176722	194760	345003	345008	5440503	5407169
23	70141	27.457	0	0	6772	25560	347011	347011	5353151	5380568
58	70151	34.541	0	0	194772	212810	347015	347014	5406098	5440611
23	70161	30.166	0	0	25572	45910	349004	349011	5380500	5350387
54	70171	35.621	0	0	16872	35160	349017	349006	5440477	5404884
6	70181	18.005	0	0	108322	126910	351036	351004	5380508	5362616
6	70182	10.155	0	0	126922	135660	351011	351012	5357863	5347750
23	70183	14.888	0	0	45922	56010	351020	351022	5369030	5354165
61	70192	36.823	0	0	30772	52060	351018	351013	5403795	5440585
59	70207	55.719	0	0	7322	42160	353011	353012	5384838	5440508
59	70211	55.811	0	0	42172	80360	355017	355020	5440497	5384745
61	70221	55.819	0	0	52072	85360	357014	357014	5440481	5384728
61	70231	55.75	0	0	85372	118760	359016	359022	5384835	5440522
61	70241	65.792	0	0	124522	158410	361015	361020	5450511	5384773
90	70252	65.818	0	0	57372	92710	363015	363016	5384808	5450582
90	70261	65.757	0	0	92722	135410	365012	365016	5450483	5384789
98	70271	65.821	0	0	21572	61410	367018	367014	5450502	5384739
98	70281	65.808	0	0	61422	101010	369013	369013	5384811	5450564
98	70291	65.823	0	0	101022	137460	371016	371021	5450508	5384736
110	70302	65.728	0	0	264772	298810	373016	373014	5384817	5450505
110	70311	65.792	0	0	234522	264760	375009	375017	5450500	5384741
110	70321	65.813	0	0	197022	234510	377011	377016	5384815	5450579
110	70331	65.79	0	0	164772	197010	379015	379011	5450470	5384717
89	70341	65.759	0	0	243672	279910	381018	381014	5450500	5384788
89	70351	65.747	0	0	207972	243660	383014	383015	5384820	5450523
89	70361	65.765	0	0	173972	207960	385016	385012	5450506	5384780
89	70371	65.78	0	0	138822	173960	387010	387016	5384817	5450551
89	70381	65.804	0	0	106472	138810	389014	389014	5450504	5384736
30	70391	38.563	0	0	22672	49460	391013	391010	5362958	5324449
51	70401	17.293	0	0	7372	16710	391007	391015	5367516	5384795
56	70402	20.058	0	0	7522	19810	391010	391013	5379800	5399841
104	70403	35.635	0	0	102222	117960	391019	391013	5394946	5430565
29	70411	27.72	0	0	274322	298960	393025	393012	5352104	5324463
51	70421	18.268	0	0	17314	30160	392999	393018	5385706	5367462

56	70422	20.06	0	0	19822	31810	393013	393007	5399792	5379750
104	70423	35.671	0	0	85022	102210	393015	393009	5430502	5394847
29	70431	24.747	0	0	298972	318760	395009	395017	5324522	5349218
51	70441	17.209	0	0	30172	40060	395020	395017	5367516	5384707
56	70442	20.048	0	0	31822	45760	395013	395019	5379799	5399825
104	70443	35.732	0	0	69072	85010	395011	395015	5394878	5430593
29	70451	13.317	0	0	318772	330910	397010	397010	5348751	5335480
51	70461	16.826	0	0	40072	51210	397108	397014	5384286	5367490
56	70462	20.221	0	0	45772	58810	397017	397012	5399804	5379604
104	70463	35.746	0	0	50172	69060	397016	397011	5430494	5394768
29	70471	12.833	0	0	330922	341460	399015	399010	5335552	5348354
51	70481	16.746	0	0	51222	62010	399018	399005	5368902	5385623
56	70482	20.001	0	0	58822	73460	399011	399013	5379847	5399824
104	70483	35.482	0	0	33972	50160	399015	399012	5395038	5430505
29	70491	6.907	0	0	341472	348660	401006	401016	5347926	5341044
51	70501	15.478	0	0	63206	76160	401011	401009	5385725	5370283
56	70502	20.087	0	0	73472	89560	401013	401011	5399792	5379735
88	70503	37.77	0	0	215322	235210	401015	401015	5392819	5430565
51	70512	13.958	0	0	76172	86310	403015	403015	5371721	5385651
56	70513	20.083	0	0	89572	109060	403012	403013	5379831	5399865
88	70514	36.688	0	0	197122	215310	403016	403016	5430493	5393829
51	70521	12.314	0	0	155394	165710	405018	405011	5385403	5373115
56	70522	20.109	0	0	109072	121260	405017	405014	5399836	5379747
88	70523	42.741	0	0	174422	197110	405014	405012	5387797	5430511
88	70531	40.055	0	0	152322	174410	407013	407015	5430506	5390481
88	70541	39.439	0	0	132522	152310	409015	409010	5391180	5430595
88	70551	34.037	0	0	113622	132510	411017	411010	5430490	5396478
88	70561	34.086	0	0	93372	113610	413016	413014	5396522	5430581
83	70571	34.046	0	0	192872	212910	415010	415011	5396513	5430524
83	70581	41.122	0	0	212922	240960	417014	417016	5430498	5389422
84	70591	41.092	0	0	108422	132960	419014	419015	5389518	5430573
104	70602	41.129	0	0	7322	33960	421014	421013	5430511	5389418
83	70611	31.099	0	0	326072	346610	423017	423008	5389512	5420569
88	70621	31.042	0	0	73772	93360	425018	425013	5420480	5389465
88	70631	31.064	0	0	57122	73760	427013	427014	5389504	5420540
88	70641	31.038	0	0	40422	57110	429012	429013	5420492	5389475
88	70651	31.058	0	0	24972	40410	431015	431016	5389524	5420561
88	70662	31.025	0	0	7222	24960	433020	433015	5420499	5389499
70	70672	31.071	0	0	141372	162110	435016	435011	5389502	5420534
70	70681	31.035	0	0	120822	141010	437015	437012	5420475	5389486
66	70691	31.102	0	0	351772	368260	439005	439020	5389539	5420616
66	70701	31.013	0	0	334272	351760	441015	441012	5420487	5389496
66	70711	31.102	0	0	319172	334260	443014	443016	5389507	5420591
66	70721	31.038	0	0	303372	319160	445013	445012	5420493	5389474
61	70731	11.11	0	0	118772	124510	360120	360122	5439458	5450560
52	70741	13.306	0	0	340972	350460	406828	406885	5385360	5372252
30	70751	21.441	0	0	4522	22660	393736	389685	5347618	5368619
29	70762	13.185	0	0	348722	359660	403020	398682	5347758	5335346
27	70771	26.484	0	0	7122	25160	373995	373992	5340582	5314127
63	70782	15.095	0	0	10122	18510	336332	328641	5367783	5380759
6	70791	34.987	0	0	6772	20110	354720	333762	5343415	5371400
54	70801	24.494	0	0	265622	282110	351763	351760	5379792	5404257
63	70831	6.503	0	0	7322	10110	353561	353951	5345684	5339195

54	70841	12.798	0	0	282122	290360	351747	340651	5403784	5410134
58	70851	5.364	0	0	172872	175760	341405	337743	5436526	5440436
36	70871	44.741	0	0	77022	104560	353013	353016	5345147	5389846
36	70881	50.379	0	0	104572	131360	355011	355013	5389809	5339466
36	70891	50.419	0	0	131372	161910	357009	357008	5339513	5389888
36	70901	50.374	0	0	49522	77010	359013	359014	5389803	5339463
36	70911	43.338	0	0	19022	49510	361014	361015	5339516	5382804
39	70912	11.795	0	0	12	8160	361017	361012	5378068	5389851
36	70921	25.609	0	0	3222	19010	363016	363012	5365018	5339430
36	70922	28.417	0	0	161922	177160	363016	363012	5389815	5361418
36	70931	22.126	0	0	177172	189110	365011	365014	5361570	5339459
40	70932	29.147	0	0	191822	209910	365017	365011	5389808	5360700
36	70941	50.406	0	0	189122	217560	367012	367014	5339501	5389873
39	70951	50.435	0	0	8172	36210	369015	369013	5389800	5339401
24	70961	50.392	0	0	12	30260	371009	371010	5339505	5389851
39	70971	50.458	0	0	36222	67560	373013	373016	5339513	5389925
24	70981	75.572	0	0	30272	79960	375013	375012	5389800	5314308
42	70991	26.071	0	0	193772	209760	377005	377012	5363816	5389861
42	70992	49.944	0	0	256222	287060	377016	377009	5314054	5363956
42	71001	76.259	0	0	209772	256210	379013	379012	5389792	5313598
43	71011	80.534	0	0	91422	151860	381025	381006	5309503	5389897
43	71021	80.507	0	0	31072	91410	383015	383007	5389793	5309434
30	71031	41.614	0	0	148722	183560	385015	385016	5309500	5351015
43	71032	42.55	0	0	12	31060	385007	385013	5347421	5389885
30	71041	80.487	0	0	92522	148710	387016	387014	5389806	5309433
30	71051	65.432	0	0	49472	92510	389020	389008	5324511	5389858

Summary for Flights 3 to 115

Lines : 10011 to 71051  
 Number of survey lines : 972  
 Number of (well defined) lines : 972  
 Total number of gaps in lines are 0  
 Total length of gaps is : 0.00 km  
 Total distance is : 44,165.616 km  
 Average Line Length is : 45.438 km

**Catalogue of Survey Lines within TASMANIA 2001 AREA E, D'Aguiar Range.**

(96 flight lines in dataset )

Flights: 24 to 27

Lines : 10011 to 70081

Flight	Line	Distance	Gaps	Distance	StartFID	EndFID	StartX	EndX	StartY	EndY
24	10201	10.244	0	0	12	5510	378589	388830	5288405	5288407
24	10211	10.273	0	0	5522	12060	388849	378581	5288211	5288208
24	10221	10.335	0	0	12072	18260	378591	388921	5288000	5288004
24	10231	10.462	0	0	18272	25560	388958	378501	5287812	5287810
24	10241	10.544	0	0	25572	33210	378584	389120	5287612	5287604
24	10251	10.623	0	0	33222	41560	389128	378513	5287404	5287408
24	10261	10.649	0	0	41572	48860	378586	389228	5287210	5287203
24	10271	10.787	0	0	48872	57210	389291	378514	5287019	5287007
24	10281	10.846	0	0	12	6610	378600	389443	5286807	5286805
24	10291	10.873	0	0	6622	14710	389418	378553	5286607	5286609
24	10301	10.987	0	0	14722	21310	378600	389583	5286409	5286405
24	10311	11.016	0	0	21322	28960	389570	378560	5286208	5286207
24	10321	11.081	0	0	28972	35410	378595	389672	5286007	5286005
24	10331	11.127	0	0	35422	43660	389696	378576	5285805	5285811
24	10341	11.222	0	0	43672	51110	378588	389804	5285610	5285609
25	10011	8.873	0	0	12	4610	378599	387470	5292208	5292205
25	10021	8.931	0	0	4622	9760	387470	378542	5292000	5292008
25	10031	8.973	0	0	9772	14860	378605	387575	5291808	5291805
25	10041	9.129	0	0	14872	20410	387606	378481	5291610	5291608
25	10051	9.116	0	0	20422	25360	378608	387721	5291405	5291408
25	10061	9.262	0	0	25372	30860	387738	378482	5291218	5291209
25	10071	9.241	0	0	30872	36010	378611	387849	5291008	5291009
25	10081	9.353	0	0	36022	41760	387893	378546	5290813	5290806
25	10091	9.466	0	0	41772	47160	378589	388052	5290614	5290606
25	10101	9.539	0	0	47172	53060	388039	378503	5290408	5290406
25	10111	9.623	0	0	53072	58310	378580	388200	5290212	5290210
25	10121	9.591	0	0	58322	63910	388170	378583	5290005	5290006
25	10131	9.744	0	0	63922	69310	378602	388343	5289807	5289804
25	10141	9.757	0	0	69322	75010	388320	378567	5289604	5289608
25	10151	9.866	0	0	75022	80560	378608	388470	5289408	5289404
25	10161	9.935	0	0	80572	86310	388483	378552	5289213	5289207
25	10171	9.98	0	0	86322	91110	378616	388594	5289007	5289004
25	10181	10.099	0	0	91122	97060	388614	378518	5288807	5288805
25	10191	10.109	0	0	97072	102560	378609	388715	5288608	5288605
25	10351	11.28	0	0	66772	75160	389852	378578	5285409	5285407
25	10361	11.371	0	0	75172	84460	378606	389969	5285209	5285205
25	10371	11.463	0	0	84472	93010	390016	378559	5285008	5285006
25	10381	11.486	0	0	93022	101810	378610	390088	5284807	5284810
25	10391	11.589	0	0	101822	110310	390135	378553	5284604	5284606
25	10401	11.635	0	0	110322	118010	378596	390226	5284410	5284404
25	10411	11.779	0	0	118022	126910	390290	378521	5284211	5284203
25	10421	11.791	0	0	126922	136210	378606	390390	5284008	5284013
25	10431	11.897	0	0	136222	145510	390436	378547	5283806	5283809
25	10441	11.949	0	0	145522	155260	378588	390528	5283605	5283603
25	10451	12.09	0	0	155272	164210	390595	378512	5283406	5283408
25	10461	12.157	0	0	164222	173610	378585	390734	5283208	5283206
25	10471	12.152	0	0	173622	183010	390715	378570	5283004	5283011
26	10481	10.694	0	0	12	7010	378598	389262	5282803	5282859
26	10482	4.027	0	0	7022	10460	386865	390882	5282807	5282802
26	10491	12.382	0	0	10472	20160	390874	378509	5282621	5282604

26	10501	12.414	0	0	20172	28360	378593	390996	5282403	5282413
26	10511	12.471	0	0	28372	37760	391021	378563	5282208	5282208
26	10521	12.587	0	0	37772	46160	378583	391160	5282004	5282014
26	10531	12.695	0	0	46172	55810	391176	378497	5281814	5281807
26	10541	12.752	0	0	55822	64360	378586	391323	5281591	5281615
26	10551	12.824	0	0	64372	74710	391312	378509	5281429	5281409
26	10561	12.852	0	0	74722	82960	378593	391435	5281212	5281204
26	10571	12.943	0	0	82972	93760	391473	378557	5281037	5281000
26	10581	13.007	0	0	93772	101610	378591	391580	5280809	5280812
26	10591	13.085	0	0	101622	111210	391613	378542	5280623	5280603
26	10601	13.124	0	0	111222	120060	378600	391713	5280403	5280412
26	10611	13.279	0	0	120072	129460	391755	378492	5280213	5280207
26	10621	13.255	0	0	129472	138210	378589	391834	5280007	5280009
26	10631	13.432	0	0	138222	148460	391895	378482	5279829	5279814
26	10641	13.423	0	0	148472	156310	378583	391997	5279609	5279613
26	10681	13.684	0	0	156322	164610	378590	392264	5278801	5278812
26	10691	13.77	0	0	164622	174260	392323	378568	5278598	5278610
26	10701	13.88	0	0	174272	182560	378586	392454	5278405	5278409
26	10711	13.926	0	0	182572	191660	392483	378568	5278222	5278203
26	10721	14.007	0	0	191672	200260	378593	392588	5278004	5278003
26	10732	14.096	0	0	200372	209760	392621	378539	5277827	5277803
26	10742	14.147	0	0	209772	218060	378596	392735	5277620	5277612
26	10753	14.204	0	0	218222	227810	392767	378574	5277413	5277398
27	10652	13.5	0	0	12	10160	378600	392091	5279405	5279406
27	10662	13.595	0	0	10172	19860	392109	378521	5279215	5279207
27	10672	13.644	0	0	19872	29010	378594	392230	5279006	5279006
27	10763	14.341	0	0	29022	38960	392830	378496	5277208	5277208
27	10771	14.417	0	0	38972	47410	378599	393011	5277007	5277004
27	10781	14.507	0	0	47422	57110	392996	378496	5276810	5276808
27	10791	14.583	0	0	57122	65210	378588	393166	5276609	5276608
27	10801	14.608	0	0	65222	74360	393115	378514	5276406	5276408
27	10811	14.665	0	0	74372	82660	378609	393269	5276206	5276209
27	10821	14.69	0	0	82672	91660	393261	378577	5276006	5276008
27	10831	14.824	0	0	91672	99760	378590	393408	5275809	5275801
27	10841	14.887	0	0	99772	109260	393426	378545	5275609	5275607
27	10851	14.948	0	0	109272	116960	378601	393545	5275405	5275410
27	10861	14.941	0	0	116972	125360	393486	378550	5275210	5275204
27	10871	14.922	0	0	125372	132910	378605	393522	5275007	5275007
24	70051	18.227	0	0	61422	71610	387005	387004	5274422	5292635
24	70081	19.666	0	0	51122	61410	386857	393533	5292732	5274253
25	70011	18.185	0	0	7172	16310	379006	379007	5292578	5274403
25	70021	18.259	0	0	16322	26360	381003	381005	5274430	5292678
25	70031	18.221	0	0	26372	38710	383006	383006	5292585	5274380
25	70041	18.242	0	0	38722	53310	385003	385004	5274408	5292625
25	70061	12.734	0	0	53322	61510	389006	389005	5287055	5274333
25	70071	7.203	0	0	61522	66760	391007	391008	5274410	5281607

Summary for Flights 24 to 27

Lines: 10011 to 70081  
 Number of survey lines: 96  
 Number of (well defined) line 96  
 Total number of gaps in line 0  
 Total length of gaps: 0  
 Total distance: 1,175.06km  
 Average Line Length: 12.24km

## **APPENDIX 5**

### **Flight Logs VH-JWF**



# GEO INSTRUMENTS

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FLIGHT LOG FOR FLIGHT 01 DOY 2 LocalTime 14:46:54 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
<b>Hover Range Pre Cals</b>							
PRE.THOR	2	B0100211	0 14:47:42	550258	5807429		
			491 14:51:47	550258	5807429	0.000	491
PRE1.GND	1	A0100111	491 14:52:17	550258	5807429		
			716 14:54:09	550258	5807429	0.000	225
<u>Lake King Hover Stack</u>							
50ft	1	T0100111	716 15:11:22	565687	5807327		
			1336 15:16:32	565614	5807321	0.073	1240
100 ft	2	T0100211	1336 15:16:55	565608	5807322		
			1951 15:22:02	565573	5807354	0.047	1226
150ft	3	T0100311	1951 15:22:23	565566	5807363		
			2581 15:27:38	565562	5807373	0.011	630
200ft	4	T0100411	2581 15:27:58	565540	5807376		
			3186 15:33:01	565603	5807370	0.063	811
250ft	5	T0100511	3186 15:33:18	565586	5807372		
			3801 15:38:26	565626	5807335	0.054	1230
300ft	6	T0100611	3801 15:38:38	565614	5807343		
			4411 15:43:43	565550	5807308	0.073	1232
350ft	7	T0100711	4411 15:44:01	565551	5807318		
			5011 15:49:01	565458	5807357	0.101	1218
400ft	8	T0100811	5011 15:50:49	565487	5807149		
			5641 15:56:04	565667	5807376	0.290	1269
450ft	9	T0100911	5641 15:56:21	565661	5807340		
			6281 16:01:41	565543	5807284	0.131	1330
500ft	10	T0101011	6281 16:01:56	565517	5807273		
			6891 16:07:01	565560	5807262	0.044	1265
550ft	11	T0101111	6891 16:07:12	565557	5807273		
			7546 16:12:40	565728	5807244	0.173	1310
600ft	12	T0101211	7546 16:12:55	565746	5807225		
			8166 16:18:05	565587	5807380	0.222	1240

Line	File	Fid	Time	East	North	Len	Alarms
<b>Bruthen Hover Range</b>							
On ground	1	L0100111	8166 16:43:45 8436 16:46:00	571460 571460	5824499 5824499	0.000	540
50ft	2	L0100211	8436 16:46:30 8676 16:48:30	571461 571471	5824499 5824498	0.010	478
100 ft	3	L0100311	8676 16:48:46 8926 16:50:51	571472 571468	5824495 5824499	0.006	500
150ft	4	L0100411	8926 16:51:04 9176 16:53:10	571472 571462	5824497 5824501	0.011	251
200ft	5	L0100511	9176 16:53:30 9421 16:55:32	571462 571460	5824495 5824504	0.009	385
250ft	6	L0100611	9421 16:55:48 9666 16:57:50	571459 571483	5824509 5824498	0.026	490
300ft	7	L0100711	9666 16:58:01 9921 17:00:09	571490 571464	5824492 5824504	0.029	510
350ft	8	L0100811	9921 17:00:22 10241 17:03:02	571470 571455	5824511 5824529	0.023	640
400ft	9	L0100911	10241 17:03:16 10491 17:05:21	571458 571461	5824527 5824490	0.037	501
450ft	10	L0101011	10491 17:05:35 10736 17:07:38	571456 571465	5824499 5824508	0.013	490
500ft	11	L0101111	10736 17:07:58 10991 17:10:06	571447 571471	5824520 5824505	0.028	510
550ft	12	L0101211	10991 17:10:20 11236 17:12:23	571460 571455	5824513 5824518	0.007	490
600ft	13	L0101311	11236 17:12:40 11486 17:14:46	571438 571491	5824520 5824511	0.054	501
Hover range post calcs							
POST.THM	10	J0101011	11486 17:29:56 11791 17:32:28	550257 550257	5807429 5807429	0.000	305
PST1.GND	9	I0100911	11791 17:32:54 12346 17:37:32	550257 550257	5807429 5807429	0.000	555



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FLIGHT LOG FOR FLIGHT 02 DOY 4 LocalTime 17:16:07 Area 1 Datum = WGS84

FLIGHT LOG FOR FLIGHT 02 DOY 5 LocalTime 09:41:28 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
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**Gnd Cals**

PRE.THOR	2	B0200211	0 09:46:13	380949	5341438		
			291 09:48:38	380949	5341439	0.001	291

PRE1.GND	1	A0200111	291 09:50:19	380949	5341438		
			1151 09:57:30	380949	5341438	0.000	860

**Cosmic Background 700 ft AMSL**

PRE.ALTB	6	F0200611	1151 10:25:27	352501	5333116		
			2426 10:36:05	348449	5335254	4.581	1275

**Cosmic Background test Climb to 7000 ft AMSL**

PRE.ALTB	6	F0200612	2426 10:36:16	348327	5335486		
			3211 10:42:49	349149	5334803	1.069	785

**Cosmic Background test 7000ft AMSL**

PRE.ALTB	6	F0200613	3211 10:43:21	348394	5335293		
			4451 10:53:41	346838	5339167	4.175	1240

**Cosmic Background test Descent from 7000ft AMSL**

PRE.ALTB	6	F0200614	4451 10:56:09	345976	5338529		
			5321 11:03:24	362187	5332048	17.459	855

POST.TST	8	G0200811	5321 11:19:26	355096	5336644		
			5411 11:20:11	354025	5337244	1.228	91

**Compensation Box Pre Compensation**

POST.ALT	7	H0200711	0 11:27:39	352159	5336415		
			526 11:32:02	351783	5337940	1.571	526

**Compensation Box Post Compensation**

POST.ALT	7	H0200712	526 11:32:10	352036	5337946		
			561 11:32:28	352570	5337949	0.534	35

**First Test Line**

PRE.TEST	5	E0200511	561 11:41:32	375649	5341394		
			751 11:43:07	379142	5340604	3.581	191



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FLIGHT LOG FOR FLIGHT 03 DOY 5 LocalTime 13:30:37 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 535	L0353511	0	13:52:18	393598	5350581		
		3276	14:19:37	349140	5350581	44.458	2961
TRAVERSE 534	L0353411	3276	14:19:38	349081	5350581		
		3276	14:19:37	349081	5350581	0.000	3
TRAVERSE 534	L0353412	3276	14:31:19	349075	5350785		
		5456	14:49:30	384738	5350716	35.663	2147
TRAVERSE 550	L0355011	5456	15:00:01	402365	5347586		
		7201	15:14:34	382552	5347561	19.813	1604
TRAVERSE 550	L0355012	7201	15:16:22	381533	5347586		
		9001	15:31:22	351408	5347581	30.125	1754
TRAVERSE 555	L0355511	9001	15:39:15	352240	5346586		
		11671	16:01:30	403193	5346589	50.953	2577
POST.TST 8	G0300811	11671	16:11:59	379147	5340604		
		11946	16:14:17	375602	5341402	3.634	275
PST1.GND 9	I0300911	11946	16:20:03	380954	5341433		
		12371	16:23:36	380954	5341433	0.000	425
POST.THM 10	J0301011	12371	16:25:46	380954	5341433		
		13571	16:35:46	380954	5341432	0.001	1200

Schub


**GEO INSTRUMENTS**

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FLIGHT LOG FOR FLIGHT 04 DOY 6 LocalTime 09:50:54 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0400211	0 10:07:31	380954	5341433		
			271 10:09:47	380954	5341433	0.000	271
PRE1.GND	1	A0400111	271 10:10:18	380954	5341433		
			801 10:14:43	380954	5341433	0.000	530
PRE.TEST	5	E0400511	0 11:38:32	379154	5340601		
			251 11:40:37	375608	5341403	3.636	251
TRAVERSE 556	L0455611	251 11:50:52	352380	5346383			
		3831 12:20:43	403191	5346382	50.811	3528	
TRAVERSE 557	L0455711	3831 12:57:55	403020	5346181			
		7106 13:25:13	352426	5346183	50.594	3203	
TRAVERSE 554	L0455411	7106 13:25:59	352051	5346802			
		10121 13:51:07	403269	5346792	51.218	3006	
TRAVERSE 553	L0455311	10121 13:51:40	403325	5346974			
		12601 14:12:20	368813	5346980	34.512	2472	
TRAVERSE 553	L0455312	12601 14:39:10	371798	5346991			
		13761 14:48:50	351836	5346983	19.962	1154	
TRAVERSE 552	L0455211	13761 14:48:51	351777	5346983			
		13761 14:48:50	351777	5346983	0.000	3	SCRUB
TRAVERSE 551	L0455111	13761 14:48:53	351663	5346977			
		13776 14:49:00	351432	5346899	0.244	32	SCRUB
TRAVERSE 550	L0455013	13776 14:49:01	351406	5346883			
		13776 14:49:01	351406	5346883	0.000	2	SCRUB
TRAVERSE 558	L0455811	13776 14:50:25	352658	5345958			
		17811 15:24:03	402973	5345990	50.315	3974	
TRAVERSE 559	L0455911	17811 15:25:18	402894	5345819			
		22381 16:03:24	352782	5345796	50.112	4586	
TRAVERSE 560	L0456011	22381 16:04:19	352989	5345579			
		26551 16:39:05	402832	5345589	49.843	4319	
TRAVERSE 561	L0456111	26551 16:40:04	402741	5345381			
		29356 17:03:27	373986	5345177	28.756	3227	



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Base Queenstown Tas Job 2101 Pilot Hamisch Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 05 DOY 6 LocalTime 17:36:44 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 561	L0556112	0	17:44:24	379463	5345384		
		1996	18:01:03	353050	5345382	26.413	1995
TRAVERSE 549	L0554911	1996	18:02:39	351324	5347788		
		5101	18:28:32	401454	5347791	50.130	3036
TRAVERSE 548	L0554811	5101	18:30:17	400471	5347983		
		8516	18:58:45	351063	5347981	49.408	3259
TRAVERSE 547	L0554711	8516	18:59:16	351007	5348180		
		11596	19:24:56	399583	5348187	48.576	3077
TRAVERSE 546	L0554611	11596	19:25:49	398573	5348382		
		14656	19:51:19	350808	5348380	47.765	3034
TRAVERSE 545	L0554511	14656	19:51:56	350703	5348594		
		17396	20:14:47	397663	5348583	46.960	2731
TRAVERSE 544	L0554411	17396	20:15:34	396670	5348781		
		19231	20:30:52	370457	5348783	26.213	1816
POST.TST 8	G0500811	19231	20:34:11	375643	5341394		
		19491	20:36:21	379215	5340590	3.661	260
PST1.GND 9	I0500911	19491	20:38:48	380952	5341432		
		19731	20:40:48	380952	5341432	0.000	240
POST.THM 10	J0501011	19731	20:41:27	380952	5341432		
		19971	20:43:27	380952	5341431	0.001	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 06 DOY 7 LocalTime 11:49:00 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0600211	0 11:52:27	380953	5341432		
			241 11:54:27	380952	5341432	0.001	241
PRE1.GND	1	A0600111	241 11:55:13	380952	5341432		
			481 11:57:13	380952	5341432	0.000	240
PRE.TEST	5	E0600511	481 12:12:37	379136	5340609		
			676 12:14:14	375617	5341417	3.611	204
TIE.LINE	79	T0607911	676 12:24:34	354838	5343596		
			2011 12:35:42	333877	5371586	34.969	1361
TIE.LINE	78	T0607811	2011 12:37:42	333954	5372265		
			2406 12:40:59	328768	5380940	10.107	415
TIE.LINE	2	T0600211	2406 12:48:51	331125	5380675		
			2691 12:51:14	331123	5376240	4.435	285
TIE.LINE	3	T0600311	2691 12:55:55	333119	5372887		
			3056 12:58:58	333127	5380756	7.869	365
TIE.LINE	4	T0600411	3056 13:02:15	335132	5380696		
			3941 13:09:38	335133	5369457	11.239	885
TIE.LINE	5	T0600511	3941 13:11:23	337083	5366874		
			3951 13:11:28	337243	5366811	0.172	20 SCRUB
TIE.LINE	6	T0600611	3951 13:12:33	339048	5367552		
			3976 13:12:46	339212	5367308	0.294	47 SCRUB
TIE.LINE	5	T0600512	3976 13:14:25	337101	5367984		
			5241 13:24:58	337095	5389093	21.109	1353
TIE.LINE	6	T0600612	5241 13:30:11	339125	5380681		
			6406 13:39:54	339126	5363927	16.754	1164
TIE.LINE	8	T0600811	6406 13:41:27	341068	5361981		
			6416 13:41:32	341240	5361982	0.172	20 SCRUB
TIE.LINE	10	T0601011	6416 13:41:49	341263	5362600		
			6426 13:41:55	341162	5362648	0.112	53 SCRUB
TIE.LINE	8	T0600812	6426 13:43:32	341114	5362662		
			6451 13:43:45	341098	5363074	0.412	51 SCRUB
TIE.LINE	8	T0600813	6451 13:46:22	341133	5361363		
			7361 13:53:57	341120	5380769	19.406	949
TIE.LINE	10	T0601012	7361 13:56:19	343126	5380684		
			9286 14:12:22	343125	5358604	22.080	1964
TIE.LINE	12	T0601211	9286 14:15:28	345125	5356010		
			10831 14:28:20	345143	5380710	24.700	1592
TIE.LINE	18	T0601811	10831 14:31:59	351155	5380689		
			12691 14:47:30	351121	5362788	17.901	1906
TIE.LINE	18	T0601812	12691 14:53:33	351129	5358044		
			13566 15:00:51	351130	5347928	10.116	933
TIE.LINE	20	T0602011	13566 15:00:56	351131	5347768		
			13581 15:01:04	351142	5347589	0.179	32 SCRUB



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 07 DOY 7 LocalTime 15:31:15 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE1.GND	1	A0700111	0 15:31:20	380953	5341431		
			241 15:33:20	380953	5341431	0.000	241
TRAVERSE	544	L0754412	241 15:38:17	380876	5342425		
			356 15:39:15	379915	5344841	2.600	233 <b>SCRUB</b>
TRAVERSE	544	L0754413	356 15:42:50	371536	5348785		
			1456 15:52:00	350472	5348783	21.064	1102
TRAVERSE	543	L0754311	1456 15:52:47	350410	5348984		
			4451 16:17:44	395819	5348980	45.409	2985
TRAVERSE	542	L0754211	4451 16:19:06	394762	5349180		
			7441 16:44:01	350190	5349182	44.572	2956
TRAVERSE	541	L0754111	7441 16:45:17	350121	5349386		
			10331 17:09:22	393849	5349384	43.728	2896
TRAVERSE	540	L0754011	10331 17:09:55	393784	5349584		
			13391 17:35:26	349926	5349581	43.858	3060
TRAVERSE	539	L0753911	13391 17:36:08	349829	5349781		
			16186 17:59:26	393771	5349784	43.942	2795
TRAVERSE	538	L0753811	16186 17:59:55	393697	5349980		
			18106 18:15:55	368625	5349979	25.072	1921
TRAVERSE	538	L0753812	18106 18:36:24	371132	5349980		
			19276 18:46:09	349568	5349982	21.564	1172
TRAVERSE	537	L0753711	19276 18:46:41	349533	5350179		
			22101 19:10:14	393712	5350188	44.179	2824
TRAVERSE	536	L0753611	22101 19:11:17	393637	5350382		
			24956 19:35:05	349316	5350379	44.321	2849
TRAVERSE	533	L0753311	24956 19:36:20	348933	5350987		
			27736 19:59:30	393556	5350985	44.623	2780
TRAVERSE	532	L0753211	27736 20:00:10	393488	5351184		
			29451 20:14:28	368701	5351179	24.787	1715
POST.TST	8	G0700811	29451 20:20:09	375642	5341398		
			29736 20:22:31	379176	5340599	3.623	285
PST1.GND	9	I0700911	29736 20:27:12	380953	5341433		
			29746 20:27:17	380953	5341433	0.000	10
PST1.GND	9	I0700912	29746 20:27:33	380953	5341432		
			29986 20:29:33	380953	5341433	0.001	240
POST.THM	10	J0701012	29986 20:30:55	380953	5341433		
			30226 20:32:55	380953	5341433	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg  
FLIGHT LOG FOR FLIGHT 08 DOY 8 LocalTime 08:13:47 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B0800211	0	08:20:00	380953	5341432		
		241	08:22:00	380953	5341432	0.000	241
PRE1.GND	1 A0800111	241	08:22:45	380953	5341432		
		481	08:24:45	380952	5341432	0.001	240
PRE.TEST	5 E0800511	481	08:47:03	379143	5340604		
		701	08:48:53	375586	5341407	3.647	220
TRAVERSE	532 L0853212	701	08:56:26	371895	5351181		
		2116	09:08:14	348733	5351179	23.162	1417
TRAVERSE	531 L0853111	2116	09:08:52	348638	5351385		
		5146	09:34:08	393471	5351381	44.833	3030
TRAVERSE	530 L0853011	5146	09:34:46	393426	5351584		
		8316	10:01:11	348412	5351581	45.014	3129
TRAVERSE	529 L0852911	8316	10:02:34	348317	5351785		
		11241	10:26:57	393440	5351788	45.123	2925
TRAVERSE	528 L0852811	11241	10:27:23	393344	5351975		
		14031	10:50:38	348109	5351982	45.235	2790
TRAVERSE	527 L0852711	14031	10:51:15	348005	5352187		
		16741	11:13:50	393343	5352186	45.338	2710
TRAVERSE	526 L0852611	16741	11:14:22	393268	5352381		
		19576	11:38:00	347827	5352385	45.441	2835
TRAVERSE	552 L0855212	19576	11:41:06	351767	5347182		
		21226	11:54:51	381810	5347187	30.043	1651
TRAVERSE	552 L0855213	21226	12:12:49	379194	5347185		
		23071	12:28:12	403340	5347186	24.146	1847
TRAVERSE	551 L0855112	23071	12:28:48	403305	5347384		
		26681	12:58:54	351549	5347381	51.756	3606
TRAVERSE	525 L0852511	26681	13:02:20	347741	5352585		
		29466	13:25:33	393261	5352586	45.520	2752
TRAVERSE	524 L0852411	29466	13:26:13	393196	5352781		
		32346	13:50:14	347522	5352781	45.674	2878
TRAVERSE	523 L0852311	32346	13:50:40	347409	5352982		
		35016	14:12:55	393178	5352978	45.769	2670
TRAVERSE	522 L0852211	35016	14:13:39	393105	5353178		
		36041	14:22:12	377760	5353181	15.345	1026
TRAVERSE	522 L0852212	36041	14:48:40	380794	5353182		
		38826	15:11:53	347164	5353185	33.630	2788

TRAVERSE	521	L0852111	38826	15:15:20	347120	5353385		
			42171	15:43:13	393101	5353377	45.981	3577
TRAVERSE	520	L0852011	42171	15:44:01	393033	5353569		
			45686	16:13:19	346887	5353589	46.146	3654
TRAVERSE	519	L0851911	45686	16:15:33	346828	5353778		
			49041	16:43:31	393036	5353778	46.208	3487
TRAVERSE	518	L0851811	49041	16:44:43	392963	5353977		
			52631	17:14:39	346638	5353990	46.325	3712
TRAVERSE	517	L0851711	52631	17:16:03	346528	5354178		
			55586	17:40:41	392960	5354188	46.432	3047
TRAVERSE	516	L0851611	55586	17:41:25	392908	5354383		
			56761	17:51:13	378509	5354368	14.399	1209
TRAVERSE	516	L0851612	56761	18:20:36	382122	5354385		
			59116	18:40:14	346266	5354382	35.856	2364
TRAVERSE	515	L0851511	59116	18:42:02	346252	5354594		
			62161	19:07:25	392894	5354592	46.642	3122
TRAVERSE	514	L0851411	62161	19:09:24	392836	5354775		
			65506	19:37:17	346026	5354789	46.810	3366
TRAVERSE	513	L0851311	65506	19:38:58	345946	5354982		
			68206	20:01:28	381290	5354924	35.344	2793
POST.TST	8	G0800811	68206	20:09:32	375653	5341396		
			68411	20:11:15	379213	5340590	3.650	205
PST1.GND	9	I0800911	68411	20:14:55	380951	5341435		
			68651	20:16:56	380951	5341435	0.000	240
POST.THM	10	J0801011	68651	20:18:01	380951	5341435		
			68891	20:20:01	380951	5341435	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 09 DOY 9 LocalTime 09:51:11 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0900211	0 09:51:19	380951	5341434		
			241 09:53:19	380951	5341434	0.000	241
PRE1.GND	1	A0900111	241 09:54:53	380951	5341434		
			481 09:56:53	380951	5341434	0.000	240
PRE.TEST	5	E0900511	481 10:07:38	379133	5340611		
			661 10:09:07	375557	5341413	3.665	180
TRAVERSE	630	L0963011	661 10:21:27	373901	5331565		
			2336 10:35:25	395378	5331589	21.477	1693
TRAVERSE	629	L0962911	2336 10:36:26	395318	5331778		
			4116 10:51:16	373857	5331785	21.461	1798
TRAVERSE	628	L0962811	4116 10:52:25	373910	5332011		
			4146 10:52:40	374126	5331883	0.251	48 <b>SCRUB</b>
TRAVERSE	628	L0962812	4146 10:54:36	373918	5331980		
			5876 11:09:01	395336	5331992	21.418	1769
TRAVERSE	627	L0962711	5876 11:09:55	395314	5332174		
			7696 11:25:05	373878	5332187	21.436	1883
TRAVERSE	626	L0962611	7696 11:26:07	373917	5332384		
			9591 11:41:55	395344	5332371	21.427	1987
TRAVERSE	625	L0962511	9591 11:44:13	395310	5332580		
			11416 11:59:26	373871	5332584	21.439	1835
TRAVERSE	624	L0962411	11416 12:00:26	373903	5332781		
			13291 12:16:04	395372	5332790	21.469	1885
TRAVERSE	623	L0962311	13291 12:17:06	395316	5332968		
			13341 12:17:31	395173	5332998	0.146	10 <b>SCRUB</b>
TRAVERSE	623	L0962312	13341 12:18:37	395310	5332982		
			15336 12:35:15	373879	5332990	21.431	2040
TRAVERSE	622	L0962211	15336 12:36:23	373904	5333181		
			17361 12:53:16	395394	5333191	21.490	2113
TRAVERSE	621	L0962111	17361 12:54:13	395323	5333385		
			19601 13:12:54	373883	5333400	21.440	2282
TRAVERSE	620	L0962011	19601 13:13:49	373908	5333587		
			21146 13:26:42	387541	5333591	13.633	1546



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 10 DOY 9 LocalTime 13:42:38 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 610	L1061011	0	13:55:59	373922	5335581		
		1836	14:11:18	395366	5335589	21.444	1832
TRAVERSE 609	L1060911	1836	14:11:52	395329	5335780		
		3621	14:26:45	373846	5335783	21.483	1785
TRAVERSE 608	L1060811	3621	14:27:09	373924	5335986		
		5261	14:40:50	395366	5335980	21.442	1640
TRAVERSE 607	L1060711	5261	14:44:24	399367	5336180		
		7346	15:01:47	373883	5336181	25.484	2085
TRAVERSE 606	L1060611	7346	15:02:43	373947	5336382		
		9276	15:18:48	399494	5336383	25.547	1876
TRAVERSE 605	L1060511	9276	15:19:35	399509	5336588		
		11266	15:36:11	373874	5336586	25.635	1990
TRAVERSE 604	L1060411	11266	15:36:57	373925	5336791		
		13061	15:51:55	399638	5336785	25.713	1795
TRAVERSE 603	L1060311	13061	15:52:23	399657	5336990		
		14996	16:08:31	373841	5336983	25.816	1935
TRAVERSE 602	L1060211	14996	16:08:56	373917	5337183		
		16826	16:24:11	399827	5337179	25.910	1830
TRAVERSE 601	L1060111	16826	16:24:39	399793	5337385		
		18731	16:40:32	373820	5337383	25.973	1905
TRAVERSE 600	L1060011	18731	17:01:57	373935	5337583		
		20521	17:16:52	399919	5337581	25.984	1790
TRAVERSE 599	L1059911	20521	17:17:42	399944	5337776		
		22466	17:33:55	373874	5337785	26.070	1932
TRAVERSE 598	L1059811	22466	17:34:16	373929	5337983		
		24266	17:49:17	400123	5337987	26.194	1800
TRAVERSE 597	L1059711	24266	17:49:36	400100	5338178		
		26291	18:06:29	373869	5338184	26.231	2025
TRAVERSE 596	L1059611	26291	18:07:06	373944	5338384		
		28336	18:24:09	400284	5338380	26.340	2047
TRAVERSE 595	L1059511	28336	18:25:20	400238	5338581		
		30526	18:43:35	373815	5338585	26.423	2190
TRAVERSE 594	L1059411	30526	18:44:18	373927	5338786		

			32506	19:00:48	400420	5338778	26.493	1980
TRAVERSE	593	L1059311	32506	19:01:19	400413	5338980		
			34496	19:17:55	373885	5338983	26.528	1990
TRAVERSE	592	L1059211	34496	19:18:29	373939	5339186		
			36261	19:33:12	400537	5339182	26.598	1765
TRAVERSE	591	L1059111	36261	19:34:00	400552	5339381		
			37936	19:47:58	373812	5339385	26.740	1675
POST.TST	8	G1000811	37936	19:49:52	375650	5341395		
			38151	19:51:39	379208	5340591	3.648	215
PRE1.GND	1	A1000111	38151	19:58:34	380953	5341433		
			38391	20:00:34	380952	5341434	0.001	240
PRE.THOR	2	B1000211	38391	20:00:51	380952	5341434		
			38426	20:01:09	380952	5341434	0.000	35
PRE.THOR	2	B1000212	38426	20:01:57	380952	5341434		
			38666	20:03:57	380953	5341434	0.001	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 11 DOY 10 LocalTime 07:44:27 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1100211	0 08:05:26	380952	5341433		
			241 08:07:26	380952	5341432	0.001	241
PRE1.GND	1	A1100111	241 08:08:31	380952	5341432		
			481 08:10:31	380952	5341432	0.000	240
PRE.TEST	5	E1100511	481 08:19:43	379136	5340606		
			746 08:21:56	375615	5341401	3.610	265
TRAVERSE	611	L1161111	746 08:25:25	373917	5335386		
			2626 08:41:06	395340	5335388	21.423	1880
TRAVERSE	612	L1161211	2626 08:41:29	395321	5335176		
			4381 08:56:07	373875	5335182	21.446	1755
TRAVERSE	613	L1161311	4381 08:56:31	373917	5334980		
			6196 09:11:39	395346	5334988	21.429	1815
TRAVERSE	614	L1161411	6196 09:12:06	395319	5334785		
			7866 09:26:02	373870	5334781	21.449	1670
TRAVERSE	615	L1161511	7866 09:28:20	373916	5334582		
			9536 09:42:16	395370	5334586	21.454	1670
TRAVERSE	616	L1161611	9536 09:42:46	395322	5334374		
			11056 09:55:26	373815	5334377	21.507	1520
TRAVERSE	617	L1161711	11056 09:56:07	373926	5334185		
			12771 10:10:25	395370	5334186	21.444	1709
TRAVERSE	618	L1161811	12771 10:15:03	395308	5333979		
			14486 10:29:21	373866	5333982	21.442	1715
TRAVERSE	619	L1161911	14486 10:36:59	373929	5333783		
			16346 10:52:29	395362	5333788	21.433	1860
TRAVERSE	590	L1159011	16346 10:56:04	400625	5339586		
			18046 11:10:14	373808	5339581	26.817	1700
TRAVERSE	589	L1158911	18046 11:10:48	373935	5339783		
			19791 11:25:21	400729	5339785	26.794	1745
TRAVERSE	588	L1158811	19791 11:25:40	400768	5339976		
			21506 11:39:58	373881	5339981	26.887	1715
TRAVERSE	587	L1158711	21506 12:00:18	376912	5340177		
			23326 12:15:29	400882	5340183	23.970	1822
TRAVERSE	586	L1158611	23326 12:15:56	400919	5340383		
			26291 12:40:39	353601	5340382	47.318	2965

TRAVERSE 585	L1158511	26291	12:41:02	353675	5340581		
		29221	13:05:27	401036	5340583	47.361	2930
TRAVERSE 584	L1158411	29221	13:06:09	401066	5340769		
		32096	13:30:07	353600	5340785	47.466	2875
TRAVERSE 587	L1158712	32096	13:30:59	353679	5340183		
		33741	13:44:42	380836	5340180	27.157	1646



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 12 DOY 10 LocalTime 13:52:45 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 620	L1262012	0	14:03:53	383785	5333589	11.569	1255
		1136	14:13:21	395354	5333580		
TRAVERSE 611	L1261112	1136	14:16:26	395292	5335379	21.404	1598
		2721	14:29:39	373888	5335374		
TRAVERSE 611	L1261113	2721	14:31:06	373922	5335376	21.420	1995
		4596	14:46:44	395342	5335390		
TRAVERSE 611	L1261114	4596	14:48:20	395296	5335392	4.135	383
		4941	14:51:12	391163	5335250		
TRAVERSE 620	L1262013	4941	15:01:53	383749	5333584	11.620	1128
		6001	15:10:43	395369	5333581		
TRAVERSE 631	L1263111	6001	15:12:42	395316	5331379	21.470	1783
		7761	15:27:22	373846	5331386		
TRAVERSE 632	L1263211	7761	15:28:30	373930	5331201	21.432	2011
		9716	15:44:48	395362	5331177		
TRAVERSE 633	L1263311	9716	15:45:41	395300	5330973	21.492	1754
		11446	16:00:06	373808	5330970		
TRAVERSE 634	L1263411	11446	16:00:55	373944	5330779	21.402	1712
		13126	16:14:56	395346	5330788		
TRAVERSE 635	L1263511	13126	16:15:46	395307	5330569	21.510	1757
		14856	16:30:11	373797	5330586		
TRAVERSE 636	L1263611	14856	16:30:57	373930	5330386	21.415	1711
		16546	16:45:03	395345	5330374		
TRAVERSE 637	L1263711	16546	16:45:43	395294	5330190	21.424	1786
		18336	17:00:38	373870	5330171		
TRAVERSE 645	L1264511	18336	17:35:57	373921	5328575	4.920	854
		18986	17:41:23	378832	5328873		
TRAVERSE 650	L1265011	18986	17:44:30	373906	5327595	21.533	1760
		20731	17:59:03	395439	5327555		
TRAVERSE 651	L1265111	20731	17:59:50	395286	5327366	21.405	1662
		22406	18:13:48	373881	5327382		
TRAVERSE 652	L1265211	22406	18:14:23	373903	5327193	21.453	1798
		24171	18:29:06	395356	5327177		

~~Scrub~~

Scrub

Scrub

Scrub.

TRAVERSE	653	L1265311	24171	18:29:53	395308	5326970		
			26026	18:45:21	373815	5326995	21.493	1862
TRAVERSE	649	L1264911	26026	18:48:04	373915	5327795		
			27851	19:03:17	395348	5327760	21.433	1907
TRAVERSE	648	L1264811	27851	19:04:06	395307	5327964		
			29766	19:20:04	373878	5328008	21.429	1935
TRAVERSE	647	L1264711	29766	19:20:59	373899	5328176		
			31716	19:37:15	395389	5328177	21.490	1986
TRAVERSE	646	L1264611	31716	19:38:00	395306	5328361		
			33506	19:52:55	373879	5328391	21.427	1806
POST.TST	8	G1200811	33506	19:54:19	373515	5329071		
			33641	19:55:27	373023	5331770	2.743	272 <b>SCRUB</b>
POST.TST	8	G1200812	33641	20:00:44	375665	5341390		
			33816	20:02:11	379179	5340597	3.602	175
PST1.GND	9	I1200911	33816	20:09:29	380952	5341429		
			34056	20:11:29	380952	5341429	0.000	240
POST.THM	10	J1201012	34056	20:12:36	380952	5341429		
			34296	20:14:36	380952	5341429	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 13 DOY 11 LocalTime 07:53:31 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B1300211	0	07:54:08	380952	5341429		
		241	07:56:08	380952	5341429	0.000	241
PRE1.GND	1 A1300111	241	07:56:54	380952	5341428		
		481	07:58:54	380952	5341428	0.000	240
PRE.TEST	5 E1300511	0	08:21:36	379136	5340603		
		221	08:23:27	375608	5341404	3.618	221
TRAVERSE	654 L1365411	221	08:31:22	373910	5326782		
		1321	08:40:32	385592	5326220	11.696	1474
							Scrub.
TRAVERSE	655 L1365511	1321	08:46:00	395315	5326576		
		3131	09:01:05	373872	5326592	21.443	1764
TRAVERSE	656 L1365611	3131	09:01:59	373918	5326370		
		4831	09:16:09	395370	5326384	21.452	1742
TRAVERSE	657 L1365711	4831	09:16:58	395295	5326182		
		6486	09:30:46	373868	5326191	21.427	1633
TRAVERSE	658 L1365811	6486	09:31:39	373900	5325985		
		8346	09:47:09	395388	5325985	21.488	2007
TRAVERSE	659 L1365911	8346	09:47:55	395304	5325780		
		10116	10:02:41	373854	5325771	21.450	1844
TRAVERSE	654 L1365412	10116	10:04:25	373916	5326771		
		11781	10:18:18	395402	5326794	21.486	1689
TRAVERSE	644 L1364411	11781	10:20:43	395318	5328780		
		13931	10:38:39	373842	5328774	21.476	2156
TRAVERSE	645 L1364512	13931	10:39:28	373914	5328575		
		15681	10:54:03	395429	5328564	21.515	2080
TRAVERSE	643 L1364311	15681	10:55:21	395310	5328967		
		17626	11:11:34	373883	5328987	21.427	1898
TRAVERSE	642 L1364211	17626	11:12:08	373934	5329213		
		19211	11:25:21	395334	5329208	21.400	1767
TRAVERSE	641 L1364111	19211	11:26:11	395300	5329415		
		21211	11:42:52	373832	5329400	21.468	2063
TRAVERSE	660 L1366011	21211	12:16:24	373909	5325580		
		22421	12:26:29	388886	5325562	14.977	1247
TRAVERSE	661 L1366111	22421	12:31:44	385439	5325377		
		23146	12:37:47	395339	5325380	9.900	741

TRAVERSE 662	L1366211	23146	12:38:59	395292	5325184		
		24856	12:53:14	373838	5325193	21.454	1794

TRAVERSE 663	L1366311	24856	12:54:35	373904	5325000		
		25286	12:58:10	379513	5324964	5.609	410

SCRUB



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 14 DOY 11 LocalTime 14:01:17 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 660	L1466012	0	14:47:41	373921	5325594		
		1176	14:57:29	388890	5325578	14.969	1127 <i>SCRUB</i>
TRAVERSE 661	L1466112	1176	15:03:31	383224	5325388		
		1186	15:03:36	383311	5325383	0.087	12 <b>SCRUB</b>
TRAVERSE 661	L1466113	1186	15:05:00	383037	5325392		
		1196	15:05:05	383141	5325384	0.104	12 <b>SCRUB</b>
TRAVERSE 661	L1466114	1196	15:05:53	383324	5325381		
		1531	15:08:41	388369	5325334	5.045	363 <b>SCRUB</b>
TRAVERSE 661	L1466115	1531	15:10:27	387168	5325396		
		2156	15:15:40	395353	5325382	8.185	623 <i>SCRUB</i>
TRAVERSE 663	L1466312	2156	15:23:49	395879	5324837		
		2176	15:23:59	395690	5324793	0.194	42 <b>SCRUB</b>
TRAVERSE 663	L1466313	2176	15:25:10	395627	5324824		
		2176	15:25:10	395627	5324824	0.000	3 <b>SCRUB</b>
TRAVERSE 663	L1466314	2176	15:27:29	396045	5324887		
		2181	15:27:31	396032	5324925	0.040	12 <b>SCRUB</b>
TRAVERSE 664	L1466411	2181	15:28:11	395557	5324755		
		2181	15:28:11	395557	5324755	0.000	3 <b>SCRUB</b>
TRAVERSE 665	L1466511	2181	15:28:12	395542	5324751		
		2181	15:28:12	395542	5324751	0.000	3 <b>SCRUB</b>
TRAVERSE 666	L1466611	2181	15:28:17	395449	5324749		
		2201	15:28:27	395283	5324795	0.172	42 <b>SCRUB</b>
TRAVERSE 640	L1464011	2201	15:34:34	388216	5329366		
		2206	15:34:37	388183	5329394	0.043	12 <b>SCRUB</b>
TRAVERSE 664	L1466412	2206	15:46:52	373915	5324790		
		3176	15:54:57	388351	5324774	14.436	996
TRAVERSE 665	L1466512	3176	15:55:52	388300	5324583		
		4536	16:07:12	373839	5324583	14.461	1342
TRAVERSE 666	L1466612	4536	16:07:51	373921	5324373		
		5696	16:17:31	388354	5324386	14.433	1151
TRAVERSE 667	L1466711	5696	16:18:26	388300	5324180		
		7136	16:30:27	373874	5324182	14.426	1454

TRAVERSE 668	L1466811	7136 16:31:05	373926 5324023				
		7171 16:31:22	374308 5324013	0.382	59	<b>SCRUB</b>	
TRAVERSE 668	L1466812	7171 16:32:42	373907 5323988				
		8426 16:43:10	388385 5323989	14.478	1305		
TRAVERSE 669	L1466911	8426 16:44:01	388317 5323801				
		9821 16:55:39	373878 5323770	14.439	1451		
TRAVERSE 670	L1467011	9821 16:56:30	373902 5323607				
		10956 17:05:58	388400 5323594	14.498	1164		
TRAVERSE 671	L1467111	10956 17:06:48	388290 5323376				
		12176 17:16:58	373877 5323394	14.413	1182		
POST.TST 8	G1400811	12176 17:24:45	375687 5341382				
		12346 17:26:10	379211 5340590	3.612	170		
PST1.GND 9	I1400911	12346 17:28:48	380952 5341429				
		12586 17:30:48	380952 5341429	0.000	240		
POST.THM 10	J1401011	12586 17:32:14	380952 5341431				
		12826 17:34:14	380952 5341430	0.001	240		



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 15 DOY 12 LocalTime 09:05:06 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B1500211	0	09:05:27	380951	5341428		
		241	09:07:27	380952	5341428	0.001	241
PRE1.GND	1 A1500111	241	09:08:20	380951	5341428		
		481	09:10:20	380951	5341428	0.000	240
PRE.TEST	5 E1500511	481	09:23:12	379150	5340603		
		721	09:25:12	375603	5341404	3.636	240
TRAVERSE 562	L1556211	721	09:27:51	377487	5345180		
		2421	09:42:01	353220	5345183	24.267	1702
TRAVERSE 563	L1556311	2421	09:42:41	353423	5344982		
		6066	10:13:04	402649	5344986	49.226	3637
TRAVERSE 564	L1556411	6066	10:18:43	402497	5344784		
		9216	10:44:59	353343	5344781	49.154	3150
TRAVERSE 565	L1556511	9216	10:45:21	353449	5344579		
		12371	11:11:39	402481	5344585	49.032	3155
TRAVERSE 566	L1556611	12371	11:12:16	402370	5344378		
		15691	11:39:57	353420	5344383	48.950	3319
TRAVERSE 567	L1556711	15691	11:40:48	353486	5344186		
		18866	12:07:16	402326	5344182	48.840	3175
TRAVERSE 568	L1556811	18866	12:07:41	402222	5343984		
		22141	12:34:59	353412	5343980	48.810	3275
TRAVERSE 569	L1556911	22141	12:35:27	353517	5343788		
		24051	12:51:23	385670	5343783	32.153	1911



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 16 DOY 12 LocalTime 14:18:01 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 569	L1656912	0	14:25:42	382859	5343779		
		1456	14:37:50	402202	5343779	19.343	1458
TRAVERSE 570	L1657011	1456	14:38:21	402085	5343587		
		4891	15:07:00	353461	5343576	48.624	3435
TRAVERSE 571	L1657111	4891	15:07:44	353520	5343388		
		7956	15:33:17	402041	5343383	48.521	3065
TRAVERSE 572	L1657211	7956	15:40:14	401918	5343185		
		11261	16:07:47	353481	5343177	48.437	3305
TRAVERSE 573	L1657311	11261	16:09:01	353516	5342981		
		14381	16:35:02	401886	5342984	48.370	3120
TRAVERSE 574	L1657411	14381	16:37:43	401793	5342784		
		17751	17:05:49	353440	5342779	48.353	3370
TRAVERSE 575	L1657511	17751	17:06:41	353559	5342583		
		20541	17:29:56	401797	5342581	48.238	2790
TRAVERSE 562	L1656212	20541	17:32:13	402669	5345182		
		22386	17:47:36	374255	5345180	28.414	1846
POST.TST 8	G1600811	22386	17:49:12	375656	5341425		
		22591	17:50:55	379444	5340573	3.883	212
PST1.GND 9	I1600911	22591	17:53:07	380952	5341431		
		22831	17:55:06	380951	5341431	0.001	240
POST.THM 10	J1601011	22831	17:56:22	380952	5341431		
		23071	17:58:22	380952	5341431	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 17 DOY 13 LocalTime 07:39:02 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1700211	0 07:48:34	380952	5341429		
			241 07:50:34	380952	5341429	0.000	241
PRE1.GND	1	A1700111	241 07:51:10	380952	5341429		
			481 07:53:10	380952	5341429	0.000	240
PRE.TEST	5	E1700511	481 07:57:08	379139	5340608		
			701 07:58:58	375584	5341413	3.645	220
TRAVERSE	672	L1767211	701 08:07:53	373904	5323177		
			1981 08:18:33	388343	5323183	14.439	1219
TRAVERSE	673	L1767311	1981 08:19:25	388322	5322978		
			3081 08:28:35	373884	5322982	14.438	1089
TRAVERSE	674	L1767411	3081 08:29:24	373933	5322785		
			4211 08:38:50	388353	5322788	14.420	1137
TRAVERSE	675	L1767511	4211 08:39:37	388321	5322575		
			5401 08:49:32	373872	5322582	14.449	1134
TRAVERSE	730	L1773011	5401 08:58:14	379908	5311587		
			6046 09:03:37	388368	5311578	8.460	645
TRAVERSE	729	L1772911	6046 09:04:13	388304	5311799		
			6706 09:09:43	379808	5311786	8.496	667
TRAVERSE	728	L1772811	6706 09:10:13	379920	5311986		
			7521 09:17:01	388362	5311987	8.442	815
TRAVERSE	727	L1772711	7521 09:17:47	388319	5312177		
			8346 09:24:40	379854	5312180	8.465	815
TRAVERSE	726	L1772611	8346 09:25:08	379900	5312376		
			9231 09:32:31	388349	5312382	8.449	878
TRAVERSE	725	L1772511	9231 09:33:06	388307	5312579		
			9921 09:38:51	379874	5312576	8.433	690
TRAVERSE	724	L1772411	9921 09:39:34	379920	5312778		
			10706 09:46:07	388363	5312780	8.443	781
TRAVERSE	723	L1772311	10706 09:46:44	388314	5313002		
			11411 09:52:37	379881	5312974	8.433	705
TRAVERSE	712	L1771211	11411 09:56:26	378388	5315192		
			11456 09:56:49	378667	5315186	0.279	21 <b>SCRUB</b>
TRAVERSE	712	L1771212	11456 09:59:35	373905	5315186		
			12601 10:09:08	388352	5315179	14.447	1150

TRAVERSE 711	L1771111	12601	10:09:32	388325	5315391		
		13756	10:19:10	373849	5315380	14.476	1155
TRAVERSE 710	L1771011	13756	10:19:44	373918	5315588		
		14866	10:28:59	388350	5315584	14.432	1110
TRAVERSE 709	L1770911	14866	10:29:45	388316	5315779		
		15886	10:38:14	373863	5315782	14.453	1020
TRAVERSE 708	L1770811	15886	10:38:38	373901	5315971		
		17041	10:48:16	388395	5315985	14.494	1163
TRAVERSE 639	L1763911	17041	10:56:35	395286	5329775		
		18691	11:10:21	373871	5329809	21.415	1731
TRAVERSE 676	L1767611	18691	11:43:17	373917	5322382		
		19821	11:52:42	388350	5322386	14.433	1066
TRAVERSE 677	L1767711	19821	11:54:36	388313	5322191		
		21101	12:05:17	373840	5322168	14.473	1293
TRAVERSE 678	L1767811	21101	12:05:49	373905	5321982		
		22426	12:16:52	388382	5321992	14.477	1246
TRAVERSE 679	L1767911	22426	12:17:58	388295	5321787		
		23691	12:28:31	373885	5321785	14.410	1267
TRAVERSE 680	L1768011	23691	12:28:59	373930	5321597		
		24861	12:38:44	388348	5321587	14.418	1163
TRAVERSE 681	L1768111	24861	12:39:15	388310	5321374		
		26121	12:49:45	373865	5321382	14.445	1271
TRAVERSE 682	L1768211	26121	12:50:24	373903	5321188		
		27496	13:01:52	388356	5321176	14.453	1392
TRAVERSE 683	L1768311	27496	13:02:29	388318	5321004		
		28866	13:13:54	373854	5320976	14.464	1377
TRAVERSE 684	L1768411	28866	13:14:39	373909	5320775		
		30201	13:25:47	388357	5320786	14.448	1393
TRAVERSE 685	L1768511	30201	13:26:22	388301	5320580		
		31611	13:38:07	373881	5320578	14.420	1417



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 18 DOY 13 LocalTime 13:56:41 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 661	L1866116	0	14:17:56	373913	5325385		
		1221	14:28:07	387182	5325391	13.269	1187
TRAVERSE 660	L1866013	1221	14:30:33	383290	5325578		
		2016	14:37:10	395339	5325584	12.049	797
TRAVERSE 663	L1866315	2016	14:40:24	388292	5324980		
		3281	14:50:57	373835	5324980	14.457	1252
TRAVERSE 686	L1868611	3281	14:53:28	373910	5320380		
		4521	15:03:48	388343	5320387	14.433	1233
TRAVERSE 687	L1868711	4521	15:04:22	388316	5320182		
		5911	15:15:57	373867	5320179	14.449	1386
TRAVERSE 688	L1868811	5911	15:16:19	373911	5319964		
		7036	15:25:41	388376	5319985	14.465	1125
TRAVERSE 689	L1868911	7036	15:28:42	388317	5319786		
		7851	15:35:30	380360	5319784	7.957	816
TRAVERSE 707	L1870711	7851	15:40:44	373914	5316185		
		8896	15:49:27	388351	5316184	14.437	1045
TRAVERSE 706	L1870611	8896	15:50:05	388300	5316377		
		10191	16:00:53	373825	5316384	14.475	1295
TRAVERSE 705	L1870511	10191	16:02:09	373926	5316586		
		11206	16:10:37	388366	5316583	14.440	1015
TRAVERSE 704	L1870411	11206	16:11:07	388323	5316778		
		12446	16:21:27	373832	5316783	14.491	1225
TRAVERSE 703	L1870311	12446	16:21:45	373906	5316964		
		13426	16:29:55	388364	5316988	14.458	980
TRAVERSE 702	L1870211	13426	16:30:24	388321	5317181		
		14631	16:40:27	373855	5317184	14.466	1205
TRAVERSE 701	L1870111	14631	16:40:59	373938	5317380		
		15691	16:49:48	388355	5317383	14.417	1060
TRAVERSE 700	L1870011	15691	16:51:46	388298	5317578		
		16861	17:01:31	373801	5317583	14.497	1170
TRAVERSE 699	L1869911	16861	17:31:52	373910	5317790		
		18126	17:42:25	388380	5317773	14.470	1292

TRAVERSE 713	L1871311	18126 17:44:16 19081 17:52:14	388311 5314981 374373 5314984	13.938	955
TRAVERSE 714	L1871411	19081 17:53:01 20056 18:01:09	375559 5314780 388350 5314781	12.791	975
TRAVERSE 715	L1871511	20056 18:01:36 20886 18:08:31	388319 5314580 376554 5314582	11.765	830
TRAVERSE 698	L1869811	20886 18:10:46 22101 18:20:54	373927 5317988 388389 5317986	14.462	1215
TRAVERSE 697	L1869711	22101 18:21:29 23361 18:31:59	388321 5318184 373878 5318184	14.443	1239
TRAVERSE 696	L1869611	23361 18:32:38 24461 18:41:48	373912 5318387 388349 5318385	14.437	1100
TRAVERSE 695	L1869511	24461 18:42:18 25611 18:51:53	388321 5318583 373834 5318585	14.487	1150
TRAVERSE 694	L1869411	25611 18:52:21 26906 19:03:08	373927 5318786 388337 5318787	14.410	1295
TRAVERSE 693	L1869311	26906 19:03:35 28216 19:14:30	388303 5318980 373870 5318981	14.433	1310
TRAVERSE 692	L1869211	28216 19:14:56 29511 19:25:44	373911 5319180 388343 5319185	14.432	1295
TRAVERSE 691	L1869111	29511 19:26:08 30636 19:35:31	388320 5319382 373841 5319384	14.479	1125
TRAVERSE 690	L1869011	30636 19:35:51 31746 19:45:06	373909 5319580 388387 5319586	14.478	1110
TRAVERSE 689	L1868912	31746 19:47:20 32521 19:53:47	383845 5319781 373880 5319783	9.965	777
POST.TST 8	G1800811	32521 20:01:26 32771 20:03:31	375669 5341386 379170 5340600	3.588	250
PST1.GND 9	I1800911	32771 20:06:11 33011 20:08:11	380952 5341431 380952 5341431	0.000	240
POST.THM 10	J1801011	33011 20:09:31 33251 20:11:31	380952 5341431 380952 5341431	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 20 DOY 16 LocalTime 07:21:44 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B2000211	0 07:22:03	380951	5341432		
			241 07:24:03	380952	5341433	0.001	241
PRE1.GND	1	A2000111	241 07:25:29	380951	5341432		
			481 07:27:29	380952	5341432	0.001	240
PRE.TEST	5	E2000511	481 07:34:21	379148	5340605		
			676 07:35:58	375612	5341402	3.625	195
TRAVERSE 715	L2071512		676 07:50:37	376651	5314580		
			1721 07:59:20	388364	5314582	11.713	1002
TRAVERSE 716	L2071611		1721 08:00:01	388320	5314388		
			2696 08:08:09	377632	5314380	10.688	978
TRAVERSE 717	L2071711		2696 08:09:38	378815	5314187		
			3651 08:17:36	388345	5314178	9.530	897
TRAVERSE 719	L2071911		3651 08:20:01	388280	5313781		
			4406 08:26:18	379873	5313784	8.407	755
TRAVERSE 720	L2072011		4406 08:27:07	379916	5313589		
			5156 08:33:22	388401	5313582	8.485	762
TRAVERSE 721	L2072111		5156 08:33:55	388314	5313395		
			5891 08:40:03	379876	5313383	8.438	734
TRAVERSE 719	L2071912		5891 08:44:07	379936	5313784		
			5976 08:44:49	379437	5313698	0.506	206 <b>SCRUB</b>
TRAVERSE 719	L2071913		5976 08:45:46	379927	5313775		
			6771 08:52:24	388375	5313784	8.448	795
TRAVERSE 718	L2071811		6771 08:54:17	388319	5313984		
			7446 08:59:55	379877	5313987	8.442	675
TRAVERSE 722	L2072212		7446 09:00:03	379766	5313978		
			7446 09:00:04	379766	5313978	0.000	3 <b>SCRUB</b>
TRAVERSE 730	L2073011		7446 09:00:44	379293	5313647		
			7451 09:00:46	379296	5313600	0.047	11 <b>SCRUB</b>
TRAVERSE 736	L2073612		7451 09:01:28	379602	5312318		
			7451 09:01:28	379602	5312318	0.000	2 <b>SCRUB</b>
TRAVERSE 736	L2073613		7451 09:02:46	380027	5310300		
			7461 09:02:51	379898	5310335	0.134	22 <b>SCRUB</b>

TRAVERSE 736	L2073614	7461 09:03:23 8226 09:09:46	379898 5310389 388340 5310387	8.442	753	
TRAVERSE 735	L2073512	8226 09:10:15 8236 09:10:20	388324 5310545 388274 5310564	0.053	19	SCRUB
TRAVERSE 735	L2073513	8236 09:11:30 8976 09:17:40	388299 5310583 379882 5310585	8.417	722	
TRAVERSE 734	L2073412	8976 09:18:21 9716 09:24:31	379927 5310784 388356 5310789	8.429	740	
TRAVERSE 733	L2073311	9716 09:25:16 10391 09:30:53	388309 5310974 379832 5310977	8.477	675	
TRAVERSE 732	L2073211	10391 09:31:24 11081 09:37:09	379917 5311185 388371 5311184	8.454	690	
TRAVERSE 731	L2073111	11081 09:37:46 11846 09:44:09	388316 5311389 379840 5311375	8.476	765	
TRAVERSE 730	L2073012	11846 09:45:33 12511 09:51:06	379920 5311583 388373 5311562	8.453	664	
TRAVERSE 729	L2072912	12511 09:51:13 12511 09:51:13	388655 5311575 388655 5311575	0.000	3	SCRUB
TRAVERSE 639	L2063912	12511 10:03:44 14216 10:17:57	373929 5329781 395351 5329788	21.422	1702	SCRUB.
TRAVERSE 637	L2063711	14216 10:19:06 15916 10:33:17	395314 5330176 373886 5330181	21.428	1659	SCRUB.
TRAVERSE 576	L2057611	0 11:08:24 46 11:08:47	400894 5342350 400513 5342335	0.381	49	SCRUB
TRAVERSE 576	L2057612	46 11:09:38 3386 11:37:29	401130 5342334 353455 5342375	47.675	3357	
TRAVERSE 577	L2057711	3386 11:39:21 6431 12:04:44	353581 5342195 401606 5342188	48.025	3080	
TRAVERSE 578	L2057811	6431 12:05:25 9696 12:32:38	401504 5341979 353503 5341986	48.001	3261	
TRAVERSE 579	L2057911	9696 12:33:40 12656 12:58:21	353593 5341775 401475 5341770	47.882	2967	
TRAVERSE 580	L2058011	12656 12:58:50 15656 13:23:51	401348 5341593 353567 5341590	47.781	2996	
TRAVERSE 581	L2058111	15656 13:24:27 17161 13:37:00	353618 5341394 381315 5341380	27.697	1506	
TRAVERSE 581	L2058112	17161 13:39:49 17361 13:41:29	380951 5341432 380951 5341432	0.000	402	



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399-3.  
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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 21 DOY 16 LocalTime 13:47:53 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 581	L2158113	0	14:05:55	378276	5341391		
		1501	14:18:26	401306	5341380	23.030	1503
TRAVERSE 582	L2158211	1501	14:19:20	401213	5341185		
		4266	14:42:23	353561	5341185	47.652	2765
TRAVERSE 583	L2158311	4266	14:43:10	353656	5340984		
		6856	15:04:45	401171	5340980	47.515	2590
TRAVERSE 550	L2155014	6856	15:16:40	385211	5347584		
		7436	15:21:30	378820	5347584	6.391	582
TRAVERSE 534	L2153413	7436	15:23:13	379084	5350782		
		8541	15:32:26	393954	5350779	14.870	1107
TRAVERSE 512	L2151211	8541	15:36:27	392751	5355185		
		11701	16:02:48	345724	5355179	47.027	3151
TRAVERSE 511	L2151111	11701	16:03:42	345623	5355381		
		14636	16:28:10	392764	5355382	47.141	2981
TRAVERSE 510	L2151011	14636	16:32:51	392672	5355581		
		17796	16:59:12	345385	5355582	47.287	3159
TRAVERSE 509	L2150911	17796	17:00:03	345328	5355787		
		19971	17:18:11	381743	5355785	36.415	2176
TRAVERSE 509	L2150912	19971	17:42:51	379040	5355784		
		21036	17:51:44	392662	5355779	13.622	1003
TRAVERSE 508	L2150811	21036	17:52:25	392587	5355984		
		24311	18:19:43	345100	5355981	47.487	3197
TRAVERSE 507	L2150711	24311	18:20:17	345026	5356184		
		27431	18:46:17	392623	5356179	47.597	3115
TRAVERSE 506	L2150611	27431	18:46:56	392516	5356384		
		30926	19:16:04	344811	5356382	47.705	3491
TRAVERSE 505	L2150511	30926	19:16:35	344707	5356587		
		34306	19:44:46	392552	5356584	47.845	3378
POST.TST 8	G2100811	34306	19:53:09	379133	5340607		
		34571	19:55:22	375612	5341401	3.609	265
PST1.GND 9	I2100911	34571	19:59:18	380951	5341434		
		34811	20:01:18	380952	5341434	0.001	240
POST.THM 10	J2101011	34811	20:02:16	380951	5341435		
		35051	20:04:16	380951	5341434	0.001	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 22 DOY 17 LocalTime 13:57:15 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
<b>MANOUVRE NOISE TEST</b>							
PRE.ALTB	6	F2200611	0 14:13:07	350764	5344251		
			101 14:13:58	350574	5345873	1.633	202
PRE.ALTB	6	F2200612	101 14:14:23	351001	5346265		
			201 14:15:13	352528	5345959	1.557	200
PRE.ALTB	6	F2200613	201 14:15:32	352628	5345463		
			301 14:16:22	351825	5343772	1.872	200
PRE.ALTB	6	F2200614	301 14:17:11	350054	5344210		
			401 14:18:01	348123	5344883	2.045	201
PRE.ALTB	6	F2200615	401 14:18:22	347948	5345492		
			501 14:19:12	348147	5347296	1.815	200
PRE.THOR	2	B2200211	501 14:40:40	380951	5341433		
			741 14:42:40	380952	5341433	0.001	240
PRE1.GND	1	A2200111	741 14:43:30	380953	5341433		
			981 14:45:30	380951	5341433	0.002	240
PRE.TEST	5	E2200511	981 15:11:23	379146	5340607		
			1186 15:13:05	375620	5341404	3.615	205
TRAVERSE	513	L2251312	1186 15:19:21	378699	5354982		
			2291 15:28:34	392812	5354974	14.113	1061
TRAVERSE	504	L2250411	2291 15:31:52	392454	5356774		
			6281 16:05:08	344514	5356789	47.940	3974
TRAVERSE	503	L2250311	6281 16:06:25	344428	5356989		
			9851 16:36:11	392443	5356982	48.015	3563
TRAVERSE	502	L2250211	9851 16:36:52	392379	5357170		
			13826 17:10:00	344192	5357184	48.187	3962
TRAVERSE	501	L2250111	13826 17:11:13	344117	5357394		
			17301 17:40:11	392386	5357379	48.269	3438
TRAVERSE	500	L2250011	17301 17:41:05	392308	5357574		
			18651 17:52:20	379205	5357547	13.103	1380
TRAVERSE	500	L2250012	18651 18:23:33	382857	5357565		
			21346 18:46:01	343895	5357575	38.962	2685
TRAVERSE	499	L2249911	21346 18:46:54	343814	5357799		
			24926 19:16:45	392319	5357783	48.505	3658

TRAVERSE	498	L2249811	24926	19:17:31	392241	5357953		
			24956	19:17:46	392184	5358090	0.148	70 <b>SCRUB</b>
TRAVERSE	498	L2249812	24956	19:17:54	392377	5358143		
			24956	19:17:54	392377	5358143	0.000	3 <b>SCRUB</b>
TRAVERSE	498	L2249813	24956	19:18:41	392215	5357979		
			28406	19:47:27	343562	5357985	48.653	3439
TRAVERSE	497	L2249711	28406	19:48:21	343540	5358190		
			31436	20:13:36	392287	5358182	48.747	3089
POST.TST	8	G2200811	31436	20:22:50	375654	5341404		
			31611	20:24:18	379188	5340589	3.627	175
PST1.GND	9	I2200911	0	20:27:10	380952	5341429		
			241	20:29:11	380952	5341429	0.000	241
POST.THM	10	J2201011	241	20:30:43	380952	5341429		
			481	20:32:43	380952	5341429	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 23 DOY 18 LocalTime 07:46:05 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B2300211	0 07:46:11	380951	5341428		
			241 07:48:11	380951	5341428	0.000	241
PRE1.GND	1	A2300111	241 07:49:19	380952	5341428		
			481 07:51:19	380952	5341428	0.000	240
PRE.TEST	5	E2300511	481 08:04:50	379153	5340606		
			676 08:06:28	375557	5341410	3.685	195
TIE.LINE	14	T2301411	676 08:25:42	347129	5353332		
			2556 08:41:23	347129	5380751	27.419	1880
TIE.LINE	16	T2301611	2556 08:43:12	349122	5380681		
			4591 09:00:10	349130	5350564	30.117	2035
TIE.LINE	18	T2301813	4591 09:08:36	351138	5369211		
			5601 09:17:01	351140	5354342	14.869	1012
TRAVERSE	496	L2349611	5601 09:22:42	343371	5358386		
			9126 09:52:05	392225	5358385	48.854	3525
TRAVERSE	495	L2349511	9126 09:52:44	392111	5358550		
			9146 09:52:54	391939	5358593	0.177	35 <b>SCRUB</b>
TRAVERSE	495	L2349512	9146 09:53:41	392113	5358592		
			12731 10:23:34	343150	5358586	48.963	3585
TRAVERSE	494	L2349411	12731 10:24:37	343064	5358786		
			15986 10:51:45	392182	5358779	49.118	3283
TRAVERSE	493	L2349311	15986 10:52:26	392052	5358988		
			16656 10:58:01	383242	5358977	8.810	666
TRAVERSE	493	L2349312	16656 11:34:22	388105	5358983		
			19606 11:58:58	342803	5358983	45.302	2938
TRAVERSE	492	L2349211	19606 12:00:16	342768	5359180		
			23131 12:29:39	392084	5359168	49.316	3543
TRAVERSE	491	L2349111	23131 12:30:02	391945	5359368		
			26436 12:57:35	342529	5359382	49.416	3308
TRAVERSE	490	L2349011	26436 12:58:14	342474	5359578		
			29696 13:25:24	392021	5359582	49.547	3295
TRAVERSE	489	L2348911	29696 13:25:51	391900	5359765		
			33211 13:55:09	342287	5359782	49.613	3584

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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 24 DOY 18 LocalTime 14:21:18 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TIE.LINE 96	T2409611	0	14:33:40	371127	5339686		
		3026	14:58:54	371129	5390037	50.351	3017
TIE.LINE 98	T2409811	3026	15:00:59	375132	5389981		
		7996	15:42:25	375131	5314484	75.497	4969
TRAVERSE 723	L2472313	7996	15:51:30	379928	5312983		
		8546	15:56:05	388411	5312980	8.483	549
							Scrub
TRAVERSE 730	L2473013	8546	15:57:13	388303	5311586		
		9201	16:02:41	379861	5311581	8.442	655
							Scrub

FLIGHT LOG FOR FLIGHT 24 DOY 18 LocalTime 16:04:11 Area 2 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 20	L2402021	0	16:12:43	378708	5288586		
		551	16:17:19	388952	5288588	10.244	551
TRAVERSE 21	L2402121	551	16:17:40	388967	5288392		
		1206	16:23:08	378678	5288389	10.289	655
TRAVERSE 22	L2402221	1206	16:23:29	378709	5288181		
		1826	16:28:40	389065	5288185	10.356	620
TRAVERSE 23	L2402321	1826	16:28:59	389076	5287993		
		2556	16:35:04	378616	5287990	10.460	730
TRAVERSE 24	L2402421	2556	16:35:27	378702	5287793		
		3321	16:41:50	389242	5287785	10.540	765
TRAVERSE 25	L2402521	3321	16:42:15	389246	5287585		
		4156	16:49:13	378628	5287589	10.618	835
TRAVERSE 26	L2402621	4156	16:54:03	378704	5287390		
		4886	17:00:08	389350	5287384	10.646	730
TRAVERSE 27	L2402721	4886	17:00:26	389409	5287200		
		5721	17:07:23	378629	5287187	10.780	835

FLIGHT LOG FOR FLIGHT 24 DOY 18 LocalTime 17:45:33 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 638	L2463812	0	17:48:49	373920	5329983		
		1976	18:05:17	395351	5329983	21.431	1878
TRAVERSE 640	L2464013	1976	18:06:58	395311	5329581		
		4176	18:25:18	373843	5329586	21.468	2174

FLIGHT LOG FOR FLIGHT 24 DOY 18 LocalTime 18:25:49 Area 2 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 28	L2402821	0	18:41:55	378719	5286988		
		661	18:47:25	389565	5286986	10.846	661
TRAVERSE 29	L2402921	661	18:47:46	389536	5286788		
		1471	18:54:31	378667	5286790	10.869	810
TRAVERSE 30	L2403021	1471	18:54:55	378718	5286589		
		2131	19:00:25	389705	5286586	10.987	660
TRAVERSE 31	L2403121	2131	19:00:46	389688	5286388		
		2896	19:07:08	378674	5286388	11.014	765
TRAVERSE 32	L2403221	2896	19:07:30	378714	5286188		
		3541	19:12:52	389794	5286186	11.080	645
TRAVERSE 33	L2403321	3541	19:13:53	389814	5285986		
		4366	19:20:46	378674	5285992	11.140	825
TRAVERSE 34	L2403421	4366	19:21:08	378706	5285790		
		5111	19:27:21	389946	5285790	11.240	745
TIE.LINE 8	T2400821	5111	19:31:48	386976	5292912		
		6141	19:40:23	393653	5274430	19.651	1030
TIE.LINE 5	T2400521	6141	19:44:00	387123	5274602		
		7161	19:52:30	387122	5292820	18.218	1020
POST.TST 8	G2400821	7161	20:09:08	375658	5341393		
		7406	20:11:10	379210	5340588	3.642	245
PST1.GND 9	I2400921	7406	20:15:08	380952	5341431		
		7646	20:17:08	380952	5341431	0.000	240
POST.THM 10	J2401021	7646	20:17:57	380952	5341432		
		7886	20:19:57	380952	5341431	0.001	240



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**Base** Queenstown Tas    **Job** 2101    **Pilots** Hamich Robertson/Sam Borg

**FLIGHT LOG FOR FLIGHT 25**    **DOY** 19 **LocalTime** 07:15:03    **Area** 2    **Datum** = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B2500221	0 07:15:18	380952	5341431		
			241 07:17:18	380952	5341431	0.000	241
PRE1.GND	1	A2500121	241 07:18:38	380952	5341431		
			481 07:20:38	380952	5341431	0.000	240
PRE.TEST	5	E2500521	481 07:40:39	379142	5340603		
			716 07:42:36	375616	5341401	3.615	235
TIE.LINE	1	T2500121	716 07:59:12	379124	5292759		
			1631 08:06:50	379126	5274564	18.195	915
TIE.LINE	2	T2500221	1631 08:08:17	381122	5274610		
			2636 08:16:40	381123	5292863	18.253	1005
TIE.LINE	3	T2500321	2636 08:18:01	383124	5292766		
			3871 08:28:19	383124	5274558	18.208	1235
TIE.LINE	4	T2500421	3871 08:29:39	385121	5274588		
			5331 08:41:50	385123	5292819	18.231	1460
TIE.LINE	6	T2500621	5331 08:45:00	389124	5287236		
			6151 08:51:50	389123	5274511	12.725	820
TIE.LINE	7	T2500721	6151 08:53:18	391125	5274590		
			6676 08:57:40	391126	5281791	7.201	525
TRAVERSE	35	L2503521	6676 09:03:05	389970	5285590		
			7516 09:10:06	378677	5285588	11.293	840
TRAVERSE	36	L2503621	7516 09:10:34	378724	5285390		
			8446 09:18:19	390091	5285385	11.367	930
TRAVERSE	37	L2503721	8446 09:18:39	390134	5285189		
			9301 09:25:46	378674	5285186	11.460	855
TRAVERSE	38	L2503821	9301 09:26:14	378728	5284988		
			10181 09:33:35	390226	5284990	11.498	880
TRAVERSE	39	L2503921	10181 09:34:10	390253	5284784		
			11031 09:41:15	378668	5284787	11.585	850
TRAVERSE	40	L2504021	11031 09:48:40	378714	5284591		
			11801 09:55:06	390366	5284585	11.652	770
TRAVERSE	41	L2504121	11801 09:55:29	390408	5284391		
			12691 10:02:54	378636	5284384	11.772	890

TRAVERSE	42	L2504221	12691	10:03:20	378724	5284189		
			13621	10:11:05	390511	5284194	11.787	930
TRAVERSE	43	L2504321	13621	10:11:31	390555	5283986		
			14551	10:19:16	378661	5283990	11.894	930
TRAVERSE	44	L2504421	14551	10:20:17	378706	5283786		
			15526	10:28:25	390662	5283784	11.956	975
TRAVERSE	45	L2504521	15526	10:28:50	390713	5283586		
			16421	10:36:17	378627	5283589	12.086	895
TRAVERSE	46	L2504621	16421	10:36:53	378703	5283388		
			17361	10:44:43	390854	5283387	12.151	940
TRAVERSE	47	L2504721	17361	10:45:07	390833	5283185		
			18301	10:52:58	378668	5283192	12.165	940

FLIGHT LOG FOR FLIGHT 25 DOY 19 LocalTime 11:18:11 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 722	L2572212	0	11:40:05	379921	5313183		
		671	11:45:40	388375	5313184	8.454	671
TRAVERSE 737	L2573715	671	11:47:22	388315	5310183		
		1336	11:52:54	379862	5310183	8.453	657

FLIGHT LOG FOR FLIGHT 25 DOY 19 LocalTime 11:53:20 Area 2 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 1	L2500121	0	12:02:43	378718	5292389		
		461	12:06:34	387591	5292386	8.873	461
TRAVERSE 2	L2500221	461	12:06:54	387588	5292180		
		976	12:11:11	378656	5292189	8.932	515
TRAVERSE 3	L2500321	976	12:11:38	378723	5291989		
		1486	12:15:53	387696	5291986	8.973	514
TRAVERSE 4	L2500421	1486	12:16:20	387724	5291791		
		2041	12:20:58	378595	5291788	9.129	555
TRAVERSE 5	L2500521	2041	12:21:31	378726	5291586		
		2536	12:25:39	387842	5291589	9.116	495
TRAVERSE 6	L2500621	2536	12:25:58	387857	5291398		
		3086	12:30:33	378596	5291389	9.261	550
TRAVERSE 7	L2500721	3086	12:32:11	378730	5291189		
		3601	12:36:28	387970	5291189	9.240	515
TRAVERSE 8	L2500821	3601	12:36:51	388011	5290994		
		4176	12:41:39	378660	5290986	9.351	574

TRAVERSE	9	L2500921	4176 12:42:02	378707 5290794			
			4716 12:46:32	388174 5290787	9.467	540	
TRAVERSE	10	L2501021	4716 12:47:10	388157 5290589			
			5306 12:52:05	378618 5290586	9.539	590	
TRAVERSE	11	L2501121	5306 12:52:30	378699 5290393			
			5831 12:56:52	388322 5290391	9.623	525	
TRAVERSE	12	L2501221	5831 12:57:22	388288 5290186			
			6391 13:02:02	378674 5290186	9.614	560	
TRAVERSE	13	L2501321	6391 13:02:30	378720 5289988			
			6931 13:07:00	388465 5289984	9.745	540	
TRAVERSE	14	L2501421	6931 13:07:29	388438 5289785			
			7501 13:12:15	378661 5289789	9.777	570	
TRAVERSE	15	L2501521	7501 13:12:42	378726 5289588			
			8056 13:17:19	388593 5289585	9.867	555	
TRAVERSE	16	L2501621	8056 13:17:58	388601 5289394			
			8631 13:22:45	378667 5289387	9.934	575	
TRAVERSE	17	L2501721	8631 13:23:13	378734 5289188			
			9111 13:27:13	388716 5289185	9.982	480	
TRAVERSE	18	L2501821	9111 13:27:39	388732 5288987			
			9706 13:32:37	378632 5288986	10.100	595	
TRAVERSE	19	L2501921	9706 13:35:20	378728 5288789			
			10256 13:39:56	388861 5288786	10.133	550	



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 26 DOY 19 LocalTime 14:04:18 Area 2 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRVERSE 48	L2604821	0	14:38:13	378716	5282983		
		701	14:44:04	389381	5283041	10.665	681
TRVERSE 48	L2604822	701	14:46:30	386983	5282987		
		1046	14:49:22	391004	5282983	4.021	352
TRVERSE 49	L2604921	1046	14:50:06	390993	5282802		
		2016	14:58:11	378624	5282784	12.369	955
TRVERSE 50	L2605021	2016	14:58:52	378711	5282584		
		2836	15:05:42	391117	5282593	12.406	820
TRVERSE 51	L2605121	2836	15:06:55	391139	5282389		
		3776	15:14:45	378678	5282389	12.461	940
TRVERSE 52	L2605221	3776	15:15:38	378702	5282184		
		4616	15:22:38	391281	5282195	12.579	840
TRVERSE 53	L2605321	4616	15:23:14	391294	5281994		
		5581	15:31:17	378611	5281988	12.683	965
TRVERSE 54	L2605421	5581	15:31:44	378704	5281771		
		6436	15:38:52	391444	5281796	12.740	855
TRVERSE 55	L2605521	6436	15:39:26	391430	5281610		
		7471	15:48:04	378623	5281589	12.807	1043
TRVERSE 56	L2605621	7471	15:48:42	378711	5281393		
		8296	15:55:35	391556	5281385	12.845	825
TRVERSE 57	L2605721	8296	15:56:05	391591	5281217		
		9376	16:05:05	378672	5281181	12.919	1084
TRVERSE 58	L2605821	9376	16:06:26	378709	5280990		
		10161	16:12:58	391701	5280993	12.992	798
TRVERSE 59	L2605921	10161	16:14:27	391731	5280803		
		11121	16:22:27	378657	5280783	13.074	958
TRVERSE 60	L2606021	11121	16:23:06	378718	5280583		
		12006	16:30:29	391833	5280593	13.115	885
TRVERSE 61	L2606121	12006	16:31:19	391873	5280394		
		12946	16:39:09	378605	5280388	13.268	940
TRVERSE 62	L2606221	12946	16:39:47	378707	5280188		
		13821	16:47:05	391970	5280188	13.263	875

TRAVERSE	63	L2606321	13821 16:47:38 14846 16:56:11	392013 5280010 378596 5279994	13.417	1027
TRAVERSE	64	L2606421	14846 16:56:46 15631 17:03:18	378701 5279790 392120 5279794	13.419	785
TRAVERSE	68	L2606821	15631 18:08:05 16461 18:15:01	378708 5278982 392401 5278994	13.693	826
TRAVERSE	69	L2606921	16461 18:15:31 17426 18:23:34	392442 5278778 378667 5278790	13.775	965
TRAVERSE	70	L2607021	17426 18:24:09 18256 18:31:04	378704 5278586 392576 5278589	13.872	830
TRAVERSE	71	L2607121	18256 18:31:32 19166 18:39:08	392601 5278403 378664 5278385	13.937	910
TRAVERSE	72	L2607221	19166 18:39:46 20026 18:46:56	378711 5278184 392711 5278184	14.000	862
TRAVERSE	73	L2607322	20036 18:48:42 20976 18:56:32	392739 5278008 378654 5277984	14.085	938
TRAVERSE	74	L2607422	20976 18:56:58 21806 19:03:53	378714 5277801 392858 5277793	14.144	830
TRAVERSE	75	L2607523	21821 19:06:52 22781 19:14:52	392886 5277594 378672 5277580	14.214	960
POST.TST	8	G2600821	22796 19:38:28 22981 19:40:00	375667 5341393 379236 5340578	3.661	185
PST1.GND	9	I2600922	22996 19:43:18 23236 19:45:18	380952 5341430 380952 5341430	0.000	240
POST.THM	10	J2601022	23236 19:48:14 23476 19:50:14	380952 5341430 380952 5341430	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 27 DOY 21 LocalTime 07:20:22 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B2700211	0	07:37:29	380951	5341434		
		241	07:39:30	380951	5341435	0.001	242
PRE1.GND	1 A2700111	241	07:40:12	380951	5341430		
		481	07:42:11	380949	5341429	0.002	240
PRE.TEST	5 E2700511	481	07:45:23	379135	5340607		
		711	07:47:18	375574	5341412	3.651	230
TIE.LINE	77 T2707711	711	07:49:15	374113	5340763		
		2516	08:04:18	374111	5314284	26.479	1805
TRAVERSE	65 L2706522	0	08:18:31	378718	5279585		
		1016	08:26:59	392213	5279587	13.495	1016
TRAVERSE	66 L2706622	1016	08:27:21	392227	5279396		
		1986	08:35:26	378636	5279388	13.591	970
TRAVERSE	67 L2706722	1986	08:36:12	378712	5279186		
		2901	08:43:50	392351	5279186	13.639	915
TRAVERSE	76 L2707623	2901	08:46:28	392948	5277389		
		3896	08:54:46	378611	5277388	14.337	995
TRAVERSE	77 L2707721	3896	08:56:06	378717	5277188		
		4741	09:03:09	393134	5277185	14.417	845
TRAVERSE	78 L2707821	4741	09:04:07	393114	5276991		
		5711	09:12:12	378611	5276989	14.503	970
TRAVERSE	79 L2707921	5711	09:12:39	378706	5276789		
		6521	09:19:24	393289	5276789	14.583	810
TRAVERSE	80 L2708021	6521	09:19:57	393234	5276587		
		7436	09:27:34	378628	5276588	14.606	915
TRAVERSE	81 L2708121	7436	09:28:15	378727	5276387		
		8266	09:35:10	393391	5276390	14.664	830
TRAVERSE	82 L2708221	8266	09:35:42	393379	5276187		
		9166	09:43:13	378672	5276188	14.707	900
TRAVERSE	83 L2708321	9166	09:44:00	378708	5275990		
		9976	09:50:45	393530	5275982	14.822	810
TRAVERSE	84 L2708421	9976	09:56:25	393544	5275790		
		10926	10:04:20	378660	5275788	14.884	950
TRAVERSE	85 L2708521	10926	10:07:06	378720	5275586		
		11696	10:13:31	393667	5275591	14.947	770
TRAVERSE	86 L2708621	11696	10:13:53	393604	5275391		
		12536	10:20:53	378665	5275385	14.939	840
TRAVERSE	87 L2708721	12536	10:23:17	378723	5275188		
		13291	10:29:35	393644	5275188	14.921	755



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 28 DOY 21 LocalTime 10:56:15 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 488	L2848811	0	11:21:37	391867	5359985		
		3196	11:48:16	342124	5359984	49.743	3165
TRAVERSE 487	L2848711	3196	11:48:48	342018	5360185		
		6301	12:14:41	391872	5360188	49.854	3105
TRAVERSE 486	L2848611	6301	12:15:14	391791	5360373		
		9531	12:42:09	341809	5360383	49.982	3230
TRAVERSE 485	L2848511	9531	12:53:17	341729	5360585		
		12456	13:17:40	391789	5360587	50.060	2950
TRAVERSE 484	L2848411	12456	13:18:05	391729	5360776		
		14216	13:32:45	366542	5360783	25.187	1761



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FLIGHT LOG FOR FLIGHT 29 DOY 21 LocalTime 13:56:40 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 484	L2948412	0	14:09:34	369943	5360782		
		2146	14:27:28	341493	5360771	28.450	2060
TRAVERSE 483	L2948311	2146	14:28:34	341436	5360995		
		5851	14:59:27	391707	5360985	50.271	3690
TRAVERSE 482	L2948211	5851	15:00:24	391643	5361181		
		9426	15:30:12	341223	5361185	50.420	3608
TRAVERSE 481	L2948112	9431	15:32:59	341139	5361380		
		12756	16:00:42	391632	5361388	50.493	3355
TRAVERSE 480	L2948011	12756	16:01:26	391576	5361601		
		16466	16:32:22	340901	5361584	50.675	3690
TRAVERSE 479	L2947911	16466	16:33:29	340812	5361785		
		18146	16:47:29	368648	5361787	27.836	1681
TRAVERSE 479	L2947912	18146	17:02:42	364413	5361786		
		20281	17:20:30	391595	5361776	27.182	2080
TRAVERSE 478	L2947811	20281	17:21:23	391484	5361992		
		23971	17:52:09	340572	5361978	50.912	3620
TRAVERSE 477	L2947711	23971	17:52:56	340514	5362187		
		27336	18:20:59	391506	5362198	50.992	3401
TIE.LINE 76	T2907611	27341	18:22:10	391822	5361364		
		27431	18:22:55	390611	5360919	1.290	182 SCRUB
TIE.LINE 41	T2904111	27431	18:28:55	393144	5352285		
		29896	18:49:28	393130	5324641	27.644	2464
TIE.LINE 43	T2904311	29896	18:52:10	395127	5324702		
		31876	19:08:40	395136	5349400	24.698	1980
TIE.LINE 45	T2904511	31876	19:10:51	397128	5348932		
		33091	19:20:58	397128	5335654	13.278	1215
TIE.LINE 47	T2904711	33091	19:23:55	399133	5335733		
		34146	19:32:43	399131	5348549	12.816	1055
TIE.LINE 49	T2904911	34146	19:35:36	401124	5348106		
		34866	19:41:37	401135	5341210	6.896	720

TIE.LINE	76	T2907612	34871	19:46:59	403139	5347939		
			35966	19:56:07	398799	5335526	13.150	1095
POST.TST	8	G2900811	35966	20:05:47	375679	5341395		
			36151	20:07:19	379175	5340595	3.586	185
PST1.GND	9	I2900911	36151	20:09:46	380951	5341431		
			36161	20:09:50	380951	5341431	0.000	10
PST1.GND	9	I2900912	36161	20:09:57	380951	5341431		
			36401	20:11:57	380951	5341431	0.000	240
POST.THM	10	J2901013	36401	20:13:06	380951	5341431		
			36641	20:15:06	380951	5341431	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 30 DOY 22 LocalTime 09:10:44 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR 2	B3000211	0	09:11:15	380951	5341429		
		241	09:13:15	380951	5341429	0.000	241
PRE1.GND 1	A3000111	0	09:15:25	380951	5341429		
		241	09:17:25	380951	5341430	0.001	241
PRE.TEST 5	E3000511	241	09:27:14	379144	5340605		
		451	09:28:59	375617	5341402	3.616	210
TIE.LINE 75	T3007511	451	09:43:50	393854	5347799		
		2266	09:58:58	389803	5368803	21.391	1815
TIE.LINE 39	T3003911	2266	10:07:31	391131	5363139		
		4946	10:29:52	391129	5324626	38.513	2676
TIE.LINE 105	T3010511	4946	10:32:54	389138	5324692		
		9251	11:08:47	389126	5390043	65.351	4305
TIE.LINE 104	T3010411	9251	11:11:55	387134	5389987		
		14871	11:58:46	387133	5309611	80.376	5620
TIE.LINE 103	T3010311	14871	12:00:44	385133	5309681		
		18356	12:29:47	385135	5351200	41.519	3486 41
TRAVERSE 475	L3047511	18356	13:03:53	340231	5362593		
		21986	13:34:09	391405	5362577	51.174	3524
TRAVERSE 474	L3047411	21986	13:34:58	391341	5362782		
		24681	13:57:26	359410	5362776	31.931	2696 30



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 31 DOY 22 LocalTime 14:24:51 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRVERSE 474	L3147412	0	14:38:53	364031	5362782		
		1516	14:51:31	340029	5362781	24.002	1518 21-2
TRVERSE 473	L3147311	1516	14:52:04	339944	5362984		
		4781	15:19:17	391374	5362985	51.430	3265
TRVERSE 472	L3147211	4781	15:20:43	391261	5363182		
		8386	15:50:46	339689	5363180	51.572	3605
TRVERSE 471	L3147111	8386	15:55:29	339623	5363385		
		11741	16:23:27	391305	5363380	51.682	3355
TRVERSE 470	L3147011	11741	16:26:36	391204	5363584		
		15416	16:57:14	339384	5363582	51.820	3675
TRVERSE 469	L3146911	15416	16:57:39	339341	5363780		
		17096	17:11:39	369198	5363780	29.857	1681
TRVERSE 469	L3146912	17096	17:27:29	364510	5363782		
		19131	17:44:27	391239	5363784	26.729	2037
TRVERSE 468	L3146811	19131	17:46:31	391122	5363982		
		22816	18:17:14	339118	5363985	52.004	3621
TRVERSE 467	L3146711	22816	18:17:40	339029	5364189		
		26131	18:45:18	391121	5364182	52.092	3315
TRVERSE 466	L3146611	26131	18:46:46	391056	5364386		
		29811	19:17:27	338787	5364383	52.269	3680
TRVERSE 465	L3146511	29811	19:17:50	338722	5364586		
		33136	19:45:33	391067	5364581	52.345	3325
POST.TST 8	G3100811	33136	19:55:48	379133	5340609		
		33406	19:58:03	375595	5341404	3.626	270
PST1.GND 9	I3100911	33406	20:01:43	380949	5341429		
		33646	20:03:43	380951	5341430	0.002	240
POST.THM 10	J3101011	33646	20:04:30	380949	5341429		
		33886	20:06:30	380951	5341430	0.002	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 32 DOY 23 LocalTime 07:44:42 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B3200211	0	07:45:32	380951	5341431		
		241	07:47:32	380951	5341431	0.000	241
PRE1.GND	1 A3200111	241	07:49:49	380951	5341431		
		481	07:51:49	380951	5341430	0.001	240
PRE.TEST	5 E3200511	481	08:11:23	379140	5340602		
		736	08:13:30	375624	5341401	3.606	255
TRAVERSE 420	L3242011	736	08:33:06	376621	5373585		
		3386	08:55:12	332663	5373584	43.958	2652
TRAVERSE 421	L3242111	3386	08:55:48	332813	5373385		
		8171	09:35:41	405092	5373384	72.279	4784
TRAVERSE 420	L3242012	8171	09:40:03	405311	5373582		
		10236	09:57:16	373618	5373579	31.693	2066
TRAVERSE 464	L3246411	10236	10:06:18	390972	5364785		
		13846	10:36:24	338525	5364783	52.447	3610
TRAVERSE 463	L3246311	13846	10:37:00	338441	5364985		
		17246	11:05:21	391010	5364986	52.569	3400
TRAVERSE 462	L3246211	17246	11:10:43	390910	5365181		
		20811	11:40:26	338195	5365182	52.715	3565
TRAVERSE 461	L3246111	20811	11:41:02	338120	5365379		
		22291	11:53:22	364490	5365386	26.370	1481
TRAVERSE 460	L3246011	22291	12:08:59	364321	5365585		
		23911	12:22:30	337926	5365582	26.395	1622
TRAVERSE 459	L3245911	23911	12:23:00	337828	5365793		
		27511	12:53:01	390850	5365783	53.022	3600
TRAVERSE 460	L3246012	27511	12:53:57	390816	5365584		
		29671	13:11:58	361469	5365584	29.347	2161
TRAVERSE 461	L3246112	29671	13:12:35	361551	5365387		
		31706	13:29:33	390905	5365382	29.354	2018
POST.TST	8 G3200811	31706	13:42:27	379146	5340605		
		31931	13:44:20	375614	5341399	3.620	225
PST1.GND	9 I3200911	31931	13:51:43	380951	5341431		
		32171	13:53:43	380949	5341431	0.002	240

POST.THM	10	J3201011	32171	13:54:29	380949	5341431		
			32411	13:56:29	380952	5341431	0.003	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 33 DOY 23 LocalTime 14:06:54 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 476	L3347612	0	14:27:43	391414	5362379	51.078	3966
		3966	15:00:47	340336	5362382		
TRAVERSE 458	L3345811	3966	15:04:34	337692	5365985	53.108	3750
		7716	15:35:50	390800	5365982		
TRAVERSE 457	L3345711	7716	15:36:38	390710	5366173	16.610	1633
		9301	15:49:51	374100	5366167		
TRAVERSE 457	L3345712	9301	15:52:29	377079	5366174	39.675	2646
		11951	16:14:35	337404	5366184		
TIE.LINE 5	T3300513	11956	16:18:38	337124	5366681	6.279	311
		12266	16:21:13	337124	5372960		
TRAVERSE 456	L3345612	12266	16:24:38	337374	5366386	53.365	3659
		15881	16:54:46	390739	5366383		
TRAVERSE 455	L3345511	15881	16:55:15	390648	5366566	26.720	2146
		18021	17:13:05	363928	5366576		
TRAVERSE 455	L3345512	18021	17:28:40	367061	5366584	29.875	1602
		19621	17:42:00	337186	5366575		
TRAVERSE 454	L3345411	19621	17:42:55	337080	5366785	53.619	3641
		23221	18:12:56	390699	5366793		
TRAVERSE 453	L3345311	23221	18:13:23	390563	5366973	12.428	1134
		24291	18:22:18	378135	5366979		
TRAVERSE 453	L3345312	24291	18:24:10	380798	5366982	43.963	2743
		27036	18:47:03	336835	5366972		
TRAVERSE 452	L3345211	27036	18:48:16	336773	5367186	53.786	3705
		30746	19:19:12	390559	5367180		
TRAVERSE 451	L3345111	30746	19:20:15	390509	5367387	53.983	3360
		34056	19:47:51	336526	5367385		
TRAVERSE 450	L3345011	34056	20:00:58	336468	5367589	24.141	1271
		35326	20:11:33	360609	5367586		



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 34 DOY 25 LocalTime 15:16:51 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B3400211	0 15:17:40	363091	5361271		
			241 15:19:40	363091	5361271	0.000	482
PRE1.GND	1	A3400111	241 15:21:09	363092	5361270		
			481 15:23:09	363093	5361269	0.001	240
PRE.TEST	5	E3400511	481 15:29:49	363011	5361761		
			691 15:31:34	365448	5364743	3.851	420
TRAVERSE	450	L3445012	691 15:59:39	358057	5367596		
			3231 16:20:50	390491	5367586	32.434	2537
TRAVERSE	449	L3444911	3231 16:21:40	390434	5367786		
			6866 16:51:58	336237	5367785	54.197	3649
TRAVERSE	448	L3444811	6866 16:53:43	336162	5367985		
			7296 16:57:18	344515	5368089	8.354	440
TRAVERSE	448	L3444812	7326 17:00:51	341790	5367985		
			10651 17:28:34	390422	5367986	48.632	3327
TRAVERSE	447	L3444714	10666 17:33:42	397594	5368197		
			14726 18:07:33	335980	5368184	61.614	4055
TRAVERSE	446	L3444612	14726 18:09:31	335888	5368378		
			16321 18:22:49	365294	5368377	29.406	1596
TRAVERSE	446	L3444613	16321 18:44:48	360176	5368388		
			19026 19:07:21	397930	5368386	37.754	2634
TRAVERSE	445	L3444512	19036 19:09:23	398157	5368579		
			23261 19:44:36	335624	5368577	62.533	4225
TRAVERSE	444	L3444411	23261 19:46:27	335563	5368784		
			24771 19:59:02	362628	5368781	27.065	1511
POST.TST	8	G3400811	24771 20:01:52	365428	5364749		
			25031 20:04:02	362995	5361735	3.873	260
PST1.GND	9	I3400911	25031 20:05:46	363093	5361271		
			25271 20:07:46	363093	5361271	0.000	240
POST.THM	10	J3401011	25271 20:08:25	363093	5361271		
			25511 20:10:25	363093	5361271	0.000	240

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Baseway



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 35 DOY 26 LocalTime 08:10:10 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B3500211	0 08:10:18	363093	5361270		
			241 08:12:18	363093	5361270	0.000	241
PRE1.GND	1	A3500111	241 08:16:27	363093	5361270		
			481 08:18:27	363093	5361270	0.000	240
PRE.TEST	5	E3500511	481 08:21:41	363015	5361768		
			811 08:24:26	365476	5364784	3.893	330
TRAVERSE	444	L3544412	811 08:31:59	358192	5368778		
			1616 08:38:41	368992	5368795	10.800	825
TRAVERSE	444	L3544413	1616 08:41:03	365476	5368790		
			4561 09:05:36	398518	5368783	33.042	2956
TRAVERSE	422	L3542211	4571 09:11:57	404745	5373178		
			8831 09:47:28	332855	5373178	71.890	4283
TRAVERSE	423	L3542311	8831 09:48:39	333062	5372978		
			14026 10:31:58	404480	5372986	71.418	5198
TRAVERSE	424	L3542411	14026 10:32:56	404155	5372788		
			16716 10:55:21	363106	5372777	41.049	2683
POST.TST	8	G3500811	16716 10:59:05	365449	5364752		
			17031 11:01:42	362975	5361706	3.924	315
PST1.GND	9	I3500912	17041 11:04:05	363093	5361271		
			17281 11:06:05	363093	5361271	0.000	240
POST.THM	10	J3501012	17281 11:06:45	363093	5361271		
			17521 11:08:45	363093	5361271	0.000	240

478-3  
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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 36 DOY 27 LocalTime 08:35:02 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B3600211	0 08:35:27 241 08:37:27	363093 363093	5361270 5361270	0.000	241
PRE1.GND	1	A3600111	241 08:40:30 481 08:42:30	363093 363093	5361270 5361270	0.000	240
PRE.TEST	5	E3600511	0 09:03:04 321 09:05:44	363006 365488	5361754 5364792	3.923	321
TIE.LINE	92	T3609211	321 09:08:12 1901 09:21:22	363135 363130	5365199 5339608	25.591	1582
TIE.LINE	91	T3609111	1901 09:25:46 4951 09:51:11	361132 361133	5339697 5382987	43.290	3051
TIE.LINE	90	T3609011	4951 09:57:21 7701 10:20:17	359131 359132	5389984 5339639	50.345	2750
TIE.LINE	87	T3608711	7701 10:24:44 10456 10:47:42	353131 353134	5345328 5390030	44.702	2747
TIE.LINE	88	T3608811	10456 10:52:57 13136 11:15:17	355129 355131	5389990 5339642	50.348	2680
TIE.LINE	89	T3608911	13136 11:16:39 16191 11:42:07	357127 357127	5339694 5390072	50.378	3055
TIE.LINE	92	T3609212	16191 11:44:45 17716 11:57:28	363134 363130	5389996 5361594	28.402	1525
TIE.LINE	93	T3609311	17716 12:10:22 18911 12:20:20	365129 365132	5361751 5339636	22.115	1197 22
TIE.LINE	94	T3609411	18911 12:21:47 21756 12:45:30	367130 367132	5339682 5390057	50.375	2844
TRAVERSE	419	L3641911	21756 12:52:10 24096 13:11:40	365389 405384	5373783 5373785	39.995	2342 40/72.8
TRAVERSE	418	L3641811	24096 13:12:35 26721 13:34:28	405371 363863	5373984 5373975	41.508	2626 41.5/72.9
POST.TST	8	G3600811	26721 13:38:31 26991 13:40:46	365448 362990	5364742 5361739	3.881	270
PST1.GND	9	I3600911	26991 13:42:30 27231 13:44:30	363094 363094	5361272 5361272	0.000	240
POST.THM	10	J3601011	27231 13:45:18 27471 13:47:18	363094 363094	5361272 5361272	0.000	240



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 37 DOY 27 LocalTime 15:05:04 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 424	L3742412	0	15:29:37	367756	5372786	34.641	2398
		2396	15:49:35	333115	5372779		
TRAVERSE 419	L3741912	2396	15:51:59	332575	5373784	38.088	2231
		4626	16:10:34	370663	5373785		
TRAVERSE 418	L3741812	4626	16:12:09	370239	5373988	29.282	2192 29
		6816	16:30:24	340957	5373981		
TRAVERSE 417	L3741711	6816	16:32:51	345739	5374179	19.596	1225 19.5
		8041	16:43:03	365335	5374188		



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 38 DOY 28 LocalTime 07:38:12 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B3800211	0 07:40:54	363093	5361271		
			241 07:42:55	363093	5361271	0.000	241
PRE1.GND	1	A3800111	241 07:44:02	363094	5361271		
			481 07:46:02	363093	5361271	0.001	240
PRE.TEST	5	E3800511	481 07:51:50	363002	5361755		
			671 07:53:24	365497	5364803	3.939	190
TRAVERSE	418	L3841813	671 08:04:41	344682	5373981		
			1341 08:10:16	332375	5373981	12.307	672
TRAVERSE	417	L3841712	1341 08:13:49	332341	5374184		
			6246 08:54:42	405455	5374183	73.114	4904
TRAVERSE	416	L3841611	6401 09:02:32	405465	5374379		
			10251 09:34:38	354620	5374271	50.845	3903 50 W
TRAVERSE	415	L3841511	10251 09:38:06	362758	5374586		
			13316 10:03:39	405530	5374582	42.772	3067 42 E
TRAVERSE	414	L3841411	13316 10:04:21	405524	5374782		
			15171 10:19:49	386555	5374778	18.969	1856 18 W
POST.TST	8	G3800811	15171 10:31:24	365448	5364740		
			15371 10:33:04	362965	5361704	3.922	200
PST1.GND	9	I3800911	15371 10:34:35	363094	5361271		
			15381 10:34:40	363094	5361271	0.000	10
PST1.GND	9	I3800912	15381 10:34:54	363094	5361271		
			15621 10:36:54	363094	5361271	0.000	240
POST.THM	10	J3801012	15621 10:37:37	363094	5361271		
			15861 10:39:37	363094	5361271	0.000	240



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 39 DOY 28 LocalTime 17:51:04 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TIE.LINE 91	T3909112	0	18:52:42	361135	5378249		
		816	18:59:30	361130	5390036	11.787	818
TIE.LINE 95	T3909511	816	19:02:59	369133	5389981		
		3621	19:26:21	369131	5339577	50.404	2805
TIE.LINE 97	T3909711	3621	19:28:12	373131	5339694		
		6756	19:54:20	373134	5390110	50.416	3133
TRAVERSE 415	L3941512	6756	20:01:57	376433	5374585		
		9141	20:21:50	332003	5374580	44.430	2387 <i>44</i>
TRAVERSE 414	L3941412	9141	20:22:18	331989	5374789		
		11381	20:40:58	376836	5374783	44.847	2240 <i>44</i>
POST.TST 8	G3900811	11381	20:46:49	365430	5364724		
		11616	20:48:46	362991	5361735	3.858	235



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 40 DOY 30 LocalTime 07:17:16 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B4000212	0 07:17:31	363094	5361270		
			241 07:19:31	363094	5361270	0.000	241
PRE1.GND	1	A4000112	241 07:20:21	363094	5361270		
			481 07:22:21	363094	5361270	0.000	240
PRE.TEST	5	E4000511	481 07:30:42	363008	5361760		
			726 07:32:45	365470	5364771	3.889	245
TRAVERSE	414	L4041414	736 07:38:58	366416	5374783		
			3571 08:02:35	405571	5374787	39.155	2788
TRAVERSE	413	L4041311	3571 08:04:08	405574	5374984		
			8671 08:46:39	331769	5374978	73.805	5100
TRAVERSE	416	L4041612	8671 08:50:12	332254	5374385		
			10106 09:02:10	359512	5374392	27.258	1436
TRAVERSE	425	L4042511	10106 09:04:15	360019	5372588		
			12901 09:27:33	403916	5372587	43.897	2796
TRAVERSE	426	L4042611	12901 09:28:31	403597	5372380		
			17651 10:08:07	333342	5372384	70.255	4750
TRAVERSE	425	L4042512	17651 10:09:03	333314	5372582		
			19181 10:21:48	364048	5372591	30.734	1531
TIE.LINE	93	T4009312	19181 10:29:41	365135	5389989		
			20991 10:44:46	365129	5360877	29.112	1811
TRAVERSE	427	L4042711	20991 11:07:54	364408	5372186		
			22956 11:24:17	333479	5372182	30.929	1967
TRAVERSE	428	L4042811	22956 11:25:15	333660	5371990		
			27211 12:00:43	403113	5371986	69.453	4269
TRAVERSE	429	L4042911	27211 12:01:48	402724	5371771		
			32096 12:42:31	333683	5371781	69.041	4891
TRAVERSE	430	L4043011	32096 12:43:31	333895	5371587		
			36266 13:18:17	402516	5371586	68.621	4182
TRAVERSE	427	L4042712	36266 13:20:29	403283	5372172		
			39331 13:46:02	361410	5372181	41.873	3083



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FLIGHT LOG FOR FLIGHT 41 DOY 30 LocalTime 13:55:44 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 431	L4143111	0	14:06:54	365642	5371385		
		2156	14:24:53	333902	5371383	31.740	2158
TRAVERSE 432	L4143211	2156	14:25:28	334113	5371188		
		7041	15:06:11	401934	5371179	67.821	4885
TRAVERSE 433	L4143311	7041	15:07:23	401607	5370985		
		12021	15:48:54	334168	5370984	67.439	4980
TRAVERSE 434	L4143411	12021	15:49:27	334350	5370783		
		16601	16:27:38	401387	5370781	67.037	4579
TRAVERSE 435	L4143511	16601	16:28:59	401030	5370584		
		18941	16:48:29	372405	5370579	28.625	2338
TRAVERSE 435	L4143512	18941	17:10:30	375046	5370582		
		21386	17:30:53	334436	5370583	40.610	2447
TRAVERSE 436	L4143611	21386	17:32:37	334591	5370381		
		25631	18:08:00	400785	5370382	66.194	4244
TRAVERSE 437	L4143711	25631	18:08:44	400460	5370179		
		30051	18:45:35	334674	5370185	65.786	4419
TRAVERSE 438	L4143811	30051	18:46:16	334829	5369985		
		34131	19:20:17	400226	5369984	65.397	4080
TRAVERSE 431	L4143113	34151	19:23:27	402148	5371380		
		36256	19:41:00	371069	5371377	31.079	2106
POST.TST 8	G4100811	36256	19:44:58	365450	5364746		
		36511	19:47:05	362975	5361717	3.912	255
PST1.GND 9	I4100911	36511	19:48:53	363094	5361270		
		36751	19:50:53	363094	5361270	0.000	240
POST.THM 10	J4101011	36751	19:51:27	363094	5361270		
		36991	19:53:27	363097	5361271	0.003	240

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FLIGHT LOG FOR FLIGHT 42 DOY 31 LocalTime 07:16:45 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B4200211	0 07:16:55	363097	5361271		
			241 07:18:55	363094	5361271	0.003	241
PRE1.GND	1	A4200111	241 07:19:39	363094	5361271		
			481 07:21:39	363097	5361271	0.003	240
PRE.TEST	5	E4200511	0 08:02:11	363002	5361754		
			236 08:04:09	365466	5364767	3.892	236
TRAVERSE	439	L4243911	236 08:07:58	368746	5369781		
			2056 08:23:08	334899	5369780	33.847	1822
TRAVERSE	440	L4244011	2056 08:23:52	335078	5369586		
			6521 09:01:06	399623	5369581	64.545	4465
TRAVERSE	441	L4244111	6521 09:02:39	399315	5369382		
			10456 09:35:27	335141	5369378	64.174	3935
TRAVERSE	442	L4244211	10456 09:35:55	335294	5369183		
			14661 10:10:58	399081	5369182	63.787	4205
TRAVERSE	443	L4244312	14661 10:16:35	398742	5368982		
			18641 10:49:46	335384	5368979	63.358	3964
TRAVERSE	431	L4243114	18641 11:05:57	374419	5371381		
			19376 11:12:05	361934	5371383	12.485	737
TIE.LINE	99	T4209911	19376 11:35:25	377123	5363997		
			20976 11:48:45	377130	5390045	26.048	1600
TIE.LINE	100	T4210011	20976 11:50:35	379131	5389973		
			25621 12:29:19	379131	5313775	76.198	4645
TIE.LINE	99	T4209912	25621 12:30:43	377134	5314235		
			28706 12:56:26	377126	5364141	49.906	3086



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 43 DOY 31 LocalTime 13:07:22 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TIE.LINE 103	T4310312	0	13:29:12	385125	5347602		
		3106	13:55:05	385131	5390069	42.467	3112
TIE.LINE 102	T4310211	3106	13:57:32	383133	5389974		
		9141	14:47:51	383125	5309612	80.362	6033
TIE.LINE 101	T4310111	9141	14:50:56	381144	5309684		
		15186	15:41:20	381125	5390081	80.397	6045
TRAVERSE 412	L4341211	15186	16:23:00	361481	5375182		
		17196	16:39:45	331656	5375176	29.825	2011
TRAVERSE 411	L4341111	17196	16:41:01	331629	5375393		
		22731	17:27:09	405671	5375384	74.042	5495
TRAVERSE 412	L4341212	22731	17:28:05	405604	5375189		
		26841	18:02:21	357542	5375179	48.062	4103
POST.TST 8	G4300811	26841	18:08:38	365442	5364758		
		27151	18:11:13	362996	5361733	3.890	310
PST1.GND 9	I4300912	27156	18:15:44	363097	5361270		
		27396	18:17:44	363097	5361270	0.000	240
POST.THM 10	J4301012	27396	18:18:42	363097	5361270		
		27636	18:20:42	363097	5361270	0.000	240



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Base Queenstown Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 44 DOY 32 LocalTime 11:02:55 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B4400211	0 11:03:05	363094	5361271		
			241 11:05:05	363094	5361271	0.000	241
PRE1.GND	1	A4400111	241 11:06:11	363094	5361271		
			481 11:08:11	363094	5361271	0.000	240
PRE.TEST	5	E4400511	481 11:24:19	363000	5361754		
			781 11:26:49	365473	5364771	3.901	300
TRAVERSE	410	L4441011	781 11:33:39	361127	5375580		
			2451 11:47:35	331482	5375583	29.645	1672
TRAVERSE	409	L4440911	2451 11:48:58	331391	5375784		
			8701 12:41:04	405748	5375786	74.357	6291
TRAVERSE	408	L4440811	8701 12:43:47	405722	5375981		
			13026 13:19:50	331186	5375975	74.536	4307
TRAVERSE	407	L4440711	13026 13:21:20	331173	5376183		
			16121 13:47:08	369125	5376170	37.952	3091
POST.TST	8	G4400811	16121 13:53:13	365453	5364751		
			16386 13:55:25	362975	5361714	3.920	265
PST1.GND	9	I4400911	16386 14:29:41	363094	5361271		
			16401 14:29:49	363094	5361271	0.000	16
PST1.GND	9	I4400912	16401 14:29:55	363094	5361271		
			16641 14:31:55	363094	5361271	0.000	240
POST.THM	10	J4401012	16641 14:32:59	363094	5361271		
			16881 14:34:59	363094	5361272	0.001	240



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 45 DOY 33 LocalTime 07:14:26 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B4500211	0 07:14:35	363093	5361270		
			241 07:16:35	363093	5361270	0.000	241
PRE1.GND	1	A4500111	241 07:17:40	363094	5361270		
			481 07:19:40	363093	5361271	0.001	240
PRE.TEST	5	E4500511	481 07:32:13	363006	5361753		
			736 07:34:21	365464	5364766	3.888	255
TRAVERSE	406	L4540611	736 07:41:46	373986	5376385		
			3276 08:02:56	330996	5376387	42.990	2536
TRAVERSE	405	L4540511	3276 08:03:50	330919	5376584		
			8576 08:48:01	405892	5376581	74.973	5300
TRAVERSE	404	L4540411	8576 08:55:18	405901	5376785		
			13141 09:33:21	330776	5376780	75.125	4510
TRAVERSE	403	L4540311	13141 09:35:01	330708	5376984		
			18296 10:17:59	405969	5376989	75.261	5155
TRAVERSE	406	L4540612	18296 10:23:53	405789	5376380		
			21181 10:47:56	359469	5376384	46.320	2884
TRAVERSE	402	L4540211	21181 11:14:59	368058	5377180		
			23301 11:32:39	330477	5377182	37.581	2121
TRAVERSE	401	L4540111	23301 11:35:06	330447	5377382		
			28441 12:17:57	406074	5377385	75.627	5136
TRAVERSE	400	L4540011	28441 12:25:36	406053	5377587		
			33136 13:04:44	330228	5377579	75.825	4691
TRAVERSE	399	L4539912	33156 13:07:21	330204	5377784		
			37836 13:46:22	406110	5377788	75.906	4680
TRAVERSE	402	L4540212	37836 13:47:29	405972	5377181		
			40341 14:08:22	365489	5377182	40.483	2504



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FLIGHT LOG FOR FLIGHT 46 DOY 33 LocalTime 14:25:27 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 407	L4640712	0	14:36:56	362986	5376191		
		2856	15:00:44	405864	5376182	42.878	2858
TRAVERSE 410	L4641012	2856	15:03:40	405677	5375578		
		6391	15:33:08	357714	5375575	47.963	3539
TRAVERSE 398	L4639811	6391	15:37:54	355696	5377983		
		7811	15:49:45	330066	5377981	25.630	1422
TRAVERSE 397	L4639711	7811	15:50:41	329977	5378189		
		12161	16:26:57	400354	5378125	70.377	4417
TRAVERSE 397	L4639712	12161	16:29:35	396628	5378181		
		12881	16:35:35	406203	5378182	9.575	722
TRAVERSE 396	L4639611	12881	16:36:19	406179	5378383		
		16531	17:06:45	355437	5378389	50.742	3651
TRAVERSE 396	L4639612	16531	17:34:13	358256	5378386		
		18356	17:49:25	329805	5378380	28.451	1827
TRAVERSE 395	L4639511	18356	17:50:13	329766	5378587		
		23751	18:35:11	406248	5378588	76.482	5390
TRAVERSE 394	L4639411	23751	18:36:04	406267	5378758		
		28751	19:17:45	329562	5378780	76.705	5002
TRAVERSE 393	L4639311	28751	19:19:04	329532	5378992		
		33711	20:00:25	406324	5378988	76.792	4959
TRAVERSE 398	L4639812	33711	20:02:01	406127	5377980		
		36826	20:27:59	353121	5377979	53.006	3114
POST.TST	8 G4600811	36826	20:35:10	365439	5364748		
		37056	20:37:05	362973	5361705	3.917	230
PST1.GND	9 I4600911	37056	20:44:26	363094	5361271		
		37296	20:46:26	363094	5361271	0.000	240



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FLIGHT LOG FOR FLIGHT 47 DOY 34 LocalTime 06:54:35 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B4700211	0	07:00:47	363094	5361270		
		241	07:02:48	363094	5361270	0.000	241
PRE1.GND	1 A4700111	241	07:06:02	363094	5361271		
		481	07:08:02	363094	5361271	0.000	240
PRE.TEST	5 E4700511	481	07:25:30	363014	5361768		
		811	07:28:15	365473	5364777	3.886	330
TRAVERSE 392	L4739211	811	07:36:32	359796	5379179		
		2721	07:52:27	329332	5379179	30.464	1912
TRAVERSE 391	L4739111	2721	07:54:18	329265	5379383		
		8496	08:42:27	406397	5379386	77.132	5775
TRAVERSE 390	L4739011	8496	08:46:13	406408	5379590		
		13536	09:28:14	329045	5379577	77.363	5050
TRAVERSE 389	L4738911	13536	09:30:10	329027	5379789		
		18786	10:13:56	406476	5379780	77.449	5246
TRAVERSE 392	L4739212	18786	10:14:51	406335	5379195		
		21611	10:38:24	361175	5379182	45.160	2826
TRAVERSE 392	L4739213	21611	11:05:00	365313	5379182		
		22311	11:10:50	356046	5379184	9.267	716
TRAVERSE 388	L4738811	22311	11:12:16	355120	5379984		
		23986	11:26:14	328873	5379988	26.247	1677
TRAVERSE 387	L4738711	23986	11:27:01	328929	5380178		
		29156	12:10:07	406587	5380184	77.658	5168
TRAVERSE 386	L4738611	29156	12:11:01	406540	5380373		
		34816	12:58:12	328882	5380381	77.658	5664
TRAVERSE 385	L4738511	34816	13:07:15	351409	5380584		
		38216	13:35:36	406689	5380584	55.280	3400
TRAVERSE 388	L4738812	38216	13:36:22	406469	5379967		
		41651	14:05:00	354648	5379982	51.821	3436



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 48 DOY 34 LocalTime 14:15:47 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 384	L4838411	0	14:32:48	351426	5380781		
		3541	15:02:19	406716	5380782	55.290	3534
TRAVERSE 383	L4838311	3541	15:05:04	406657	5380989		
		7736	15:40:02	351374	5380982	55.283	4136
TRAVERSE 382	L4838212	7751	15:48:50	351406	5381189		
		11096	16:16:43	406763	5381181	55.357	3345
TRAVERSE 381	L4838111	11096	16:17:08	406732	5381382		
		14701	16:47:11	351368	5381384	55.364	3603
TRAVERSE 380	L4838011	14701	16:47:34	351408	5381583		
		17761	17:13:04	406825	5381577	55.417	3056
TRAVERSE 379	L4837911	17761	17:13:31	406798	5381785		
		19326	17:26:34	381309	5381779	25.489	1566
TRAVERSE 379	L4837912	19326	18:00:53	384681	5381784		
		21541	18:19:21	351313	5381784	33.368	2195
TRAVERSE 378	L4837811	21541	18:19:40	351425	5381982		
		24961	18:48:10	406925	5381987	55.500	3402
TRAVERSE 377	L4837711	24961	18:48:39	406886	5382172		
		28861	19:21:10	351369	5382183	55.517	3899
TRAVERSE 376	L4837611	28861	19:22:01	351405	5382384		
		32491	19:52:17	406944	5382387	55.539	3577
TRAVERSE 375	L4837511	32491	19:53:02	406948	5382584		
		35061	20:14:27	379382	5382583	27.566	2568 25.
POST.TST 8	G4800811	35061	20:23:34	365446	5364743		
		35306	20:25:37	362970	5361709	3.916	245
PST1.GND 9	I4800911	35306	20:27:08	363092	5361272		
		35546	20:29:08	363092	5361272	0.000	240
POST.THM 10	J4801011	35546	20:30:06	363093	5361271		
		35786	20:32:06	363093	5361272	0.001	240



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Base Zeehan Tas Job 2101 Pilots Hamich Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 49 DOY 35 LocalTime 07:18:56 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B4900211	0	07:19:11	363093	5361271		
		241	07:21:11	363093	5361271	0.000	241
PRE1.GND	1 A4900111	241	07:24:06	363093	5361271		
		481	07:26:06	363092	5361271	0.001	240
PRE.TEST	5 E4900511	481	07:52:54	363014	5361762		
		721	07:54:53	365499	5364812	3.934	240
TRAVERSE	375 L4937512	0	10:28:28	382400	5382590		
		2321	10:47:48	351376	5382580	31.024	2311
TRAVERSE	374 L4937411	2321	10:49:07	351422	5382784		
		6171	11:21:13	407086	5382778	55.664	3843
TRAVERSE	373 L4937311	6171	11:32:07	407013	5382983		
		9986	12:03:55	351338	5382981	55.675	3773
TRAVERSE	372 L4937211	9986	12:04:25	351428	5383183		
		13346	12:32:26	407096	5383182	55.668	3360
TRAVERSE	371 L4937111	13346	12:34:17	407085	5383386		
		16966	13:04:28	351373	5383381	55.712	3618
TRAVERSE	370 L4937011	16966	13:09:31	351416	5383584		
		18801	13:24:49	381062	5383586	29.646	1836 30.



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FLIGHT LOG FOR FLIGHT 50 DOY 35 LocalTime 13:40:47 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 370	L5037012	0	13:59:18	377370	5383583		
		1921	14:15:19	407158	5383587	29.788	1921 259.
TRAVERSE 369	L5036911	1921	14:16:55	407184	5383765		
		5986	14:50:48	351367	5383779	55.817	4064
TRAVERSE 368	L5036811	5986	14:51:30	351409	5383983		
		9781	15:23:08	407229	5383991	55.820	3793
TRAVERSE 367	L5036711	9781	15:24:10	407240	5384179		
		13866	15:58:13	351346	5384182	55.894	4085
TRAVERSE 366	L5036611	13866	15:58:54	351427	5384392		
		17661	16:30:32	407326	5384387	55.899	3830
TRAVERSE 365	L5036511	17661	16:31:40	407326	5384584		
		19526	16:47:13	378345	5384578	28.981	1872
TRAVERSE 365	L5036512	19526	17:21:54	381935	5384579		
		21911	17:41:47	351368	5384579	30.567	2370
TRAVERSE 364	L5036411	21911	17:42:27	351395	5384784		
		25841	18:15:13	407365	5384786	55.970	3944
TRAVERSE 363	L5036311	25841	18:16:10	407325	5384979		
		30281	18:53:11	351376	5384980	55.949	4435
TRAVERSE 362	L5036211	30281	18:53:47	351398	5385202		
		34016	19:24:55	405562	5385186	54.164	3735
TRAVERSE 361	L5036112	34026	19:30:26	403726	5385386		
		37806	20:01:57	351379	5385378	52.347	3772
POST.TST 8	G5000811	37806	20:14:27	365449	5364745		
		38031	20:16:20	362996	5361728	3.888	225
PST1.GND 9	I5000911	38031	20:18:14	363093	5361271		
		38271	20:20:14	363093	5361271	0.000	239
POST.THM 10	J5001011	38271	20:20:59	363094	5361271		
		38511	20:22:59	363094	5361271	0.000	240



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FLIGHT LOG FOR FLIGHT 51 DOY 36 LocalTime 07:24:48 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B5100211	0 07:24:54	363093	5361271		
			241 07:26:54	363093	5361271	0.000	241
PRE1.GND	1	A5100111	241 07:28:17	363093	5361271		
			481 07:30:17	363093	5361271	0.000	240
PRE.TEST	5	E5100511	481 07:38:21	363009	5361763		
			736 07:40:28	365477	5364781	3.899	255
TIE.LINE	40	T5104011	736 07:54:05	391125	5367697		
			1671 08:01:52	391133	5384981	17.284	936
TIE.LINE	42	T5104211	1671 08:03:22	393058	5386243		
			3016 08:14:35	393136	5367640	18.603	1432
TIE.LINE	44	T5104411	3016 08:16:59	395138	5367697		
			4006 08:25:14	395136	5384891	17.194	991
TIE.LINE	46	T5104611	4006 08:27:48	397226	5384466		
			5121 08:37:06	397133	5367669	16.797	1137
TIE.LINE	48	T5104811	5121 08:39:20	399137	5369083		
			6201 08:48:21	399123	5385827	16.744	1081
TIE.LINE	50	T5105011	6201 08:50:48	401139	5387207		
			7616 09:02:36	401127	5370460	16.747	1368
TIE.LINE	51	T5105112	7616 09:05:23	403133	5371902		
			8631 09:13:51	403133	5385833	13.931	1026
TRAVERSE	360	L5136011	8631 09:19:17	401932	5385580		
			11996 09:47:20	351362	5385583	50.570	3359
TRAVERSE	359	L5135911	11996 09:48:04	351429	5385785		
			15196 10:14:45	400173	5385791	48.744	3200
TIE.LINE	52	T5105211	15196 10:20:52	405128	5389812		
			16571 10:32:20	405130	5373292	16.520	1375
TRAVERSE	439	L5143912	16571 10:36:45	399872	5369780		
			19156 10:58:18	360557	5369757	39.315	2588
TRAVERSE	358	L5135811	19156 11:24:59	351415	5385976		
			22316 11:51:20	398361	5385979	46.946	3157
TRAVERSE	357	L5135711	22316 11:52:08	398304	5386192		
			25641 12:19:51	351385	5386177	46.919	3326

TRAVERSE 356	L5135611	25641	12:26:34	351410	5386383		
		28811	12:53:00	398387	5386377	46.977	3167
TRAVERSE 355	L5135511	28811	12:53:35	398305	5386576		
		31876	13:19:08	351387	5386574	46.918	3063
TRAVERSE 354	L5135411	31876	13:19:16	351056	5386591		
		31891	13:19:23	350870	5386580	0.186	32



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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 52 DOY 36 LocalTime 13:40:28 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 354	L5235412	0	13:53:31	351405	5386786		
		3066	14:19:05	398353	5386781	46.948	3005
TRAVERSE 353	L5235311	3066	14:19:52	398311	5386984		
		6001	14:44:20	351321	5386980	46.990	2934
TRAVERSE 352	L5235211	6001	14:52:40	351412	5387190		
		9131	15:18:46	398351	5387194	46.939	3120
TRAVERSE 351	L5235111	9131	15:19:20	398309	5387383		
		12301	15:45:46	351386	5387377	46.923	3165
TRAVERSE 350	L5235011	12301	15:52:17	351416	5387585		
		15436	16:18:25	398370	5387584	46.954	3169
TRAVERSE 349	L5234911	15436	16:19:19	398307	5387783		
		18661	16:46:12	351381	5387781	46.926	3206
TRAVERSE 348	L5234811	18661	17:23:41	351410	5387986		
		21756	17:49:29	398391	5387984	46.981	3073
TRAVERSE 347	L5234711	21756	17:49:42	398610	5388095		
		24911	18:16:00	351372	5388181	47.238	3158
TRAVERSE 346	L5234611	24911	18:16:59	351422	5388385		
		27761	18:40:45	399537	5388382	48.115	2846
TRAVERSE 345	L5234511	27761	18:41:34	400095	5388584		
		31016	19:08:42	351369	5388578	48.726	3254
TRAVERSE 344	L5234411	31016	19:09:12	351416	5388781		
		34096	19:34:52	400746	5388790	49.330	3076
TIE.LINE 74	T5207411	34096	19:39:54	406946	5385541		
		35046	19:47:49	404803	5372429	13.286	950
POST.TST 8	G5200811	35046	20:01:56	365449	5364736		
		35286	20:03:56	362956	5361697	3.931	240
PST1.GND 9	I5200911	35286	20:05:58	363093	5361271		
		35526	20:07:58	363093	5361271	0.000	240
POST.THM 10	J5201011	35526	20:08:40	363093	5361272		
		35766	20:10:40	363093	5361271	0.001	240


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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 53 DOY 37 LocalTime 07:20:55 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B5300211	0 07:21:09	363093	5361272		
			241 07:23:10	363092	5361271	0.001	241
PRE1.GND	1	A5300111	241 07:25:07	363093	5361271		
			481 07:27:07	363093	5361272	0.001	240
PRE.TEST	5	E5300511	481 07:42:34	363009	5361748		
			726 07:44:37	365471	5364777	3.903	245
TRAVERSE	343	L5334311	726 07:56:01	351428	5388986		
			4406 08:26:41	401333	5388985	49.905	3648
TRAVERSE	342	L5334211	4406 08:29:25	401913	5389189		
			7566 08:55:46	351365	5389180	50.548	3135
TRAVERSE	341	L5334111	7566 09:00:39	351425	5389387		
			11311 09:31:52	402556	5389384	51.131	3717
TRAVERSE	340	L5334011	11311 09:32:41	403092	5389587		
			14426 09:58:39	351370	5389580	51.722	3102
TRAVERSE	339	L5333911	14426 10:07:05	351419	5389785		
			17981 10:36:43	403772	5389783	52.353	3519
TRAVERSE	338	L5333811	17981 10:37:35	404314	5389987		
			19306 10:48:38	382416	5389982	21.898	1320
TRAVERSE	338	L5333812	19306 11:24:54	384870	5389983		
			21356 11:41:59	351345	5389975	33.525	2036
TRAVERSE	336	L5333611	21356 11:48:01	351411	5390183		
			25046 12:18:46	404967	5390185	53.556	3666
TRAVERSE	334	L5333411	25046 12:20:29	405495	5390384		
			28276 12:47:24	351329	5390383	54.166	3220



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FLIGHT LOG FOR FLIGHT 54 DOY 37 LocalTime 13:13:43 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 332	L5433211	0	13:31:25	351414	5390583		
		3836	14:03:24	405056	5390615	53.642	3842
TRAVERSE 332	L5433212	3836	14:05:41	401492	5390592		
		4216	14:08:51	406182	5390580	4.690	382
TRAVERSE 330	L5433011	4216	14:10:05	406706	5390795		
		7711	14:39:13	351323	5390780	55.383	3494
TRAVERSE 328	L5432811	7711	14:39:59	351438	5390987		
		11496	15:11:32	407353	5390981	55.915	3781
TRAVERSE 326	L5432611	11496	15:12:19	407908	5391190		
		14996	15:41:30	351386	5391186	56.522	3494
TRAVERSE 324	L5432411	14996	15:42:33	351418	5391383		
		18826	16:14:29	408579	5391382	57.161	3843
TRAVERSE 322	L5432211	18826	16:58:24	351411	5391582		
		22816	17:31:40	409139	5391587	57.728	3983
TRAVERSE 320	L5432011	22816	17:32:38	409700	5391795		
		26561	18:03:51	351373	5391776	58.327	3735
TIE.LINE 80	T5408011	26561	18:21:59	351881	5379973		
		28211	18:35:45	351878	5404442	24.469	1650
TIE.LINE 84	T5408411	28211	18:37:49	351865	5403965		
		29036	18:44:41	340766	5410316	12.788	825
TIE.LINE 9	T5400911	0	18:50:39	341127	5409696		
		1676	19:04:38	341134	5440763	31.067	1676
TIE.LINE 17	T5401711	1686	19:21:47	349135	5440658		
		3516	19:37:03	349124	5405063	35.595	1828
POST.TST 8	G5400811	3516	19:54:07	365448	5364752		
		3766	19:56:13	362998	5361735	3.886	250
PST1.GND 9	I5400911	3766	19:58:23	363093	5361271		
		4016	20:00:27	363093	5361271	0.000	251
POST.THM 10	J5401011	4016	20:01:32	363093	5361271		
		4256	20:03:32	363093	5361271	0.000	240



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FLIGHT LOG FOR FLIGHT 55 DOY 38 LocalTime 08:51:01 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B5500211	0 08:51:08 241 08:53:08	363093 363093	5361271 5361271	0.000	241
PRE1.GND	1	A5500111	241 08:54:44 481 08:56:44	363093 363093	5361271 5361271	0.000	240
PRE.TEST	5	E5500511	481 09:17:56 731 09:20:01	363019 365484	5361762 5364792	3.906	250
TRAVERSE	318	L5531811	731 09:33:03 4971 10:08:23	351444 410393	5391984 5391984	58.949	4094
TRAVERSE	316	L5531611	4971 10:08:50 8676 10:39:43	410293 351324	5392188 5392180	58.969	3701
TRAVERSE	314	L5531411	8676 10:42:49 9111 10:46:26	351405 357057	5392383 5392382	5.652	436 <b>SCRUB</b>
POST.TST	8	G5500811	9111 10:57:54 9316 10:59:37	365447 362984	5364727 5361728	3.881	205
PST1.GND	9	I5500911	9316 11:01:34 9556 11:03:34	363093 363094	5361271 5361271	0.001	240
POST.THM	10	J5501011	9556 11:04:58 9796 11:06:58	363093 363094	5361271 5361271	0.001	240



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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 56 DOY 39 LocalTime 07:19:22 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B5600211	0	07:21:05	363093	5361271		
		241	07:23:05	363093	5361271	0.000	241
PRE1.GND	1 A5600111	241	07:27:15	363094	5361272		
		481	07:29:15	363094	5361271	0.001	240
PRE.TEST	5 E5600511	481	07:42:44	363009	5361755		
		751	07:44:59	365467	5364767	3.888	270
TIE.LINE	40 T5604012	751	08:07:11	391129	5379981		
		1981	08:17:26	391131	5400025	20.044	1231
TIE.LINE	42 T5604212	1981	08:19:14	393132	5399974		
		3181	08:29:14	393125	5379927	20.047	1202
TIE.LINE	44 T5604412	3181	08:30:54	395131	5379980		
		4576	08:42:32	395137	5400009	20.029	1387
TIE.LINE	46 T5604612	4576	08:44:55	397135	5399985		
		5881	08:55:48	397129	5379758	20.227	1300
TIE.LINE	48 T5604812	5881	09:00:55	399130	5380027		
		7346	09:13:08	399131	5400009	19.982	1462
TIE.LINE	50 T5605012	7346	09:14:32	401132	5399973		
		8956	09:27:57	401129	5379911	20.062	1576
TIE.LINE	51 T5605113	8956	09:29:51	403130	5380012		
		10906	09:46:07	403132	5400049	20.037	1895
TIE.LINE	52 T5605212	10906	09:47:54	405136	5400018		
		12126	09:58:04	405132	5379923	20.095	1221
TRAVERSE	314 L5631412	12126	10:09:33	410295	5392386		
		15991	10:41:46	351373	5392378	58.922	3861
POST.TST	8 G5600811	15991	10:52:17	365453	5364744		
		16206	10:54:05	362988	5361735	3.890	215
PST1.GND	9 I5600911	16206	10:55:50	363094	5361271		
		16446	10:57:50	363094	5361271	0.000	240
POST.THM	10 J5601011	16446	10:58:34	363094	5361271		
		16686	11:00:34	363094	5361271	0.000	240

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FLIGHT LOG FOR FLIGHT 57 DOY 39 LocalTime 14:10:36 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 312	L5731211	0	14:32:35	351424	5392585	58.918	3874
		3911	15:05:12	410342	5392583		
TRAVERSE 268	L5726811	3911	15:08:22	410306	5396985	27.977	1944 27
		5856	15:24:35	382329	5396981		
POST.TST 8	G5700811	5856	15:36:18	365417	5364711	3.836	190
		6046	15:37:53	362991	5361740		



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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 58 DOY 40 LocalTime 14:33:42 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B5800211	0 14:33:49	363094	5361271		
			241 14:35:49	363094	5361271	0.000	241
PRE1.GND	1	A5800111	241 14:41:05	363094	5361271		
			481 14:43:05	363094	5361271	0.000	240
PRE.TEST	5	E5800511	481 14:47:24	363007	5361746		
			701 14:49:14	365474	5364774	3.906	220
TRAVERSE	310	L5831011	701 15:03:42	351428	5392785		
			4481 15:35:12	410338	5392787	58.910	3783
TRAVERSE	308	L5830811	4481 15:36:17	410306	5392986		
			8536 16:10:05	351373	5392984	58.933	4046
TRAVERSE	306	L5830611	8536 16:10:50	351419	5393206		
			11821 16:38:13	410341	5393182	58.922	3291
TRAVERSE	304	L5830411	11821 16:39:02	410329	5393388		
			15751 17:11:48	351343	5393384	58.986	3903
TIE.LINE	11	T5801111	15751 18:08:22	343138	5408562		
			17286 18:21:10	343122	5440759	32.197	1531
TIE.LINE	85	T5808511	17286 18:25:34	341524	5436707		
			17576 18:27:59	337858	5440620	5.362	290
TIE.LINE	7	T5800711	17576 18:31:08	339136	5438672		
			17671 18:31:56	339134	5440735	2.063	95
TIE.LINE	13	T5801311	17671 18:35:40	345121	5440684		
			19476 18:50:43	345126	5407346	33.338	1805
TIE.LINE	15	T5801511	19476 18:53:33	347133	5406279		
			21281 19:08:36	347132	5440797	34.518	1805
TIE.LINE	20	T5802013	21281 19:13:54	353127	5440681		
			22376 19:23:01	353129	5419931	20.750	1095
TIE.LINE	19	T5801911	22586 19:35:06	353143	5419837		
			22596 19:35:11	353159	5419695	0.143	22
POST.TST	8	G5800811	22596 19:56:08	365430	5364729		
			22811 19:57:56	362991	5361728	3.867	215
PST1.GND	9	I5800911	22811 19:59:23	363093	5361271		
			23051 20:01:23	363093	5361271	0.000	240
POST.THM	10	J5801011	23051 20:02:17	363093	5361271		
			23291 20:04:17	363093	5361271	0.000	240



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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 59 DOY 42 LocalTime 07:22:16 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B5900211	0 07:22:34	363094	5361270		
			241 07:24:34	363094	5361270	0.000	241
PRE1.GND	1	A5900111	241 07:26:44	363094	5361270		
			481 07:28:44	363093	5361270	0.001	240
PRE.TEST	5	E5900511	481 07:40:18	363015	5361757		
			731 07:42:24	365473	5364773	3.891	250
TIE.LINE	20	T5902017	731 07:51:27	353129	5385019		
			4216 08:20:30	353130	5440716	55.697	3484
TIE.LINE	21	T5902111	4216 08:23:10	355135	5440678		
			8036 08:55:01	355138	5384923	55.755	3813
TRAVERSE	302	L5930211	8036 09:00:00	351421	5393587		
			12031 09:33:18	410364	5393586	58.943	3986
TRAVERSE	300	L5930011	12031 09:33:55	410310	5393782		
			15691 10:04:26	351356	5393778	58.954	3656
TRAVERSE	298	L5929811	15691 10:11:23	351419	5393981		
			19576 10:43:46	410344	5393978	58.925	3873
TRAVERSE	296	L5929611	19576 10:44:45	410317	5394191		
			21001 10:56:38	387137	5394182	23.180	1423
TRAVERSE	296	L5929612	21001 11:27:55	389778	5394187		
			23856 11:51:43	351386	5394181	38.392	2821
TRAVERSE	294	L5929411	23856 11:57:14	351403	5394384		
			28111 12:32:42	410254	5394380	58.851	4228
TRAVERSE	292	L5929211	28111 12:32:58	410324	5394550		
			32056 13:05:51	351326	5394582	58.998	3948
TRAVERSE	290	L5929011	32056 13:06:57	351416	5394785		
			35651 13:36:55	410391	5394791	58.975	3595
TRAVERSE	288	L5928811	35651 13:37:13	410316	5394978		
			39306 14:07:41	351381	5394981	58.935	3654



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FLIGHT LOG FOR FLIGHT 60 DOY 42 LocalTime 14:24:10 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 286	L6028611	0	14:46:36	351411	5395191		
		3741	15:17:47	410405	5395183	58.994	3706
TRAVERSE 284	L6028411	3741	15:18:26	410318	5395395		
		7796	15:52:14	351368	5395383	58.950	4047
TRAVERSE 282	L6028211	7796	15:52:51	351406	5395588		
		11311	16:22:09	410424	5395582	59.018	3516
TRAVERSE 280	L6028011	11311	16:22:50	410321	5395784		
		15186	16:55:08	351367	5395782	58.954	3875
TRAVERSE 278	L6027811	15186	16:55:50	351407	5395977		
		18636	17:24:36	410371	5395974	58.964	3449
TRAVERSE 276	L6027611	18636	17:25:09	410316	5396198		
		19966	17:36:14	389204	5396187	21.112	1331
TRAVERSE 276	L6027612	19966	18:09:10	392997	5396186		
		22591	18:31:03	351378	5396181	41.619	2616
TRAVERSE 274	L6027411	22591	18:32:19	351402	5396383		
		26101	19:01:35	410359	5396386	58.957	3502
TRAVERSE 272	L6027211	26101	19:02:04	410306	5396580		
		29821	19:33:05	351360	5396581	58.946	3718
TRAVERSE 270	L6027011	29821	19:46:55	351422	5396787		
		32931	20:12:51	410411	5396786	58.989	3108
POST.TST 8	G6000811	32931	20:31:01	365429	5364722		
		33166	20:32:59	362993	5361728	3.860	235
PST1.GND 9	I6000911	33166	20:35:28	363093	5361272		
		33406	20:37:28	363093	5361272	0.000	240
POST.THM 10	J6001011	33406	20:40:31	363093	5361272		
		33646	20:42:31	363093	5361272	0.000	240



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FLIGHT LOG FOR FLIGHT 61 DOY 43 LocalTime 07:29:05 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B6100211	0 07:29:43	363093	5361271		
			241 07:31:43	363093	5361271	0.000	241
PRE1.GND	1	A6100111	241 07:32:53	363093	5361271		
			481 07:34:53	363093	5361271	0.000	240
PRE.TEST	5	E6100511	481 07:40:16	363017	5361776		
			736 07:42:24	365484	5364783	3.889	255
TRAVERSE	268	L6126812	736 08:01:09	390073	5396984		
			3076 08:20:40	351385	5396977	38.688	2323
TIE.LINE	19	T6101912	3076 08:25:08	351136	5403976		
			5206 08:42:53	351131	5440770	36.794	2130
TIE.LINE	22	T6102211	5206 08:47:58	357132	5440662		
			8536 09:15:44	357133	5384904	55.758	3330
TIE.LINE	23	T6102311	8536 09:17:44	359134	5385016		
			11876 09:45:35	359140	5440727	55.711	3341
TIE.LINE	73	T6107311	11876 09:49:09	360238	5439639		
			12451 09:53:56	360240	5450745	11.106	575
TIE.LINE	24	T6102411	12451 09:55:36	361133	5450692		
			15841 10:23:52	361138	5384951	65.741	3390
TRAVERSE	266	L6126611	15841 11:02:37	351408	5397384		
			22071 11:54:34	445357	5397381	93.949	6092
TRAVERSE	265	L6126511	22071 11:55:21	445305	5397585		
			27716 12:42:25	351369	5397581	93.936	5640
TRAVERSE	264	L6126411	27716 12:43:27	351413	5397791		
			33716 13:33:28	445393	5397785	93.980	6034

496.7

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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 62 DOY 43 LocalTime 14:06:30 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 263	L6226311	0	14:29:56	351416	5397988		
		6096	15:20:45	445386	5397979	93.970	6065
TRAVERSE 262	L6226211	6096	15:22:55	445294	5398186		
		11391	16:07:04	351375	5398183	93.919	5295
TRAVERSE 261	L6226111	11391	16:07:59	351398	5398382		
		17056	16:55:12	445409	5398380	94.011	5662
TRAVERSE 260	L6226011	17056	16:55:41	445308	5398587		
		20546	17:24:47	378386	5398582	66.922	3491
TRAVERSE 260	L6226012	20546	17:51:07	381019	5398582		
		22321	18:05:55	351385	5398582	29.634	1768
TRAVERSE 259	L6225911	22321	18:06:45	351410	5398778		
		27981	18:53:56	445341	5398781	93.931	5660
TRAVERSE 258	L6225811	27981	18:54:21	445293	5398989		
		29181	19:04:21	424856	5398981	20.437	1189
POST.TST 8	G6200811	29181	19:27:00	365448	5364744		
		29416	19:28:57	362971	5361709	3.917	235
PST1.GND 9	I6200911	29416	19:32:16	363097	5361271		
		29656	19:34:16	363097	5361271	0.000	240
POST.THM 10	J6201011	29656	19:35:47	363097	5361271		
		29896	19:37:47	363097	5361271	0.000	240



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Base Zeehan Tas Job 2101 Pilots Hamish Robertson/Sam Borg

FLIGHT LOG FOR FLIGHT 63 DOY 44 LocalTime 07:35:43 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B6300211	0 07:35:55	363097	5361270		
			241 07:37:55	363097	5361271	0.001	241
PRE1.GND	1	A6300111	241 07:38:44	363097	5361271		
			481 07:40:44	363097	5361271	0.000	240
PRE.TEST	5	E6300511	481 07:49:49	363018	5361767		
			731 07:51:54	365471	5364774	3.881	250
TIE.LINE	83	T6308311	731 08:00:02	353680	5345865		
			1011 08:02:22	354069	5339372	6.505	280
TIE.LINE	78	T6307812	1011 08:19:55	336451	5367964		
			1851 08:26:55	328757	5380943	15.088	840
TRAVERSE	257	L6325711	1851 08:47:11	365089	5399187		
			6366 09:24:49	445379	5399182	80.290	4515
TRAVERSE	256	L6325611	6366 09:25:38	445310	5399385		
			10981 10:04:06	364246	5399382	81.064	4615
TRAVERSE	255	L6325511	10981 10:06:38	364231	5399585		
			12601 10:20:09	390526	5399579	26.295	1622


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**Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Sam Borg**
**FLIGHT LOG FOR FLIGHT 64 DOY 46 LocalTime 07:25:43 Area 1 Datum = WGS84**

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B6400211	0	07:28:59	442882	5419050		
		241	07:30:59	442882	5419050	0.000	482
PRE1.GND	1 A6400111	241	07:31:48	442883	5419050		
		481	07:33:48	442883	5419050	0.000	480
PRE.TEST	5 E6400511	481	07:43:31	449531	5415782		
		761	07:45:51	444756	5413887	5.137	560
PRE.TEST	5 E6400512	761	07:57:29	444514	5413825		
		1036	07:59:47	449469	5415768	5.322	550
PRE.TEST	5 E6400513	1036	08:00:27	449355	5415719		
		1361	08:03:10	444433	5413790	5.287	326
TRAVERSE	200 L6420011	1361	08:14:02	445322	5410593		
		3456	08:31:30	414194	5410593	31.128	2095
TRAVERSE	173 L6417311	3456	08:34:38	413036	5415984		
		7616	09:09:19	340879	5415979	72.157	4161
TRAVERSE	172 L6417211	7616	09:10:20	340924	5416190		
		13061	09:55:43	445362	5416188	104.438	5444
TRAVERSE	173 L6417312	13061	09:56:42	445326	5415977		
		15461	10:16:42	407808	5415975	37.518	2401
TRAVERSE	200 L6420012	15461	10:20:34	406768	5410567		
		17571	10:38:09	369687	5410572	37.081	2112
TRAVERSE	200 L6420013	17571	11:00:12	375394	5410561		
		19841	11:19:07	340861	5410580	34.533	2261
TRAVERSE	174 L6417411	19841	11:23:33	340918	5415791		
		25231	12:08:29	445400	5415790	104.482	5390
TRAVERSE	175 L6417511	25231	12:09:06	445321	5415586		
		31386	13:00:25	340848	5415576	104.473	6150
TRAVERSE	176 L6417611	31386	13:01:03	340925	5415383		
		36711	13:45:26	445342	5415387	104.417	5319

835.6



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**Base** Sheffield Tas **Job** 2101 **Pilots** Hamish Robertson/Sam Borg

**FLIGHT LOG FOR FLIGHT 65 DOY 46 LocalTime 13:53:01 Area 1 Datum = WGS84**

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 177	L6517711	0	14:09:39	445294	5415186		
		5936	14:59:08	340880	5415181	104.414	5931
TRAVERSE 178	L6517811	5936	15:01:01	340927	5414986		
		11331	15:46:00	445411	5414981	104.484	5344
TRAVERSE 179	L6517911	11331	15:46:36	445285	5414783		
		17126	16:34:55	340829	5414782	104.456	5795
TRAVERSE 180	L6518011	17126	16:35:50	340904	5414584		
		22641	17:21:49	445340	5414579	104.436	5515
TRAVERSE 181	L6518111	22641	17:41:08	445300	5414384		
		28451	18:29:35	340863	5414382	104.437	5809
TRAVERSE 182	L6518211	28451	18:30:14	340912	5414185		
		33886	19:15:32	445410	5414181	104.498	5435
TRAVERSE 183	L6518311	33886	19:16:10	445309	5413986		
		39466	20:02:41	340876	5413980	104.433	5579
TRAVERSE 184	L6518411	39466	20:03:07	340917	5413788		
		44581	20:45:46	445349	5413778	104.432	5115
PST1.GND 9	I6500911	0	20:55:51	442882	5419051		
		241	20:57:52	442881	5419051	0.001	241
POST.THM 10	J6501011	241	20:58:43	442882	5419051		
		481	21:00:43	442882	5419051	0.000	240


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**Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller**

FLIGHT LOG FOR FLIGHT 66 DOY 47 LocalTime 07:14:30 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B6600211	0	07:14:52	442881	5419050		
		241	07:16:52	442882	5419050	0.001	241
PRE1.GND	1 A6600111	241	07:19:01	442881	5419050		
		481	07:21:01	442881	5419050	0.000	240
PRE.TEST	5 E6600511	481	07:21:51	442881	5419050		
		486	07:21:53	442881	5419050	0.000	11
PRE.TEST	5 E6600512	486	07:44:05	449476	5415770		
		746	07:46:15	444409	5413784	5.442	260
TRAVERSE	185 L6618511	746	07:47:54	445290	5413582		
		4481	08:19:02	378803	5413596	66.487	3606
TRAVERSE	171 L6617111	4481	08:36:23	361864	5416369		
		8651	09:11:09	445411	5416382	83.547	4172
TRAVERSE	170 L6617011	8651	09:12:04	445321	5416585		
		14086	09:57:23	340834	5416580	104.487	5433
TRAVERSE	169 L6616911	14086	09:58:13	340921	5416784		
		19591	10:44:07	445356	5416781	104.435	5458
TRAVERSE	168 L6616811	19591	11:02:19	445318	5416982		
		25116	11:48:23	340853	5416981	104.465	5493
TRAVERSE	167 L6616711	25116	11:48:56	340926	5417190		
		30336	12:32:27	446240	5417062	105.314	5289
TIE.LINE	72 T6607211	30336	12:40:59	445132	5420674		
		31916	12:54:09	445130	5389650	31.024	1580
TIE.LINE	71 T6607111	31916	12:55:27	443132	5389688		
		33426	13:08:02	443135	5420776	31.088	1510
TIE.LINE	70 T6607011	33426	13:09:24	441134	5420668		
		35176	13:24:00	441132	5389651	31.017	1750
TIE.LINE	69 T6606911	35176	13:25:14	439124	5389719		
		36826	13:38:59	439139	5420802	31.083	1650


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**Base** Sheffield Tas **Job** 2101 **Pilots** Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 67 DOY 47 LocalTime 13:54:01 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 254	L6725411	0	14:13:26	445304	5399793		
		5221	14:56:58	351360	5399778	93.944	5225
TRAVERSE 253	L6725311	5221	15:07:04	351428	5399983		
		10066	15:47:28	445351	5399984	93.923	4844
TRAVERSE 252	L6725211	10066	15:47:59	445309	5400182		
		15336	16:31:55	351318	5400181	93.991	5270
TRAVERSE 251	L6725111	15336	16:33:05	351423	5400386		
		20036	17:12:16	445391	5400385	93.968	4699
TRAVERSE 250	L6725011	20036	17:45:14	445300	5400589		
		25421	18:30:07	351355	5400576	93.945	5384
TRAVERSE 249	L6724911	25421	18:30:52	351402	5400765		
		30191	19:10:38	445347	5400779	93.945	4761
TRAVERSE 248	L6724811	30191	19:11:01	445320	5400981		
		35521	19:55:27	351356	5400973	93.964	5328
TRAVERSE 247	L6724711	35521	19:56:14	351397	5401191		
		39911	20:32:50	445346	5401191	93.949	4416
POST.TST 8	G6700811	39911	20:37:45	444528	5413813		
		40156	20:39:47	449542	5415809	5.397	245
PST1.GND 9	I6700911	40156	20:45:41	442882	5419050		
		40396	20:47:42	442882	5419050	0.000	241
POST.THM 10	J6701011	40396	20:48:29	442882	5419050		
		40636	20:50:29	442882	5419050	0.000	240



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Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 68 DOY 48 LocalTime 07:18:29 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B6800211	0	07:18:51	442882	5419050		
		241	07:20:52	442882	5419049	0.001	241
PRE1.GND	1 A6800111	241	07:22:09	442882	5419049		
		481	07:24:09	442882	5419050	0.001	240
PRE.TEST	5 E6800511	481	07:38:24	444509	5413894		
		726	07:40:26	449505	5415781	5.340	267
TRAVERSE	199 L6819911	726	07:44:41	445327	5410784		
		6531	08:33:05	340821	5410783	104.506	5790
TRAVERSE	201 L6820111	6531	08:34:21	340907	5410388		
		12571	09:24:42	445368	5410389	104.461	6040
TRAVERSE	202 L6820211	12571	09:25:19	445322	5410196		
		18566	10:15:18	340875	5410181	104.447	6002
TRAVERSE	246 L6824611	18566	11:11:57	351455	5401458		
		18581	11:12:05	351532	5401415	0.088	31 scrub
TRAVERSE	246 L6824612	18581	11:12:54	351396	5401414		
		23576	11:54:33	445416	5401379	94.020	4995
TRAVERSE	245 L6824511	23576	11:54:58	445302	5401585		
		28606	12:36:54	351381	5401584	93.921	5026
TRAVERSE	244 L6824411	28606	12:37:33	351393	5401777		
		31956	13:05:29	415570	5401787	64.177	3351
TRAVERSE	244 L6824412	31956	13:10:17	410277	5401779		
		33801	13:25:40	445370	5401788	35.093	1847

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Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 69 DOY 48 LocalTime 13:46:57 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 243	L6924311	0	13:55:49	445293	5401989	93.910	5180
		5206	14:39:13	351383	5401980		
TRAVERSE 242	L6924211	5206	14:40:47	351416	5402185	93.955	5002
		10201	15:22:25	445371	5402159		
TRAVERSE 241	L6924111	10201	15:23:08	445283	5402383	93.924	5120
		15321	16:05:49	351359	5402378		
TRAVERSE 203	L6920311	15321	16:11:27	340945	5409986	104.406	5945
		21266	17:01:01	445351	5409981		



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Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 70 DOY 48 LocalTime 17:37:44 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 198	L7019811	0	17:48:30	445302	5410982		
		6196	18:40:09	340840	5410978	104.462	6174
TRAVERSE 197	L7019711	6196	18:43:13	340904	5411186		
		12081	19:32:17	445344	5411180	104.440	5885
TIE.LINE 68	T7006811	12081	19:39:37	437133	5420656		
		14101	19:56:28	437130	5389650	31.006	2054
TIE.LINE 67	T7006711	14101	19:58:37	435134	5389685		
		14136	19:58:54	435128	5389939	0.254	36 scrub
TIE.LINE 67	T7006712	14136	20:09:28	435134	5389683		
		16211	20:26:46	435130	5420718	31.035	2082
POST.TST 8	G7000811	16211	20:32:37	449464	5415766		
		16466	20:34:44	444481	5413814	5.352	255
PST1.GND 9	I7000911	16466	20:39:40	442882	5419051		
		16711	20:41:43	442882	5419051	0.000	245
POST.THM 10	J7001011	16711	20:43:20	442882	5419051		
		16956	20:45:23	442881	5419050	0.001	245


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**Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller**

FLIGHT LOG FOR FLIGHT 71 DOY 49 LocalTime 07:10:49 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B7100211	0 07:10:53	442882	5419050		
			241 07:12:53	442881	5419050	0.001	241
PRE1.GND	1	A7100111	241 07:13:39	442881	5419050		
			481 07:15:39	442881	5419050	0.000	240
PRE.TEST	5	E7100511	481 07:36:03	449449	5415762		
			766 07:38:25	444474	5413806	5.346	285
TRAVERSE	186	L7118611	766 07:45:16	445317	5413383		
			7061 08:37:45	340824	5413379	104.493	6247
TRAVERSE	187	L7118711	7061 08:38:47	340902	5413184		
			13556 09:32:56	445364	5413180	104.462	6476
TRAVERSE	196	L7119611	13556 09:34:58	445318	5411384		
			19006 10:20:24	340868	5411386	104.450	5450
TRAVERSE	195	L7119511	19006 10:20:57	340921	5411586		
			21506 10:41:47	384218	5411583	43.297	2501
TRAVERSE	195	L7119512	21506 11:06:50	378685	5411587		
			25126 11:37:01	446458	5411581	67.773	3626
TRAVERSE	204	L7120411	25126 11:38:46	445289	5409782		
			31406 12:31:07	341192	5409783	104.097	6275
TRAVERSE	205	L7120511	31406 12:32:00	341623	5409584		
			37721 13:24:39	445344	5409587	103.721	6314



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FLIGHT LOG FOR FLIGHT 72 DOY 49 LocalTime 13:44:09 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 240	L7224011	0	13:51:04	445313	5402588		
		666	13:56:37	435650	5402603	9.663	642
TRAVERSE 240	L7224012	666	13:59:31	441428	5402591		
		1121	14:03:19	435625	5402556	5.803	428
TRAVERSE 231	L7223111	1121	14:08:20	445309	5404386		
		6146	14:50:14	350645	5404379	94.664	5038
TRAVERSE 206	L7220611	6146	14:56:15	341954	5409360		
		6221	14:56:52	342153	5409862	0.540	173 scrub
TRAVERSE 206	L7220612	6221	14:58:24	341959	5409392		
		12211	15:48:20	445401	5409376	103.442	5988
TRAVERSE 207	L7220711	12211	15:49:01	445317	5409178		
		17706	16:34:49	342244	5409184	103.073	5488
TRAVERSE 267	L7226711	17706	17:10:01	351395	5397183		
		23431	17:57:45	445364	5397181	93.969	5759
TRAVERSE 269	L7226911	23431	18:00:38	445311	5396972		
		25491	18:17:48	415878	5396985	29.433	2032
TRAVERSE 271	L7227111	25491	18:18:41	415904	5396792		
		27571	18:36:02	445420	5396781	29.516	2079
TRAVERSE 273	L7227311	27571	18:36:31	445319	5396586		
		29716	18:54:24	415885	5396575	29.434	2145
TRAVERSE 275	L7227511	29716	18:55:08	415929	5396398		
		31911	19:13:26	445345	5396381	29.416	2207
TRAVERSE 277	L7227711	31911	19:13:55	445322	5396172		
		34146	19:32:33	415885	5396187	29.437	2209
TRAVERSE 279	L7227911	34146	19:33:09	415909	5395988		
		36386	19:51:50	445397	5395985	29.488	2235
TRAVERSE 281	L7228111	36386	19:52:16	445326	5395785		
		36701	19:54:54	439948	5395784	5.378	316
POST.TST 8	G7200811	36701	20:02:41	444509	5413823		
		36961	20:04:51	449519	5415790	5.382	260
PST1.GND 9	I7200911	36961	20:12:22	442882	5419050		
		37201	20:14:21	442881	5419050	0.001	240
POST.THM 10	J7201011	37201	20:16:20	442881	5419050		
		37441	20:18:20	442881	5419050	0.000	240


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**Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller**

FLIGHT LOG FOR FLIGHT 73 DOY 50 LocalTime 07:02:32 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B7300211	0 07:02:41	442882	5419050		
			241 07:04:41	442882	5419050	0.000	241
PRE2.GND	4	D7300411	241 07:08:05	442882	5419049		
			486 07:10:07	442882	5419049	0.000	245
PRE.TEST	5	E7300511	486 07:31:25	449471	5415763		
			766 07:33:45	444484	5413814	5.354	280
TRAVERSE 230	L7323011	766 07:39:10	445283	5404580			
		5821 08:21:19	350325	5404580	94.958	5053	
TRAVERSE 232	L7323211	5821 08:23:29	351100	5404184			
		10491 09:02:25	445374	5404183	94.274	4676	
TRAVERSE 281	L7328112	10491 09:06:15	445293	5395787			
		12671 09:24:26	415885	5395780	29.408	2166	
TRAVERSE 283	L7328311	12671 09:25:05	415919	5395581			
		14676 09:41:48	445407	5395578	29.488	2047	
TRAVERSE 285	L7328511	14676 09:42:22	445312	5395401			
		16721 09:59:25	415876	5395386	29.436	2043	
TRAVERSE 287	L7328711	16721 09:59:55	415904	5395176			
		18506 10:14:48	445345	5395186	29.441	1785	
TRAVERSE 240	L7324013	18506 10:18:18	445298	5402588			
		21901 10:46:37	376279	5402584	69.019	3396	
TRAVERSE 240	L7324014	21901 11:02:55	382251	5402580			
		23556 11:16:43	351323	5402577	30.928	1657	
TRAVERSE 239	L7323911	23556 11:52:02	351397	5402773			
		28346 12:31:58	445342	5402790	93.945	4787	
TRAVERSE 238	L7323811	28346 12:32:52	445310	5402996			
		33051 13:12:05	351339	5402980	93.971	4703	
TRAVERSE 237	L7323711	33051 13:12:44	351404	5403192			
		37661 13:51:10	445342	5403179	93.938	4609	


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**Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller**

FLIGHT LOG FOR FLIGHT 74 DOY 50 LocalTime 14:17:52 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 236	L7423611	0	14:25:30	445301	5403387		
		5401	15:10:31	351359	5403379	93.942	5330
TRAVERSE 235	L7423511	5401	15:12:20	351438	5403581		
		10431	15:54:16	445416	5403583	93.978	5069
TRAVERSE 234	L7423411	10431	15:55:09	445286	5403783		
		15466	16:37:08	351383	5403781	93.903	5032
TRAVERSE 233	L7423311	15466	16:37:52	351416	5403987		
		17341	16:53:30	389476	5403987	38.060	1876
TRAVERSE 233	L7423312	17341	17:19:46	383986	5403984		
		20856	17:49:04	445346	5403984	61.360	3485
TRAVERSE 289	L7428911	20856	17:53:56	445274	5394988		
		22961	18:11:29	415814	5394981	29.460	2095
TRAVERSE 291	L7429111	22961	18:12:05	415937	5394787		
		24936	18:28:33	445421	5394781	29.484	1975
TRAVERSE 293	L7429311	24936	18:29:12	445306	5394584		
		26941	18:45:55	415880	5394584	29.426	1968
TRAVERSE 295	L7429511	26941	18:46:35	415897	5394386		
		28961	19:03:25	445419	5394388	29.522	2018
TRAVERSE 297	L7429711	28961	19:04:46	445312	5394187		
		30996	19:21:44	415881	5394182	29.431	2035
TRAVERSE 299	L7429911	30996	19:22:22	415918	5393984		
		32201	19:32:25	434560	5393876	18.642	1249
TRAVERSE 301	L7430111	32201	19:32:27	434517	5393871		
		32206	19:32:30	434489	5393886	0.032	13 scrub
TRAVERSE 303	L7430311	32206	19:32:34	434463	5393915		
		32691	19:36:37	434282	5394014	0.206	998 scrub
TRAVERSE 299	L7429912	32691	19:44:08	428557	5393986		
		33756	19:53:01	445361	5393981	16.804	1066
POST.TST 8	G7400811	33756	20:02:03	444530	5413830		
		34046	20:04:28	449555	5415805	5.399	290
PST1.GND 9	I7400911	34046	20:10:10	442881	5419050		
		34286	20:12:10	442881	5419050	0.000	240
POST.THM 10	J7401011	34286	20:13:54	442881	5419050		
		34526	20:15:54	442881	5419050	0.000	240



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Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 76 DOY 52 LocalTime 08:23:24 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B7600211	0 08:23:29	442881	5419050		
			241 08:25:29	442881	5419050	0.000	241
PRE1.GND	1	A7600111	241 08:28:05	442882	5419050		
			486 08:30:07	442881	5419050	0.001	245
PRE.THOR	2	B7600212	486 08:33:19	442881	5419050		
			726 08:35:19	442882	5419050	0.001	240
PRE.THOR	2	B7600213	726 10:55:03	442881	5419050		
			966 10:57:03	442881	5419050	0.000	240
PRE2.GND	4	D7600411	966 10:58:07	442881	5419050		
			1206 11:00:07	442881	5419050	0.000	240
PRE.TEST	5	E7600511	1206 11:10:36	444514	5413836		
			1476 11:12:51	449530	5415780	5.380	297
TRAVERSE	200	L7620014	1476 11:26:31	423062	5410589		
			2811 11:37:39	400165	5410576	22.897	1336
TRAVERSE	258	L7625812	2811 11:54:17	436052	5398991		
			7611 12:34:18	351371	5398977	84.681	4803
TRAVERSE	257	L7625712	7611 12:35:14	351399	5399186		
			9271 12:49:04	379999	5399187	28.600	1661
TRAVERSE	256	L7625612	9271 12:49:58	379799	5399376		
			10991 13:04:19	351380	5399383	28.419	1722
TRAVERSE	255	L7625512	10991 13:04:54	351395	5399600		
			15901 13:45:50	445402	5399582	94.007	4915
TRAVERSE	311	L7631111	15901 13:52:16	445308	5392789		
			18361 14:12:47	415872	5392777	29.436	2458
TRAVERSE	313	L7631311	18361 14:13:31	415915	5392584		
			20456 14:30:59	445367	5392591	29.452	2089
TRAVERSE	229	L7622911	20456 15:02:51	445293	5404791		
			26311 15:51:39	349965	5404781	95.328	5814
TRAVERSE	228	L7622811	26311 15:51:57	349686	5404898		
			26326 15:52:04	349832	5404966	0.161	32
TRAVERSE	228	L7622812	26326 15:53:20	349657	5404979		
			31451 16:36:04	445338	5404984	95.681	5099
TRAVERSE	227	L7622711	31451 16:36:41	445310	5405182		

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			37431	17:26:32	349224	5405174	96.086	5975
TRAVERSE	226	L7622611	37431	17:27:12	348962	5405372		
			42416	18:08:45	445383	5405386	96.421	5018
POST.TST	8	G7600811	42416	18:12:58	444535	5413801		
			42681	18:15:10	449525	5415793	5.373	271
POST.THM	10	J7601011	42681	18:37:05	442882	5419050		
			42926	18:39:07	442882	5419050	0.000	245
PST1.GND	9	I7600911	42926	18:42:47	442882	5419050		
			43176	18:44:52	442882	5419050	0.000	250
POST.THM	10	J7601012	43176	18:45:55	442881	5419050		
			43416	18:47:55	442882	5419051	0.001	240



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FLIGHT LOG FOR FLIGHT 77 DOY 53 LocalTime 07:01:10 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B7700211	0	07:01:15	442882	5419049		
		241	07:03:15	442882	5419049	0.000	241
PRE1.GND	1 A7700111	241	07:08:56	442882	5419050		
		481	07:10:56	442882	5419050	0.000	240
PRE.TEST	5 E7700511	481	07:29:19	449469	5415766		
		766	07:31:41	444484	5413815	5.353	285
TRAVERSE 166	L7716611	766	07:34:49	445315	5417382		
		6321	08:21:08	340875	5417381	104.440	5508
TRAVERSE 165	L7716511	6321	08:22:42	340913	5417583		
		12181	09:11:33	445401	5417581	104.488	5843
TRAVERSE 164	L7716411	12181	09:13:02	445309	5417787		
		17586	09:58:06	340875	5417780	104.434	5404
TRAVERSE 194	L7719411	17586	10:06:43	340931	5411786		
		20296	10:29:19	384302	5411781	43.371	2711
TRAVERSE 194	L7719412	20296	11:01:15	378209	5411777		
		24131	11:33:13	445385	5411784	67.176	3829
TRAVERSE 225	L7722511	24131	11:37:59	445296	5405585		
		29531	12:23:00	348554	5405579	96.742	5395
TRAVERSE 224	L7722411	29531	12:25:59	348260	5405780		
		35136	13:12:43	445360	5405790	97.100	5600
TRAVERSE 315	L7731511	35136	13:17:58	445312	5392388		
		37026	13:33:43	415853	5392380	29.459	1890



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FLIGHT LOG FOR FLIGHT 78 DOY 53 LocalTime 13:52:15 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 223	L7822311	0	13:59:11	414897	5405990		
		3461	14:28:02	347878	5405983	67.019	3463
TRAVERSE 222	L7822211	3461	14:28:33	347557	5406183		
		7476	15:02:01	414562	5406159	67.005	4039
TRAVERSE 222	L7822212	7476	15:05:40	408822	5406184		
		9916	15:26:01	445358	5406186	36.536	2442
TRAVERSE 221	L7822111	9916	15:27:11	445318	5406386		
		15591	16:14:30	347161	5406384	98.157	5668
TRAVERSE 220	L7822011	15591	16:15:00	346876	5406575		
		17741	16:32:56	380440	5406581	33.564	2150
TRAVERSE 185	L7818512	17741	16:58:26	391797	5413584		
		20461	17:21:07	340828	5413581	50.969	2722
TRAVERSE 171	L7817112	20461	17:23:38	340914	5416381		
		22416	17:39:56	371856	5416383	30.942	1956
TRAVERSE 220	L7822012	22416	17:45:44	372582	5406594		
		26936	18:23:25	445360	5406581	72.778	4522
TRAVERSE 223	L7822312	26936	18:26:08	445312	5405990		
		29691	18:49:06	409490	5405983	35.822	2754
TRAVERSE 337	L7833711	29691	19:04:37	415909	5390204		
		31826	19:22:25	445394	5390182	29.485	2185
TRAVERSE 335	L7833511	31826	19:23:14	445324	5390368		
		33986	19:41:14	415880	5390383	29.444	2159
TRAVERSE 333	L7833311	33986	19:41:54	415902	5390586		
		36031	19:58:56	445438	5390581	29.536	2045
POST.TST 8	G7800811	36031	20:07:28	444505	5413823		
		36296	20:09:41	449495	5415776	5.359	265
PST1.GND 9	I7800911	36296	20:15:32	442882	5419050		
		36536	20:17:33	442882	5419049	0.001	241
POST.THM 10	J7801011	36536	20:20:43	442882	5419050		
		36786	20:22:47	442882	5419050	0.000	250



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FLIGHT LOG FOR FLIGHT 79 DOY 54 LocalTime 07:06:19 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B7900211	0 07:07:23	442882	5419049		
			241 07:09:23	442882	5419049	0.000	241
PRE1.GND	1	A7900111	241 07:14:57	442882	5419049		
			486 07:16:59	442882	5419050	0.001	245
PRE2.GND	4	D7900411	0 07:20:34	442882	5419050		
			241 07:22:34	442882	5419049	0.001	241
PRE.TEST	5	E7900511	241 10:39:42	444520	5413839		
			476 10:41:40	449495	5415777	5.339	235
TRAVERSE	158	L7915811	476 10:50:25	445318	5418985		
			2421 11:06:38	416511	5418985	28.807	1942
TRAVERSE	150	L7915011	2421 11:12:05	415491	5420565		
			3071 11:17:30	405479	5420465	10.013	699
TRAVERSE	151	L7915111	3071 11:17:31	405456	5420443		
			3086 11:17:38	405360	5420410	0.102	32 <u>scrub</u>
TRAVERSE	100	L7910011	3086 11:28:00	389313	5430580		
			5931 11:51:43	340803	5430578	48.510	2843
TRAVERSE	99	L7909911	5931 11:55:22	340940	5430787		
			8746 12:18:50	389352	5430786	48.412	2815
TRAVERSE	98	L7909811	8746 12:19:28	389293	5430977		
			11541 12:42:46	340861	5430983	48.432	2795
TRAVERSE	97	L7909711	11541 12:43:14	340928	5431187		
			14231 13:05:39	389357	5431182	48.429	2693
TRAVERSE	96	L7909611	14231 13:06:21	389292	5431377		
			16881 13:28:26	340865	5431380	48.427	2647
TRAVERSE	95	L7909511	16881 13:28:52	340925	5431594		
			19386 13:49:45	389440	5431584	48.515	2503

649.8

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Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 80 DOY 54 LocalTime 14:21:42 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 101	L8010111	0	14:36:09	421300	5430388	80.472	4293
		4296	15:11:58	340828	5430382		
TRAVERSE 102	L8010211	4296	15:12:33	340925	5430185	80.439	4320
		8616	15:48:34	421364	5430181		
TRAVERSE 103	L8010311	8616	15:49:12	421312	5429982	80.492	4434
		13051	16:26:10	340820	5429983		
TRAVERSE 104	L8010411	13051	16:28:19	340939	5429785	80.488	4271
		17291	17:03:40	421427	5429784		
TRAVERSE 163	L8016311	17291	17:26:34	445303	5417988	104.436	5778
		23066	18:14:43	340867	5417983		
TRAVERSE 162	L8016211	23066	18:15:54	340913	5418187	59.434	3120
		26181	18:41:52	400347	5418191		
TRAVERSE 161	L8016111	26181	18:42:29	400490	5418381	59.622	3092
		29271	19:08:15	340868	5418383		
TRAVERSE 160	L8016011	29271	19:08:54	340902	5418585	104.459	5813
		35041	19:57:00	445361	5418583		
POST.TST 8	G8000811	35041	19:59:38	449451	5415759	5.343	305
		35346	20:02:11	444476	5413810		
PST1.GND 9	I8000911	35346	20:07:08	442882	5419050	0.000	245
		35591	20:09:11	442882	5419050		
POST.THM 10	J8001011	35591	20:10:15	442882	5419049	0.001	240
		35831	20:12:15	442882	5419050		



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FLIGHT LOG FOR FLIGHT 81 DOY 55 LocalTime 06:52:02 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR 2	B8100211	0	06:52:18	442881	5419049		
		241	06:54:18	442881	5419050	0.001	241
PRE2.GND 4	D8100411	241	07:02:58	442881	5419050		
		486	07:05:01	442882	5419050	0.001	245
PRE.TEST 5	E8100511	486	07:36:01	449476	5415769		
		751	07:38:13	444475	5413814	5.370	265
TRAVERSE 208✓	L8120811	751	07:43:14	445324	5408986		
		1066	07:45:52	441665	5408993	3.659	287 SCRUB
TRAVERSE 219✓	L8121911	1066	07:49:55	445310	5406780		
		1796	07:56:00	435095	5406858	10.215	732
TRAVERSE 161	L8116112	1796	08:01:52	445309	5418384		
		4716	08:26:12	395803	5418385	49.506	2921 49
TRAVERSE 162	L8116212	4716	08:26:40	395507	5418186		
		7511	08:49:58	445382	5418174	49.875	2797 49
TRAVERSE 208✓	L8120812	7511	08:55:38	445318	5408985		
		13496	09:45:32	342635	5408981	102.683	5983
TRAVERSE 219✓	L8121912	13496	09:50:05	346526	5406783		
		19101	10:36:49	445388	5406780	98.862	5604
TRAVERSE 218	L8121811	19101	11:03:12	445307	5406985		
		25346	11:55:16	346138	5406981	99.169	6243
TRAVERSE 217	L8121711	25346	11:58:20	345820	5407184		
		28641	12:25:48	407475	5407206	61.655	3296 60
TRAVERSE 216	L8121611	28641	12:27:11	407564	5407387		
		32061	12:55:42	345383	5407382	62.181	3422 60
TRAVERSE 209	L8120911	32061	12:58:00	343044	5408785		
		37606	13:44:14	445363	5408784	102.319	5588



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FLIGHT LOG FOR FLIGHT 82 DOY 55 LocalTime 14:04:25 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 216	L8221612	0	14:07:23	445310	5407382		
		1516	14:20:01	427311	5407372	17.999	1479
TRAVERSE 216	L8221613	1516	14:23:41	431936	5407388		39.8
		3756	14:42:21	401554	5407380	30.382	2249
TRAVERSE 217	L8221712	3756	14:44:30	400278	5407186		
		6606	15:08:15	445378	5407173	45.100	2891 39.5
TRAVERSE 215	L8221511	6606	15:14:33	445307	5407580		
		10256	15:44:59	393203	5407584	52.104	3651 52.1
POST.TST 8	G8200811	10256	16:09:53	444519	5413827		
		10506	16:11:58	449548	5415806	5.404	250
PST1.GND 9	I8200911	10506	17:41:48	442882	5419050		
		10751	17:43:48	442882	5419050	0.000	245
POST.THM 10	J8201011	10751	17:44:52	442882	5419050		
		10991	17:46:52	442882	5419050	0.000	240



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Base Sheffield Tas Job 2101 Pilots Hamish Robertson/Tony Feller

FLIGHT LOG FOR FLIGHT 83 DOY 56 LocalTime 07:30:41 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B8300211	0 07:31:03 241 07:33:03	442881	5419050	0.000	241
PRE1.GND	1	A8300111	241 07:33:55 481 07:35:55	442881	5419050	0.000	240
PRE.TEST	5	E8300511	481 07:43:44 741 07:45:55	444521	5413824	5.356	260
TRAVERSE	105	L8310511	741 07:59:13 5261 08:36:53	421309	5429593	80.427	4524
TRAVERSE	106	L8310611	5261 08:37:38 10246 09:19:12	340928	5429382	80.416	4985
TRAVERSE	107	L8310711	10246 09:19:46 14816 09:57:52	421312	5429185	80.463	4567
TRAVERSE	108	L8310811	14816 09:58:42 19286 10:35:58	340905	5428984	80.452	4471
TIE.LINE	57	T8305711	19286 11:13:36 21291 11:30:19	415128	5396694	34.030	2005
TIE.LINE	58	T8305811	21291 11:32:17 24096 11:55:40	417132	5430679	41.081	2805
TRAVERSE	331	L8333111	24096 11:59:09 26226 12:16:54	415931	5390786	29.476	2168
TRAVERSE	329	L8332911	26226 12:17:32 28361 12:35:20	445301	5390994	29.438	2135
TRAVERSE	327	L8332711	28361 12:36:41 30566 12:55:04	415923	5391187	29.421	2246
TRAVERSE	325	L8332511	30566 12:55:39 32606 13:12:39	445313	5391383	29.464	2040
TIE.LINE	61	T8306111	32606 13:19:22 34661 13:36:30	423135	5389693	31.062	2054

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FLIGHT LOG FOR FLIGHT 84 DOY 56 LocalTime 13:49:39 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TIE.LINE 60	T8406011	0	14:08:42	421130	5430664		
		2661	14:30:53	421127	5389656	41.008	2615
TRAVERSE 323	L8432311	2661	14:35:12	415927	5391585		
		4716	14:52:20	445351	5391583	29.424	2055
TRAVERSE 321	L8432111	4716	14:54:01	445319	5391785		
		6791	15:11:19	415853	5391784	29.466	2057
TRAVERSE 319	L8431911	6791	15:11:57	415915	5391986		
		8821	15:28:53	445338	5391988	29.423	2030
TRAVERSE 317	L8431711	8821	15:29:33	445316	5392188		
		10841	15:46:23	415828	5392178	29.488	2019
TIE.LINE 59	T8405911	10841	15:50:03	419132	5389699		
		13296	16:10:30	419134	5430759	41.060	2455
POST.TST 8	G8400811	13296	16:22:02	444530	5413831		
		13556	16:24:12	449494	5415774	5.331	260
PST1.GND 9	I8400911	13556	16:29:55	442882	5419051		
		13796	16:31:55	442882	5419051	0.000	240
POST.THM 10	J8401011	13796	16:33:08	442882	5419051		
		14036	16:35:08	442882	5419051	0.000	240

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FLIGHT LOG FOR FLIGHT 85 DOY 58 LocalTime 15:27:21 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.ALTB	6	F8500611	0 15:48:01	444309	5414465		
			121 15:49:02	444796	5416185	1.788	242
PRE.ALTB	6	F8500612	121 15:49:20	445330	5416352		
			231 15:50:15	447468	5416069	2.157	221
PRE.ALTB	6	F8500613	231 15:50:42	447820	5415337		
			341 15:51:37	447626	5413603	1.745	220
PRE.ALTB	6	F8500614	341 15:52:05	447017	5413413		
			456 15:53:02	445856	5413758	1.211	230
PRE.THOR	2	B8500211	456 16:27:04	442882	5419050		
			696 16:29:04	442881	5419050	0.001	240
PRE1.GND	1	A8500111	696 16:33:54	442882	5419050		
			936 16:35:54	442882	5419050	0.000	240
PRE.TEST	5	E8500511	0 16:55:05	444518	5413824		
			291 16:57:30	449502	5415777	5.353	291
TRAVERSE	210	L8521011	291 17:01:42	445326	5408584		
			6911 17:56:53	343273	5408582	102.053	6552
TRAVERSE	211	L8521111	6911 17:59:29	343716	5408381		
			12936 18:49:43	445340	5408382	101.624	6025
POST.TST	8	G8500811	12936 18:55:00	444526	5413826		
			13211 18:57:17	449547	5415797	5.394	275
PST1.GND	9	I8500911	13211 19:02:39	442881	5419050		
			13451 19:04:39	442881	5419051	0.001	240
POST.THM	10	J8501011	13451 19:05:29	442881	5419051		
			13691 19:07:29	442881	5419051	0.000	240

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FLIGHT LOG FOR FLIGHT 86 DOY 59 LocalTime 07:23:53 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B8600211	0 07:24:04	442881	5419050		
			241 07:26:04	442881	5419050	0.000	241
PRE1.GND	1	A8600111	241 07:28:47	442881	5419049		
			481 07:30:47	442881	5419050	0.001	240
PRE.TEST	5	E8600511	481 07:39:22	444525	5413829		
			751 07:41:37	449534	5415791	5.380	270
TRAVERSE	159	L8615911	751 07:46:00	445292	5418786		
			7151 08:39:21	357093	5418778	88.199	6400
TRAVERSE	157	L8615711	7151 09:08:46	414759	5419188		
			8966 09:23:53	445412	5419186	30.653	1817
TRAVERSE	156	L8615611	8966 09:24:37	445315	5419387		
			11266 09:43:47	415020	5419378	30.295	2301
TRAVERSE	155	L8615511	11266 09:44:19	415065	5419580		
			13226 10:00:40	445403	5419583	30.338	1962
POST.TST	8	G8600811	13226 10:03:13	449448	5415763		
			13531 10:05:45	444444	5413798	5.376	305
PST1.GND	9	I8600911	13531 10:09:56	442881	5419050		
			13771 10:11:56	442881	5419050	0.000	240
POST.THM	10	J8601011	13771 10:12:55	442881	5419050		
			14011 10:14:55	442881	5419050	0.000	240



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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 88 DOY 60 LocalTime 07:31:32 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B8800211	0 07:31:43	442881	5419050		
			241 07:33:43	442882	5419050	0.001	241
PRE1.GND	1	A8800111	241 07:34:29	442882	5419050		
			481 07:36:29	442881	5419050	0.001	240
PRE.TEST	5	E8800511	481 07:42:40	449462	5415766		
			721 07:44:41	444486	5413817	5.344	240
TIE.LINE	66	T8806612	721 07:51:15	433139	5420680		
			2496 08:06:02	433133	5389653	31.027	1775
TIE.LINE	65	T8806511	2496 08:08:05	431133	5389705		
			4041 08:20:58	431135	5420747	31.042	1544
TIE.LINE	64	T8806411	4041 08:22:23	429130	5420673		
			5711 08:36:19	429132	5389654	31.019	1670
TIE.LINE	63	T8806311	5711 08:37:46	427131	5389685		
			7376 08:51:39	427132	5420724	31.039	1664
TIE.LINE	62	T8806211	7376 09:30:24	425137	5420661		
			9336 09:46:45	425131	5389644	31.017	1957
TIE.LINE	56	T8805611	9336 09:58:28	413134	5396703		
			11361 10:15:21	413133	5430766	34.063	2025
TIE.LINE	55	T8805511	11361 10:17:12	411136	5430671		
			13251 10:32:57	411128	5396654	34.017	1890
TIE.LINE	54	T8805411	13251 10:36:48	409133	5391361		
			15231 10:53:18	409128	5430781	39.420	1980
TIE.LINE	53	T8805311	15231 10:55:03	407131	5430687		
			17441 11:13:28	407133	5390658	40.029	2210
TIE.LINE	52	T8805213	17441 11:22:26	405133	5387978		
			19711 11:41:21	405130	5430716	42.738	2271
TIE.LINE	51	T8805114	19711 11:42:55	403134	5430674		
			21531 11:58:05	403134	5394008	36.666	1821
TIE.LINE	50	T8805013	21531 12:00:34	401133	5393000		
			23521 12:17:10	401133	5430750	37.750	1992
TRAVERSE	152	L8815211	23521 13:07:09	445310	5420181		
			26616 13:32:57	390764	5420182	54.546	3080
TRAVERSE	153	L8815311	26616 13:33:30	390194	5419934		
			29676 13:59:00	445398	5419983	55.204	3081

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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 89 DOY 60 LocalTime 14:05:36 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 156	L8915612	0	14:15:28	420845	5419385		
		4581	14:53:40	340881	5419382	79.964	4583
TRAVERSE 159	L8915912	4581	15:03:25	363978	5418778		
		6031	15:15:30	340867	5418781	23.111	1452
TRAVERSE 157	L8915712	6031	15:16:45	340901	5419185		
		10646	15:55:13	420442	5419178	79.541	4616
TIE.LINE 38	T8903811	10646	16:47:29	389133	5450685		
		13881	17:14:27	389133	5384912	65.773	3235
TIE.LINE 37	T8903711	13881	17:16:11	387129	5384998		
		17396	17:45:29	387134	5450737	65.739	3519
TIE.LINE 36	T8903611	17396	17:46:54	385134	5450688		
		20796	18:15:15	385130	5384960	65.728	3400
TIE.LINE 35	T8903511	20796	18:20:15	383132	5385001		
		24366	18:50:01	383133	5450726	65.725	3570
TIE.LINE 34	T8903411	24366	18:51:42	381136	5450681		
		27991	19:21:55	381133	5384965	65.716	3622
POST.TST 8	G8900811	27991	19:46:05	444512	5413827		
		28226	19:48:02	449556	5415798	5.415	235
PST1.GND 9	I8900911	28226	20:49:52	442881	5419050		
		28466	20:51:51	442881	5419050	0.000	240
POST.THM 10	J8901011	28466	20:52:50	442881	5419050		
		28706	20:54:50	442881	5419051	0.001	240

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FLIGHT LOG FOR FLIGHT 90 DOY 61 LocalTime 07:25:14 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B9000211	0 07:25:46	442881	5419050		
			241 07:27:46	442881	5419050	0.000	241
PRE1.GND	1	A9000111	241 07:29:47	442881	5419050		
			481 07:31:47	442881	5419050	0.000	240
PRE.TEST	5	E9000511	481 07:43:47	449449	5415761		
			736 07:45:54	444485	5413817	5.331	255
TRAVERSE	158	L9015812	736 07:54:02	425211	5418984		
			5726 08:35:38	340814	5418981	84.397	4983
TIE.LINE	25	T9002511	5726 08:51:27	363048	5385131		
			5736 08:51:32	363174	5384954	0.217	19
TIE.LINE	25	T9002512	5736 08:54:51	363133	5384989		
			9271 09:24:20	363135	5450768	65.779	3535
TIE.LINE	26	T9002611	9271 09:25:49	365130	5450664		
			13541 10:01:25	365134	5384965	65.699	4268
TRAVERSE	212	L9021211	13541 10:13:22	344073	5408184		
			19006 10:58:56	445341	5408185	101.268	5523
TRAVERSE	149	L9014911	19006 11:27:05	421307	5420783		
			23681 12:06:03	340853	5420780	80.454	4659

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FLIGHT LOG FOR FLIGHT 91 DOY 61 LocalTime 14:57:48 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 154	L9115411	0	15:07:54	445297	5419786	104.428	5805
		5841	15:56:36	340869	5419780		
TRAVERSE 153	L9115312	5841	15:58:21	340908	5419985	55.212	2891
		8731	16:22:26	396120	5419989		
TRAVERSE 152	L9115212	8731	16:23:20	396149	5420180	55.308	2937
		11666	16:47:48	340841	5420182		
TRAVERSE 148	L9114811	11666	16:50:06	340917	5420984	80.471	4332
		15936	17:25:42	421388	5420981		
PRE.TEST 5	E9100511	15936	17:36:12	444520	5413824	5.346	255
		16191	17:38:20	449496	5415779		
PST1.GND 9	I9100911	16191	17:44:33	442881	5419051	0.000	240
		16431	17:46:33	442881	5419051		
POST.THM 10	J9101011	16431	17:47:35	442881	5419051	0.000	240
		16671	17:49:34	442881	5419051		



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FLIGHT LOG FOR FLIGHT 92 DOY 62 LocalTime 09:32:57 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B9200211	0 09:33:05	442882	5419050		
			241 09:35:05	442881	5419050	0.001	241
PRE1.GND	1	A9200111	241 09:36:23	442881	5419050		
			481 09:38:23	442882	5419050	0.001	240
PRE.TEST	5	E9200511	481 09:52:42	449437	5415759		
			716 09:54:40	444483	5413815	5.322	235
TRAVERSE	147	L9214711	716 10:09:55	421279	5421180		
			4891 10:44:43	340879	5421181	80.400	4152
TRAVERSE	146	L9214611	4891 10:51:23	340904	5421382		
			9701 11:31:29	421367	5421385	80.463	4810
TRAVERSE	145	L9214511	9701 11:32:03	421319	5421587		
			14031 12:08:09	340879	5421578	80.440	4327
TRAVERSE	144	L9214411	14031 12:08:49	340919	5421789		
			18961 12:49:55	421370	5421786	80.451	4930



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FLIGHT LOG FOR FLIGHT 93 DOY 62 LocalTime 13:05:59 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 151	L9315112	0	13:17:29	445293	5420383		
		6211	14:09:15	340834	5420384	104.459	6146
TRAVERSE 155	L9315512	6211	14:10:58	340895	5419584		
		11011	14:50:59	420420	5419581	79.525	4801
TRAVERSE 215	L9321512	11011	15:00:08	405214	5407583		
		14101	15:25:54	345024	5407581	60.190	3092
TRAVERSE 213	L9321311	14101	15:27:51	344434	5407983		
		19756	16:15:00	445345	5407986	100.911	5654
TRAVERSE 150	L9315012	19756	16:42:01	421308	5420585		
		24236	17:19:21	340823	5420584	80.485	4413
TRAVERSE 143	L9314311	24236	17:20:21	340934	5421983		
		28731	17:57:49	421346	5421985	80.412	4494
TRAVERSE 142	L9314211	28731	17:58:18	421314	5422184		
		32916	18:33:11	340849	5422183	80.465	4185
TRAVERSE 141	L9314111	32916	18:33:48	340905	5422387		
		37131	19:08:56	421357	5422386	80.452	4215
POST.TST 8	G9300811	37131	19:17:23	444514	5413822		
		37396	19:19:36	449502	5415778	5.358	265
PST1.GND 9	I9300911	37396	19:34:08	442882	5419050		
		37636	19:36:08	442882	5419050	0.000	240
POST.THM 10	J9301011	37636	19:40:42	442882	5419050		
		37876	19:42:42	442882	5419050	0.000	240

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FLIGHT LOG FOR FLIGHT 94 DOY 63 LocalTime 07:23:10 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B9400211	0	07:23:17	442882	5419050		
		241	07:25:17	442882	5419050	0.000	241
PRE1.GND	1 A9400111	241	07:26:31	442882	5419050		
		481	07:28:31	442881	5419050	0.001	240
PRE.TEST	5 E9400511	481	07:46:10	444516	5413825		
		731	07:48:14	449528	5415791	5.384	250
TRAVERSE 109	L9410911	731	08:01:34	421318	5428785		
		5231	08:39:05	340817	5428782	80.501	4496
TRAVERSE 110	L9411011	5231	08:39:42	340928	5428585		
		9686	09:16:50	421414	5428580	80.486	4453
TRAVERSE 111	L9411111	9686	09:19:26	421301	5428386		
		13916	09:54:42	340838	5428381	80.463	4230
TRAVERSE 112	L9411211	13916	09:55:08	340912	5428187		
		18131	10:30:16	421409	5428179	80.497	4214
POST.TST	8 G9400811	18131	10:40:14	444545	5413833		
		18376	10:42:17	449546	5415792	5.371	245
PST1.GND	9 I9400911	18376	10:46:48	442881	5419050		
		18616	10:48:48	442881	5419050	0.000	240
POST.THM	10 J9401011	18616	10:49:42	442881	5419050		
		18856	10:51:41	442881	5419050	0.000	240



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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 95 DOY 65 LocalTime 07:32:45 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B9500211	0	07:33:03	442881	5419050		
		241	07:35:03	442881	5419050	0.000	241
PRE1.GND	1 A9500111	241	07:36:11	442881	5419050		
		481	07:38:11	442881	5419050	0.000	240
PRE.TEST	5 E9500511	0	07:59:34	449471	5415770		
		286	08:01:57	444429	5413792	5.416	286
TRAVERSE	113 L9511311	286	08:13:13	421294	5427987		
		4711	08:50:06	340823	5427983	80.471	4422
TRAVERSE	114 L9511411	4711	08:50:51	340921	5427786		
		9681	09:32:17	421365	5427787	80.444	4970
TRAVERSE	115 L9511511	9681	09:33:01	421308	5427585		
		14006	10:09:04	340842	5427583	80.466	4325
TRAVERSE	116 L9511611	14006	10:16:41	340908	5427381		
		18996	10:58:17	421410	5427384	80.502	4990

SBG



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FLIGHT LOG FOR FLIGHT 96 DOY 66 LocalTime 08:57:25 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B9600211	0 08:57:42	442881	5419050		
			241 08:59:42	442881	5419050	0.000	241
PRE1.GND	1	A9600111	241 09:00:51	442881	5419049		
			481 09:02:51	442881	5419049	0.000	240
PRE.TEST	5	E9600511	481 09:08:09	449451	5415765		
			731 09:10:14	444488	5413820	5.331	250
TRAVERSE	188	L9618812	731 09:12:46	445312	5412985		
			6216 09:58:30	340844	5412978	104.468	5481
TRAVERSE	189	L9618912	6216 09:59:43	340931	5412784		
			11831 10:46:32	445396	5412781	104.465	5634
TRAVERSE	301	L9630113	11831 10:55:06	445304	5393785		
			13406 11:08:14	415878	5393783	29.426	1575
TRAVERSE	303	L9630312	13406 11:08:58	415907	5393581		
			15041 11:22:36	445420	5393582	29.513	1635
TRAVERSE	305	L9630512	15041 11:23:29	445296	5393388		
			16781 11:38:00	415877	5393384	29.419	1740
TRAVERSE	307	L9630712	16781 11:38:38	415898	5393185		
			18546 11:53:21	445380	5393186	29.482	1765
TRAVERSE	309	L9630912	18546 11:54:00	445288	5392982		
			20171 12:07:33	415878	5392981	29.410	1625
TRAVERSE	190	L9619012	20171 12:35:37	445313	5412582		
			25726 13:21:56	340845	5412581	104.468	5539
TRAVERSE	191	L9619112	25726 13:22:58	340930	5412384		
			31586 14:11:49	445417	5412383	104.487	5860

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FLIGHT LOG FOR FLIGHT 97 DOY 66 LocalTime 14:21:29 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 192	L9719212	0	14:33:38	445294	5412183		
		5821	15:22:09	340877	5412182	104.417	5821
TRAVERSE 193	L9719312	5821	15:23:12	340903	5411983		
		11746	16:12:36	445406	5411979	104.503	5925
TRAVERSE 214	L9721411	11746	16:15:42	445300	5407787		
		17026	16:59:43	344695	5407782	100.605	5264
TRAVERSE 140	L9714011	17026	17:06:47	340922	5422586		
		21546	17:44:28	421340	5422583	80.418	4520
TRAVERSE 139	L9713911	21546	18:12:11	421306	5422781		
		25696	18:46:46	340867	5422783	80.439	4150
TRAVERSE 138	L9713811	25696	18:47:32	340934	5422987		
		30031	19:23:40	421370	5422982	80.436	4335
TRAVERSE 137	L9713711	30031	19:24:26	421309	5423184		
		32026	19:41:04	380799	5423182	40.510	1996
TRAVERSE 136	L9713611	32026	19:41:27	380498	5423388		
		34121	19:58:55	421341	5423384	40.843	2097
POST.TST 8	G9700811	34121	20:07:12	444548	5413834		
		34371	20:09:17	449520	5415788	5.342	250
PST1.GND 9	I9700911	34371	20:13:56	442882	5419050		
		34611	20:15:56	442881	5419050	0.001	240
POST.THM 10	J9701011	34611	20:16:44	442881	5419050		
		34851	20:18:44	442882	5419050	0.001	240

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FLIGHT LOG FOR FLIGHT 98 DOY 67 LocalTime 07:33:52 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B9800211	0 07:34:00	442881	5419050		
			241 07:36:00	442881	5419050	0.000	241
PRE1.GND	1	A9800111	241 07:36:42	442881	5419050		
			481 07:38:42	442881	5419050	0.000	240
PRE.TEST	5	E9800511	481 07:45:21	449463	5415765		
			736 07:47:29	444453	5413804	5.380	255
TRAVERSE	1	L9800111	736 08:09:10	389305	5450385		
			2156 08:21:00	359868	5450378	29.437	1420
TIE.LINE	27	T9802711	2156 08:25:54	367136	5450683		
			6141 08:59:07	367132	5384915	65.768	3982
TIE.LINE	28	T9802811	6141 09:01:08	369131	5384992		
			10101 09:34:09	369131	5450749	65.757	3959
TIE.LINE	29	T9802911	10101 09:35:53	371134	5450689		
			13746 10:06:16	371140	5384913	65.776	3644
TIE.LINE	30	T9803011	13746 10:07:49	373130	5385003		
			16291 10:29:02	373132	5425521	40.518	2546

241.2  
104.4 345.6

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FLIGHT LOG FOR FLIGHT 99 DOY 67 LocalTime 16:13:04 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 135	L9913511	0	16:22:59	421289	5423581		
		3956	16:55:58	340824	5423585	80.465	3956
TRAVERSE 134	L9913411	3956	16:56:42	340923	5423788		
		8676	17:36:03	421346	5423784	80.423	4717
TRAVERSE 133	L9913311	8676	17:36:45	421296	5423984		
		12661	18:09:58	340851	5423984	80.445	3984
TRAVERSE 160	L9916012	12661	18:15:25	340925	5418582		
		18761	19:06:17	445340	5418578	104.415	6100
POST.TST 8	G9900811	18761	19:08:45	449451	5415763		
		19066	19:11:17	444430	5413795	5.393	305
PST1.GND 9	I9900911	19066	19:16:14	442881	5419050		
		19306	19:18:14	442882	5419051	0.001	240
POST.THM 10	J9901011	19306	19:19:01	442882	5419050		
		19546	19:21:01	442882	5419050	0.000	240



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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 100 DOY 68 LocalTime 07:38:56 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0100211	0 07:39:04	442881	5419050		
			241 07:41:04	442882	5419050	0.001	241
PRE1.GND	1	A0100111	241 07:41:35	442881	5419050		
			481 07:43:35	442881	5419050	0.000	240
PRE.TEST	5	E0100511	481 07:48:12	449455	5415765		
			746 07:50:25	444456	5413807	5.369	265
TRAVERSE	132	L0113211	746 07:59:40	421304	5424180		
			4786 08:33:21	340848	5424182	80.456	4037
TRAVERSE	131	L0113111	4786 08:34:19	340928	5424382		
			9711 09:15:23	421341	5424381	80.413	4950
TRAVERSE	130	L0113011	9711 09:16:01	421293	5424583		
			13741 09:49:37	340790	5424582	80.503	4030
TRAVERSE	129	L0112911	13741 09:55:00	340911	5424787		
			18316 10:33:08	421363	5424780	80.452	4575
TRAVERSE	128	L0112811	18316 11:02:24	421274	5424984		
			22301 11:35:37	340881	5424977	80.393	3982
TRAVERSE	127	L0112711	22301 11:36:15	340932	5425189		
			26791 12:13:41	421413	5425182	80.481	4511
POST.TST	8	G0100811	26791 12:22:37	444517	5413827		
			27031 12:24:37	449537	5415794	5.392	240
PST1.GND	9	I0100911	27031 12:29:04	442882	5419051		
			27271 12:31:04	442882	5419050	0.001	240
POST.THM	10	J0101011	27271 12:31:58	442882	5419050		
			27511 12:33:58	442882	5419050	0.000	240

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160.8  
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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 102 DOY 69 LocalTime 10:08:05 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0200211	0 10:08:22	442881	5419050		
			241 10:10:22	442876	5419048	0.005	241
PRE1.GND	1	A0200111	241 10:11:05	442881	5419050		
			481 10:13:05	442881	5419050	0.000	240
PRE.TEST	5	E0200511	481 10:18:41	449473	5415773		
			741 10:20:51	444471	5413810	5.373	260
TRAVERSE 115	L0211512	741	10:32:26	421288	5427589		
		5071	11:08:31	340872	5427582	80.416	4326
TRAVERSE 116	L0211612	5071	11:13:27	340913	5427387		
		9801	11:52:53	421407	5427388	80.494	4729
TRAVERSE 117	L0211711	9801	11:54:27	421292	5427187		
		14131	12:30:33	340805	5427185	80.487	4328
TRAVERSE 118	L0211811	14131	12:33:25	340923	5426981		
		18956	13:13:39	421352	5426982	80.429	4825



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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 103 DOY 69 LocalTime 13:26:41 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 119	L0311911	0	13:45:50	421297	5426785	47.130	2576
		2576	14:07:18	374167	5426777		
TRAVERSE 120	L0312011	2576	14:11:04	376023	5426587	45.329	2558
		5106	14:32:09	421352	5426580		
POST.TST 8	G0300811	5106	14:44:02	444518	5413824	5.345	260
		5366	14:46:12	449495	5415773		
PST1.GND 9	I0300911	5366	14:50:48	442882	5419051	0.001	240
		5606	14:52:48	442881	5419051		
POST.THM 10	J0301011	5606	14:53:36	442881	5419051	0.001	240
		5846	14:55:36	442882	5419051		



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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 104 DOY 70 LocalTime 07:36:56 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2 B0400211	0	07:37:06	442881	5419049		
		241	07:39:06	442881	5419049	0.000	241
PRE1.GND	1 A0400111	241	07:40:57	442881	5419049		
		481	07:42:57	442881	5419049	0.000	240
PRE.TEST	5 E0400511	481	07:48:17	444528	5413827		
		731	07:50:22	449513	5415782	5.355	250
TIE.LINE	60 T0406012	731	08:03:01	421132	5430693		
		3396	08:25:14	421131	5389595	41.098	2634
TIE.LINE	48 T0404813	3396	08:34:47	399133	5395219		
		5016	08:48:18	399131	5430715	35.496	1622
TIE.LINE	46 T0404613	5016	08:49:48	397134	5430675		
		6906	09:05:33	397130	5394945	35.730	1891
TIE.LINE	44 T0404413	6906	09:06:56	395129	5395059		
		8501	09:20:14	395133	5430779	35.720	1596
TIE.LINE	42 T0404213	8501	09:24:50	393133	5430683		
		10221	09:39:10	393128	5395025	35.658	1721
TIE.LINE	40 T0404013	10221	09:40:34	391138	5395127		
		11796	09:53:42	391131	5430751	35.624	1577
TRAVERSE	119 L0411912	11796	09:59:32	380664	5426785		
		13766	10:15:57	340884	5426783	39.780	1972
TRAVERSE	120 L0412012	13766	10:16:44	340938	5426586		
		15941	10:34:52	383822	5426582	42.884	2176
TRAVERSE	121 L0412111	15941	11:16:28	421300	5426385		
		19836	11:48:56	340819	5426380	80.481	3895
TRAVERSE	122 L0412211	19836	11:51:58	340904	5426185		
		24091	12:27:26	421363	5426188	80.459	4254
TRAVERSE	123 L0412311	24091	12:27:57	421291	5425985		
		28011	13:00:38	340850	5425985	80.441	3920
TRAVERSE	124 L0412411	28011	13:02:08	340949	5425782		
		31901	13:34:34	421338	5425779	80.389	3890



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446.4

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FLIGHT LOG FOR FLIGHT 105 DOY 70 LocalTime 13:56:03 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 125	L0512511	0	14:02:59	421304	5425589		
		21	14:03:09	420853	5425582	0.451	22
TRAVERSE 125	L0512512	21	14:04:21	421307	5425582		
		4541	14:42:02	340820	5425586	80.487	4512
TRAVERSE 136	L0513612	4541	14:44:24	340908	5423382		
		7111	15:05:49	386737	5423385	45.829	2571
TRAVERSE 137	L0513712	7111	15:06:43	386873	5423186		
		9611	15:27:33	340843	5423184	46.030	2490
TRAVERSE 126	L0512611	9611	15:29:35	340920	5425387		
		14086	16:06:53	421423	5425382	80.503	4550 <i>SCRUB.</i>
TRAVERSE 317	L0531712	14086	16:19:30	428859	5392198		
		15111	16:28:03	415862	5392180	12.997	1027
TRAVERSE 321	L0532112	15111	16:29:46	415915	5391782		
		17156	16:46:49	445348	5391784	29.433	2115 <i>SCRUB.</i>
TRAVERSE 323	L0532312	17156	16:48:53	445319	5391585		
		18986	17:04:09	415858	5391581	29.461	1827
TRAVERSE 94	L0509411	18986	17:51:17	389291	5431780		
		21656	18:13:32	340825	5431780	48.466	2665
TRAVERSE 93	L0509311	21656	18:14:10	340911	5431982		
		24531	18:38:08	389421	5431986	48.510	3008 <i>SCRUB</i>
TRAVERSE 92	L0509211	24531	18:38:44	389313	5432186		
		27431	19:02:54	340873	5432184	48.440	2898
TRAVERSE 91	L0509111	27431	19:07:32	340932	5432387		
		30346	19:31:50	389375	5432383	48.443	3013 <i>SCRUB</i>
POST.TST 8	G0500811	30346	19:52:29	444518	5413827		
		30611	19:54:41	449553	5415799	5.407	265
PST1.GND 9	I0500911	30611	20:01:05	442881	5419051		
		30851	20:03:05	442881	5419051	0.000	240
PST1.GND 9	I0500912	30851	20:04:38	442881	5419051		
		31091	20:06:38	442881	5419051	0.000	240
POST.THM 10	J0501012	31091	20:07:31	442881	5419050		
		31331	20:09:31	442881	5419051	0.001	240



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80.4 REFLY.  
145.2

Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 106 DOY 72 LocalTime 07:44:20 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0600211	0 07:44:29	442881	5419049		
			241 07:46:29	442881	5419049	0.000	241
PRE1.GND	1	A0600111	241 07:47:32	442881	5419049		
			481 07:49:32	442881	5419050	0.001	240
PRE.TEST	5	E0600511	481 07:52:53	444512	5413825		
			716 07:54:51	449497	5415777	5.354	235
TRAVERSE	126	L0612612	716 08:07:24	421305	5425390		
			5166 08:44:30	340883	5425383	80.422	4443
TRAVERSE	93	L0609312	5166 08:47:27	340922	5431983		
			7636 09:08:03	389354	5431983	48.432	2511
TRAVERSE	91	L0609112	7636 09:09:04	389298	5432389		
			10456 09:32:35	340878	5432381	48.420	2819
TRAVERSE	90	L0609011	10456 09:33:04	340925	5432594		
			10466 09:33:09	341091	5432564	0.169	26 <i>Screen</i>
TRAVERSE	90	L0609012	10466 09:34:14	340916	5432581		
			12966 09:55:04	389349	5432579	48.433	2515
TRAVERSE	89	L0608911	12966 09:55:22	390301	5432530		
			13016 09:55:47	391439	5432120	1.210	120
PRE.ALTB	6	F0600611	13016 10:17:54	442881	5419050		
			13161 10:19:06	442850	5419042	0.032	135 <i>RADACT</i>

*HOVER CALIBRATION*

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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 107 DOY 72 LocalTime 13:43:00 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
TRVERSE	2	L0700211	0 15:28:34	389321	5450182		
			1816 15:43:43	359878	5450180	29.443	1833
TRVERSE	3	L0700311	1816 15:44:26	359915	5449991		
			3316 15:56:56	389426	5449981	29.511	1499
TRVERSE	4	L0700411	3316 15:57:41	389303	5449782		
			5136 16:12:52	359858	5449780	29.445	1835
TRVERSE	5	L0700511	5136 16:13:33	359917	5449591		
			6646 16:26:08	389386	5449582	29.469	1509
TRVERSE	6	L0700611	6646 16:26:46	389306	5449387		
			8461 16:41:54	359822	5449382	29.484	1815
TRVERSE	7	L0700711	8461 16:42:41	359932	5449187		
			9936 16:54:59	389421	5449186	29.489	1475
TRVERSE	8	L0700811	9936 16:55:40	389316	5448984		
			11721 17:10:33	359814	5448985	29.502	1785
TRVERSE	9	L0700911	11721 17:18:15	359915	5448786		
			13321 17:31:35	389409	5448785	29.494	1600
TRVERSE	10	L0701011	13321 17:32:13	389320	5448583		
			15071 17:46:48	359838	5448580	29.482	1750
TRVERSE	11	L0701111	15071 17:47:21	359931	5448384		
			16546 17:59:39	389355	5448381	29.424	1475
POST.TST	8	G0700811	16546 18:19:17	444543	5413834		
			16781 18:21:15	449556	5415803	5.386	235
PST1.GND	9	I0700911	16781 18:26:52	442881	5419051		
			17021 18:28:52	442881	5419051	0.000	240
POST.THM	10	J0701011	17021 18:30:09	442881	5419051		
			17261 18:32:09	442881	5419051	0.000	240

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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 008 DOY 73 LocalTime 07:27:55 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B0800211	0 07:28:07	442881	5419050		
			241 07:30:07	442881	5419050	0.000	241
PRE1.GND	1	A0800111	241 07:31:07	442881	5419050		
			481 07:33:07	442881	5419050	0.000	240
PRE.TEST	5	E0800511	481 07:40:10	449465	5415770		
			781 07:42:40	444430	5413796	5.408	300
TRAVERSE	185	L0818513	781 07:53:06	420868	5413583		
			2026 08:03:28	400814	5413582	20.054	1246
TRAVERSE	12	L0801211	2026 08:24:03	389293	5448186		
			3626 08:37:23	359833	5448183	29.460	1600
TRAVERSE	13	L0801311	3626 08:38:09	359914	5447987		
			5216 08:51:24	389360	5447985	29.446	1590
TRAVERSE	14	L0801411	5216 08:52:04	389291	5447785		
			6936 09:06:25	359847	5447784	29.444	1717
TRAVERSE	15	L0801511	6936 09:07:05	359928	5447586		
			8721 09:21:58	389358	5447585	29.430	1784
TRAVERSE	16	L0801611	8721 09:22:38	389309	5447383		
			10591 09:38:14	359842	5447377	29.467	1833
TRAVERSE	24	L0802411	10826 09:53:20	359924	5445786		
			12491 10:07:13	389396	5445787	29.472	1664
TRAVERSE	23	L0802311	12491 10:07:54	389292	5445982		
			14196 10:22:07	359884	5445982	29.408	1705
TRAVERSE	22	L0802211	14196 10:22:46	359915	5446186		
			15781 10:35:59	389356	5446187	29.441	1582
TRAVERSE	21	L0802111	15781 11:34:43	389309	5446387		
			17336 11:47:41	359832	5446380	29.477	1555
TRAVERSE	20	L0802011	17336 11:48:17	359910	5446584		
			18901 12:01:20	389362	5446586	29.452	1565
TRAVERSE	19	L0801911	18901 12:02:02	389314	5446781		
			20501 12:15:23	359860	5446781	29.454	1600
TRAVERSE	18	L0801811	20501 12:16:01	359913	5446985		
			22136 12:29:39	389409	5446983	29.496	1635
							Scrub
POST.TST	8	G0800811	22451 12:58:20	444518	5413826		
			22711 13:00:30	449497	5415781	5.349	260
PST1.GND	9	I0800911	22711 13:05:35	442881	5419050		
			22951 13:07:35	442881	5419050	0.000	240
POST.THM	10	J0801011	22951 13:08:31	442881	5419050		
			23191 13:10:31	442881	5419051	0.001	240

Scrub  
Scrub


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**Base** Sheffield Tas **Job** 2101 **Pilots** Sam Borg/Tony Feller

**FLIGHT LOG FOR FLIGHT 109 DOY 73 LocalTime 16:42:04 Area 1 Datum = WGS84**

Line	File	Fid	Time	East	North	Len	Alarms
TRAVERSE 88	L0908811	0	17:17:15	389317	5432986		
		2481	17:37:56	340873	5432984	48.444	2481
TRAVERSE 87	L0908711	2481	17:38:50	340934	5433183		
		4876	17:58:48	389353	5433179	48.419	2395
TRAVERSE 50	L0905011	4876	18:03:00	389288	5440585		
		6271	18:14:38	359861	5440582	29.427	1425
TRAVERSE 49	L0904911	6271	18:15:01	359920	5440783		
		7571	18:25:51	389344	5440780	29.424	1300
TRAVERSE 48	L0904811	7571	18:26:26	389299	5440982		
		8981	18:38:11	359831	5440979	29.468	1428
TRAVERSE 47	L0904711	8981	18:38:37	359911	5441185		
		10331	18:49:52	389420	5441180	29.509	1350
TRAVERSE 51	L0905111	10331	18:50:29	389281	5440380		
		12781	19:10:54	337822	5440382	51.459	2449
TRAVERSE 52	L0905211	12781	19:11:36	337948	5440183		
		15106	19:30:59	389369	5440180	51.421	2325
POST.TST 8	G0900811	15106	19:51:21	444537	5413834		
		15341	19:53:19	449562	5415800	5.396	235
PST1.GND 9	I0900911	15341	20:11:32	442881	5419051		
		15581	20:13:32	442881	5419051	0.000	240
POST.THM 10	J0901011	15581	20:14:24	442881	5419051		
		15821	20:16:23	442881	5419051	0.000	240



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58-8

Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 110 DOY 74 LocalTime 07:33:06 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1000211	0 07:33:17	442881	5419050		
		241	07:35:17	442881	5419050	0.000	241
PRE1.GND	1	A1000111	241 07:36:42	442881	5419050		
		481	07:38:42	442881	5419050	0.000	240
PRE.TEST	5	E1000511	481 07:49:37	449446	5415763		
		726	07:51:40	444484	5413819	5.329	245
TRAVERSE	25	L1002511	726 08:12:19	389281	5445580		
		2266	08:25:09	359858	5445583	29.423	1538
TRAVERSE	26	L1002611	2266 08:25:48	359918	5445386		
		3941	08:39:46	389360	5445384	29.442	1674
TRAVERSE	27	L1002711	3941 08:40:21	389298	5445184		
		5476	08:53:09	359823	5445182	29.475	1535
TRAVERSE	28	L1002811	5476 08:53:58	359911	5444983		
		7251	09:08:46	389407	5444980	29.496	1775
TRAVERSE	29	L1002911	7251 09:09:36	389313	5444783		
		8836	09:22:49	359870	5444787	29.443	1584
TRAVERSE	17	L1001714	8836 09:24:48	359926	5447182		
		10466	09:38:24	389354	5447185	29.428	1629
TRAVERSE	30	L1003011	10466 09:39:53	389294	5444581		
		11921	09:52:01	359842	5444584	29.452	1467
TRAVERSE	18	L1001812	11921 09:53:41	359916	5446985		
		13496	10:06:49	389355	5446983	29.439	1588
TRAVERSE	19	L1001912	13496 10:07:31	389285	5446785		
		14891	10:19:09	359880	5446783	29.405	1390
TRAVERSE	31	L1003111	14891 10:20:47	359914	5444383		
		16476	10:34:00	389357	5444382	29.443	1585
TIE.LINE	33	T1003311	16476 11:35:40	379134	5450651		
		19701	12:02:33	379129	5384893	65.758	3222
TIE.LINE	32	T1003211	19701 12:03:46	377129	5384996		
		23451	12:35:02	377135	5450764	65.768	3750
TIE.LINE	31	T1003111	23451 12:36:14	375127	5450681		
		26476	13:01:27	375135	5384918	65.763	3025
TIE.LINE	30	T1003012	26476 13:02:50	373134	5384998		
		29881	13:31:13	373133	5450716	65.718	3400
POST.TST	8	G1000812	29966 13:58:35	444552	5413836		
		30191	14:00:27	449504	5415780	5.320	225
PST1.GND	9	I1000911	30191 14:05:29	442881	5419050		
		30431	14:07:29	442881	5419051	0.001	240
POST.THM	10	J1001011	30431 14:08:22	442881	5419049		
		30671	14:10:22	442881	5419051	0.002	240



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FLIGHT LOG FOR FLIGHT 111 DOY 75 LocalTime 09:46:23 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1100211	0 09:47:02	442882	5419050		
			241 09:49:02	442882	5419050	0.000	241
PRE1.GND	1	A1100111	241 09:49:42	442882	5419050		
			481 09:51:42	442882	5419050	0.000	240
PRE.TEST	5	E1100511	481 10:25:35	449469	5415772		
			731 10:27:40	444410	5413786	5.435	250
TRAVERSE	321	L1132113	731 10:36:31	445326	5391787		
			2606 10:52:09	415880	5391782	29.446	1871
TRAVERSE	86	L1108611	2606 11:39:05	389297	5433388		
			5156 12:00:21	340814	5433381	48.483	2550
TRAVERSE	85	L1108511	5156 12:00:56	340924	5433582		
			8031 12:24:54	389345	5433584	48.421	2874
TRAVERSE	84	L1108411	8031 12:25:34	389277	5433789		
			10431 12:45:35	340872	5433783	48.405	2396
TRAVERSE	83	L1108311	10431 12:50:04	340913	5433987		
			13421 13:15:00	389355	5433982	48.442	2988
TRAVERSE	82	L1108211	13421 13:15:26	389315	5434192		
			15876 13:35:54	340856	5434176	48.459	2454
TRAVERSE	81	L1108111	15876 13:36:33	340917	5434376		
			18806 14:00:58	389351	5434384	48.434	2929
POST.TST	8	G1100811	0 15:46:22	444527	5413832		
			241 15:48:22	449579	5415808	5.425	241
PST1.GND	9	I1100911	241 15:53:15	442882	5419051		
			481 15:55:15	442882	5419051	0.000	240
POST.THM	10	J1101011	481 15:56:17	442882	5419051		
			721 15:58:17	442882	5419051	0.000	240



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FLIGHT LOG FOR FLIGHT 112 DOY 77 LocalTime 10:07:22 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1200211	0 10:07:33	442881	5419050		
			241 10:09:33	442881	5419050	0.000	241
PRE1.GND	1	A1200111	241 10:11:09	442882	5419050		
			481 10:13:09	442879	5419051	0.003	240
PRE.TEST	5	E1200511	481 11:41:35	449468	5415765		
			726 11:43:37	444447	5413803	5.391	245
TRAVERSE	80	L1208011	726 12:05:09	389285	5434582		
			3486 12:28:09	340861	5434576	48.424	2760
TRAVERSE	79	L1207911	3486 12:31:24	340932	5434787		
			5331 12:47:23	373232	5434792	32.300	1923
TRAVERSE	78	L1207811	5331 13:03:08	389286	5434987		
			8021 13:25:34	340829	5434984	48.457	2687
TRAVERSE	77	L1207711	8021 13:26:10	340924	5435187		
			10616 13:47:48	389351	5435180	48.427	2595
TRAVERSE	76	L1207611	10616 13:49:39	389311	5435383		
			13286 14:11:54	340811	5435381	48.500	2670
TRAVERSE	75	L1207511	13286 14:12:21	340936	5435590		
			15806 14:33:21	389390	5435581	48.454	2516
TRAVERSE	74	L1207411	15806 15:29:08	389284	5435782		
			18396 15:50:44	340877	5435780	48.407	2588
TRAVERSE	73	L1207311	18396 15:51:11	340914	5435986		
			20896 16:12:01	389338	5435988	48.424	2497
TRAVERSE	72	L1207211	20896 16:12:39	389292	5436184		
			23351 16:33:07	340833	5436183	48.459	2455
TRAVERSE	71	L1207111	23351 16:33:42	340942	5436384		
			25666 16:53:00	389369	5436380	48.427	2313
TRAVERSE	70	L1207011	25666 16:55:06	389305	5436587		
			28136 17:15:41	340830	5436582	48.475	2467
TRAVERSE	89	L1208912	28136 17:17:46	340932	5432786		
			30636 17:38:36	389405	5432788	48.473	2500
POST.TST	8	G1200811	30636 17:58:22	444535	5413829		
			30881 18:00:24	449501	5415776	5.334	245
PST1.GND	9	I1200911	30881 18:04:47	442881	5419050		
			31121 18:06:47	442881	5419050	0.000	240
POST.THM	10	J1201011	31121 18:08:03	442881	5419050		
			31361 18:10:03	442881	5419050	0.000	240

681.4

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Base Sheffield Tas Job 2101 Pilots Sam Borg/Tony Feller

FLIGHT LOG FOR FLIGHT 113 DOY 78 LocalTime 07:51:38 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1300211	0 07:51:50	442881	5419050		
			241 07:53:51	442881	5419050	0.000	241
PRE1.GND	1	A1300111	241 07:54:56	442881	5419050		
			481 07:56:56	442881	5419050	0.000	240
PRE.TEST	5	E1300511	481 08:21:12	449454	5415758		
			731 08:23:17	444430	5413797	5.393	250
TRAVERSE	69	L1306911	731 08:42:58	389297	5436783		
			1306 08:47:45	377809	5436770	11.488	576
TRAVERSE	53	L1305311	1306 08:55:11	389280	5439980		
			3721 09:15:19	337879	5439980	51.401	2412
TRAVERSE	54	L1305411	3721 09:15:52	338118	5439782		
			6276 09:37:10	389386	5439781	51.268	2553
TRAVERSE	55	L1305511	6276 09:39:07	389319	5439616		
			6286 09:39:12	389279	5439591	0.047	23
TRAVERSE	55	L1305512	6286 09:39:58	389286	5439585		
			8661 09:59:46	338233	5439584	51.053	2375
TRAVERSE	56	L1305611	8661 10:00:19	338538	5439386		
			11066 10:20:22	389393	5439385	50.855	2404
TRAVERSE	57	L1305711	11066 10:22:44	389304	5439185		
			13351 10:41:47	338668	5439183	50.636	2285
TRAVERSE	58	L1305811	13351 10:42:11	338945	5438985		
			15716 11:01:54	389384	5438982	50.439	2363
TRAVERSE	46	L1304611	15716 11:58:20	389296	5441385		
			17071 12:09:37	359846	5441385	29.450	1350
TRAVERSE	45	L1304511	17071 12:10:00	359914	5441581		
			18501 12:21:55	389411	5441579	29.497	1428
TRAVERSE	44	L1304411	18501 12:22:25	389285	5441784		
			19866 12:33:48	359863	5441786	29.422	1361
TRAVERSE	43	L1304311	19866 12:34:10	359913	5441979		
			21261 12:45:48	389346	5441981	29.433	1395
TRAVERSE	59	L1305911	21261 12:48:23	389295	5438782		
			23586 13:07:46	339007	5438785	50.288	2324
TRAVERSE	60	L1306011	23586 13:08:28	339329	5438586		
			25901 13:27:46	389391	5438591	50.062	2313
TRAVERSE	61	L1306111	25901 13:29:48	389304	5438385		
			28221 13:49:08	339414	5438382	49.890	2320
TRAVERSE	62	L1306211	28221 13:49:37	339750	5438185		
			30541 14:08:57	389438	5438182	49.688	2320
TRAVERSE	42	L1304211	30541 14:11:52	389318	5442179		
			31896 14:23:10	359876	5442183	29.442	1355
TRAVERSE	41	L1304111	31896 14:23:27	359934	5442390		
			33156 14:33:57	389405	5442380	29.471	1260
POST.TST	8	G1300811	33156 15:00:48	449477	5415753		
			33386 15:02:43	444459	5413805	5.383	230
PST1.GND	9	I1300911	33386 15:07:40	442882	5419050		
			33626 15:09:40	442882	5419050	0.000	240
POST.THM	10	J1301011	33626 15:10:34	442882	5419050		
			33866 15:12:34	442882	5419050	0.000	240



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FLIGHT LOG FOR FLIGHT 114 DOY 80 LocalTime 10:33:23 Area 1 Datum = WGS84

Table with columns: Line, File, Fid, Time, East, North, Len, Alarms. Contains flight log data for various points like PRE.THOR, TRVERSE, POST.TST, etc.



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Base Sheffield Tas Job 2101 Pilots Sam Borg

FLIGHT LOG FOR FLIGHT 115 DOY 81 LocalTime 09:32:27 Area 1 Datum = WGS84

Line	File	Fid	Time	East	North	Len	Alarms
PRE.THOR	2	B1500211	0 09:32:36	442881	5419051		
			241 09:34:36	442881	5419050	0.001	241
PRE1.GND	1	A1500111	241 09:35:33	442881	5419050		
			481 09:37:33	442882	5419051	0.001	240
PRE.TEST	5	E1500511	481 09:42:42	449457	5415775		
			721 09:44:42	444400	5413784	5.435	240
TRAVERSE	32	L1503211	721 10:05:03	389290	5444180		
			2246 10:17:45	359876	5444183	29.414	1524
TRAVERSE	33	L1503311	2246 10:18:10	359904	5443985		
			3756 10:30:45	389343	5443985	29.439	1507
TRAVERSE	34	L1503411	3756 10:31:07	389311	5443785		
			5346 10:44:22	359792	5443783	29.519	1588
TRAVERSE	35	L1503511	5346 10:44:57	359917	5443585		
			6841 10:57:25	389347	5443584	29.430	1494
TRAVERSE	36	L1503611	6841 11:01:25	389321	5443385		
			8346 11:13:58	359836	5443381	29.485	1505
TRAVERSE	67	L1506711	8346 11:22:00	340730	5437182		
			10646 11:41:11	389355	5437185	48.625	2297
TRAVERSE	68	L1506811	10646 11:41:34	389281	5436969		
			12926 12:00:34	340815	5436979	48.466	2279
TRAVERSE	69	L1506912	12926 12:01:00	340930	5436790		
			15166 12:19:41	389377	5436782	48.447	2238
TRAVERSE	79	L1507912	15166 12:29:11	364455	5434789		
			16501 12:40:19	389398	5434778	24.943	1336
POST.TST	8	G1500811	16501 12:59:29	444521	5413830		
			16731 13:01:24	449536	5415794	5.386	230
PST1.GND	9	I1500911	16731 13:08:34	442882	5419052		
			16971 13:10:34	442882	5419052	0.000	240
POST.THM	10	J1501011	16971 13:11:24	442882	5419052		
			17211 13:13:24	442882	5419052	0.000	240

## **APPENDIX 6**

### **Radiometric Calibration Procedures and Results Cosmic Stripping Tests Hover Range Plots Calibration Spectra for Radon, Cosmic and Aircraft Rad-alt and Baro-alt Calibrations**

## **RADIOMETRIC CALIBRATION RANGE**

### **1. INTRODUCTION**

Mineral Resources Tasmania requires that radiometric data be calibrated for all helicopter-borne gamma spectrometer surveys. The data are to be used to estimate the concentrations in the ground for the three radio elements, K, U, Th. Using properly calibrated equipment the results are independent of survey variables such as survey height.

### **2. SPECTROMETER CALIBRATIONS**

#### **2.1 Calibration frequency**

Spectrometer calibrations should be carried out every 12 months. For this MRT project, the aircraft spectrometer system was recalibrated on 15 December 2000 prior to the commencement of data acquisition

#### **2.2 Calibration pads and stripping ratios**

The helicopter spectrometer system was calibrated over the approved set of calibration pads held by the CSIRO at Londonderry, NSW, for the determination of stripping ratios on 15 December 2000.

Before and after the pad calibration, background and thorium source tests are carried out and recorded digitally. If the pre and post calibration dead-time and background corrected count rate in the thorium window or the two thorium stripping ratios,  $\alpha$  and  $\beta$  vary by more than 3 percent, the calibration are repeated. All pads are located a distance of a least 20 metres from the detector when they are not being measured.

If the thorium peak position is found to drift by more than one channel at any time during the survey or during the pad calibrations, the spectra from each pad is energy calibrated and the standard window count rates calculated following the procedure described for the portable spectrometer. Provided that the thorium peak is stable to  $\pm 1$  channel during the entire survey and during the pad calibrations, then the closest whole number of channels corresponding to the standard windows can be used. The stripping ratios are then determined from the standard window count rates using the program PADWIN, with the geometric correction factors set to unity, since they have no effect on the stripping ratios.

### **2.3 Attenuation coefficients and sensitivity coefficients**

The height attenuation coefficients and system sensitivities were determined using a series of flights on 2 January 2001 over the Bruthen calibration range near Bairnsdale, Victoria. The actual measurement heights are close to 25 m, 35 m, 50 m, 65 m, 95 m, 110 m, 125 m, 140 m, 150 m, 165 m and 190 m both over land and water. Sufficient data was recorded to ensure reliable conversion of instrument counts to radioelement concentrations. The calibration range was surveyed with a calibrated portable spectrometer on the same day as the calibrations flights.

The data are corrected for aircraft background, cosmic effect and STP and stripped prior to the calculation of exponential height attenuation coefficients.

### **2.4 Radon calibration**

Geo Instruments removed radon background using the spectral ratio technique.

### **2.5 Cosmic and aircraft background test flights**

A series of flights were made over Lake King close to Bairnsdale to relate the cosmic-ray window to the cosmic and aircraft background components of each window. A suitable series of flights are at 300 m and at 3000 m intervals. The flying time at each altitude was for a minimum of 20 minutes.

## **3. GROUND CALIBRATION**

The ground calibrations of the airborne calibration range were measured with a calibrated portable spectrometer. In order to calibrate the airborne gamma spectrometer, the radioelement concentrations of the test strip must be measured at the same time as the calibration flight so that the soil moisture content changes between airborne survey and ground measurements are minimised. The ground sampling scheme entailed minute observation periods at intervals of 10 m, 30 m, 40 m, 50 m, 65 m, 80 m, 95 m, 120 m and 160 m along perpendicular lines in a north/south and east/west direction over the centre point of the hover range.

## **4. DELIVERABLES FROM CALIBRATION RANGE**

The results of airborne and ground calibrations, and tabulations and graphs of the results are included in this Appendix.



Bruthen Hover Range Test Data Jan 2001  
 JET RANGER VH-JWF GR820 Ser#173 16.8 litre detector #AGSO137

	Cosmic Coeff	Aircraft Bgrnd	Height Att Coeff (u)
Total count	0.6673	67.314	0.0068
Potassium	0.0257	6.682	0.0091
Uranium	0.0249	2.668	0.0051
Thorium	0.0396	0.7368	0.0075

System Sensitivities		
K Sensitivity	cnts/%K	81.157
U Sensitivity	cnts/ppm	6.611
Th Sensitivity	cnts/ppm	3.167

System Stripping Coefficients		
Alpha	0.2728	T/U
Beta	0.4435	T/K
Gamma	0.7861	U/K
a	0.0633	U/T
g	-0.0014	K/U

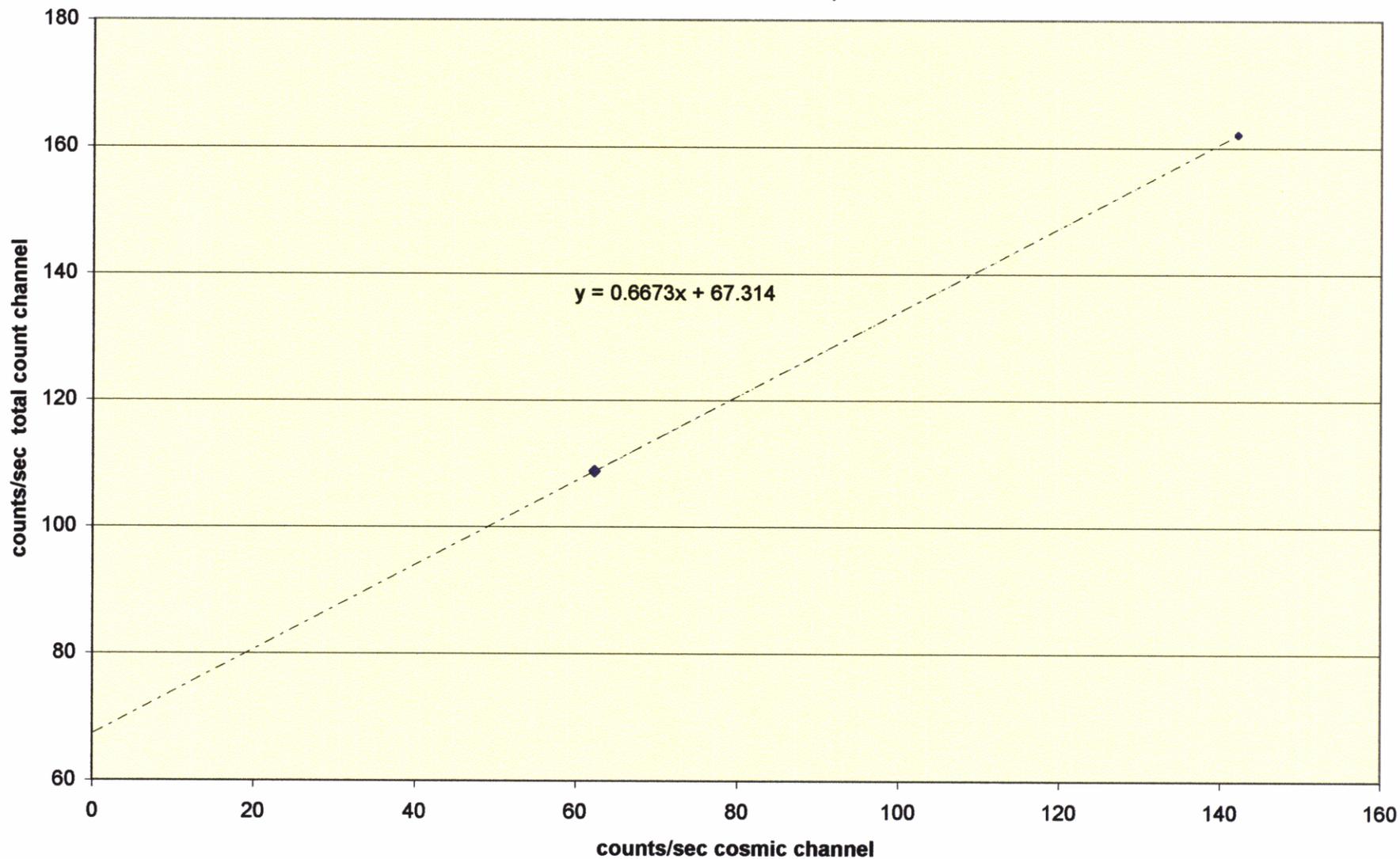
Hover Range Concentrations		
K40	1.708	%k
Un	2.61	ppm
Th	12.732	ppm

Alt(AGL mtrs)	Measured Counts				Stripped Brnd corr Counts			Concentrations			Acc Time
	K40 Cnts	U Cnts	Th Cnts	Total Cnt	K40 Str/s	Un Str/s	Th Cnts/s	K40 %	U ppm	Th ppm	Secs
16.5	294.5	59.5	87.6	2443.4	223.68	26.87	81.13	130.96	10.30	6.37	1
35.0	258.5	54.3	79.4	2176.0	193.47	23.56	73.28	113.27	9.03	5.76	1
50.0	226.5	49.4	70.4	1990.4	167.63	20.81	64.50	98.14	7.97	5.07	1
65.6	195.8	45.3	62.8	1754.5	140.79	18.57	57.07	82.43	7.11	4.48	1
81.0	171.7	42.7	55.4	1580.2	121.11	17.33	49.96	70.91	6.64	3.92	1
95.5	154.9	40.0	51.3	1449.0	107.66	16.00	46.11	63.04	6.13	3.62	1
109.0	139.7	37.2	46.7	1322.5	96.35	15.09	41.45	56.41	5.78	3.26	1
125.0	123.7	33.8	41.7	1208.0	84.23	14.11	36.69	49.31	5.41	2.88	1
139.0	110.4	32.0	38.0	1111.0	72.51	13.50	33.09	42.45	5.17	2.60	1
152.0	98.7	29.8	35.0	1025.4	63.82	12.16	30.02	37.36	4.66	2.36	1
168.0	89.6	28.1	31.8	938.5	56.82	11.55	26.81	33.27	4.43	2.11	1
187.0	79.8	26.2	28.6	854.7	48.93	10.76	23.91	28.65	4.12	1.88	1

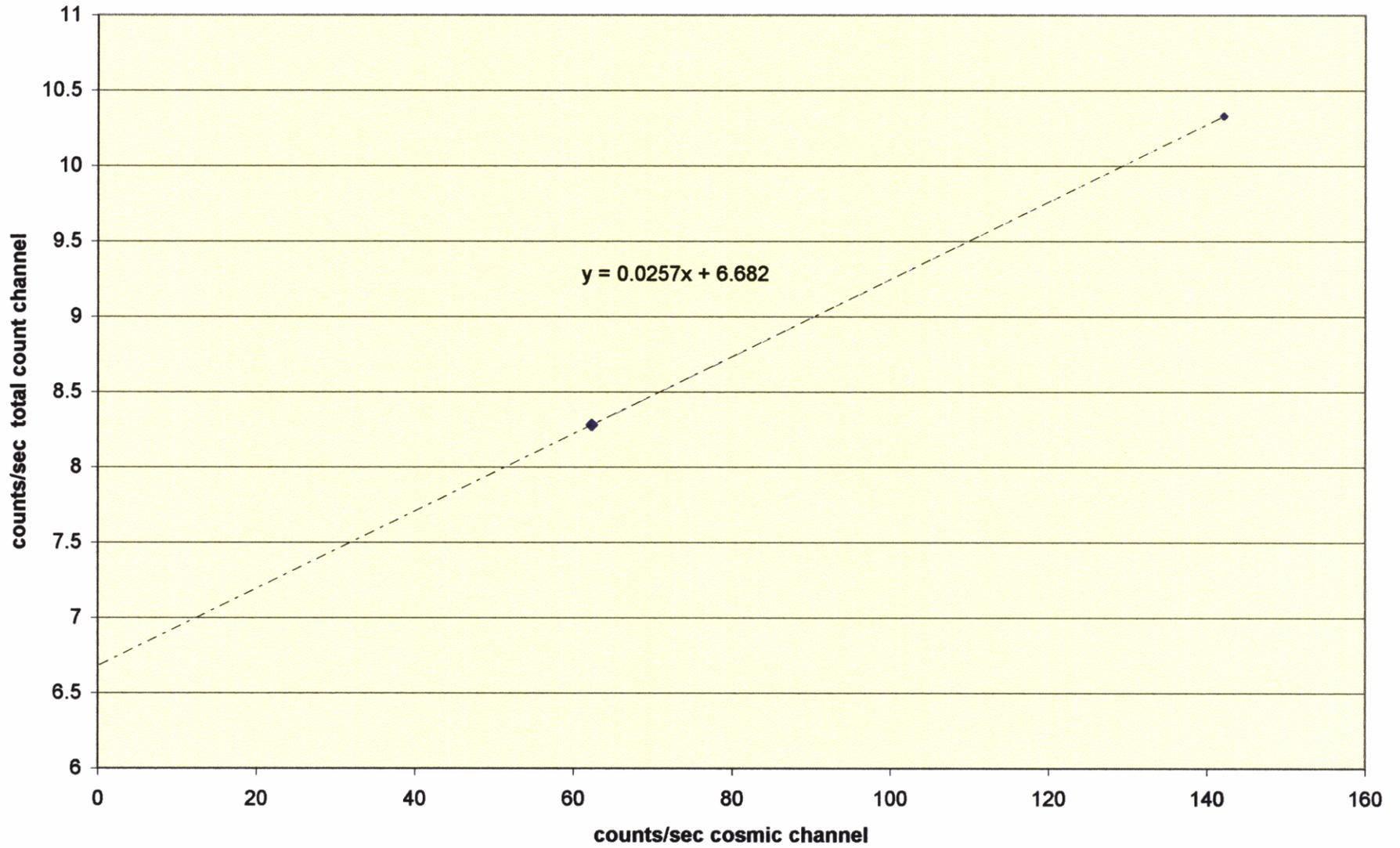
Lake Hover Background Raw and corrected counts/sec							Acc Time
Alt(m)	K40 cps	Un cps	Th cps	K40 cor	Un cor	Th cor	Secs
17.2	13.7	10.0	3.4	5.33	9.07	2.77	1
36.0	14.0	10.3	3.4	5.40	9.37	2.75	1
50.0	13.9	10.6	3.5	5.05	9.65	2.83	1
64.0	15.1	10.8	3.6	6.07	9.82	2.92	1
80.0	14.8	11.4	3.5	5.34	10.45	2.78	1
95.0	14.2	11.1	3.4	4.99	10.17	2.70	1
109.0	13.1	10.5	3.6	4.30	9.52	2.94	1
124.0	12.1	9.4	3.5	4.16	8.44	2.91	1
139.0	12.6	9.2	3.5	4.81	8.24	2.92	1
154.0	12.0	9.2	3.7	4.17	8.19	3.12	1
170.0	11.8	9.0	3.8	4.09	7.96	3.23	1
186.0	11.8	8.7	3.6	4.37	7.72	3.05	1

Cosmic background Height Attenuation Coefficients					
Alt (m)	AM Tcount	K40	Un	Th	Coe
238	108.83	8.28	4.22	3.2	62.22
2421	162.09	10.33	6.21	6.36	142.04

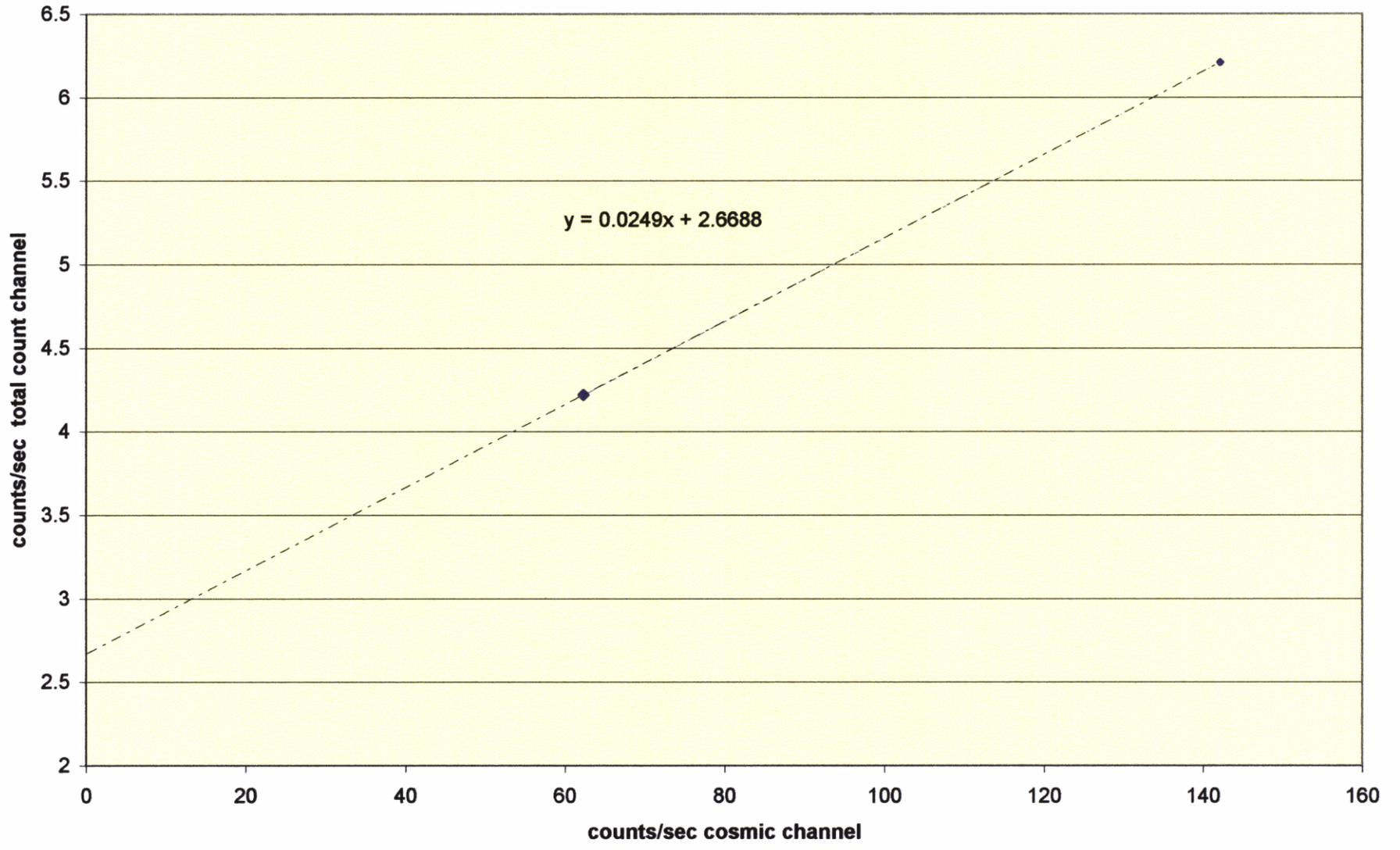
**Cosmic Stripping Test Total Count Channel Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



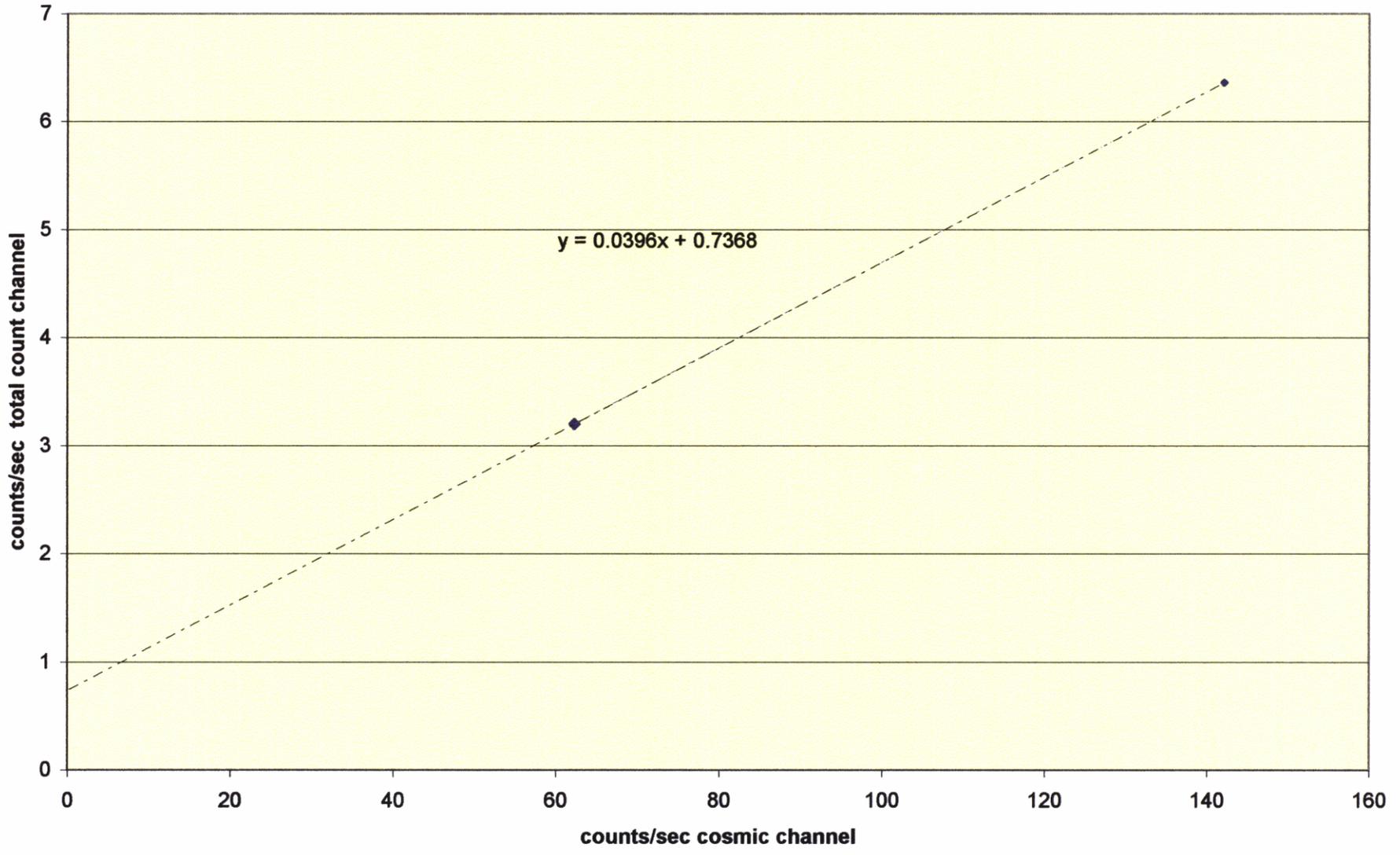
**Cosmic Stripping Test Potassium Channel Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



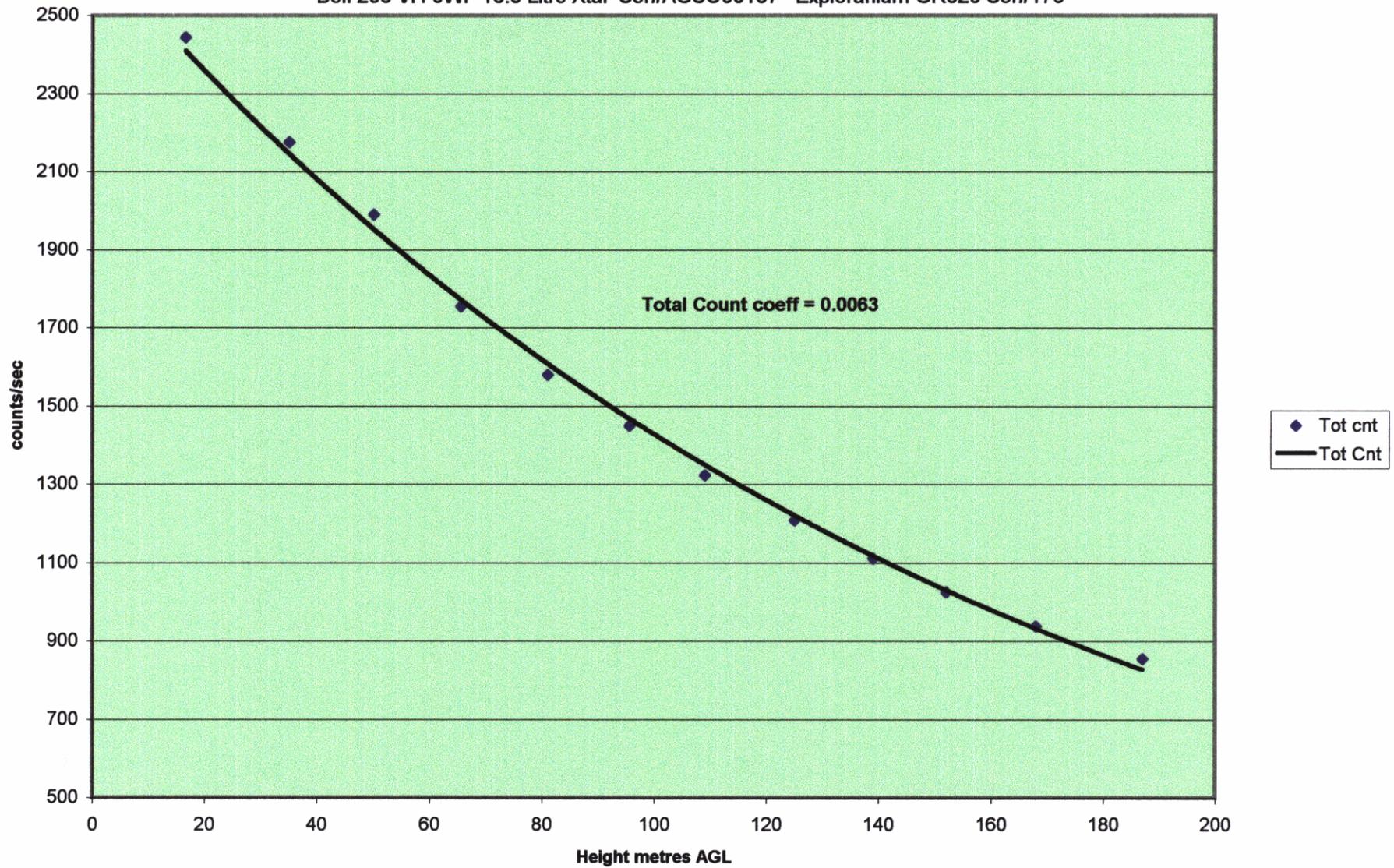
**Cosmic Stripping Test Uranium Channel Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



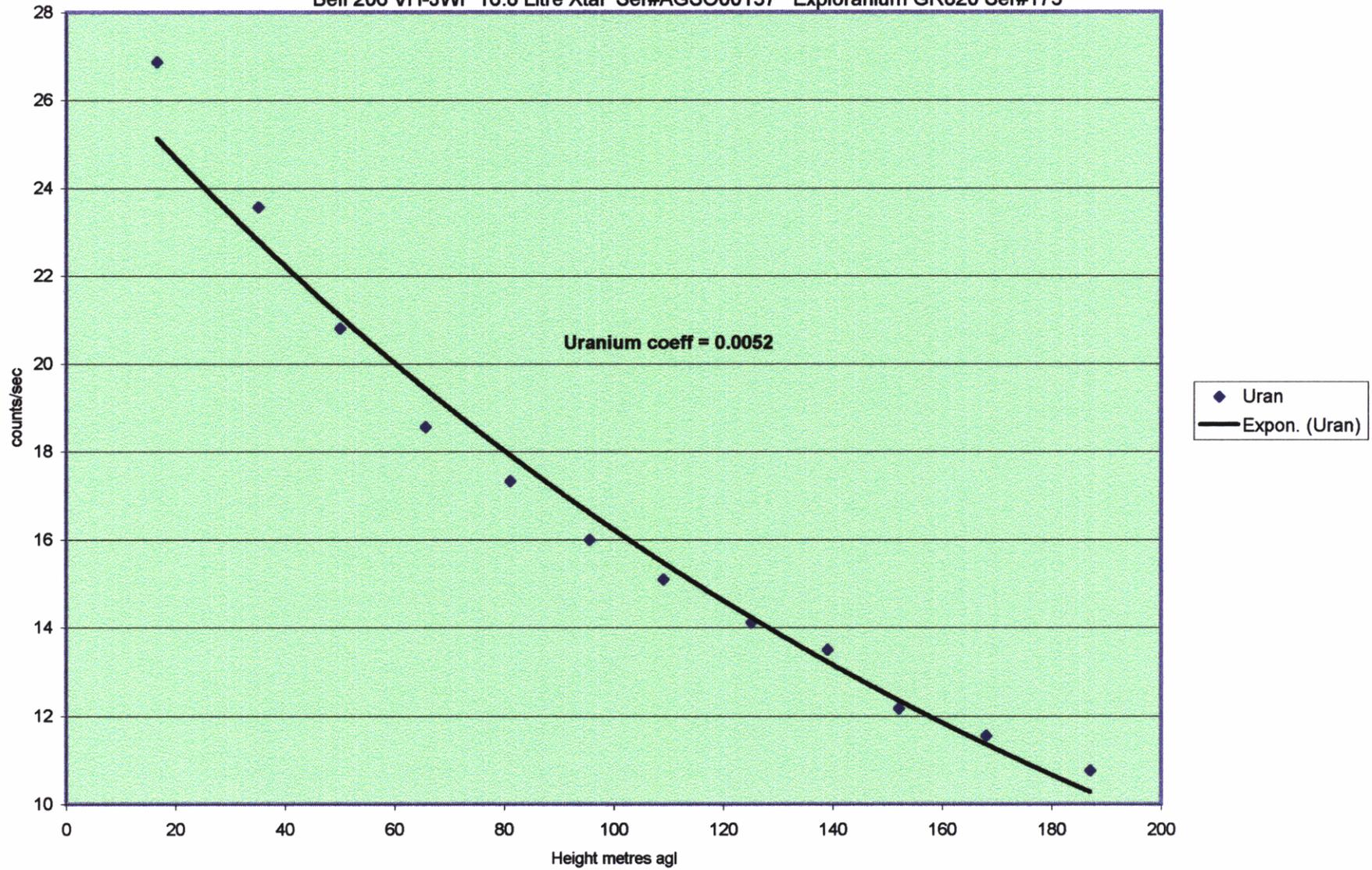
**Cosmic Stripping Test Thorium Channel Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



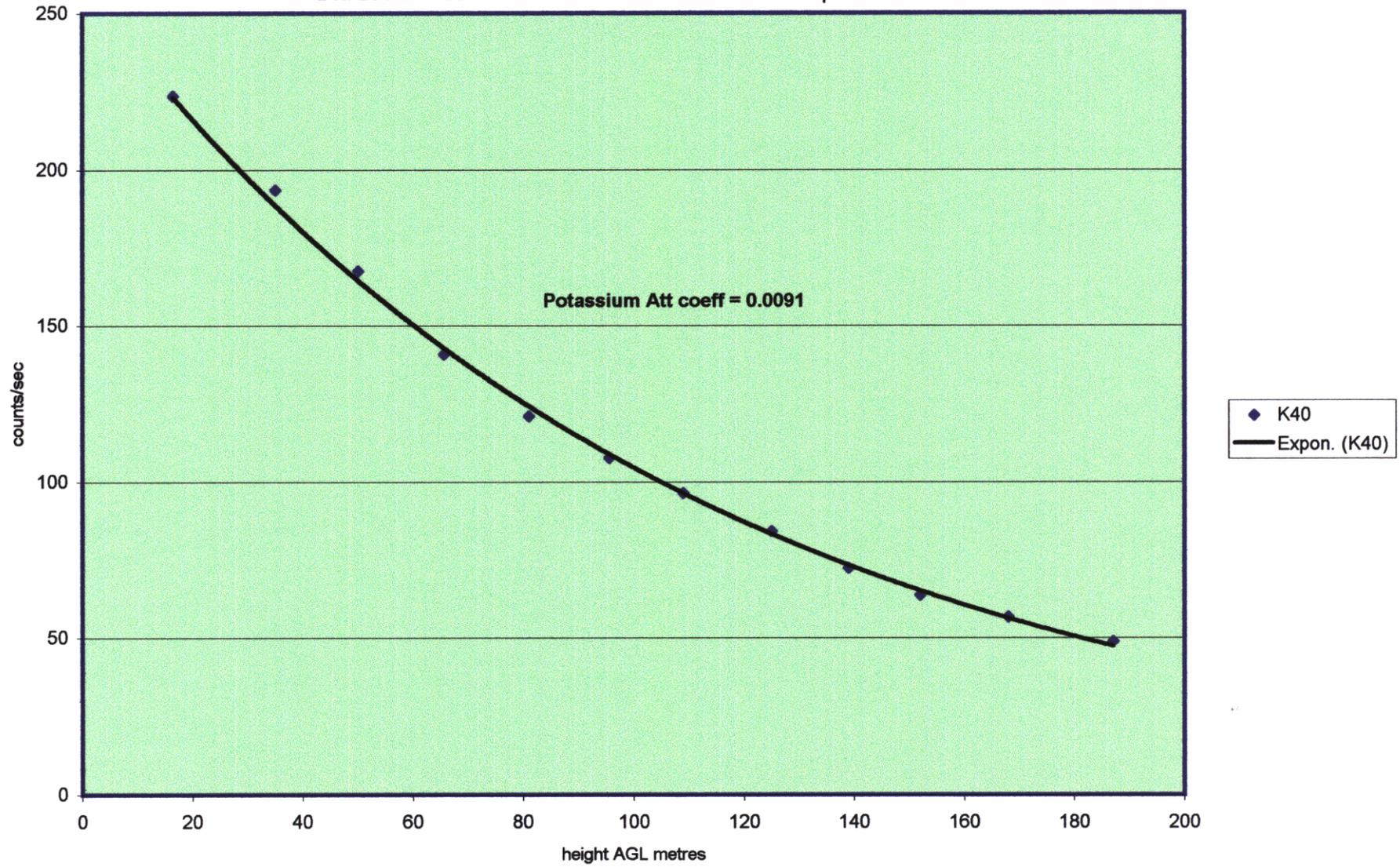
**Bruthen Hover range Total Count values Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



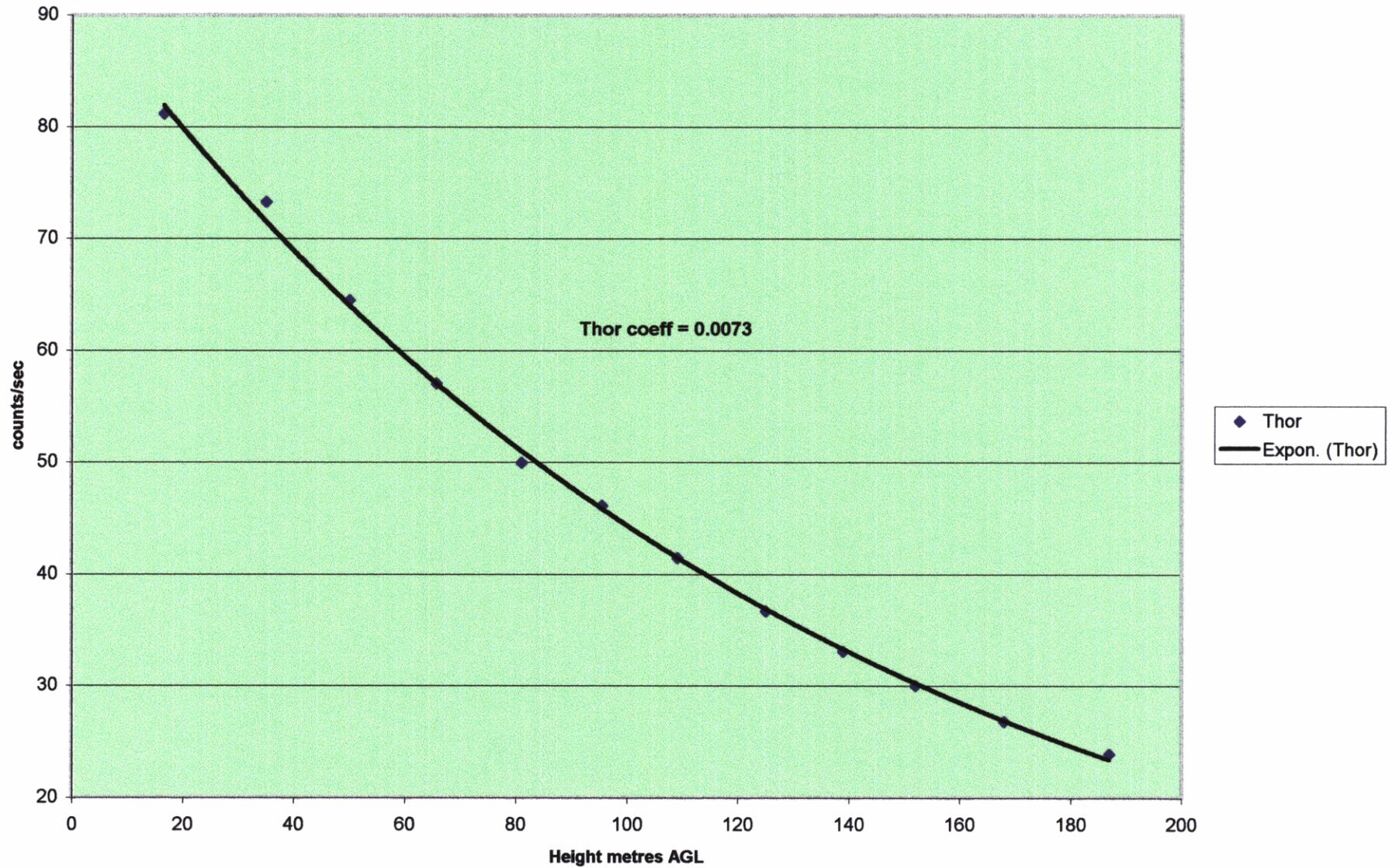
**Bruthen Hover range Uranium values Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



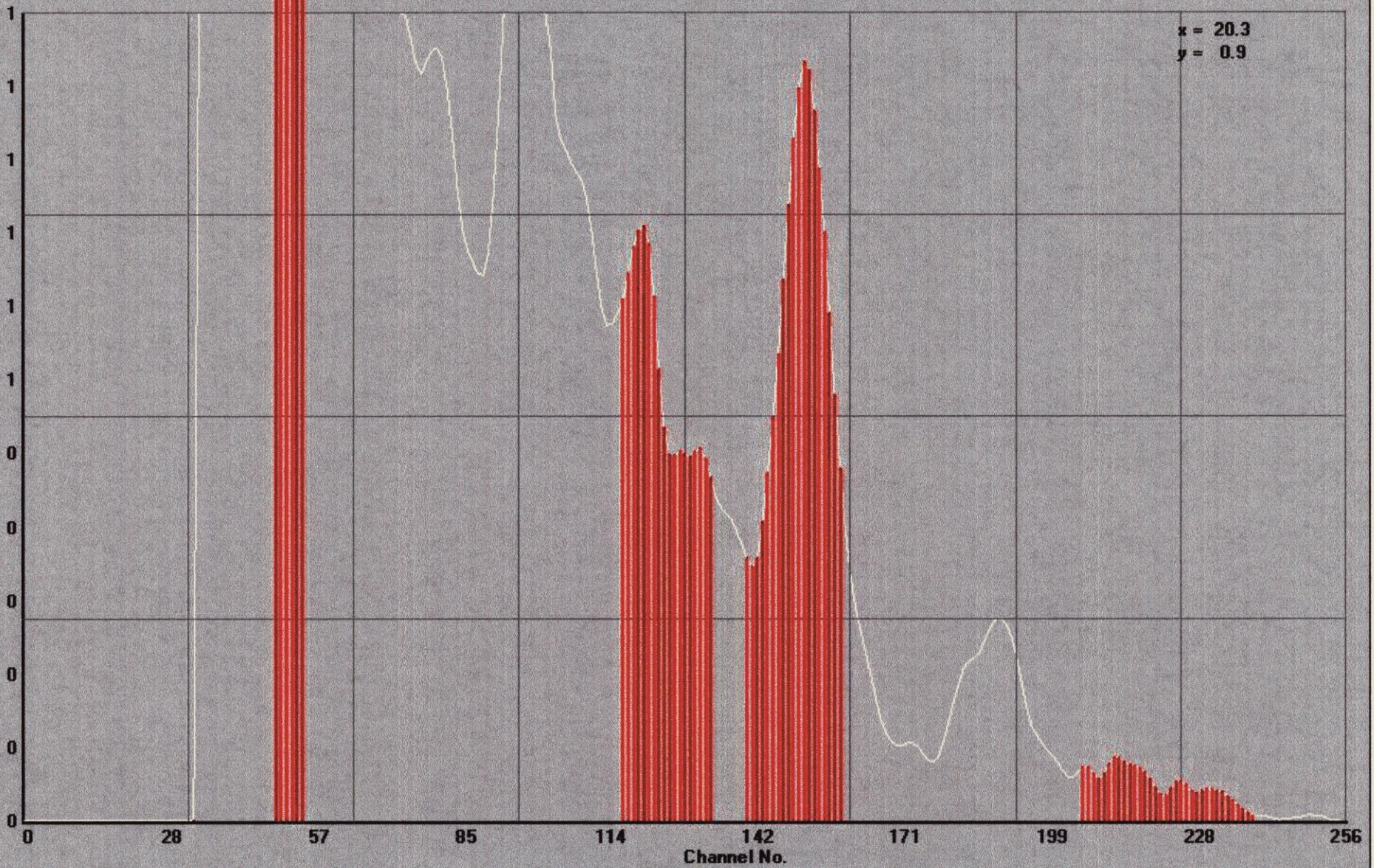
**Bruthen Hover range Potassium values Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173



**Bruthen Hover range Thorium values Jan 2001**  
Bell 206 VH-JWF 16.8 Litre Xtal Ser#AGSO00137 Exploranium GR820 Ser#173

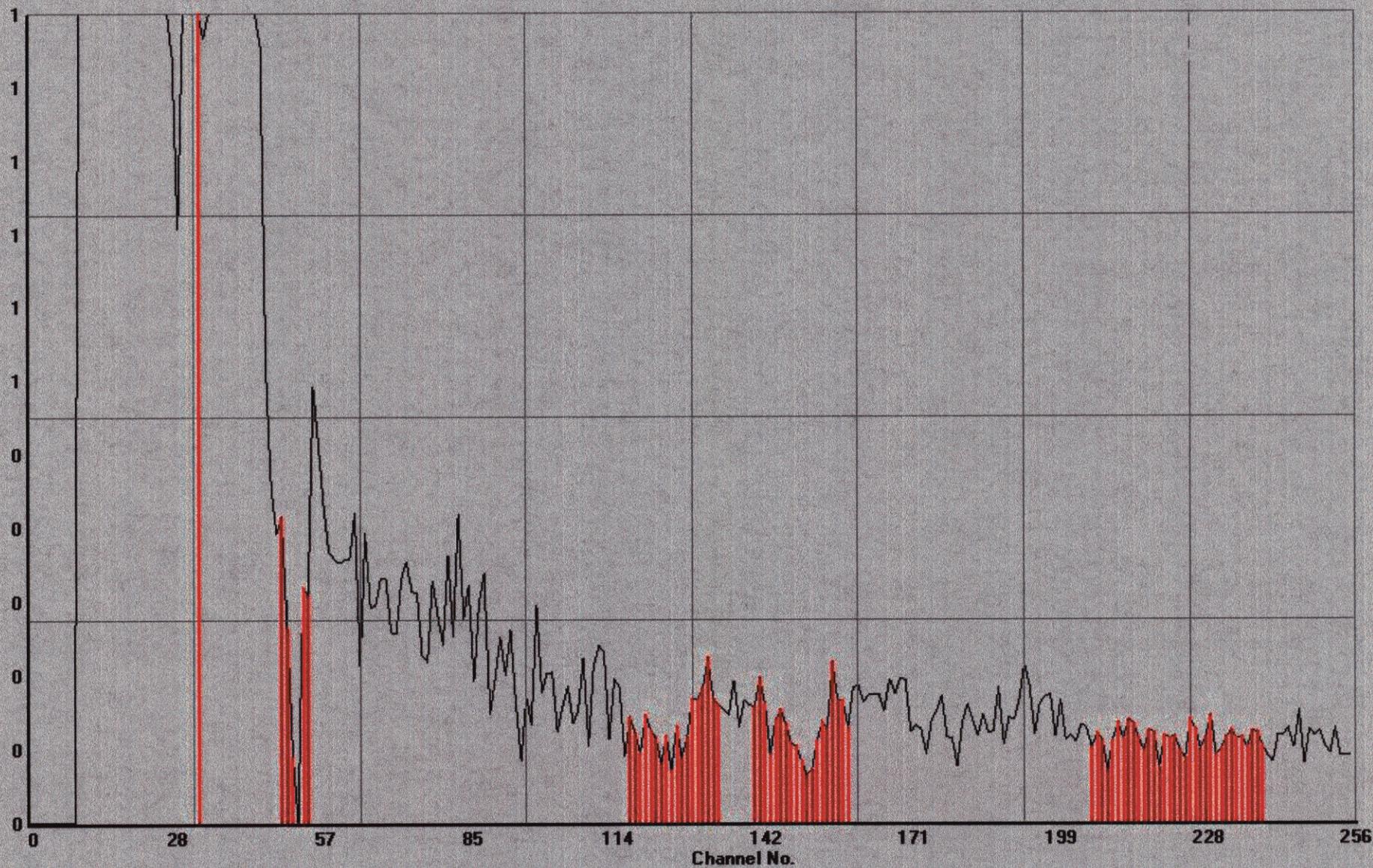


### Calibration Spectrum - Radon



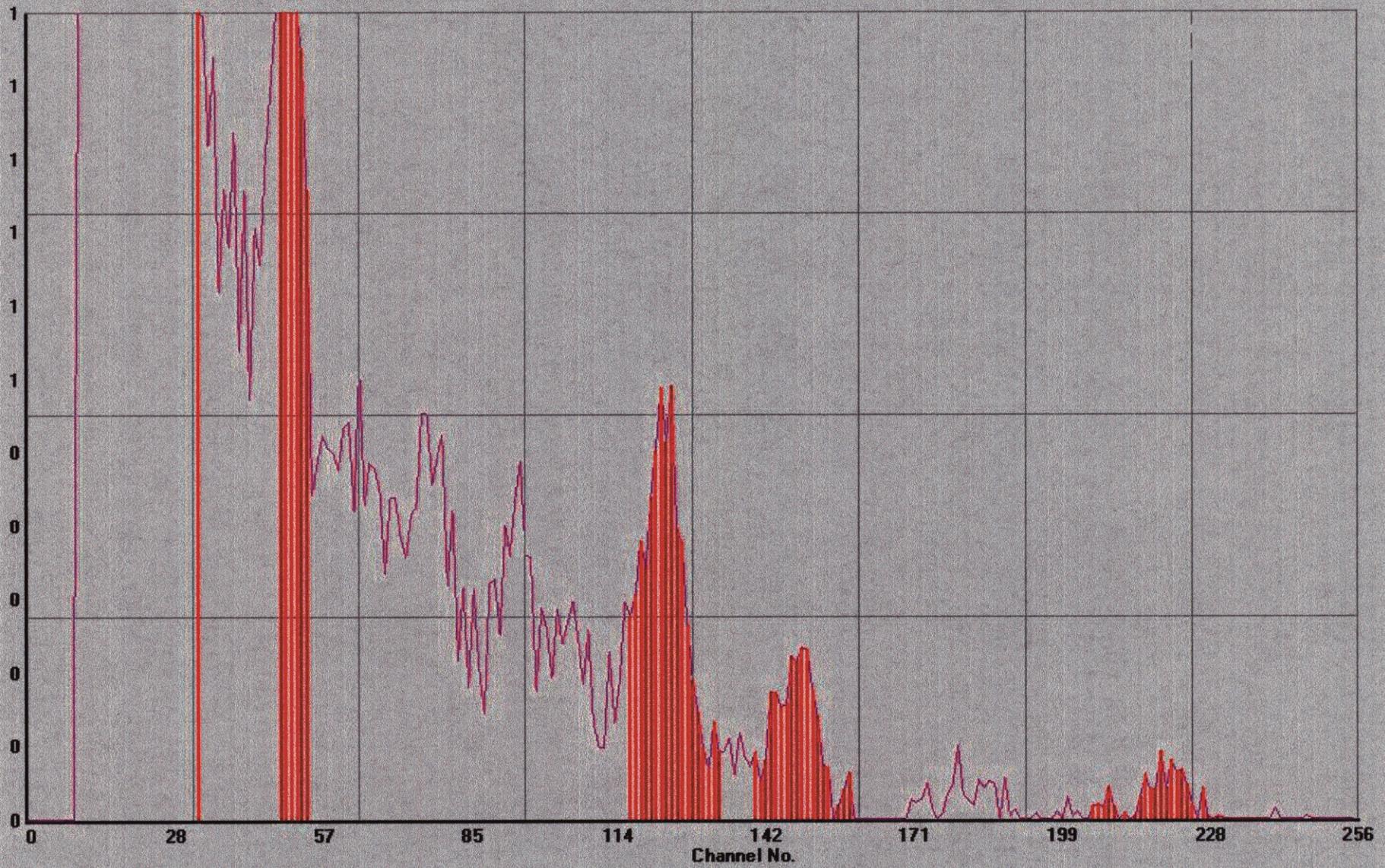
Dismiss

Calibration Spectrum - Cosmic

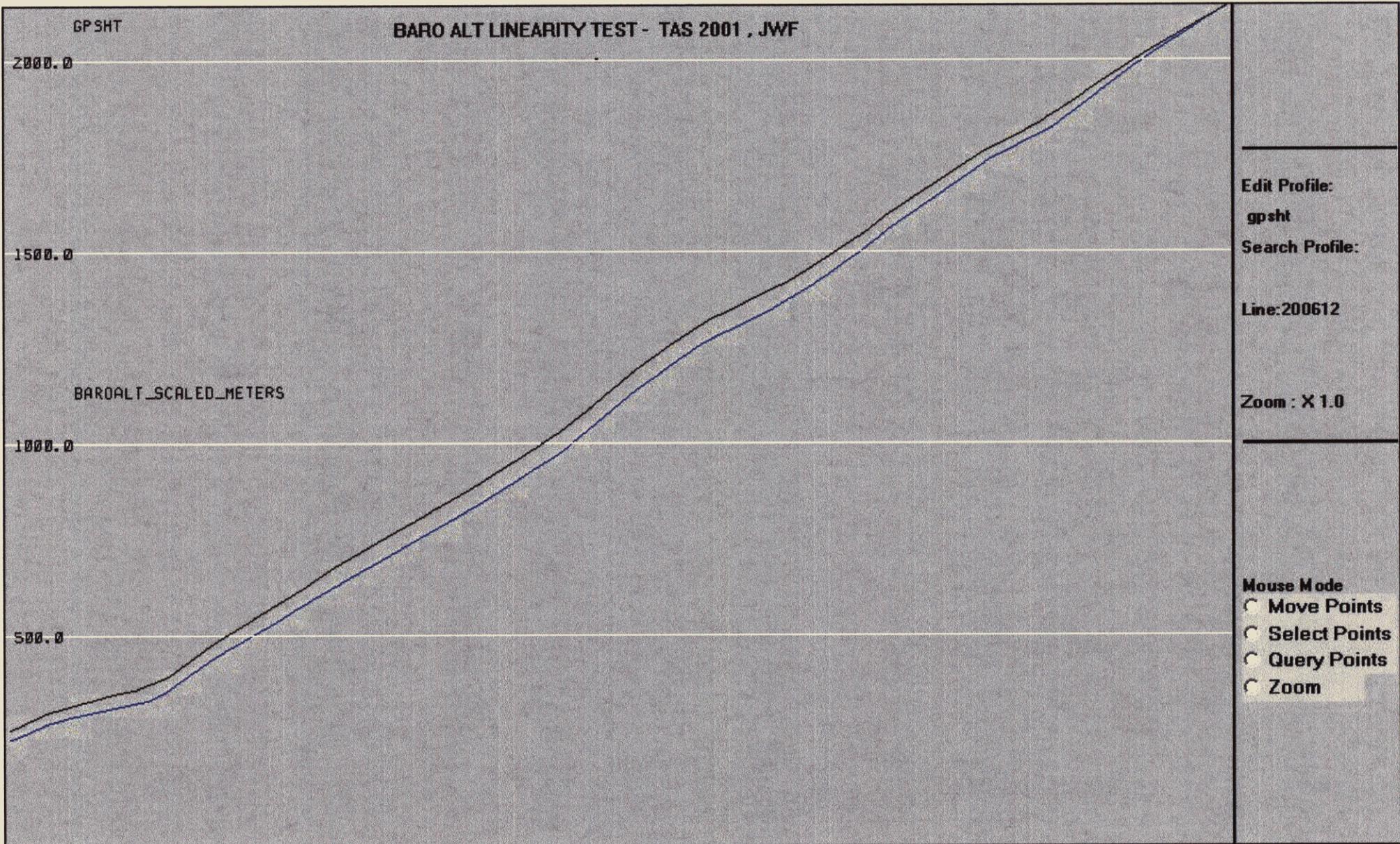


Dismiss

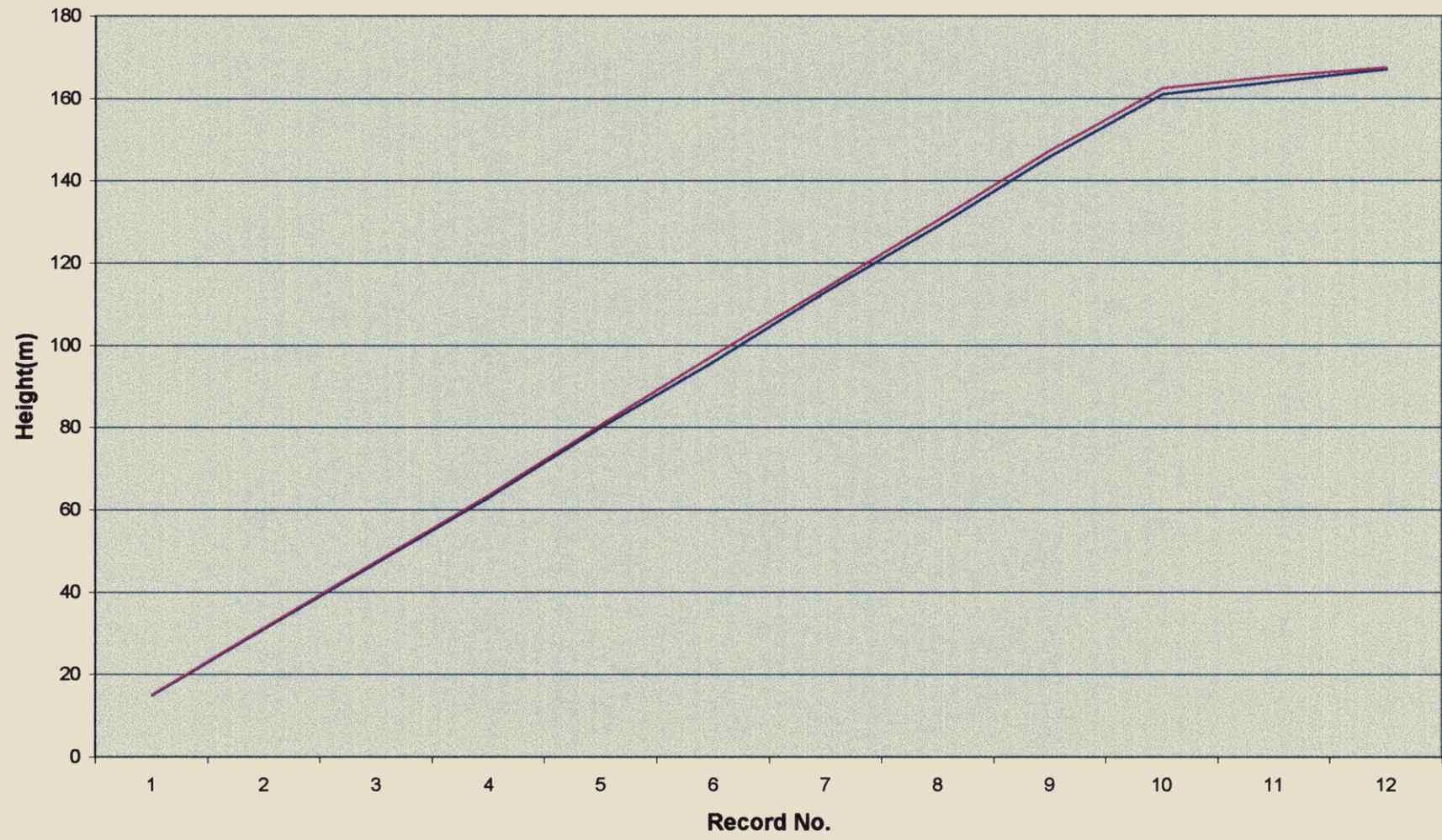
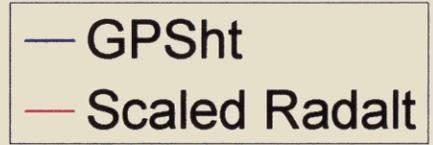
Calibration Spectrum - Aircraft



Dismiss



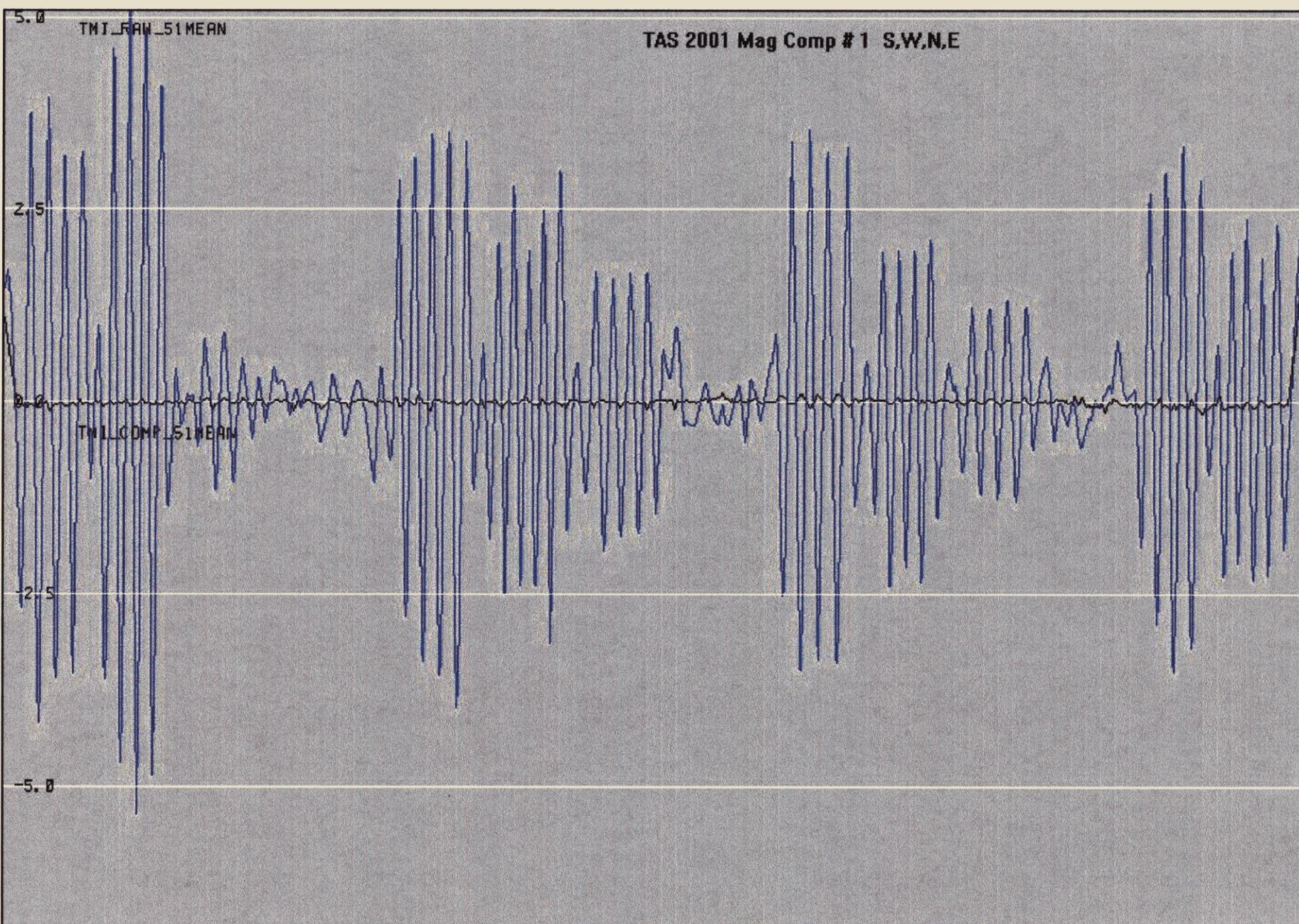
# Radalt V GPS Alt - Scaled



## **APPENDIX 7**

### **Magnetometer Compensation Box**

TAS 2001 Mag Comp #1 S,W,N,E



Edit Profile:

TMI\_RAW\_51mean

Search Profile:

Line:200711

Zoom : X 1.0

Mouse Mode

- Move Points
- Select Points
- Query Points
- Zoom

## **APPENDIX 8**

### **Location Maps for Base Stations Sample Diurnal Magnetic Record**

## **DIURNAL RECORDS**

Diurnal magnetic data files were delivered in digital form to MRT.

Two examples of a diurnal magnetic field plot are given in this appendix, one showing a relatively quiet day, and the other showing a magnetic storm.

Difference ( 1.0-sec samples)

+ -1 to 1 (Range 2 nT)

Gradient (threshold=10nT/10mins)

+ 0 to 15 (Range 15 nT)

Deviation from 60-sec Chord (threshold=1nT)

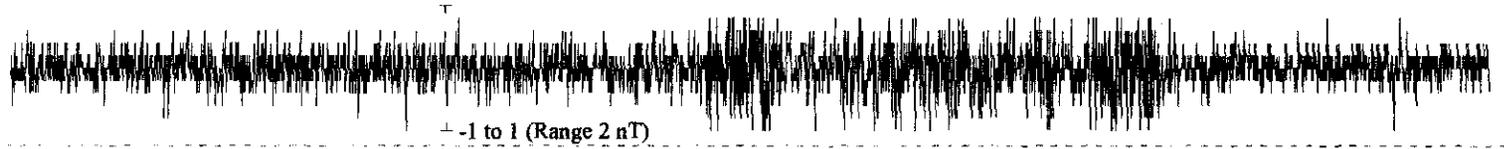
+ 0 to 2 (Range 2 nT)

Total Magnetic Intensity ( 1.0-sec samples)

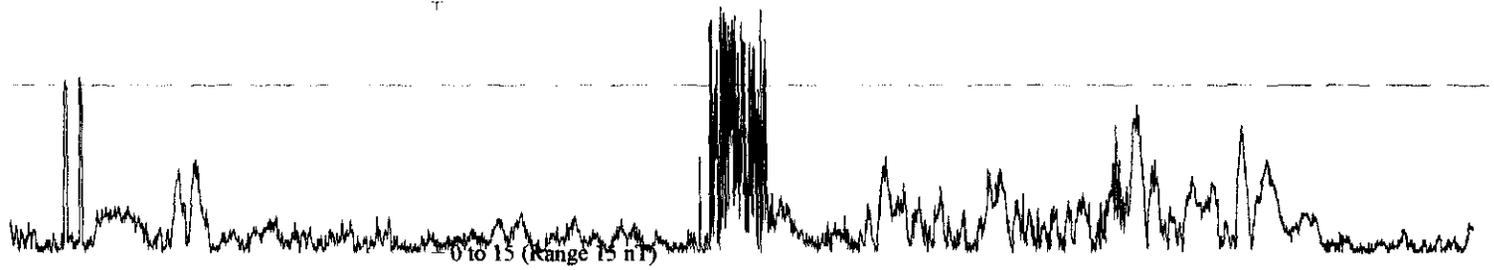
+ 62050 to 62075 (Range 25 nT)

00:00 (00:00:00 UTC) 04:00:00 (04:00:00 UTC) 08:00:00 (08:00:00 UTC) 12:00:00 (12:00:00 UTC) 16:00:00 (16:00:00 UTC) 20:00:00 (20:00:00 UTC) 00:00:00 (00:00:00 UTC)

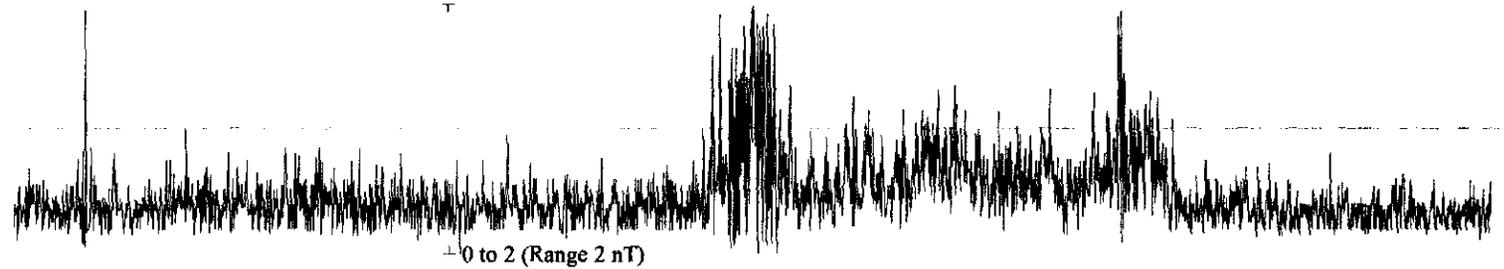
Difference ( 5.0-sec samples)



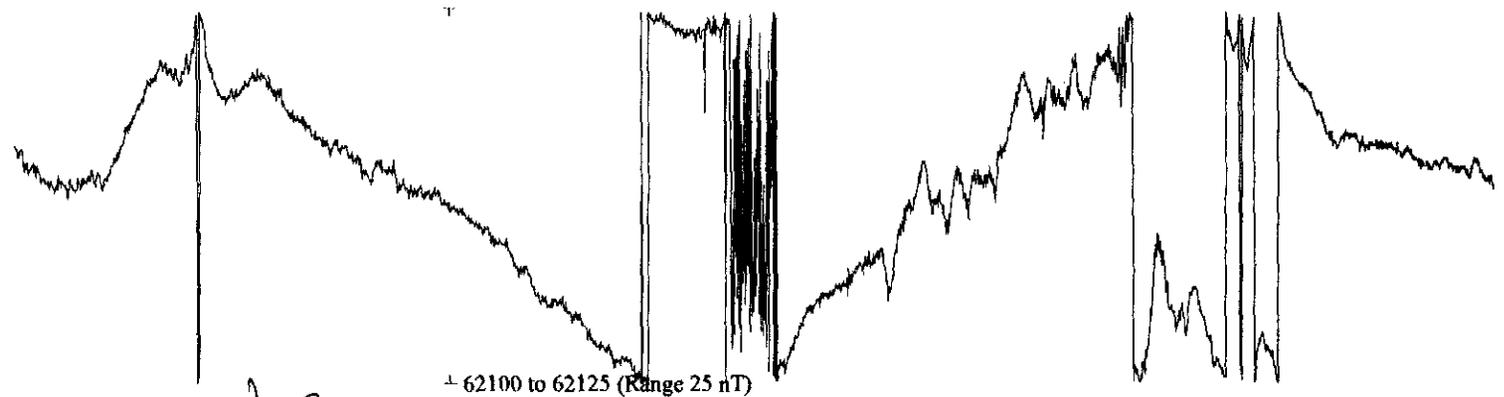
Gradient (threshold=10nT/10mins)



Deviation from 60-sec Chord (threshold=1nT)



Total Magnetic Intensity ( 5.0-sec samples)



No SURVEY OPS.

0:00 (00:00 UTC)      04:00:00 (04:00:00 UTC)      08:00:00 (08:00:00 UTC)      12:00:00 (12:00:00 UTC)      16:00:00 (16:00:00 UTC)      20:00:00 (20:00:00 UTC)      00:00 (00:00:00 UTC)

# QUEENSTOWN

## A TOURIST FEATURES

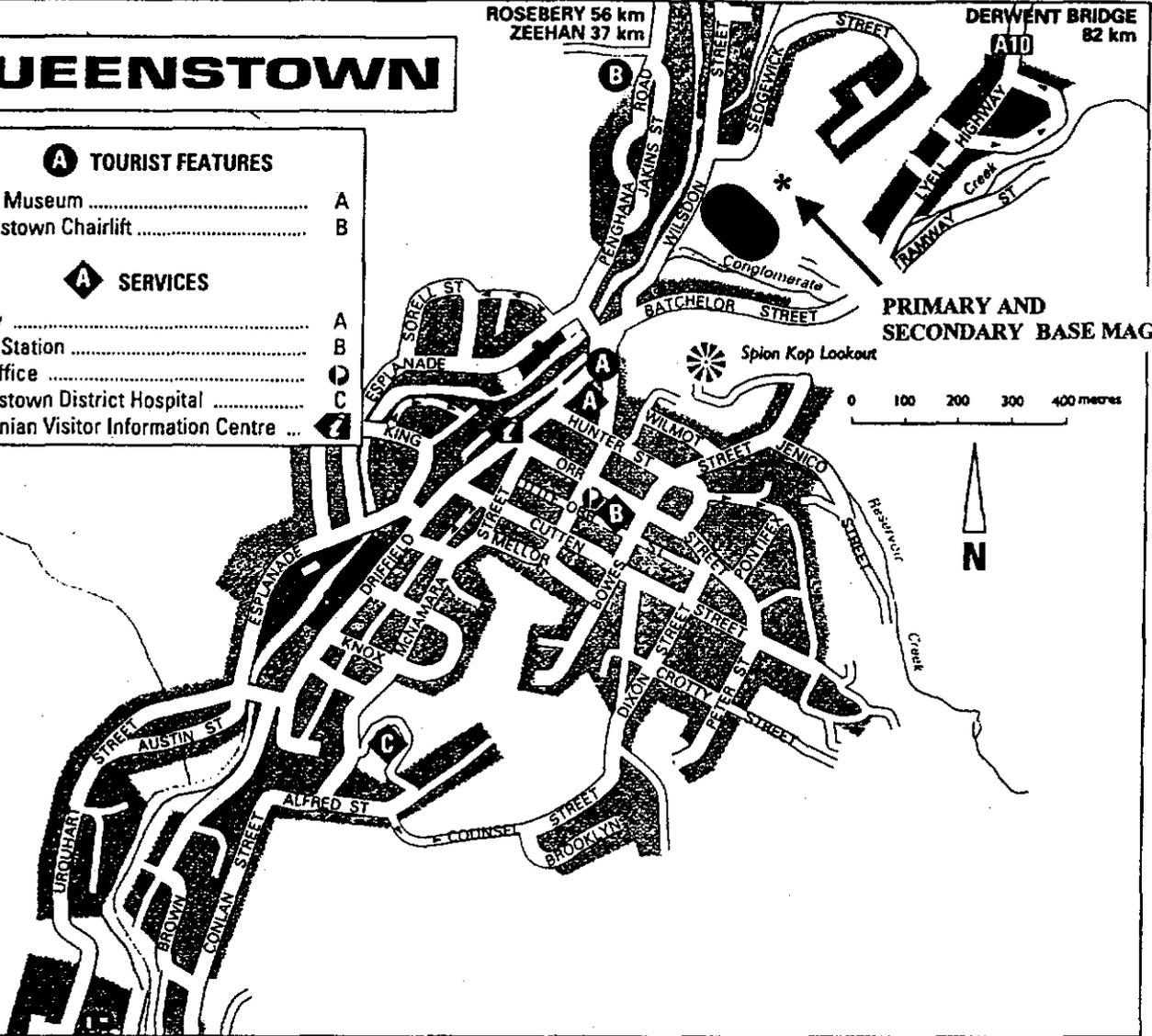
- Galley Museum ..... A
- Queenstown Chairlift ..... B

## ◆ SERVICES

- Library ..... A
- Police Station ..... B
- Post Office ..... C
- Queenstown District Hospital ..... C
- Tasmanian Visitor Information Centre ... C

ROSEBERRY 56 km  
ZEEHAN 37 km

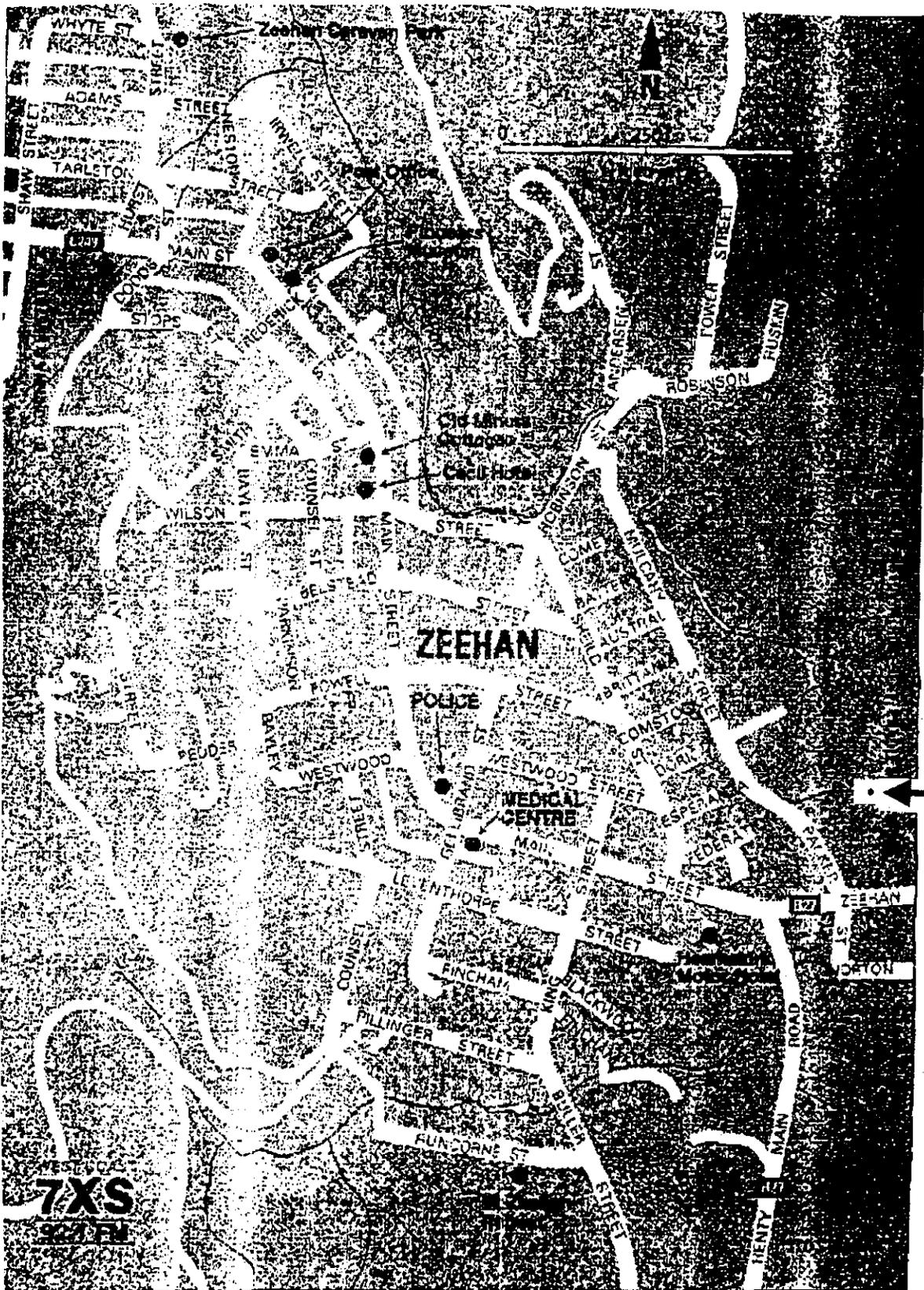
DERWENT BRIDGE 82 km



PRIMARY AND SECONDARY BASE MAG

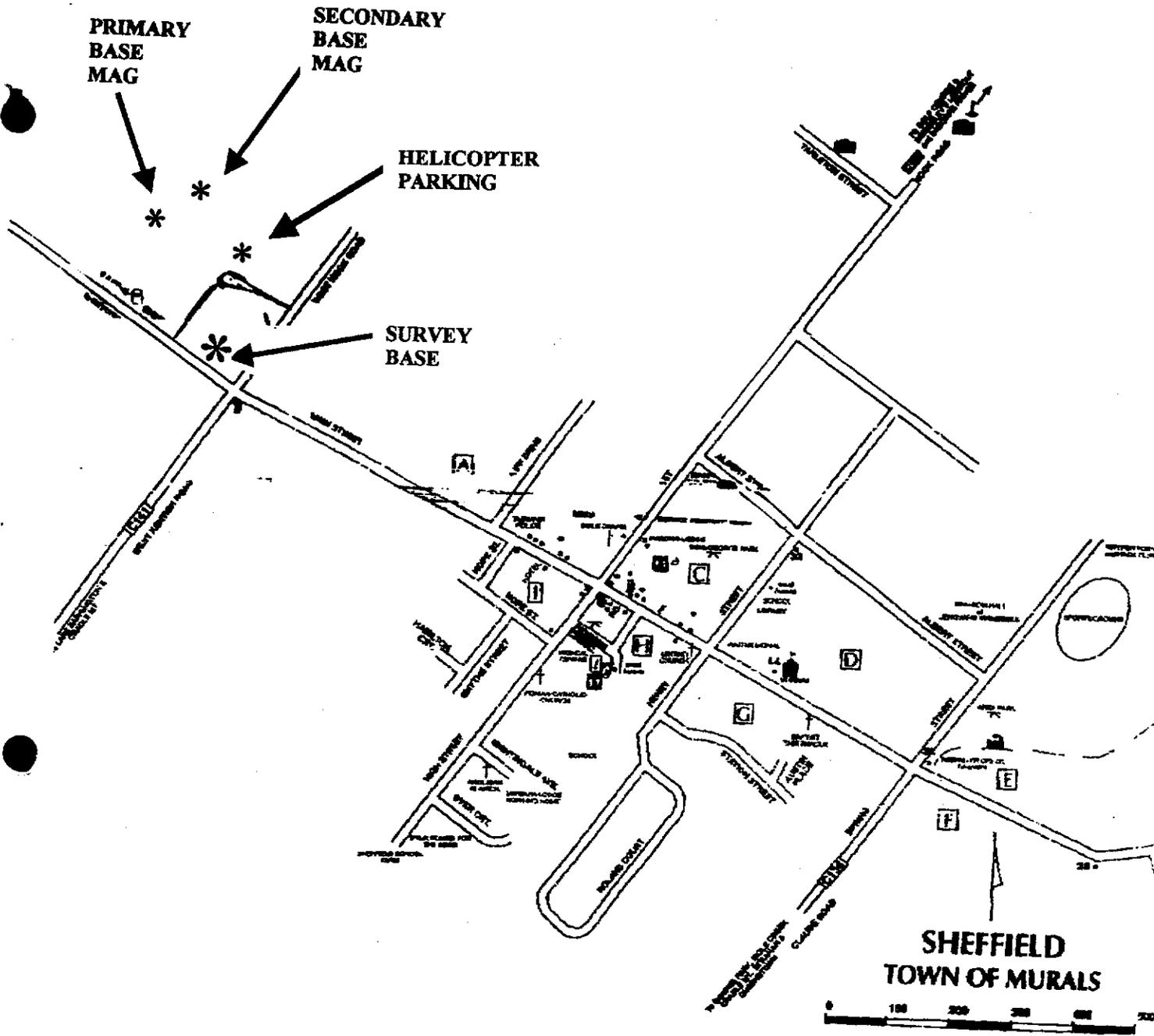
0 100 200 300 400 metres





PRIMARY  
AND  
SECONDARY  
BASE MAGS

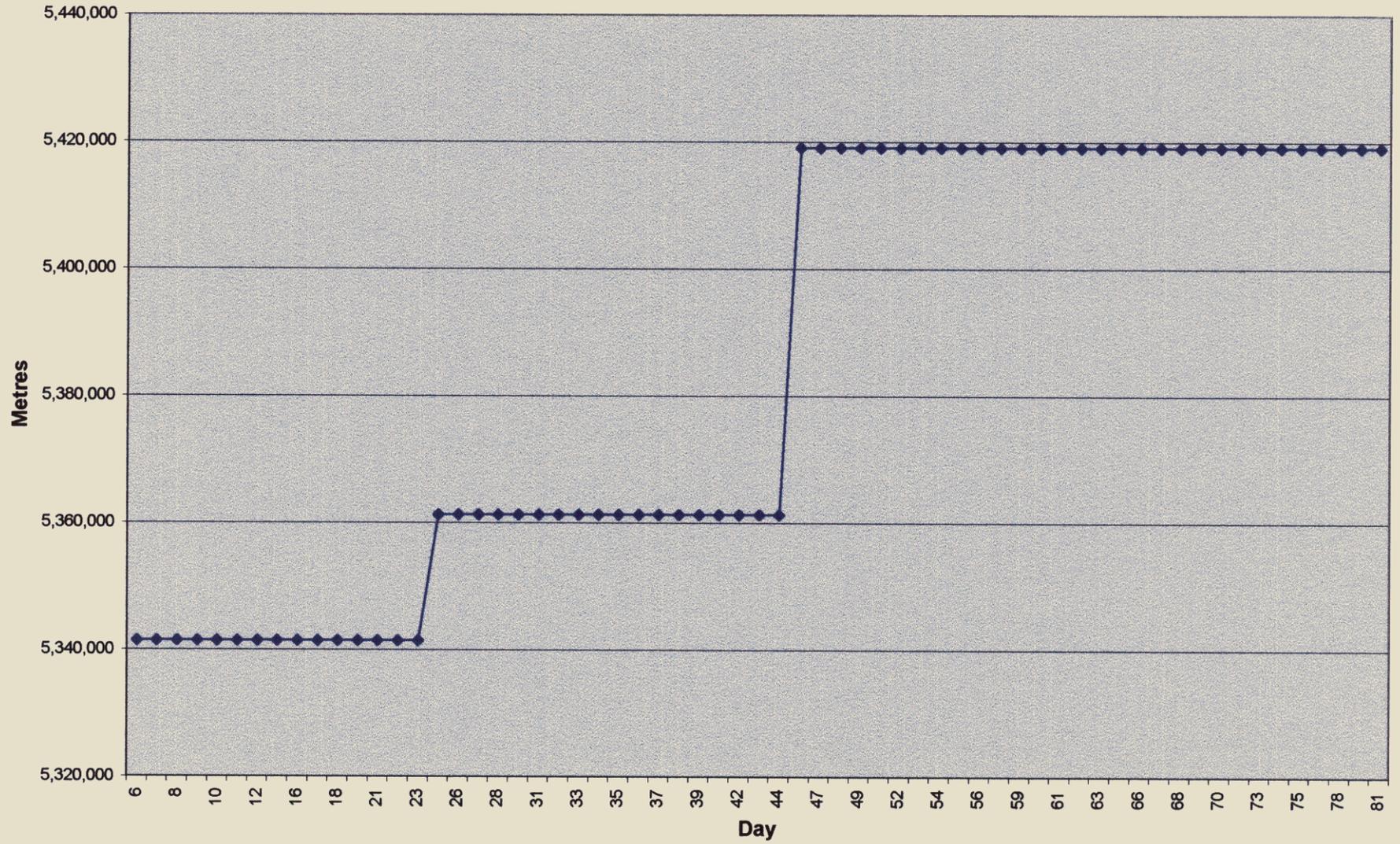
**7XS**  
92.7 FM



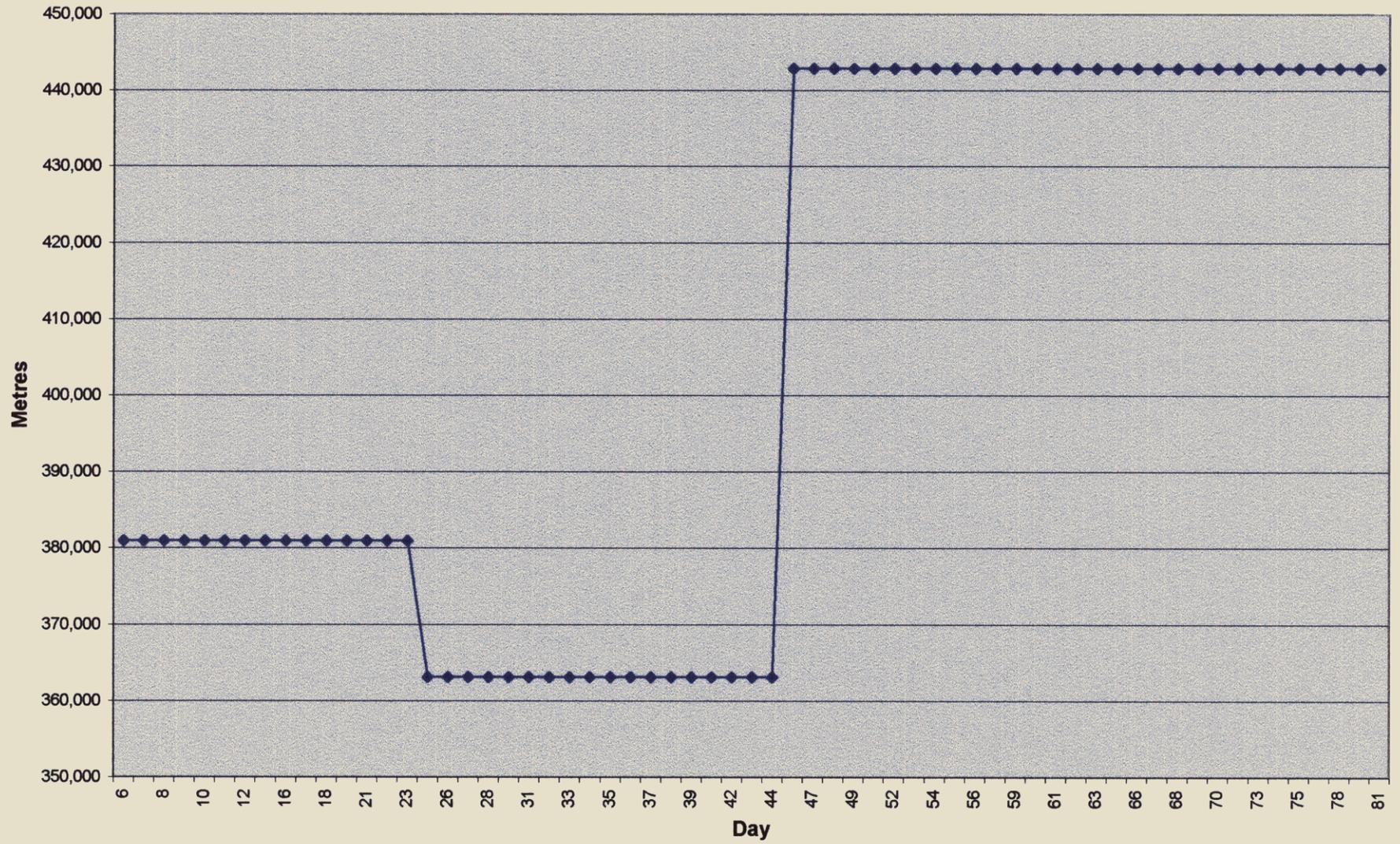
## **APPENDIX 9**

### **Plots of Parked Helicopter Position**

# HELICOPTER PARKED POSITION POST-FLIGHT NORTHING



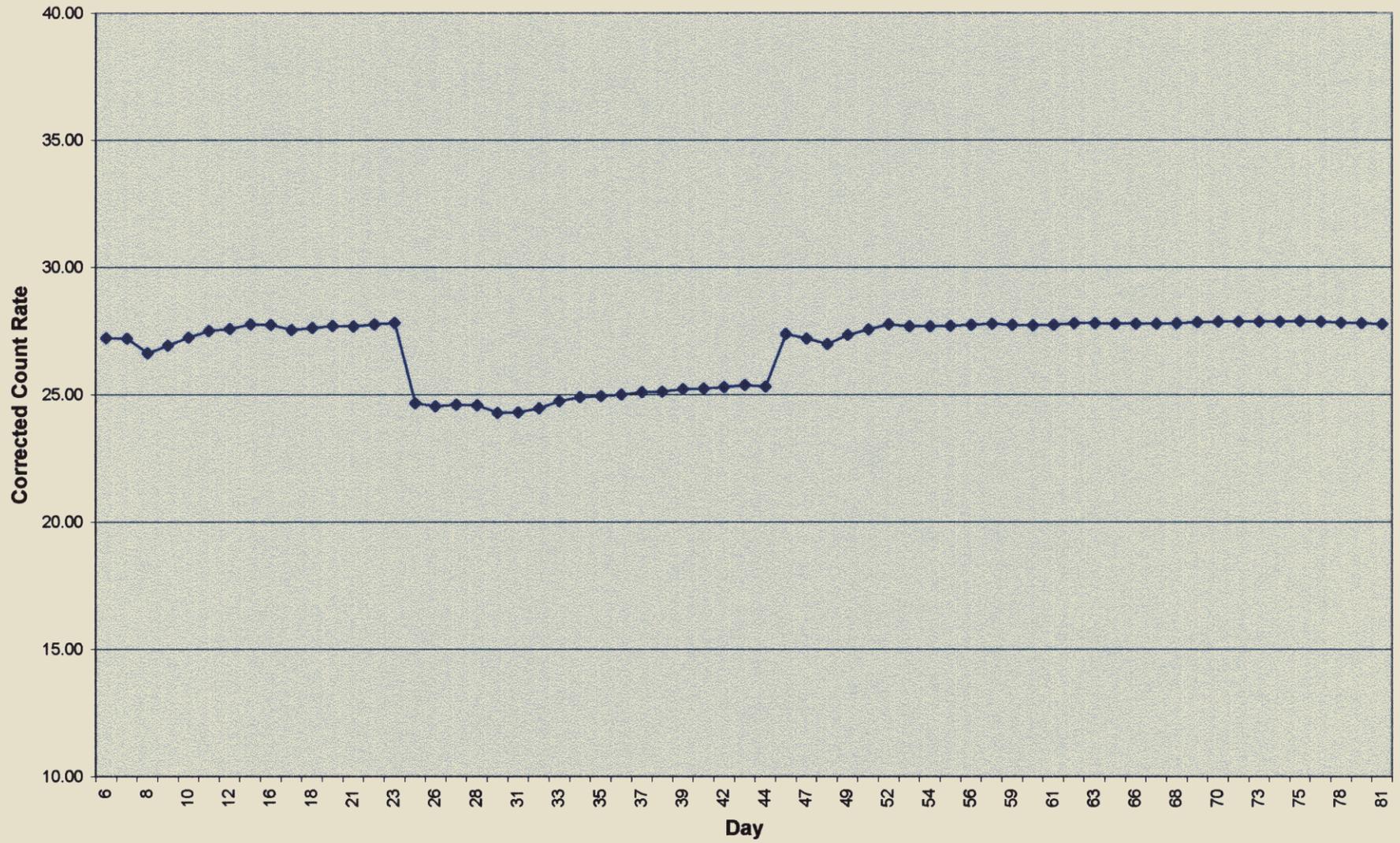
### PARKED HELICOPTER POSITION POST-FLIGHT EASTING



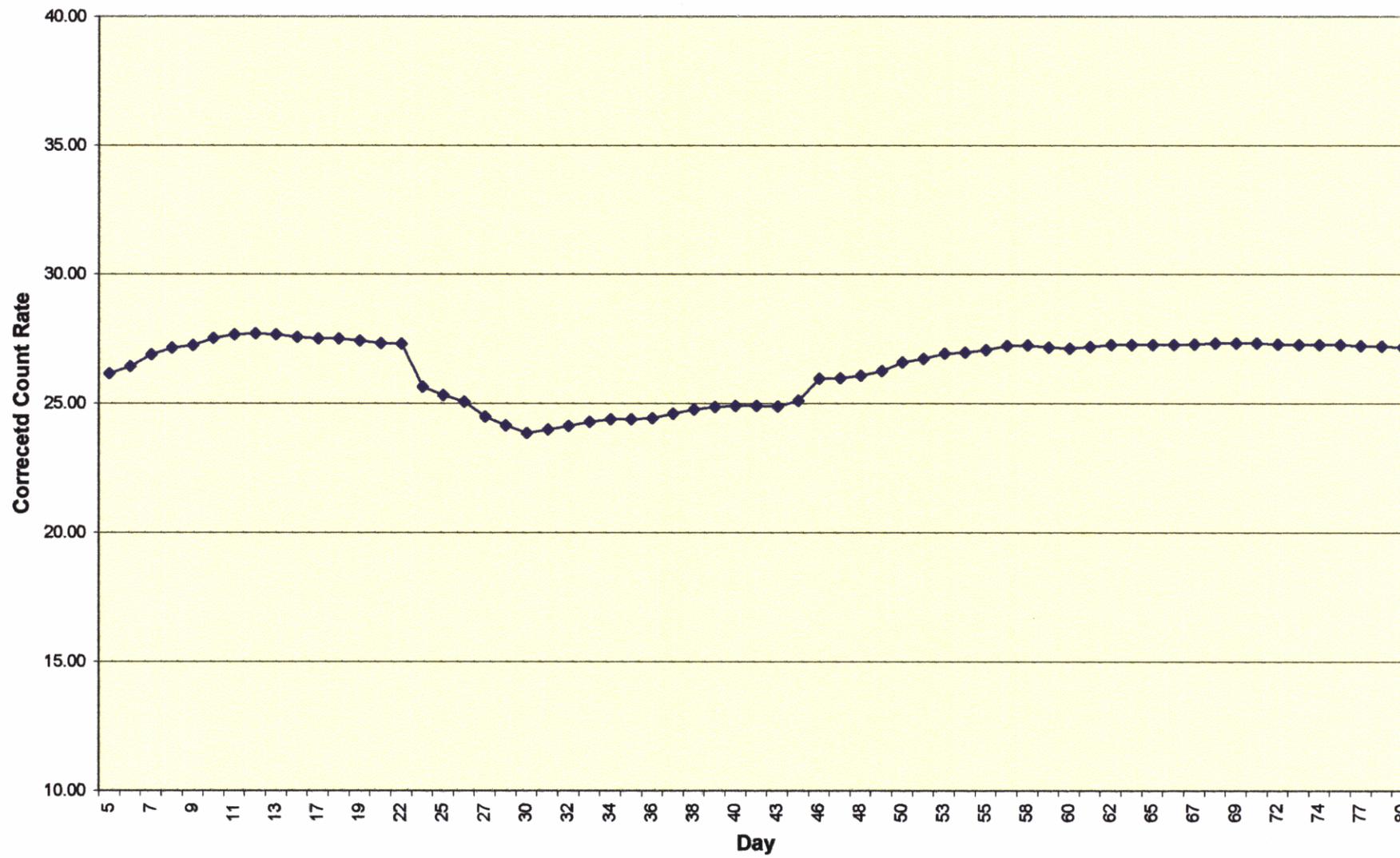
## **APPENDIX 10**

### **Thorium Sample Calibration Plots Crystal Resolution Plots Pre and Post Flight Spectrometer Calibration Data**

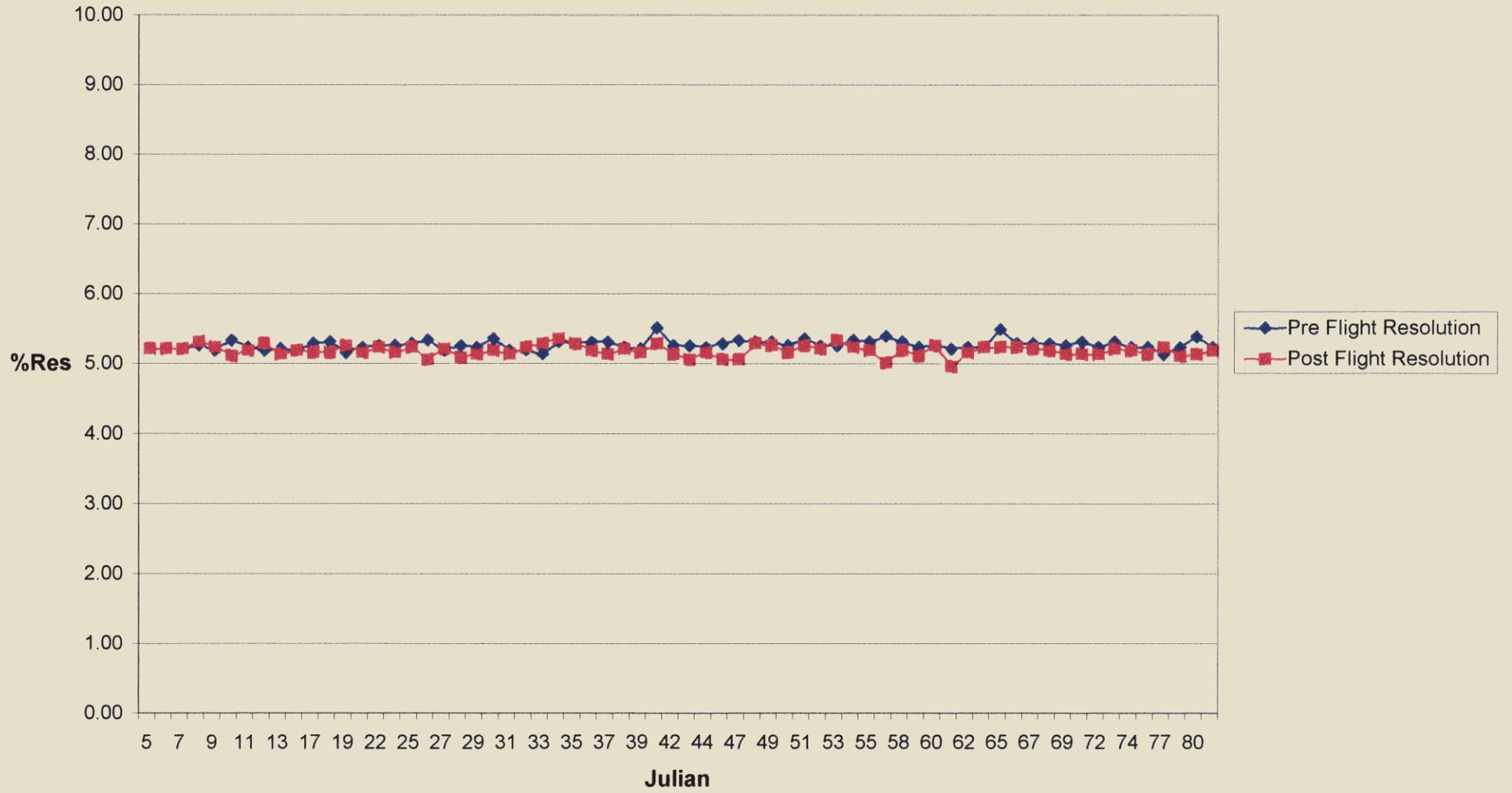
### THORIUM SOURCE CHECK VALUES: POST-FLIGHT



### THORIUM SOURCE CHECK VALUES: PRE-FLIGHT



### J2101 VH-JWF Crystal Resolutions





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Email : geoair@geoinstruments.com.au

## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 4,5 DATE 6/01/2001 JULIAN 006 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.0	94	0.1
2	5.3	74	0.0
3	5.8	76	0.1
4	4.8	74	-0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
5.0	93	0.0
5.4	75	0.0
5.7	75	0.1
4.8	71	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2451	178	90	74
Pre Flt Thorium	3352	182	110	150
Pre Production Test Line	752	65	17	26
Post Production Test Line	761	66	16	27
Post Flt Background	2540	188	93	75
Post Flt Thorium	3445	188	114	152

Background removed	TC	K	U	TH
Pre Thorium B/G removed	901	4	20	76
Post Thorium B/G removed	905	-0	20	77

Pre Test line TC. Running Mean of all flights	753
Percentage change this flight	-0.1%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-1.1%
Post Test line TC. Running Mean of all flights	749
Percentage change this flight	1.7%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	0.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380954.40	5341433.10
Post Flight Ground Cals	380952.10	5341431.60

Comments:



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 Email : geoair@geoinstruments.com.au

# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 6,7 DATE 7/01/2001 JULIAN 007 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	94	0.1
2	5.3	74	0.0
3	5.8	76	0.1
4	4.8	74	-0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	93	0.0
5.4	75	0.0
5.7	75	0.1
4.8	71	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2446	182	90	73
Pre Flt Thorium	3318	182	110	146
Pre Production Test Line	754	65	16	27
Post Production Test Line	736	64	15	27
Post Flt Background	2446	182	90	73
Post Flt Thorium	3318	182	110	146

Background removed	TC	K	U	TH
Pre Thorium B/G removed	872	-1	20	73
Post Thorium B/G removed	872	-1	20	73

Pre Test line TC. Running Mean of all flights	753
Percentage change this flight	0.1%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	1.1%
Post Test line TC. Running Mean of all flights	749
Percentage change this flight	-1.7%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	-0.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380952.40	5341432.00
Post Flight Ground Cals	380952.40	5341432.00

Comments:



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Email : geoair@geoinstruments.com.au

## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 8 DATE 8/01/2001 JULIAN 008 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.2	85	-0.1
2	5.4	69	-0.1
3	5.8	72	0.1
4	4.7	62	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
5.1	86	-0.1
5.4	72	0.0
5.9	73	-0.1
4.9	64	-0.1
<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2565	182	95	75
Pre Flt Thorium	3485	184	119	152
Pre Production Test Line	758	65	17	28
Post Production Test Line	727	62	15	25
Post Flt Background	2565	182	95	75
Post Flt Thorium	3558	178	126	147

Background removed	TC	K	U	TH
Pre Thorium B/G removed	921	2	24	77
Post Thorium B/G removed	994	-5	31	72

Pre Test line TC. Running Mean of all flights	755
Percentage change this flight	0.4%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	3.4%
Post Test line TC. Running Mean of all flights	741
Percentage change this flight	-2.0%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	-4.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380953.30	5341432.30
Post Flight Ground Cals	38254.50	5341435.00

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 9,10 DATE 9/01/2001 JULIAN 009 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.2	84	-0.1
2	5.2	69	0.1
3	5.7	71	0.2
4	4.7	62	0.0
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
5.0	85	0.0
5.4	73	0.0
5.8	72	0.0
4.8	63	0.0
<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2562	173	103	65
Pre Flt Thorium	2799	171	110	88
Pre Production Test Line	762	65	17	28
Post Production Test Line	777	67	16	28
Post Flt Background	2562	173	103	65
Post Flt Thorium	2799	171	110	88

Background removed	TC	K	U	TH
Pre Thorium B/G removed	237	-1	8	23
Post Thorium B/G removed	237	-1	8	23

Pre Test line TC. Running Mean of all flights	757
Percentage change this flight	0.7%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	3.0%
Post Test line TC. Running Mean of all flights	750
Percentage change this flight	3.6%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	3.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.00	5341434.50
Post Flight Ground Cals	380951.00	5341434.50

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 11,12 DATE 10/01/2001 JULIAN 010 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.3	84	-0.2
2	5.4	70	-0.1
3	5.9	71	0.0
4	4.8	61	-0.1
	<b>5.4</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	88	0.0
5.4	76	0.0
5.4	74	0.4
4.7	66	0.1
	<b>5.1</b>	<b>Total Sys</b>
		<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2490	182	92	71
Pre Flt Thorium	2849	183	105	97
Pre Production Test Line	764	65	17	28
Post Production Test Line	782	69	16	29
Post Flt Background	2490	182	92	71
Post Flt Thorium	2767	181	99	97

Background removed	TC	K	U	TH
Pre Thorium B/G removed	359	1	13	26
Post Thorium B/G removed	277	-1	7	26

Pre Test line TC. Running Mean of all flights	758
Percentage change this flight	0.8%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	1.4%
Post Test line TC. Running Mean of all flights	756
Percentage change this flight	3.4%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	4.6%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380952.10	5341432.50
Post Flight Ground Cals	380952.20	5341429.60

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 13,14 DATE 11/01/2001 JULIAN 011 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	86	0.1
2	5.3	72	0.0
3	5.9	73	0.0
4	4.8	63	-0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	89	0.0
5.6	76	-0.2
5.4	75	0.4
4.8	66	0.0
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2457	179	94	70
Pre Flt Thorium	2760	184	100	96
Pre Production Test Line	805	67	19	29
Post Production Test Line	810	69	18	29
Post Flt Background	2459	185	89	71
Post Flt Thorium	2735	180	98	97

Background removed	TC	K	U	TH
Pre Thorium B/G removed	302	5	6	26
Post Thorium B/G removed	276	-4	9	26

Pre Test line TC. Running Mean of all flights	766
Percentage change this flight	5.1%
Pre Test line TH. Running Mean of all flights	28
Percentage change this flight	4.9%
Post Test line TC. Running Mean of all flights	765
Percentage change this flight	5.8%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	4.6%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380952.20	5341428.60
Post Flight Ground Cals	380952.20	5341430.20

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 15,16  
~~17,18~~ DATE 12/01/2001 JULIAN 012 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	87	0.0
2	5.1	72	0.2
3	5.9	74	0.0
4	4.7	63	0.0
<b>5.2</b>		<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	84	-0.2
5.3	70	0.1
5.9	73	-0.1
4.8	64	0.0
<b>5.3</b>		<b>Total Sys</b>
		<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2334	176	84	69
Pre Flt Thorium	2591	176	92	91
Pre Production Test Line	777	70	16	29
Post Production Test Line	803	71	17	28
Post Flt Background	2334	176	84	69
Post Flt Thorium	2591	176	92	91

Background removed	TC	K	U	TH
Pre Thorium B/G removed	256	0	7	22
Post Thorium B/G removed	256	0	7	22

Pre Test line TC. Running Mean of all flights	768
Percentage change this flight	1.2%
Pre Test line TH. Running Mean of all flights	28
Percentage change this flight	3.2%
Post Test line TC. Running Mean of all flights	771
Percentage change this flight	4.2%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	1.8%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.40	5341428.30
Post Flight Ground Cals	380951.40	5341428.30

Comments:



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Email : geoair@geoinstruments.com.au

# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 17,18  
15,16 DATE 12/01/2001 JULIAN 013 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	84	-0.1
2	5.3	70	0.0
3	5.7	73	0.2
4	4.7	61	0.0
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	85	-0.1
5.1	73	0.3
5.7	72	0.1
4.7	62	0.1
<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2467	182	94	72
Pre Flt Thorium	2726	181	99	96
Pre Production Test Line	784	66	18	28
Post Production Test Line	807	69	17	29
Post Flt Background	2467	182	92	71
Post Flt Thorium	2724	180	98	97

Background removed	TC	K	U	TH
Pre Thorium B/G removed	259	-2	5	24
Post Thorium B/G removed	257	-2	7	26

Pre Test line TC: Running Mean of all flights	770
Percentage change this flight	1.9%
Pre Test line TH: Running Mean of all flights	28
Percentage change this flight	0.9%
Post Test line TC: Running Mean of all flights	775
Percentage change this flight	4.0%
Post Test line TH: Running Mean of all flights	28
Percentage change this flight	4.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380952.20	5341429.50
Post Flight Ground Cals	380952.20	5341431.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 20,21 DATE 16/01/2001 JULIAN 016 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	85	0.0
2	5.3	68	0.0
3	5.8	72	0.1
4	4.6	61	0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.8	84	0.2
5.4	71	0.0
5.7	71	0.1
4.9	61	-0.1
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2369	173	91	66
Pre Flt Thorium	2639	174	97	91
Pre Production Test Line	740	64	16	27
Post Production Test Line	764	69	15	28
Post Flt Background	2645	183	104	70
Post Flt Thorium	2926	183	110	96

Background removed	TC	K	U	TH
Pre Thorium B/G removed	270	1	6	25
Post Thorium B/G removed	281	0	6	26

Pre Test line TC. Running Mean of all flights	766
Percentage change this flight	-3.5%
Pre Test line TH. Running Mean of all flights	28
Percentage change this flight	-1.3%
Post Test line TC. Running Mean of all flights	774
Percentage change this flight	-1.3%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-0.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.20	5341432.10
Post Flight Ground Cals	380951.00	5341434.20

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 22 DATE 17/01/2001 JULIAN 017 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.1	86	0.0
2	5.4	71	-0.1
3	6.1	72	-0.2
4	4.6	62	0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

### Post Calibration

% Res	Gain	Avg% Diff
4.8	83	0.2
5.4	72	0.0
5.7	72	0.1
4.8	63	0.0
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2660	184	105	71
Pre Flt Thorium	2911	181	112	93
Pre Production Test Line	763	67	16	27
Post Production Test Line	740	67	15	26
Post Flt Background	2508	182	91	71
Post Flt Thorium	2786	184	99	98

Background removed	TC	K	U	TH
Pre Thorium B/G removed	252	-2	7	23
Post Thorium B/G removed	278	1	8	27

Pre Test line TC: Running Mean of all flights	766
Percentage change this flight	-0.4%
Pre Test line TH: Running Mean of all flights	28
Percentage change this flight	-3.1%
Post Test line TC: Running Mean of all flights	771
Percentage change this flight	-3.9%
Post Test line TH: Running Mean of all flights	28
Percentage change this flight	-7.0%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.90	5341433.20
Post Flight Ground Cals	380952.20	5341429.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 23,24 DATE 18/01/2001 JULIAN 018 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	84	0.0
2	5.4	70	-0.1
3	6.1	72	-0.2
4	4.7	60	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff	
4.9	86	0.1	
5.2	74	0.2	
5.9	73	-0.1	
4.7	63	0.1	
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2444	177	91	71
Pre Flt Thorium	2739	178	100	94
Pre Production Test Line	774	67	16	27
Post Production Test Line	781	68	16	29
Post Flt Background	2541	188	92	73
Post Flt Thorium	2824	188	102	98

Background removed	TC	K	U	TH
Pre Thorium B/G removed	295	1	9	23
Post Thorium B/G removed	282	-0	9	25

Pre Test line TC. Running Mean of all flights	767
Percentage change this flight	1.0%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-2.3%
Post Test line TC. Running Mean of all flights	771
Percentage change this flight	1.2%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	3.4%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.10	5341428.50
Post Flight Ground Cals	380952.20	5341431.60

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 25,26 DATE 19/01/2001 JULIAN 019 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.9	84	0.2
2	5.4	70	-0.1
3	5.8	72	0.1
4	4.6	61	0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	87	0.0
5.4	75	0.0
6.1	75	-0.3
4.6	64	0.2
	<b>5.3</b>	<b>Total Sys</b>
		<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2518	183	94	74
Pre Flt Thorium	2816	190	102	98
Pre Production Test Line	778	69	17	28
Post Production Test Line	789	68	17	29
Post Flt Background	2419	179	88	71
Post Flt Thorium	2717	180	97	97

Background removed	TC	K	U	TH
Pre Thorium B/G removed	298	7	8	25
Post Thorium B/G removed	298	1	8	27

Pre Test line TC. Running Mean of all flights	768
Percentage change this flight	1.4%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	0.1%
Post Test line TC. Running Mean of all flights	773
Percentage change this flight	2.1%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	3.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380952.20	5341431.50
Post Flight Ground Cals	380952.20	5341430.00

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 27,28,29 DATE 21/01/2001 JULIAN 021 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.0	85	0.1
2	5.2	70	0.1
3	6.1	75	-0.2
4	4.7	61	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
4.9	86	0.1
5.2	74	0.2
5.9	73	-0.1
4.7	63	0.1
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2354	173	90	66
Pre Flt Thorium	2632	174	96	91
Pre Production Test Line	757	66	16	27
Post Production Test Line	746	65	15	27
Post Flt Background	2384	178	87	69
Post Flt Thorium	2663	178	94	94

Background removed	TC	K	U	TH
Pre Thorium B/G removed	277	1	7	25
Post Thorium B/G removed	279	-0	6	25

Pre Test line TC. Running Mean of all flights	767
Percentage change this flight	-1.3%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-3.3%
Post Test line TC. Running Mean of all flights	771
Percentage change this flight	-3.2%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-0.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.50	5341434.60
Post Flight Ground Cals	380951.00	5341431.00

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 30,31 DATE 22/01/2001 JULIAN 022 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	83	-0.1
2	5.3	69	0.0
3	6.0	71	-0.1
4	4.6	59	0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	83	-0.2
5.5	72	-0.1
5.7	71	0.0
4.6	60	0.2
<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	2303	172	84	66
Pre Fit Thorium	2567	175	92	89
Pre Production Test Line	765	65	16	26
Post Production Test Line	777	69	15	29
Post Fit Background	2316	175	85	67
Post Fit Thorium	2591	176	92	92

Background removed	TC	K	U	TH
Pre Thorium B/G removed	264	3	8	23
Post Thorium B/G removed	275	1	7	25

Pre Test line TC. Running Mean of all flights	767
Percentage change this flight	-0.3%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-4.4%
Post Test line TC. Running Mean of all flights	771
Percentage change this flight	0.8%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	3.2%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.10	5341429.20
Post Flight Ground Cals	380949.10	5341429.80

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 32,33 DATE 23/01/2001 JULIAN 023 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.1	82	0.0
2	5.3	68	0.0
3	6.0	71	-0.1
4	4.7	59	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
4.9	86	0.1
5.2	74	0.2
5.9	73	-0.1
4.7	63	0.1
	<b>Total Sys</b>	<b>5.2</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	2260	171	83	65
Pre Flt Thorium	2524	169	91	90
Pre Production Test Line	766	67	17	27
Post Production Test Line	780	68	16	29
Post Flt Background	2356	175	87	67
Post Flt Thorium	2624	174	94	93

Background removed	TC	K	U	TH
Pre Thorium B/G removed	264	-2	8	25
Post Thorium B/G removed	268	-1	8	26

Pre Test line TC. Running Mean of all flights	767
Percentage change this flight	-0.1%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-1.3%
Post Test line TC. Running Mean of all flights	772
Percentage change this flight	1.0%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	3.2%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	380951.00	5341430.60
Post Flight Ground Cals	380949.60	5341430.40

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 34 DATE 25/01/2001 JULIAN 025 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.8	84	0.3
2	5.4	72	-0.1
3	6.1	73	-0.2
4	4.9	61	-0.2
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	85	-0.2
5.4	74	-0.1
5.6	74	0.1
4.8	62	0.0
5.3	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Fit Background	1045	124	23	33
Pre Fit Thorium	1331	124	31	57
Pre Production Test Line	602	42	13	26
Post Production Test Line	602	44	14	25
Post Fit Background	1085	126	24	33
Post Fit Thorium	1363	128	31	57

Background removed	TC	K	U	TH
Pre Thorium B/G removed	285	1	8	25
Post Thorium B/G removed	277	2	7	24

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	0.0%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	0.0%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	0.0%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	0.0%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363092.40	5361268.10
Post Flight Ground Cals	363093.30	5361270.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 35 DATE 26/01/2001 JULIAN 026 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	85	-0.1
2	5.5	72	-0.2
3	5.8	74	0.1
4	4.9	60	-0.2
	<b>5.4</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	83	-0.1
4.9	73	0.4
5.6	73	0.1
4.7	61	0.1
<b>5.1</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1071	124	24	33
Pre Flt Thorium	1339	124	31	58
Pre Production Test Line	602	45	14	25
Post Production Test Line	607	44	15	24
Post Flt Background	1121	127	26	34
Post Flt Thorium	1392	129	33	58

Background removed	TC	K	U	TH
Pre Thorium B/G removed	269	-0	7	25
Post Thorium B/G removed	270	2	7	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	0.0%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-2.5%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	1.0%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	-0.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361269.70
Post Flight Ground Cals	363093.30	5361270.50

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 36,37 DATE 27/01/2001 JULIAN 027 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.1	81	0.0
2	5.2	71	0.1
3	5.6	74	0.3
4	4.9	60	-0.2
	<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

### Post Calibration

% Res	Gain	Avg% Diff
4.9	85	0.1
5.4	73	-0.1
5.8	74	-0.1
4.8	61	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	1059	123	23	32
Pre Fit Thorium	1337	125	32	57
Pre Production Test Line	599	44	13	25
Post Production Test Line	595	44	13	25
Post Fit Background	1123	132	26	35
Post Fit Thorium	1395	132	33	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	277	2	8	26
Post Thorium B/G removed	272	-0	7	24

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-0.5%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-4.4%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	-1.1%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	0.2%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.00
Post Flight Ground Cals	363094.40	5361272.00

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 38,39 DATE 28/01/2001 JULIAN 028 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.1	82	0.0
2	5.2	69	0.1
3	5.9	73	0.0
4	4.9	58	-0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
5.0	82	0.0
5.1	71	0.2
5.6	72	0.1
4.7	58	0.1
<b>5.1</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1046	122	23	33
Pre Flt Thorium	1327	125	31	58
Pre Production Test Line	557	42	13	23
Post Production Test Line	591	43	13	25
Post Flt Background	1085	125	24	34
Post Flt Thorium	1358	125	32	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	280	3	8	24
Post Thorium B/G removed	273	0	7	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-7.5%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-11.2%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	-1.7%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	-0.6%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.90
Post Flight Ground Cals	363094.40	5361270.50

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 40,41 DATE 30/01/2001 JULIAN 030 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.1	82	0.0
2	5.5	70	-0.2
3	6.0	73	-0.1
4	4.9	59	-0.1
	<b>5.4</b>	<b>Total Sys</b>	<b>-0.1</b>

### Post Calibration

% Res	Gain	Avg% Diff
5.1	82	-0.1
5.4	71	-0.1
5.6	71	0.1
4.7	59	0.1
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1054	124	23	33
Pre Flt Thorium	1331	124	31	57
Pre Production Test Line	556	41	12	23
Post Production Test Line	580	43	13	23
Post Flt Background	1120	133	25	35
Post Flt Thorium	1392	134	32	58

Background removed	TC	K	U	TH
Pre Thorium B/G removed	277	1	8	25
Post Thorium B/G removed	272	1	7	24

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-7.7%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-11.1%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	-3.6%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	-6.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363094.20	5361269.70
Post Flight Ground Cals	363095.70	5361270.40

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 42,43 DATE 31/01/2001 JULIAN 031 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	80	0.1
2	5.4	66	-0.1
3	5.7	70	0.2
4	4.7	56	0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	81	0.0
5.2	70	0.1
5.6	72	0.1
4.8	60	0.0
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1094	128	25	33
Pre Flt Thorium	1361	129	33	57
Pre Production Test Line	587	42	13	22
Post Production Test Line	595	44	13	24
Post Flt Background	1095	126	25	34
Post Flt Thorium	1371	127	32	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	267	1	7	24
Post Thorium B/G removed	275	2	7	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-2.4%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-12.6%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	-1.0%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	-1.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363096.10	5361270.70
Post Flight Ground Cals	363096.50	5361270.00

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 44 DATE 1/02/2001 JULIAN 032 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	82	0.0
2	5.1	69	0.2
3	5.8	72	0.1
4	4.8	59	0.0
	5.2	Total Sys	0.1

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	81	-0.1
5.3	72	0.0
5.9	73	-0.2
4.7	61	0.1
5.3	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	1081	127	23	33
Pre Flt Thorium	1346	126	31	58
Pre Production Test Line	594	43	12	25
Post Production Test Line	633	44	15	25
Post Flt Background	1124	130	25	34
Post Flt Thorium	1405	131	33	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	265	-1	8	25
Post Thorium B/G removed	281	1	8	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-1.3%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-3.4%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	5.3%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	3.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363094.40	5361270.50
Post Flight Ground Cals	363094.40	5361271.30

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 45,46 DATE 2/02/2001 JULIAN 033 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	86	-0.1
2	4.9	72	0.4
3	5.8	75	0.1
4	4.7	62	0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	84	-0.2
5.3	75	0.0
5.9	76	-0.2
4.8	64	0.0
<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1077	127	24	34
Pre Flt Thorium	1350	127	31	58
Pre Production Test Line	612	46	13	25
Post Production Test Line	666	47	16	27
Post Flt Background	1172	136	27	35
Post Flt Thorium	1405	131	33	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	272	1	8	23
Post Thorium B/G removed	233	-5	5	23

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	1.7%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-1.8%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	10.8%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	8.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.00
Post Flight Ground Cals	363094.40	5361271.30

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 47,48 DATE 3/02/2001 JULIAN 034 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	91	-0.1
2	5.4	77	-0.1
3	5.9	79	0.0
4	4.8	66	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	95	-0.2
5.5	82	-0.2
5.9	83	-0.2
4.9	72	-0.1
<b>5.4</b>	<b>Total Sys</b>	<b>-0.2</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1125	133	25	35
Pre Flt Thorium	1387	129	32	59
Pre Production Test Line	640	43	16	26
Post Production Test Line	673	46	18	26
Post Flt Background	1168	132	28	36
Post Flt Thorium	1446	136	35	62

Background removed	TC	K	U	TH
Pre Thorium B/G removed	262	-3	7	25
Post Thorium B/G removed	278	3	7	26

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	6.2%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-0.5%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	11.9%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	6.0%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363094.10	5361270.30
Post Flight Ground Cals	363093.10	5361271.40

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 49,50 DATE 4/02/2001 JULIAN 035 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	91	-0.1
2	5.3	76	0.0
3	5.9	80	0.0
4	4.8	66	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	84	-0.2
5.3	75	0.0
5.9	76	-0.2
4.8	64	0.0
	<b>Total Sys</b>	<b>5.2</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	1093	129	25	35
Pre Fit Thorium	1392	132	33	61
Pre Production Test Line	603	44	13	25
Post Production Test Line	619	46	13	25
Post Fit Background	1132	134	25	35
Post Fit Thorium	1405	133	32	61

Background removed	TC	K	U	TH
Pre Thorium B/G removed	299	2	9	26
Post Thorium B/G removed	272	-1	7	26

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	0.2%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-1.8%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	2.9%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	2.7%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.80
Post Flight Ground Cals	363094.00	5361270.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 51/52 DATE 5/02/2001 JULIAN 036 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	86	0.0
2	5.6	72	-0.3
3	5.9	77	0.0
4	4.7	61	0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	86	-0.2
5.2	75	0.1
5.8	75	-0.1
4.6	62	0.2
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1080	127	24	34
Pre Flt Thorium	1367	130	32	59
Pre Production Test Line	590	44	13	25
Post Production Test Line	626	46	13	26
Post Flt Background	1129	133	25	35
Post Flt Thorium	1390	134	33	60

Background removed	TC	K	U	TH
Pre Thorium B/G removed	287	3	7	25
Post Thorium B/G removed	261	1	8	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-1.9%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-4.4%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	4.1%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	3.5%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361271.20
Post Flight Ground Cals	363093.80	5361271.00

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 53/54 DATE 6/02/2001 JULIAN 037 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.2	84	-0.1
2	5.3	71	0.0
3	6.0	75	-0.1
4	4.8	61	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

### Post Calibration

% Res	Gain	Avg% Diff
4.8	87	0.2
5.2	76	0.1
5.8	76	-0.1
4.8	63	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1101	132	25	35
Pre Flt Thorium	1365	131	32	58
Pre Production Test Line	609	44	14	25
Post Production Test Line	640	46	15	26
Post Flt Background	1101	132	25	35
Post Flt Thorium	1398	130	33	60

Background removed	TC	K	U	TH
Pre Thorium B/G removed	264	-1	7	23
Post Thorium B/G removed	296	-1	8	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	1.2%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-2.9%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	6.5%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	6.0%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363092.30	5361271.30
Post Flight Ground Cals	363093.00	5361270.80

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 55 DATE 7/02/2001 JULIAN 038 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	84	0.1
2	5.2	72	0.1
3	6.0	75	-0.1
4	4.8	61	0.0
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	86	0.0
5.5	73	-0.2
5.9	76	-0.2
4.5	62	0.3
5.2	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Fit Background	1121	133	25	35
Pre Fit Thorium	1371	130	31	59
Pre Production Test Line	631	45	14	27
Post Production Test Line	630	44	15	26
Post Fit Background	1126	131	25	34
Post Fit Thorium	1402	131	33	60

Background removed	TC	K	U	TH
Pre Thorium B/G removed	250	-3	6	24
Post Thorium B/G removed	276	0	8	26

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	4.8%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	3.6%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	4.8%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	3.8%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.50
Post Flight Ground Cals	363093.80	5361271.00

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 56/57 DATE 8/02/2001 JULIAN 039 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.9	89	0.2
2	5.3	76	0.0
3	6.0	78	-0.1
4	4.7	65	0.1
	<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	90	0.1
5.3	78	0.0
5.5	75	0.2
4.8	60	0.0
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1122	129	26	35
Pre Flt Thorium	1384	131	32	58
Pre Production Test Line	668	49	15	27
Post Production Test Line	693	46	17	26
Post Flt Background	1170	135	27	36
Post Flt Thorium	1442	136	35	61

Background removed	TC	K	U	TH
Pre Thorium B/G removed	262	2	6	23
Post Thorium B/G removed	272	1	7	25

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	11.0%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	4.9%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	15.2%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	7.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.90
Post Flight Ground Cals	363094.40	5361270.70

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 58 DATE 9/02/2001 JULIAN 040 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.8	91	-0.7
2	5.4	76	-0.1
3	6.0	80	-0.1
4	4.9	67	-0.1
	5.5	Total Sys	-0.2

### Post Calibration

% Res	Gain	Avg% Diff
5.3	90	-0.3
5.5	77	-0.2
5.6	78	0.1
4.8	65	0.0
5.3	Total Sys	-0.1

Calibration Line	TC	K	U	TH
Pre Flt Background	1092	128	24	35
Pre Flt Thorium	1379	129	32	60
Pre Production Test Line	622	45	13	26
Post Production Test Line	625	46	13	25
Post Flt Background	1100	129	25	34
Post Flt Thorium	1378	129	32	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	287	2	8	25
Post Thorium B/G removed	278	-0	7	26

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	3.3%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	2.6%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	3.8%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	3.0%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363094.40	5361270.50
Post Flight Ground Cals	363093.90	5361270.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 59/60 DATE 11/02/2001 JULIAN 042 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	87	0.0
2	5.5	72	-0.2
3	5.8	77	0.1
4	4.7	62	0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	86	0.1
5.3	75	0.0
5.8	75	-0.1
4.6	62	0.2
	<b>5.2</b>	<b>Total Sys</b>
		<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	1105	131	25	35
Pre Flt Thorium	1362	126	32	58
Pre Production Test Line	618	45	14	25
Post Production Test Line	646	47	15	26
Post Flt Background	1097	127	25	34
Post Flt Thorium	1347	128	31	57

Background removed	TC	K	U	TH
Pre Thorium B/G removed	257	-5	7	23
Post Thorium B/G removed	250	1	6	23

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	2.6%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-0.6%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	7.4%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	6.6%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363094.40	5361269.90
Post Flight Ground Cals	363093.20	5361271.80

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 61/62 DATE 12/02/2001 JULIAN 043 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	83	0.1
2	5.3	71	0.0
3	6.0	75	-0.1
4	4.8	60	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	83	0.1
5.1	73	0.2
5.6	74	0.1
4.7	61	0.1
	<b>5.1</b>	<b>Total Sys</b>
		<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	1085	128	24	34
Pre Fit Thorium	1338	130	32	57
Pre Production Test Line	623	46	14	25
Post Production Test Line	686	48	18	26
Post Fit Background	1158	133	28	34
Post Fit Thorium	1415	135	34	59

Background removed	TC	K	U	TH
Pre Thorium B/G removed	254	2	7	22
Post Thorium B/G removed	257	2	7	24

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	3.5%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-2.5%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	14.0%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	7.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363093.30	5361270.50
Post Flight Ground Cals	363096.70	5361270.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 63 DATE 13/02/2001 JULIAN 044 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	83	0.0
2	5.2	72	0.1
3	5.9	74	0.0
4	4.8	61	0.0
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	84	0.1
5.2	75	0.1
5.8	75	-0.1
4.8	62	0.0
5.2	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	1064	126	24	33
Pre Flt Thorium	1322	126	30	56
Pre Production Test Line	600	45	13	25
Post Production Test Line	600	45	13	25
Post Flt Background	1064	126	24	33
Post Flt Thorium	1322	126	30	56

Background removed	TC	K	U	TH
Pre Thorium B/G removed	258	0	6	24
Post Thorium B/G removed	258	0	6	24

Pre Test line TC. Running Mean of all flights	602
Percentage change this flight	-0.3%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	-4.3%
Post Test line TC. Running Mean of all flights	602
Percentage change this flight	-0.3%
Post Test line TH. Running Mean of all flights	25
Percentage change this flight	-0.5%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	363096.70	5361270.50
Post Flight Ground Cals	363096.70	5361270.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 66/67 DATE 16/02/2001 JULIAN 047 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.9	82	0.2
2	5.2	68	0.1
3	6.3	72	-0.4
4	5.0	57	-0.2
	<b>5.4</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.8	83	0.2
5.3	71	0.0
5.6	71	0.1
4.6	57	0.2
<b>5.1</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	361	14	10	19
Pre Fit Thorium	622	15	17	43
Pre Production Test Line	704	51	19	26
Post Production Test Line	684	52	15	27
Post Fit Background	376	15	10	20
Post Fit Thorium	647	17	16	44

Background removed	TC	K	U	TH
Pre Thorium B/G removed	261	1	7	24
Post Thorium B/G removed	271	2	6	24

Pre Test line TC. Running Mean of all flights	704
Percentage change this flight	0.1%
Pre Test line TH. Running Mean of all flights	25
Percentage change this flight	3.4%
Post Test line TC. Running Mean of all flights	671
Percentage change this flight	1.9%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	-0.7%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.70	5419050.00
Post Flight Ground Cals	442882.00	5419050.00

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 68/69/70 DATE 17/02/2001 JULIAN 048 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	82	0.0
2	5.2	68	0.1
3	6.0	72	-0.1
4	5.0	57	-0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	84	-0.2
5.5	74	-0.2
5.7	74	0.0
4.8	61	0.0
<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	380	15	11	20
Pre Fit Thorium	637	17	17	43
Pre Production Test Line	788	51	25	27
Post Production Test Line	680	53	16	27
Post Fit Background	393	16	11	20
Post Fit Thorium	637	17	17	43

Background removed	TC	K	U	TH
Pre Thorium B/G removed	257	2	5	23
Post Thorium B/G removed	244	1	6	22

Pre Test line TC. Running Mean of all flights	732
Percentage change this flight	7.7%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	5.3%
Post Test line TC. Running Mean of all flights	674
Percentage change this flight	0.9%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	-1.6%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442882.00	5419049.60
Post Flight Ground Cals	442882.00	5419049.60

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 71/72 DATE 18/02/2001 JULIAN 049 JOB # J2101

### Pre Calibration

Crystal	% Res	Gain	Avg% Diff
1	5.1	81	0.0
2	5.2	69	0.1
3	6.2	73	-0.3
4	4.8	58	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

### Post Calibration

% Res	Gain	Avg% Diff
5.0	85	0.0
5.6	76	-0.3
5.7	75	0.0
4.8	63	0.0
	<b>5.3</b>	<b>Total Sys</b>
		<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	380	15	11	20
Pre Flt Thorium	638	16	18	43
Pre Production Test Line	759	48	24	26
Post Production Test Line	707	54	17	28
Post Flt Background	400	17	11	21
Post Flt Thorium	651	18	17	43

Background removed	TC	K	U	TH
Pre Thorium B/G removed	259	1	7	23
Post Thorium B/G removed	251	1	6	22

Pre Test line TC. Running Mean of all flights	739
Percentage change this flight	2.7%
Pre Test line TH. Running Mean of all flights	26
Percentage change this flight	2.2%
Post Test line TC. Running Mean of all flights	682
Percentage change this flight	3.6%
Post Test line TH. Running Mean of all flights	27
Percentage change this flight	3.8%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419050.00
Post Flight Ground Cals	442881.00	5419050.30

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 73/74 DATE 19/02/2001 JULIAN 050 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.3	85	-0.2
2	5.3	73	0.0
3	5.7	76	0.2
4	4.8	61	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	88	0.0
5.3	78	0.0
5.5	78	0.2
4.9	64	-0.1
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	380	15	11	20
Pre Fit Thorium	637	17	17	43
Pre Production Test Line	788	51	25	27
Post Production Test Line	757	55	20	28
Post Fit Background	423	17	12	21
Post Fit Thorium	663	17	19	44

Background removed	TC	K	U	TH
Pre Thorium B/G removed	257	2	5	23
Post Thorium B/G removed	240	-0	7	23

Pre Test line TC: Running Mean of all flights	748
Percentage change this flight	5.3%
Pre Test line TH: Running Mean of all flights	26
Percentage change this flight	3.6%
Post Test line TC: Running Mean of all flights	697
Percentage change this flight	8.6%
Post Test line TH: Running Mean of all flights	28
Percentage change this flight	3.4%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442882.00	5419049.60
Post Flight Ground Cals	442880.80	5419050.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 76 DATE 21/02/2001 JULIAN 052 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	87	0.0
2	5.4	74	-0.1
3	5.8	79	0.1
4	4.8	62	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	90	0.0
5.1	78	0.2
6.0	80	-0.3
4.8	65	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	384	16	10	20
Pre Flt Thorium	675	18	18	45
Pre Production Test Line	710	54	17	28
Post Production Test Line	719	53	17	29
Post Flt Background	384	16	10	20
Post Flt Thorium	640	16	17	43

Background removed	TC	K	U	TH
Pre Thorium B/G removed	291	2	8	25
Post Thorium B/G removed	257	-0	7	23

Pre Test line TC: Running Mean of all flights	742
Percentage change this flight	-4.3%
Pre Test line TH: Running Mean of all flights	26
Percentage change this flight	7.1%
Post Test line TC: Running Mean of all flights	701
Percentage change this flight	2.6%
Post Test line TH: Running Mean of all flights	28
Percentage change this flight	3.5%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.00	5419050.10
Post Flight Ground Cals	44473.40	5419050.70

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 7778 DATE 22/02/2001 JULIAN 053 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	86	0.0
2	5.4	75	-0.1
3	6.0	79	-0.1
4	4.6	62	0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	86	0.0
5.6	75	-0.3
6.1	77	-0.4
4.7	62	0.1
<b>5.4</b>	<b>Total Sys</b>	<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	370	16	10	19
Pre Flt Thorium	620	17	16	43
Pre Production Test Line	647	52	14	26
Post Production Test Line	692	53	16	27
Post Flt Background	393	16	11	21
Post Flt Thorium	620	17	16	43

Background removed	TC	K	U	TH
Pre Thorium B/G removed	249	1	6	24
Post Thorium B/G removed	227	2	5	23

Pre Test line TC Running Mean of all flights	728
Percentage change this flight	-11.2%
Pre Test line TH Running Mean of all flights	26
Percentage change this flight	-2.9%
Post Test line TC Running Mean of all flights	700
Percentage change this flight	-1.1%
Post Test line TH Running Mean of all flights	28
Percentage change this flight	-1.7%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442882.00	5419049.20
Post Flight Ground Cals	442882.00	5419049.20

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 79/80 DATE 23/02/2001 JULIAN 054 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.3	85	-0.2
2	5.2	73	0.1
3	6.1	78	-0.2
4	4.8	61	0.0
	5.4	Total Sys	-0.1

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	85	-0.1
5.2	75	0.1
5.8	76	-0.1
4.9	61	-0.1
5.3	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Fit Background	370	15	10	20
Pre Fit Thorium	638	17	16	44
Pre Production Test Line	688	52	16	28
Post Production Test Line	693	54	16	28
Post Fit Background	370	15	10	20
Post Fit Thorium	641	17	17	43

Background removed	TC	K	U	TH
Pre Thorium B/G removed	268	2	6	24
Post Thorium B/G removed	271	3	7	24

Pre Test line TC. Running Mean of all flights	723
Percentage change this flight	-4.9%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	6.7%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	-0.8%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-0.2%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442882.00	5419049.00
Post Flight Ground Cals	442882.00	5419049.70

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 81/82 DATE 24/02/2001 JULIAN 055 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	84	-0.1
2	5.2	71	0.1
3	6.2	76	-0.3
4	4.7	59	0.1
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	84	-0.1
5.2	74	0.1
5.7	75	0.0
4.8	61	0.0
5.2	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	393	17	10	21
Pre Flt Thorium	647	16	18	43
Pre Production Test Line	763	53	22	26
Post Production Test Line	694	54	15	28
Post Flt Background	393	17	10	21
Post Flt Thorium	655	17	16	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	255	-1	8	23
Post Thorium B/G removed	263	1	6	24

Pre Test line TC Running Mean of all flights	728
Percentage change this flight	4.8%
Pre Test line TH Running Mean of all flights	27
Percentage change this flight	-1.1%
Post Test line TC Running Mean of all flights	698
Percentage change this flight	-0.6%
Post Test line TH Running Mean of all flights	28
Percentage change this flight	0.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.20	5419049.90
Post Flight Ground Cals	442882.00	5419050.00

Comments:



# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 83/84 DATE 25/02/2001 JULIAN 056 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	85	-0.1
2	5.4	72	-0.1
3	6.1	76	-0.2
4	4.9	60	-0.1
	5.4	Total Sys	-0.1

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	85	0.1
5.3	75	0.0
5.2	75	0.5
4.7	61	0.1
5.0	Total Sys	0.2

Calibration Line	TC	K	U	TH
Pre Flt Background	381	15	10	20
Pre Flt Thorium	650	15	18	46
Pre Production Test Line	714	53	17	28
Post Production Test Line	695	55	15	28
Post Flt Background	388	17	10	20
Post Flt Thorium	669	17	17	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	270	-1	8	26
Post Thorium B/G removed	281	0	7	26

Pre Test line TC. Running Mean of all flights	726
Percentage change this flight	-1.7%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	4.9%
Post Test line TC. Running Mean of all flights	698
Percentage change this flight	-0.4%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	1.5%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419049.80
Post Flight Ground Cals	442882.00	5419051.10

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 85 DATE 27/02/2001 JULIAN 058 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	90	0.1
2	5.3	76	0.0
3	6.0	80	-0.1
4	5.0	64	-0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	90	0.1
5.4	77	-0.1
5.7	80	0.0
4.8	64	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	385	16	10	21
Pre Fit Thorium	661	16	18	45
Pre Production Test Line	702	55	16	29
Post Production Test Line	690	54	15	28
Post Fit Background	392	17	10	20
Post Fit Thorium	672	17	17	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	276	-1	7	24
Post Thorium B/G removed	280	0	7	26

Pre Test line TC. Running Mean of all flights	724
Percentage change this flight	-3.1%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	7.0%
Post Test line TC. Running Mean of all flights	697
Percentage change this flight	-1.0%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	0.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.00	5419050.10
Post Flight Ground Cals	442880.80	5419051.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 86/87 DATE 28/02/2001 JULIAN 059 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	86	0.0
2	5.2	72	0.1
3	6.1	75	-0.2
4	4.6	61	0.2
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	86	0.1
5.4	73	-0.1
5.6	77	0.1
4.6	61	0.2
5.1	Total Sys	0.1

Calibration Line	TC	K	U	TH
Pre Flt Background	388	16	11	20
Pre Flt Thorium	668	16	18	46
Pre Production Test Line	702	52	17	27
Post Production Test Line	720	53	18	27
Post Flt Background	416	17	12	21
Post Flt Thorium	683	17	20	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	280	1	7	27
Post Thorium B/G removed	268	0	8	24

Pre Test line TC: Running Mean of all flights	722
Percentage change this flight	-2.8%
Pre Test line TH: Running Mean of all flights	27
Percentage change this flight	-0.8%
Post Test line TC: Running Mean of all flights	699
Percentage change this flight	2.9%
Post Test line TH: Running Mean of all flights	28
Percentage change this flight	-1.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.90	5419049.70
Post Flight Ground Cals	442880.80	5419050.10

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 88/89 DATE 1/03/2001 JULIAN 060 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	84	0.0
2	5.3	70	0.0
3	5.8	77	0.1
4	4.9	59	-0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.3	85	-0.3
5.5	75	-0.2
5.7	74	0.0
4.6	60	0.2
<b>5.3</b>	<b>Total Sys</b>	<b>-0.1</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	394	15	12	20
Pre Fit Thorium	673	17	19	46
Pre Production Test Line	765	51	23	26
Post Production Test Line	682	54	15	27
Post Fit Background	397	17	11	21
Post Fit Thorium	675	17	18	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	280	2	7	26
Post Thorium B/G removed	278	0	7	24

Pre Test line TC. Running Mean of all flights	750
Percentage change this flight	1.9%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-3.8%
Post Test line TC. Running Mean of all flights	698
Percentage change this flight	-2.2%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-1.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.40	5419050.50
Post Flight Ground Cals	442880.80	5419050.70

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 90/91 DATE 2/03/2001 JULIAN 061 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.9	83	0.2
2	5.3	69	0.0
3	5.8	74	0.1
4	4.9	57	-0.1
	5.2	Total Sys	0.1

**Post Calibration**

% Res	Gain	Avg% Diff
4.8	85	0.2
5.2	74	0.1
5.4	75	0.3
4.5	61	0.3
5.0	Total Sys	0.2

Calibration Line	TC	K	U	TH
Pre Flt Background	385	15	11	20
Pre Flt Thorium	653	16	18	44
Pre Production Test Line	742	50	21	27
Post Production Test Line	712	56	16	28
Post Flt Background	395	16	10	20
Post Flt Thorium	681	16	18	47

Background removed	TC	K	U	TH
Pre Thorium B/G removed	268	1	7	24
Post Thorium B/G removed	286	0	8	27

Pre Test line TC. Running Mean of all flights	749
Percentage change this flight	-1.0%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-2.2%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	1.9%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	0.7%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419049.90
Post Flight Ground Cals	442880.90	5419051.20

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 92/93 DATE 3/03/2001 JULIAN 062 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	85	0.0
2	5.3	72	0.0
3	5.6	76	0.3
4	5.0	60	-0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	87	-0.2
5.3	76	0.0
5.4	76	0.3
4.8	62	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	399	16	11	21
Pre Fit Thorium	684	17	18	47
Pre Production Test Line	778	53	22	28
Post Production Test Line	693	54	16	29
Post Fit Background	394	16	10	21
Post Fit Thorium	687	17	18	47

Background removed	TC	K	U	TH
Pre Thorium B/G removed	285	1	6	26
Post Thorium B/G removed	292	1	8	26

Pre Test line TC Running Mean of all flights	751
Percentage change this flight	3.5%
Pre Test line TH Running Mean of all flights	27
Percentage change this flight	3.6%
Post Test line TC Running Mean of all flights	698
Percentage change this flight	-0.8%
Post Test line TH Running Mean of all flights	28
Percentage change this flight	3.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.40	5419050.00
Post Flight Ground Cals	442882.00	5419050.70

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 94 DATE 4/03/2001 JULIAN 063 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	84	-0.1
2	5.1	72	0.2
3	5.8	77	0.1
4	4.9	60	-0.1
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	85	0.0
5.3	74	0.0
5.9	76	-0.2
4.8	60	0.0
5.3	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	412	17	12	21
Pre Flt Thorium	702	16	20	47
Pre Production Test Line	780	54	29	28
Post Production Test Line	711	55	19	28
Post Flt Background	417	16	13	21
Post Flt Thorium	687	18	20	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	290	-1	8	26
Post Thorium B/G removed	270	2	7	25

Pre Test line TC. Running Mean of all flights	753
Percentage change this flight	3.6%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	3.8%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	1.7%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	0.6%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442882.00	5419050.50
Post Flight Ground Cals	442880.80	5419050.00

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 95 DATE 6/03/2001 JULIAN 065 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.7	87	-0.6
2	5.3	75	0.0
3	6.1	80	-0.2
4	4.9	63	-0.1
	<b>5.5</b>	<b>Total Sys</b>	<b>-0.2</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	85	0.0
5.3	74	0.0
5.9	76	-0.2
4.8	60	0.0
<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	382	16	10	20
Pre Fit Thorium	652	16	18	45
Pre Production Test Line	748	52	17	27
Post Production Test Line	696	52	17	27
Post Fit Background	382	16	10	20
Post Fit Thorium	652	16	18	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	270	0	7	<b>25</b>
Post Thorium B/G removed	270	0	7	<b>25</b>

Pre Test line TC. Running Mean of all flights	753
Percentage change this flight	-0.7%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	0.3%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	-0.5%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-1.5%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419050.10
Post Flight Ground Cals	442880.80	5419050.10

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 96/97 DATE 7/03/2001 JULIAN 066 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	88	0.0
2	5.3	75	0.0
3	5.8	80	0.1
4	5.0	63	-0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.9	89	0.1
5.4	78	-0.1
5.9	80	-0.2
4.8	64	0.0
	<b>5.3</b>	<b>Total Sys</b>
		<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	393	15	12	20
Pre Flt Thorium	667	17	18	45
Pre Production Test Line	788	52	25	27
Post Production Test Line	700	55	16	28
Post Flt Background	387	17	10	20
Post Flt Thorium	659	17	17	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	274	2	7	25
Post Thorium B/G removed	271	1	8	25

Pre Test line TC. Running Mean of all flights	755
Percentage change this flight	4.4%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	0.8%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	0.1%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-0.2%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419050.00
Post Flight Ground Cals	442881.80	5419050.20

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 98/99 DATE 8/03/2001 JULIAN 067 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	87	0.0
2	5.3	75	0.0
3	6.1	80	-0.2
4	4.7	62	0.1
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	90	0.0
5.5	78	-0.2
5.5	81	0.2
4.9	64	-0.1
5.2	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	371	15	10	19
Pre Flt Thorium	647	16	17	45
Pre Production Test Line	742	52	15	27
Post Production Test Line	692	55	15	28
Post Flt Background	392	16	11	21
Post Flt Thorium	660	17	17	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	277	0	7	26
Post Thorium B/G removed	269	1	7	24

Pre Test line TC. Running Mean of all flights	754
Percentage change this flight	-1.6%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-1.2%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	-0.9%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	0.7%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419050.20
Post Flight Ground Cals	442882.00	5419050.60

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 100 DATE 9/03/2001 JULIAN 068 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.9	88	0.2
2	5.4	75	-0.1
3	6.0	81	-0.1
4	4.9	62	-0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	88	0.0
5.1	77	0.2
5.8	79	-0.1
4.9	63	-0.1
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	382	16	11	20
Pre Flt Thorium	640	16	18	44
Pre Production Test Line	766	51	17	28
Post Production Test Line	713	54	16	28
Post Flt Background	397	15	11	20
Post Flt Thorium	669	17	18	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	258	-0	7	23
Post Thorium B/G removed	272	2	7	25

Pre Test line TC. Running Mean of all flights	755
Percentage change this flight	1.4%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	2.6%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	1.9%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	0.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.70	5419050.10
Post Flight Ground Cals	442882.00	5419050.20

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 102/103 DATE 10/03/2001 JULIAN 069 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	89	0.1
2	5.3	76	0.0
3	6.0	81	-0.1
4	4.8	63	0.0
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	88	-0.1
5.4	77	-0.1
5.4	79	0.3
4.7	63	0.1
5.2	Total Sys	0.1

Calibration Line	TC	K	U	TH
Pre Fit Background	386	16	11	19
Pre Fit Thorium	653	16	17	46
Pre Production Test Line	745	53	19	28
Post Production Test Line	727	55	18	28
Post Fit Background	427	16	13	21
Post Fit Thorium	706	17	22	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	267	-0	6	26
Post Thorium B/G removed	279	1	8	24

Pre Test line TC. Running Mean of all flights	754
Percentage change this flight	-1.2%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	2.6%
Post Test line TC. Running Mean of all flights	701
Percentage change this flight	3.7%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	2.1%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.70	5419050.10
Post Flight Ground Cals	442881.40	5419051.40

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 104/105 DATE 11/03/2001 JULIAN 070 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	4.9	85	0.2
2	5.4	71	-0.1
3	6.1	77	-0.2
4	4.9	58	-0.1
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	84	-0.1
5.2	72	0.1
5.4	74	0.3
4.9	59	-0.1
<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	388	16	11	21
Pre Flt Thorium	665	17	18	46
Pre Production Test Line	768	51	23	27
Post Production Test Line	686	53	16	28
Post Flt Background	380	15	10	20
Post Flt Thorium	654	16	17	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	277	1	7	25
Post Thorium B/G removed	274	1	7	25

Pre Test line TC: Running Mean of all flights	755
Percentage change this flight	1.8%
Pre Test line TH: Running Mean of all flights	27
Percentage change this flight	-0.1%
Post Test line TC: Running Mean of all flights	700
Percentage change this flight	-2.0%
Post Test line TH: Running Mean of all flights	28
Percentage change this flight	2.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419049.60
Post Flight Ground Cals	442880.80	5419050.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 106/107 DATE 13/03/2001 JULIAN 072 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	83	0.1
2	5.4	69	-0.1
3	5.8	75	0.1
4	4.8	57	0.0
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	83	0.0
5.4	72	-0.1
5.5	74	0.2
4.7	58	0.1
5.2	Total Sys	0.1

Calibration Line	TC	K	U	TH
Pre Flt Background	378	15	10	20
Pre Flt Thorium	651	15	17	46
Pre Production Test Line	732	52	16	27
Post Production Test Line	687	55	15	28
Post Flt Background	390	17	10	21
Post Flt Thorium	656	17	17	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	273	-0	7	26
Post Thorium B/G removed	266	1	7	25

Pre Test line TC. Running Mean of all flights	754
Percentage change this flight	-3.0%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-0.9%
Post Test line TC. Running Mean of all flights	700
Percentage change this flight	-1.8%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	0.5%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419049.00
Post Flight Ground Cals	442880.80	5419051.50

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 108/109 DATE 14/03/2001 JULIAN 073 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.3	83	-0.2
2	5.3	69	0.0
3	5.9	74	0.0
4	4.8	57	0.0
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.0	85	0.0
5.3	74	0.0
5.8	75	-0.1
4.8	60	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	384	16	11	20
Pre Flt Thorium	647	16	17	45
Pre Production Test Line	726	51	20	26
Post Production Test Line	686	53	16	28
Post Flt Background	380	15	11	20
Post Flt Thorium	661	16	17	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	263	1	7	25
Post Thorium B/G removed	281	1	7	26

Pre Test line TC Running Mean of all flights	753
Percentage change this flight	-3.5%
Pre Test line TH Running Mean of all flights	27
Percentage change this flight	-3.0%
Post Test line TC Running Mean of all flights	699
Percentage change this flight	-1.9%
Post Test line TH Running Mean of all flights	28
Percentage change this flight	0.0%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419050.00
Post Flight Ground Cals	442880.80	5419050.70

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 110 DATE 15/03/2001 JULIAN 074 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	84	0.0
2	5.2	71	0.1
3	5.9	75	0.0
4	4.8	58	0.0
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	85	-0.1
5.6	73	-0.3
5.4	75	0.3
4.7	59	0.1
5.2	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	385	16	11	20
Pre Flt Thorium	664	17	18	45
Pre Production Test Line	766	52	23	27
Post Production Test Line	708	55	17	28
Post Flt Background	406	16	11	22
Post Flt Thorium	683	17	18	46

Background removed	TC	K	U	TH
Pre Thorium B/G removed	279	0	7	25
Post Thorium B/G removed	277	1	7	24

Pre Test line TC. Running Mean of all flights	753
Percentage change this flight	1.7%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-0.7%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	1.2%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-0.8%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419049.70
Post Flight Ground Cals	442880.80	5419050.60

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 111 DATE 16/03/2001 JULIAN 075 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	83	0.0
2	5.6	73	-0.3
3	5.3	74	0.6
4	5.0	59	-0.2
	<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	87	-0.1
5.1	75	0.2
5.6	77	0.1
4.8	61	0.0
<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	392	15	12	20
Pre Flt Thorium	659	17	18	44
Pre Production Test Line	780	55	23	27
Post Production Test Line	723	54	20	29
Post Flt Background	412	15	13	20
Post Flt Thorium	698	17	20	45

Background removed	TC	K	U	TH
Pre Thorium B/G removed	267	1	7	24
Post Thorium B/G removed	286	2	7	25

Pre Test line TC. Running Mean of all flights	754
Percentage change this flight	3.4%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-0.8%
Post Test line TC. Running Mean of all flights	700
Percentage change this flight	3.2%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	2.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442882.00	5419050.20
Post Flight Ground Cals	442882.00	5419051.50

Comments:



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## Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 112 DATE 18/03/2001 JULIAN 077 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	87	0.1
2	5.1	73	0.2
3	5.7	79	0.2
4	4.8	61	0.0
	<b>5.2</b>	<b>Total Sys</b>	<b>0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
5.2	88	-0.2
5.5	76	-0.2
5.5	78	0.2
4.8	62	0.0
<b>5.3</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Fit Background	324	14	9	16
Pre Fit Thorium	607	13	16	43
Pre Production Test Line	733	53	22	27
Post Production Test Line	706	52	18	27
Post Fit Background	341	14	9	18
Post Fit Thorium	623	15	17	43

Background removed	TC	K	U	TH
Pre Thorium B/G removed	283	-0	8	27
Post Thorium B/G removed	283	1	8	26

Pre Test line TC. Running Mean of all flights	753
Percentage change this flight	-2.7%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-0.9%
Post Test line TC. Running Mean of all flights	700
Percentage change this flight	0.9%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-2.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.20	5419050.20
Post Flight Ground Cals	442880.80	5419050.50

Comments:



**GEO INSTRUMENTS**

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 Email : geoair@geoinstruments.com.au

# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 113 DATE 19/03/2001 JULIAN 078 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.0	85	0.1
2	5.3	72	0.0
3	5.8	78	0.1
4	4.9	59	-0.1
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
4.8	86	0.2
5.2	75	0.1
5.7	77	0.0
4.8	61	0.0
5.1	Total Sys	0.1

Calibration Line	TC	K	U	TH
Pre Fit Background	340	14	10	17
Pre Fit Thorium	624	14	17	44
Pre Production Test Line	724	50	22	27
Post Production Test Line	690	53	14	27
Post Fit Background	346	15	9	18
Post Fit Thorium	616	15	16	41

Background removed	TC	K	U	TH
Pre Thorium B/G removed	284	-0	8	27
Post Thorium B/G removed	270	-0	7	24

Pre Test line TC. Running Mean of all flights	752
Percentage change this flight	-3.7%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-2.3%
Post Test line TC. Running Mean of all flights	700
Percentage change this flight	-1.5%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-3.3%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419050.00
Post Flight Ground Cals	442882.00	5419050.00

Comments:



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 Email: geoair@geoinstruments.com.au

# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 114 DATE 21/03/2001 JULIAN 080 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.1	87	0.0
2	5.5	74	-0.2
3	6.0	79	-0.1
4	5.0	61	-0.2
	<b>5.4</b>	<b>Total Sys</b>	<b>-0.1</b>

**Post Calibration**

% Res	Gain	Avg% Diff
4.8	89	0.2
5.5	75	-0.2
5.6	79	0.1
4.7	62	0.1
<b>5.2</b>	<b>Total Sys</b>	<b>0.0</b>

Calibration Line	TC	K	U	TH
Pre Flt Background	337	13	9	17
Pre Flt Thorium	608	14	16	42
Pre Production Test Line	738	50	16	26
Post Production Test Line	700	52	19	27
Post Flt Background	381	15	12	18
Post Flt Thorium	655	14	19	44

Background removed	TC	K	U	TH
Pre Thorium B/G removed	272	0	7	25
Post Thorium B/G removed	274	-1	7	26

Pre Test line TC. Running Mean of all flights	752
Percentage change this flight	-1.8%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-2.6%
Post Test line TC. Running Mean of all flights	700
Percentage change this flight	0.0%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-2.9%

Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442880.80	5419049.60
Post Flight Ground Cals	442882.90	5419050.60

Comments:



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# Pre & Post Flight Spectrometer Calibration Data VH-JWF

FLIGHTS 115 DATE 22/03/2001 JULIAN 081 JOB # J2101

**Pre Calibration**

Crystal	% Res	Gain	Avg% Diff
1	5.2	88	-0.1
2	5.4	73	-0.1
3	5.8	80	0.1
4	4.6	61	0.2
	5.3	Total Sys	0.0

**Post Calibration**

% Res	Gain	Avg% Diff
5.1	88	-0.1
5.5	75	-0.2
5.6	78	0.1
4.6	61	0.2
5.2	Total Sys	0.0

Calibration Line	TC	K	U	TH
Pre Flt Background	341	13	10	17
Pre Flt Thorium	622	14	17	42
Pre Production Test Line	729	49	20	26
Post Production Test Line	680	53	24	27
Post Flt Background	386	13	13	19
Post Flt Thorium	663	15	20	42

Background removed	TC	K	U	TH
Pre Thorium B/G removed	282	1	7	25
Post Thorium B/G removed	277	2	7	23

Pre Test line TC. Running Mean of all flights	751
Percentage change this flight	-3.0%
Pre Test line TH. Running Mean of all flights	27
Percentage change this flight	-3.4%
Post Test line TC. Running Mean of all flights	699
Percentage change this flight	-2.8%
Post Test line TH. Running Mean of all flights	28
Percentage change this flight	-2.9%

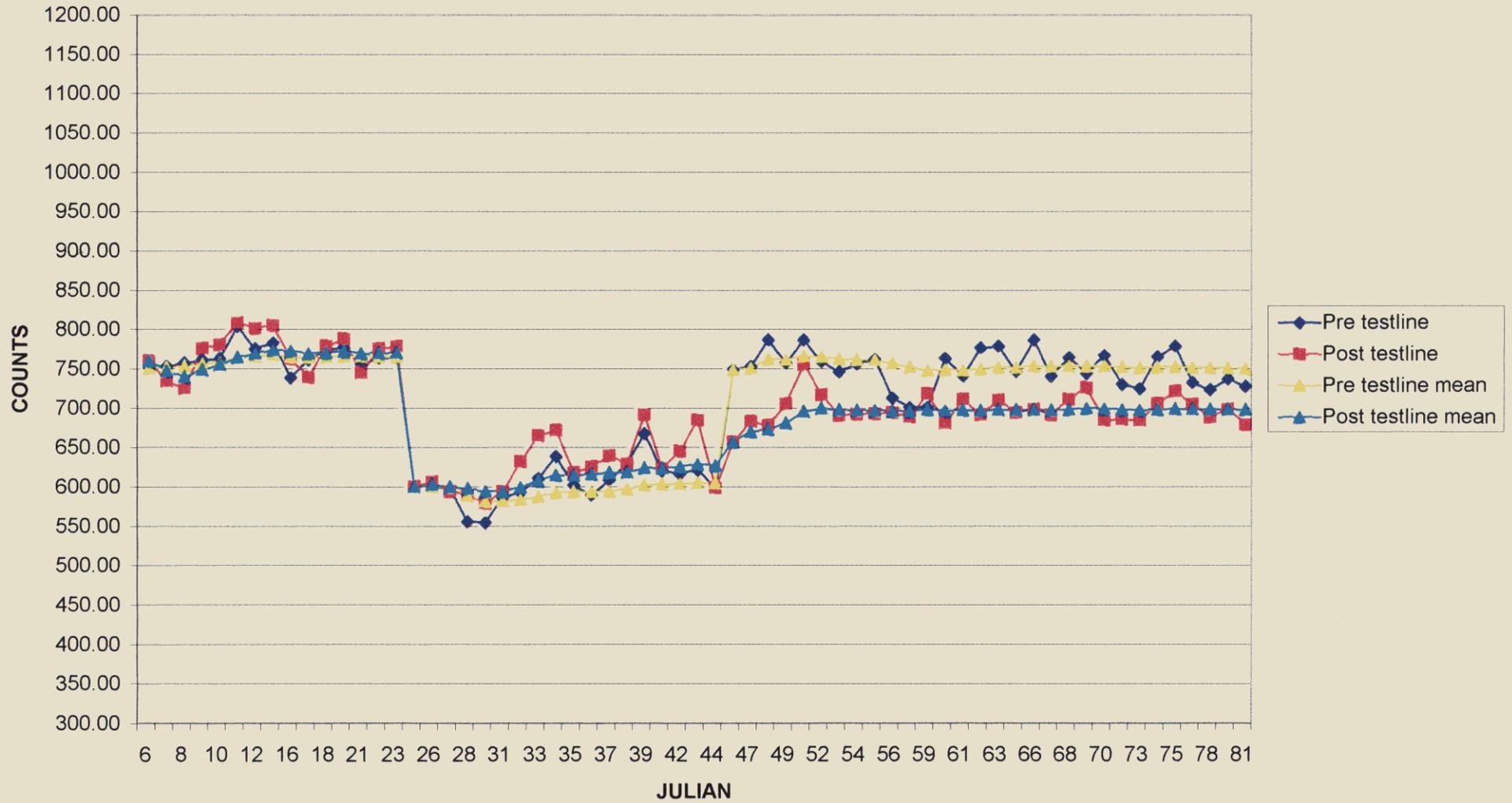
Aircraft Calibration Position	Easting	Northing
Pre Flight Ground Cals	442881.30	5419050.50
Post Flight Ground Cals	442882.00	5419052.50

Comments:

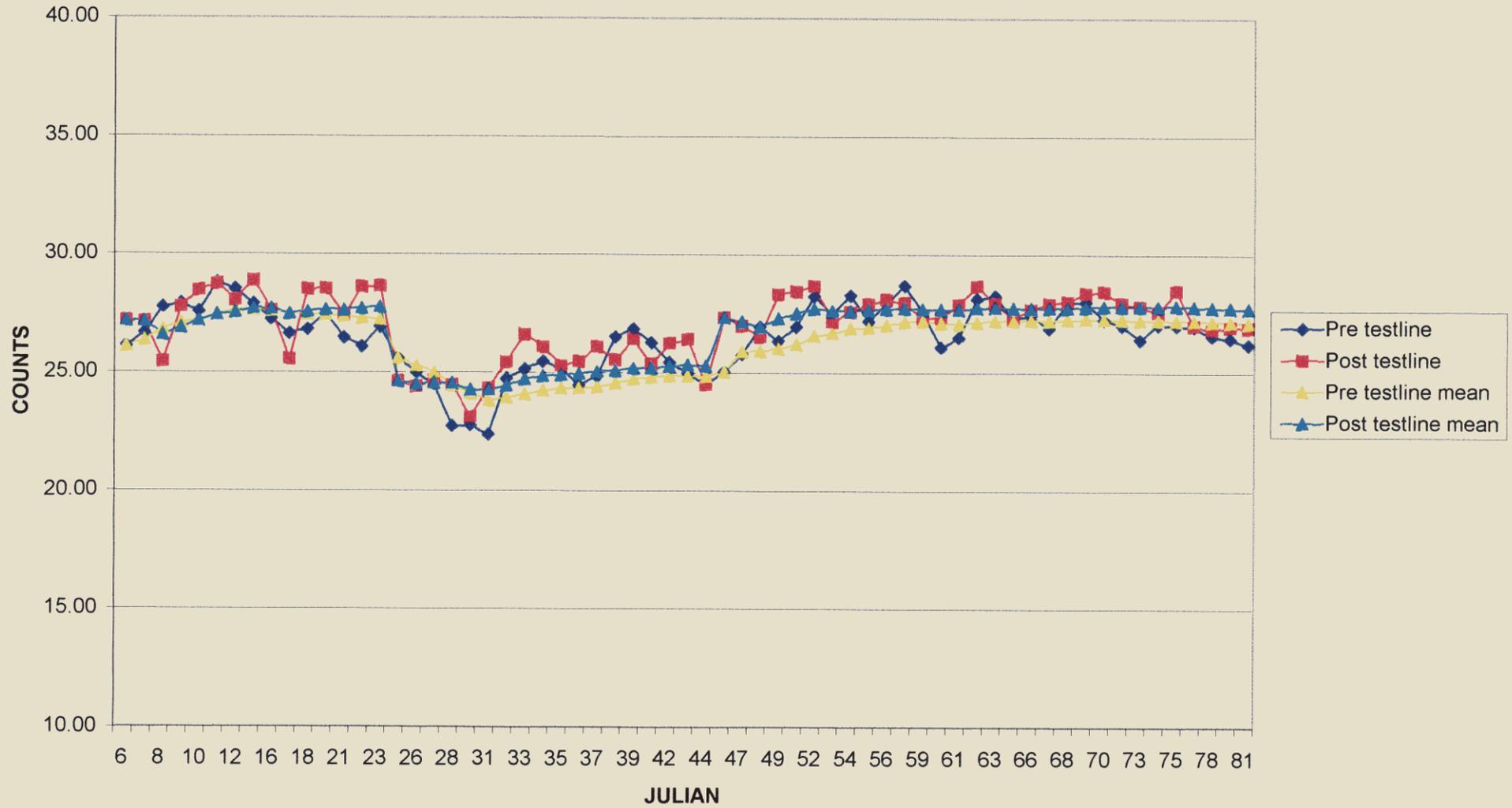
# **APPENDIX 11**

## **Test Line Statistics**

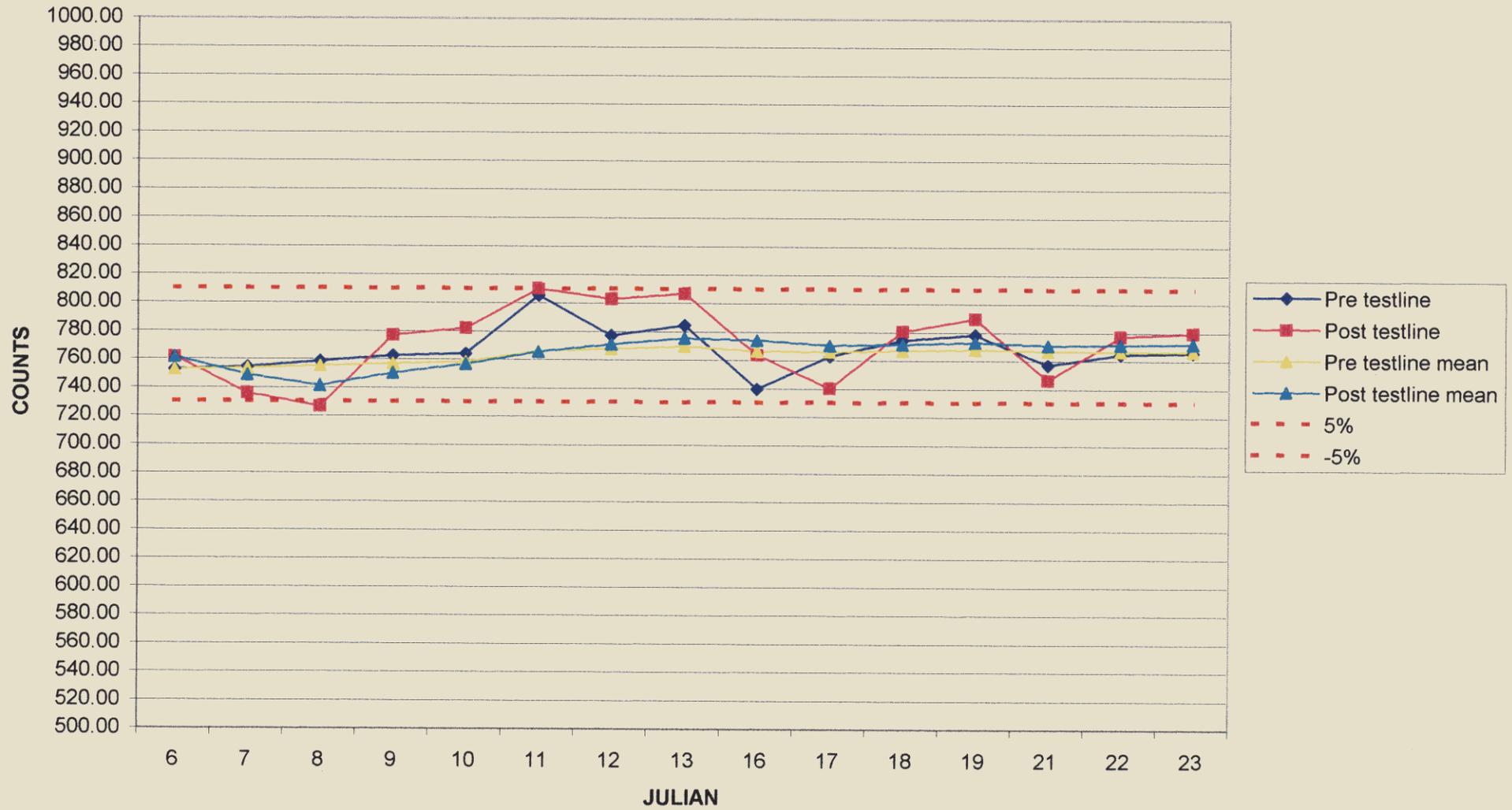
### J2101 (QUEENSTOWN : ZEEHAN : SHEFFIELD) TESTLINE TOTAL COUNT



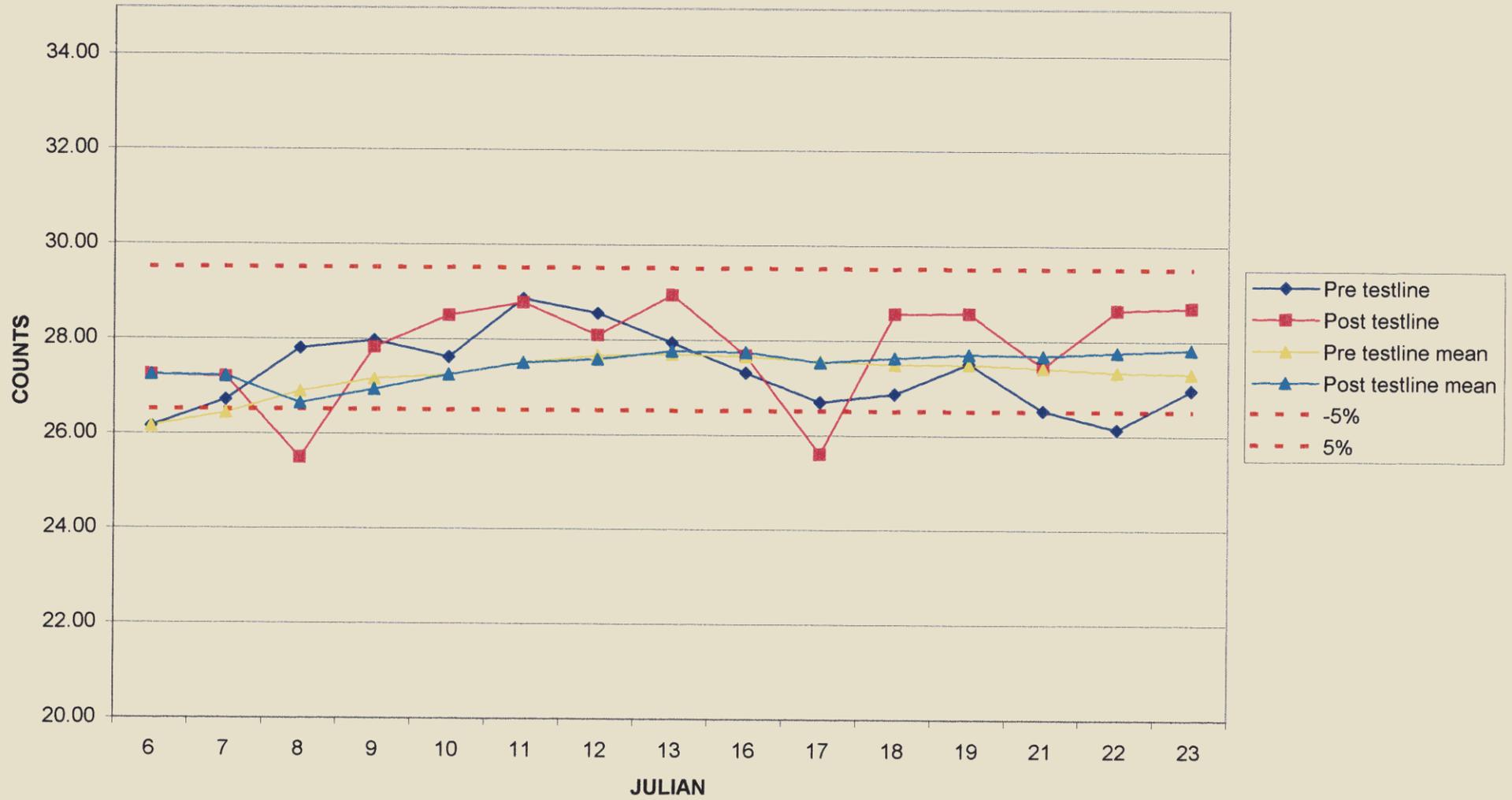
### J2101 (QUEENSTOWN : ZEEHAN : SHEFFIELD) TESTLINE THORIUM



### J2101 (QUEENSTOWN) TESTLINE TOTAL COUNT



### J2101 (QUEENSTOWN) TESTLINE THORIUM



## **APPENDIX 12**

### **Summed 256 Channel Spectra Data Files and Disks**

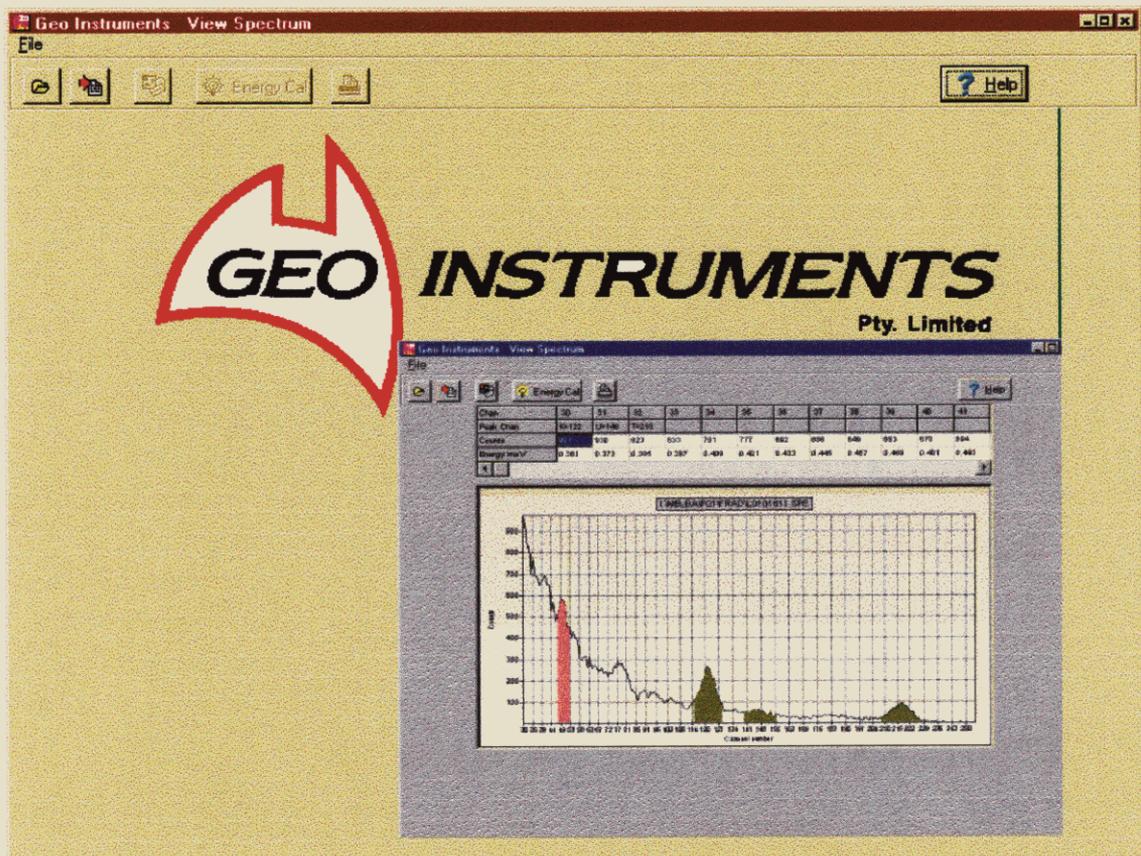
## SUMMED 256 CHANNEL SPECTRAL DATA

The summed raw 256 channel spectrometer data for each line are provided separately on CD ROM as Ascii files together with the program **SpecPlot**. This allows on- screen viewing manipulating and plotting of each spectrum.

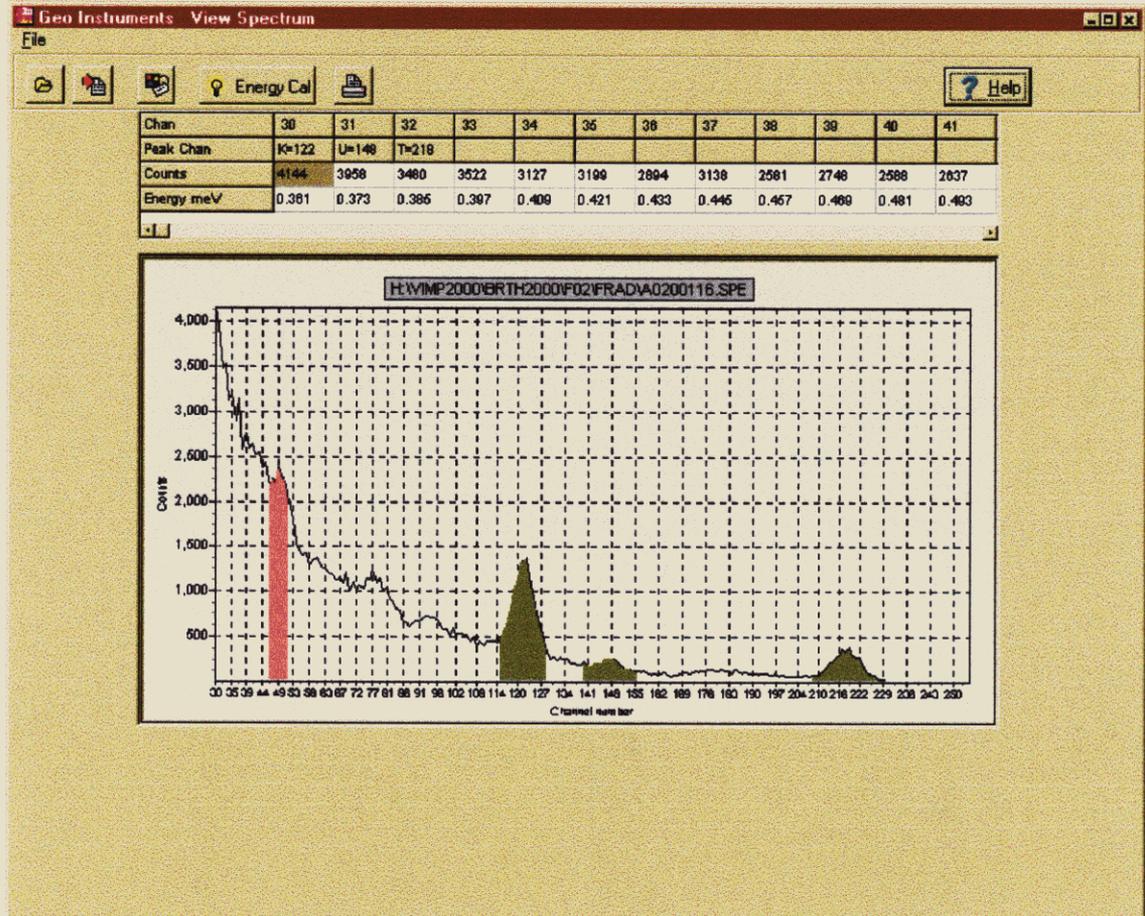
An example of a summed spectra plotted by **SpecPlot** is given on the following page.

**SpecPlot** is a program written by **Geo Instruments** which allows viewing spectra from Exploranium gamma Ray spectrometers. Both raw binary and ASCII derived spectra files are supported. The supplied CD-Rom contains only the ASCII derived spectra in the interests of conserving space and allowing fast access to each and every record. The file extension for the ASCII records is .SPA. **SpecPlot** may be used to view spectra (extension .SPE) from the raw field tapes. These files represent the binary spectral data as generated directly from the spectrometer and are provided to ensure integrity of the original data base. Unlike previous presentations, **SpecPlot** allows the viewer to interact with the spectra to zoom in on specific areas, change scale and so forth. A help file is provided with the program to facilitate its use.

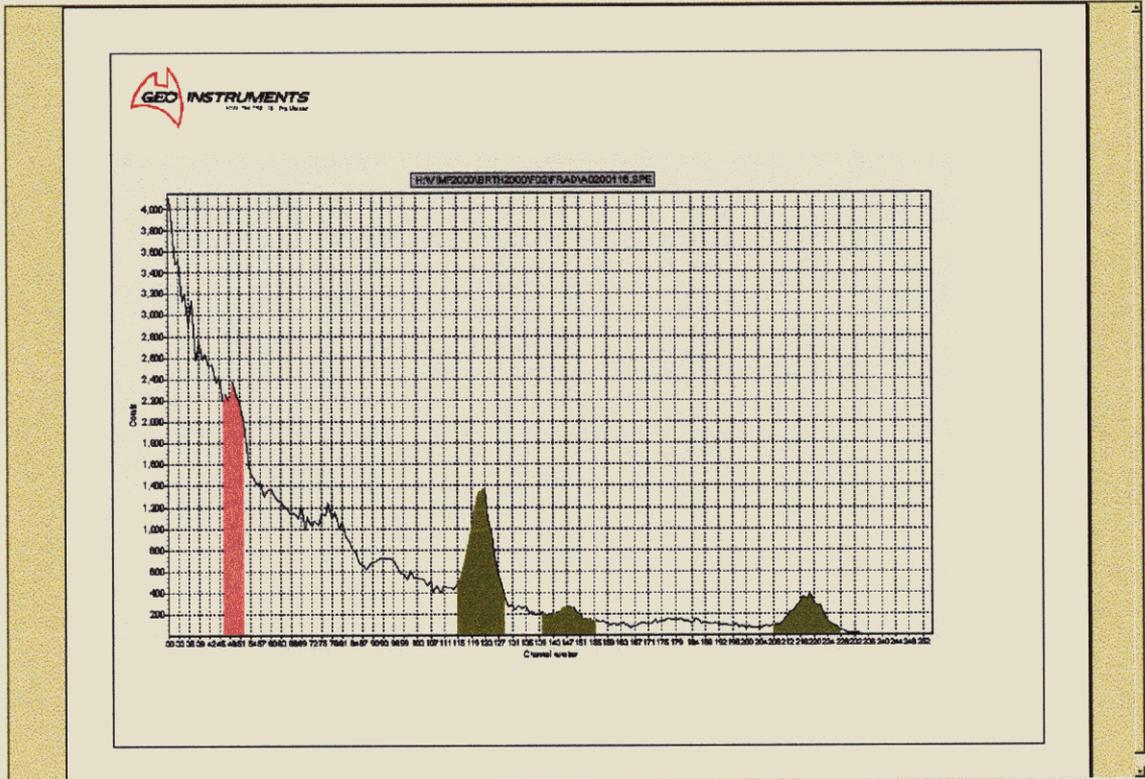
### An Example of the opening splash screen for **SpecPlot**



## An example of a spectra viewed in *SpecPlot*



### An example of a *SpecPlot* Printout



# **APPENDIX 13**

## **Data Formats**

## DATA TAPES AND FORMATS

### 1. RAW DATA

#### Raw field data directory format

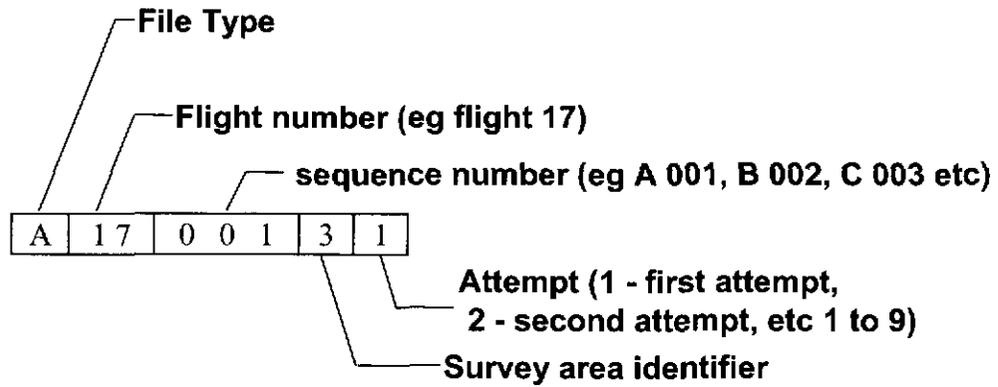
**/Fdat/ \*.ani** (Raw field analogue files)  
    **\*.geo** (Raw field geophysical data files)  
    **\*.mag** (Raw field Magnetometer readings)  
    **\*.ref** (Located raw field data post processed)

**/Flog/**       **\*.log** (Flight details)

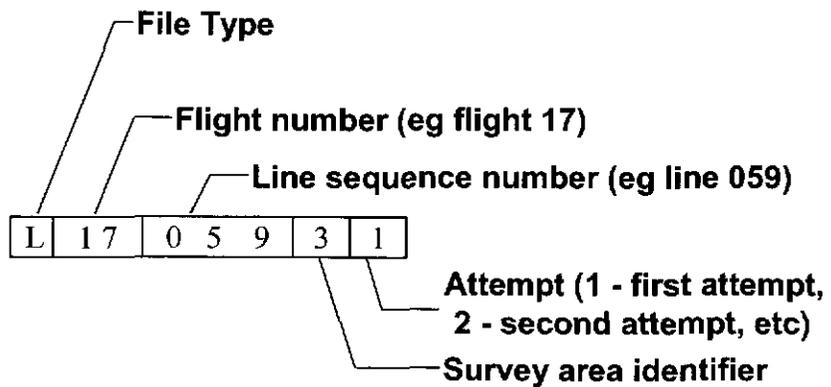
**/Fnav/**       **\*.gps** (Raw field position data files)

**/Frad/**       **\*.spe, \*.spf** (Raw field radiometric data files, Binary format)

## Calibration format



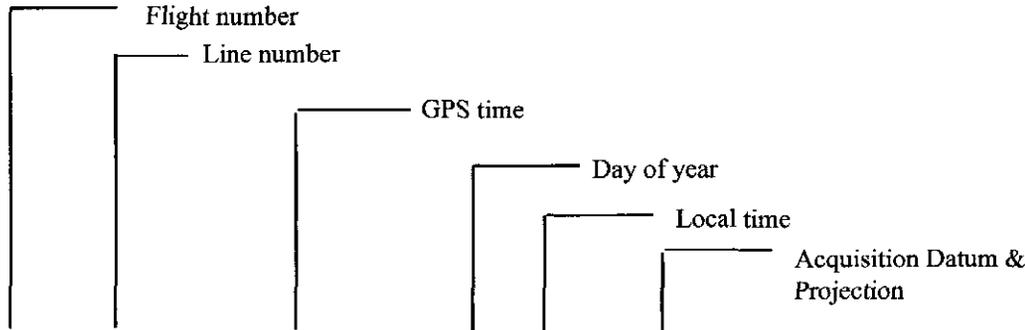
## Acquisition format



## File type

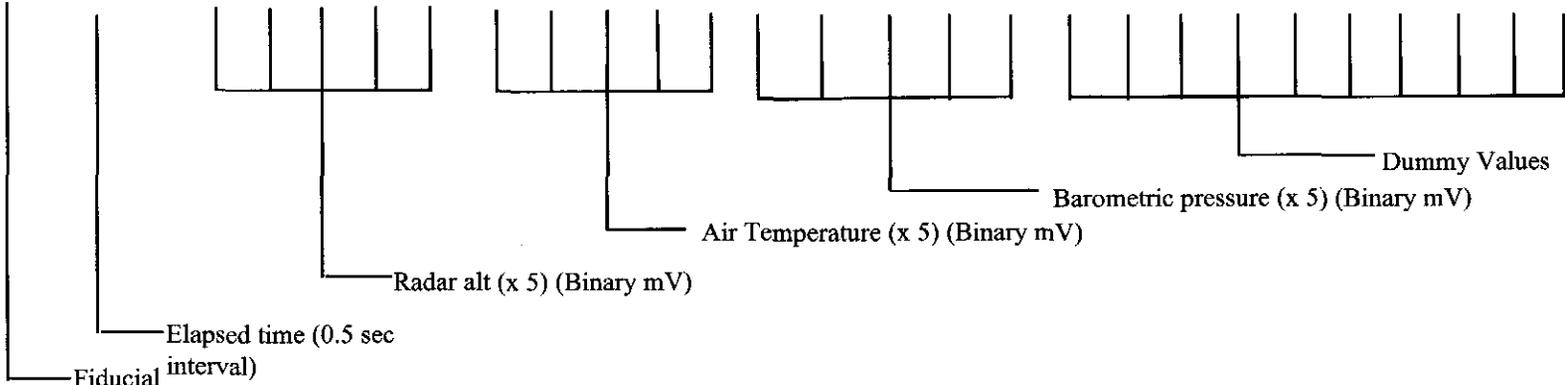
Pre Ground Background	A
Pre Thorium	B
Pre Uranium	C
Pre GND Background	D
Pre Test line	E
Post Test line	G
Post GND Background	I
Post Thorium	J
Post Uranium	K
Post GND Background	M
Flight line	L
Tie line	T

## Analogue file format (Fdat directory .ani)

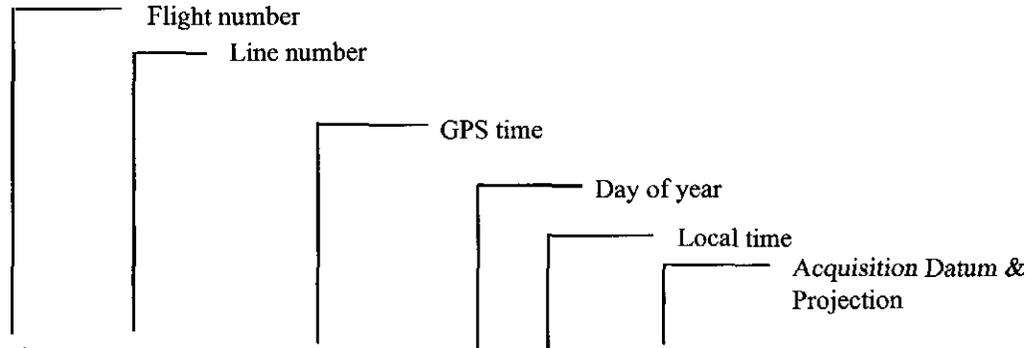


```

FLT 71 LINE 286 GPSTIME 050548.00 Day 92 15:05:01 WGS84 Zone= 55
28437 47269.5000 -125 -126 -125 -128 -135 53 52 51 53 53 643 643 643 645 645 28 27 29 29 28 28 28 27 27 28
28438 47270.0000 -131 -127 -127 -133 -125 52 52 54 54 53 646 640 644 643 643 28 28 27 27 28 27 28 28 28 28
28439 47270.5000 -137 -131 -130 -134 -133 53 53 53 53 53 643 644 642 651 649 27 28 30 28 30 28 29 28 27 28
28440 47271.0000 -141 -134 -133 -137 -142 54 55 53 54 53 641 645 640 642 645 27 29 29 29 29 26 28 28 29 28
28441 47271.5000 -152 -157 -142 -146 -150 53 54 54 53 54 643 650 642 643 646 29 28 27 29 30 29 28 28 28 27
28442 47272.0000 -172 -156 -157 -159 -166 52 53 54 54 52 645 648 640 645 646 29 28 30 27 28 28 27 28 27 28
28443 47272.5000 -176 -174 -175 -177 -184 52 53 52 52 53 644 640 649 643 645 28 28 29 28 29 28 28 29 28 28
28444 47273.0000 -171 -187 -176 -179 -174 52 52 53 53 53 646 647 641 641 644 28 28 28 27 28 29 29 28 28 27
28445 47273.5000 -156 -166 -163 -159 -165 53 52 54 53 53 643 642 642 641 644 27 28 29 28 27 26 28 26 28 28
    
```

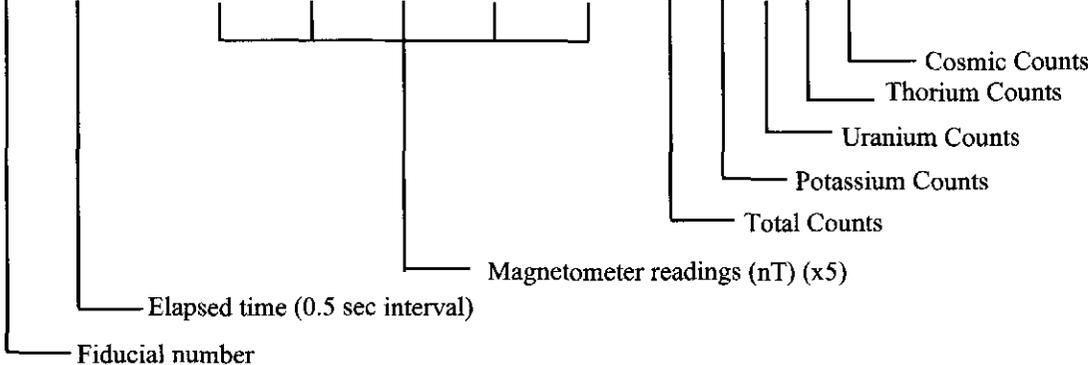


## Geo file format (FDAT directory .geo)



```

FLT 71 LINE 286 GPSTIME 050548.00 Day 92 15:05:01 WGS84 Zone= 55
28437 47269.500059848525984852598485159848535984855 1698 171 60 64 74
28438 47270.000059848595984856598485359848525984851 1698 171 60 64 74
28439 47270.500059848805984876598487159848665984862 1735 188 58 42 68
28440 47271.000059849105984903598489659848905984885 1735 188 58 42 68
28441 47271.500059849475984939598493159849235984916 1771 213 52 43 71
28442 47272.000059849935984983598497359849645984955 1771 213 52 43 71
28443 47272.500059850415985030598502159850125985002 1746 195 69 44 73
28444 47273.000059850975985086598507459850625985052 1746 195 69 44 73
28445 47273.500059851655985151598513759851235985110 1704 189 53 57 64
    
```





## Data Format for REF Files (Intermediate processed files)

Line 1 is a generic header line to table line relevant information.

FLT 08 DAY 13 Trav 418 GpsTym 043130.0 LocTym 15:31:31 WGS84 Zone= 55

Field 01 = Flight number  
 Field 02 = Day of year (related to local time)  
 Field 03 = Line type descriptor  
 Field 04 = Line sequence number  
 Field 05 = GpsTym Label  
 Field 06 = Gps Time Field HHMMSS.s  
 Field 07 = Local time Label  
 Field 07 = Local time HH:MM:SS  
 Field 08 = Datum reference for GPS positions  
 Field 09 = UTM Zone identifier

Line 2 to end of file contains lines of the following format.

365598.8 5822378.4 12 15.52530 +54041.23 +13791.80 +23531.18 60534.17 -0.003 60160.072  
 60160.831 842 95 25 30 39 64.9 902.4 445.2 29.1 237.8 2.0

Where;

Field 01 = Float 6.1 Position Easting in metres referenced to UTM Zone as per header  
 Field 02 = Float 7.1 Position Northing in metres referenced to UTM Zone as per header  
 Field 03 = Int 5.0 System fiducial number (duotonic)  
 Field 04 = Float 2.5 System time HH.mmmmm  
 Field 05 = Float 6.2 Vector Magnetometer X Axis  
 Field 06 = Float 6.2 Vector Magnetometer Y Axis  
 Field 07 = Float 6.2 Vector Magnetometer Z Axis  
 Field 08 = Float 6.2 Vector Magnetometer Total field  
 Field 09 = Float 3.3 Raw magnetometer fourth difference noise figure.  
 Field 10 = Float 6.3 Total field Magnetometer raw uncompensated  
 Field 11 = Float 6.3 Total field Magnetometer compensated  
 Field 12 = Int 4.0 Radiometrics Total count channel count/sec dead time corrected  
 Field 13 = Int 3.0 Radiometrics Potassium channel count/sec dead time corrected  
 Field 14 = Int 3.0 Radiometrics Bi 214 (uranium) channel count/sec dead time corrected.  
 Field 15 = Int 3.0 Radiometrics Thorium channel count/sec dead time corrected.  
 Field 16 = Int 3.0 Radiometrics Cosmic channel count/sec dead time corrected  
 Field 17 = Float 4.1 Radar altimeter metres above radar reflective terrain.  
 Field 18 = Float 4.1 Barometric pressure in hectoPascals.  
 Field 19 = Float 4.1 Gps height above ellipsoid.  
 Field 20 = Float 4.1 Outside air temperature in degrees Celsius.  
 Field 21 = Float 4.1 Dummy value to preserve formatting  
 Field 21 = Float 4.1 Dummy value to preserve formatting

**log file format (Flog directory .log)***(Geo Instruments internal use only)*

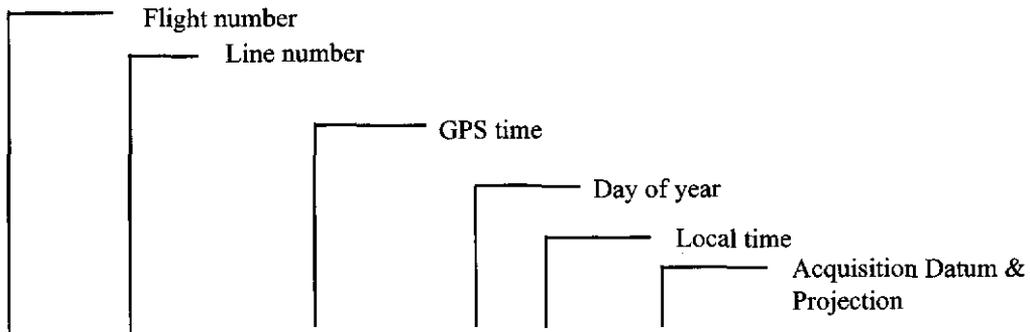
FLIGHT LOG FOR FLIGHT 41 DOY 62 LocalTime 09:26:06 Area 1 Datum = WGS84

---

Line	File	Fid	Time	East	North	Len	Alarms
PRE1.GND 1	A4100111	0	09:37:14	420563	5897863		
		241	09:39:15	420563	5897863	0.000	241
PRE.THOR 2	B4100211	241	09:39:19	420563	5897863		
		481	09:41:19	420563	5897863	0.000	240
PRE.URNM 3	C4100311	481	09:42:21	420563	5897862		
		721	09:44:21	420563	5897863	0.001	240
PRE2.GND 4	D4100411	721	09:46:02	420563	5897863		
		961	09:48:02	420563	5897862	0.001	240
PRE.TEST 5	E4100511	961	09:52:12	423816	5895694		
		1241	09:54:32	429008	5894968	5.243	228

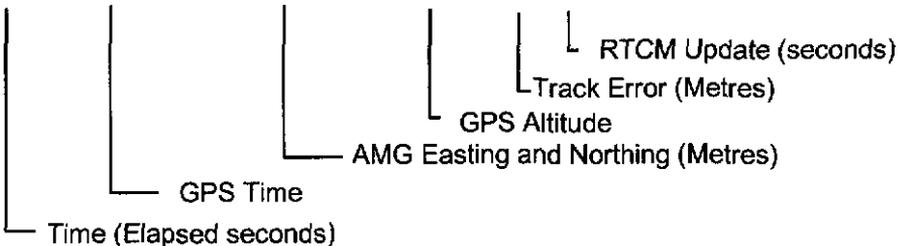
---

## Raw Position Data (Fnav directory .gps)



```

FLT 71 LINE 286 GPSTIME 050548.00 Day 92 15:05:01 WGS84 Zone= 55
47269.5000050548.00 481988.85849382.01369.3 0 6.0
47270.0000050548.00 481988.85849382.01369.3 0 6.0
47270.5000050549.00 482021.45849383.71371.7 0 5.0
47271.0000050549.00 482021.45849383.71371.7 0 5.0
47271.5000050550.00 482054.55849384.91373.6 2 6.0
47272.0000050550.00 482054.55849384.91373.6 2 6.0
47272.5000050551.00 482088.05849385.81374.8 2 6.0
47273.0000050551.00 482088.05849385.81374.8 2 6.0
47273.5000050552.00 482122.25849386.71375.4 3 7.0
    
```



# Raw Radiometric Spectral Data FRAD Directory (Binary file) \*.SPE

## Format

BYTE #	Data Format
1 - 70	Geo Instruments ASCII file header
71 - 90	Exploranium ASCII data
91 - 646	Exploranium Binary data

BYTE #	DATA	COMMENTS
1		<b>Start of Geo Instruments ASCII file header</b>
1 - 5	ASCII Text	"FLT "
6 - 7	FLIGHT	FLIGHT NUMBER (0 - 99)
8 - 13	ASCII Text	" LINE "
14 - 16	LINE	LINE NUMBER (0 - 999)
17 - 25	ASCII Text	" GPSTIME "
26 - 34	GPS TIME	HHMMSS.SS
35 - 40	ASCII Text	" Day "
41 - 44	DAY	JULIAN DAY (1 - 365)
45 - 46	Local Time (Hrs)	HH
47	ASCII Text	","
48 - 49	Local Time (Mins)	MM
50	ASCII Text	","
51 - 52	Local Time (Secs)	SS
53 - 59	ASCII Text	Acquisition Datum " WGS84 "
60 - 65	ASCII Text	Acquisition Projection (UTM) "Zone= "
66 - 68	UTM Zone	
69	<cr>	Carriage Return
70	<lf>	Line Feed

<b>71</b>		<b>Start of Exploranium ASCII data</b>
71	U (55 H)	Sync Character - May be used by data Acq. System
72	U (55 H)	System to check that data transfer is ok

73	G - sync codes
74	R

75	"x"	ERROR CODE
----	-----	------------

76	"n"	ERROR XTAL
----	-----	------------

77 X	
78 X	Serial #

79	Y - YEAR	REAL TIME CLOCK
80	Y	
81	M - MONTH	
82	M	
83	D - DAY	
84	D	
85	H - HOUR	
86	H	
87	M - MINUTE	
88	M	
89 S - SECOND		
90	S	

---

91		<b>Start of Exploranium Binary data</b>
91	DATA 1 BYTE	# OF DOWN DETECTORS
92	DATA 1 BYTE	# OF UP DETECTORS
<hr/>		
93	L	
94 H		SAMPLE TIME (mSec) – 2 BYTES
<hr/>		
95 L		
96	H	LIVE-TIME (mSec) – 2 BYTES
<hr/>		
97	L	
98	H	COSMIC CHANNEL – 2 BYTES
<hr/>		
99	L	
100	H	RESOLUTION – e.g. 87 = 8.7% (in isotope units)
<hr/>		
101	L	
102	H	CHECKSUM
<hr/>		
103	L	
104	H	ROI's # 1-8 = 4 BYTES/ROI
<hr/>		
105 – 646		256 CHANNELS FROM DOWN DETECTOR CHANNEL 0 FIRST CHANNEL 255 LAST 2 BYTES/CHANNEL – LOW BYTE FIRST
<hr/>		

TOTAL BLOCK LENGTH = 646 BYTES

**Raw Radiometric Spectral Data FRAD Directory (Binary file) \*.SPF****Format****BYTE # Data Format**

1 - 54 Geo Instruments ASCII file header  
 55 - 74 Exploranium ASCII data  
 75 - 630 Exploranium Binary data

BYTE #	DATA	COMMENTS
1		<b>Start of Geo Instruments ASCII file header</b>
1 - 5	ASCII Text	"FLT "
6 - 7	FLIGHT	FLIGHT NUMBER (0 - 99)
8 - 13	ASCII Text	" LINE "
14 - 16	LINE	LINE NUMBER (0 - 999)
17 - 25	ASCII Text	" GPSTIME "
26 - 34	GPS TIME	HHMMSS.SS
35 - 40	ASCII Text	" Day "
41 - 44	DAY	JULIAN DAY (1 - 365)
45 - 46	Local Time (Hrs)	HH
47	ASCII Text	","
48 - 49	Local Time (Mins)	MM
50	ASCII Text	","
51 - 52	Local Time (Secs)	SS
53	<cr>	Carriage Return
54 <lf>	Line Feed	

---

<b>55</b>		<b>Start of Exploranium ASCII data</b>
55	U (55 H)	Sync Character - May be used by data Acq. System
56	U (55 H)	System to check that data transfer is ok

---

57	G - sync codes	
58	R	

---

59	"x"	ERROR CODE
----	-----	------------

---

60	"n"	ERROR XTAL
----	-----	------------

---

61 X		
62 X	Serial #	

---

63	Y - YEAR	REAL TIME CLOCK
64	Y	
65	M - MONTH	
66	M	
67	D - DAY	
68	D	
69	H - HOUR	
70	H	
71	M - MINUTE	
72	M	
73 S - SECOND		
74	S	

---

<b>75</b>		<b>Start of Exploranium Binary data</b>
75	DATA 1 BYTE	# OF DOWN DETECTORS
76	DATA 1 BYTE	# OF UP DETECTORS

---

---

77	L	
78 H		SAMPLE TIME (mSec) – 2 BYTES
<hr/>		
79 L		
80	H	LIVE-TIME (mSec) – 2 BYTES
<hr/>		
81	L	
82	H	COSMIC CHANNEL – 2 BYTES
<hr/>		
83	L	
84	H	RESOLUTION – e.g. 87 = 8.7% (in isotope units)
<hr/>		
85	L	
86	H	CHECKSUM
<hr/>		
87	L	
88	H	ROI's # 1-8 = 4 BYTES/ROI
<hr/>		
89 – 630		256 CHANNELS FROM DOWN DETECTOR CHANNEL 0 FIRST CHANNEL 255 LAST 2 BYTES/CHANNEL – LOW BYTE FIRST
<hr/>		

TOTAL BLOCK LENGTH = 630 BYTES

## 2. FINAL LOCATED DATA FORMATS

**Project:** TASMANIA 2001

**Survey names:** Area C - Western Tasmania.  
Area E - D'Aguilar Range.

### CO-ORDINATES OF THE VERTICES OF AREA C.

Projection: TMAMG55, Datum AGD66

mE	mN
360000.0	5440000.0
360000.0	5450000.0
389000.0	5450000.0
389000.0	5430000.0
421000.0	5430000.0
421000.0	5420000.0
445000.0	5420000.0
445000.0	5390000.0
416000.0	5390000.0
416000.0	5397000.0
410000.0	5397000.0
410000.0	5392000.0
398000.0	5388000.0
398000.0	5385600.0
407000.0	5384600.0
405000.0	5373600.0
397000.0	5368000.0
390000.0	5368000.0
393500.0	5349000.0
403000.0	5347000.0
399000.0	5336000.0
395000.0	5336000.0
395000.0	5325000.0
388000.0	5325000.0
388000.0	5310000.0
380000.0	5310000.0
380000.0	5314000.0
374000.0	5315091.0
374000.0	5340000.0
353787.0	5340000.0
353500.0	5345000.0
335500.0	5369000.0
329000.0	5380000.0
351500.0	5380000.0
351500.0	5404000.0
341000.0	5410000.0
341000.0	5437000.0
338000.0	5440000.0
360000.0	5440000.0

### CO-ORDINATES OF THE VERTICES OF AREA E.

Projection: TMAMG55, Datum AGD66

mE	mN
379000.0	5292000.0
387000.0	5292000.0
393181.0	5275000.0
379000.0	5275000.0
379000.0	5292000.0

### LOCATED DATA FILES

Data type: Final ASCII ASEG GDF2 located data  
Archive Media: CDs (Joliet format)

#### DATA FILE CONTENTS:

##### Area C - Western Tasmania:

AREA_C_MAG_Trav1.dat	( magnetic data for lines 10011 - 11601)
AREA_C_MAG_Trav2.dat	( magnetic data for lines 11611 - 12601)
AREA_C_MAG_Trav3.dat	( magnetic data for lines 12611 - 14001)
AREA_C_MAG_Trav4.dat	( magnetic data for lines 14011 - 15401)
AREA_C_MAG_Trav5.dat	( magnetic data for lines 15411 - 17371)
AREA_C_MAG_Ties.dat	( magnetic data for tie lines)
AREA_C_RAD_Trav.dat	( radiometric data for all lines)
AREA_C_RAD_Ties.dat	( radiometric data for tie lines)
AREA_C_RAD256_Trav1.dat	( radiometric data for lines 10011 - 11601)
AREA_C_RAD256_Trav2.dat	( radiometric data for lines 11611 - 12601)
AREA_C_RAD256_Trav3.dat	( radiometric data for lines 12611 - 14001)
AREA_C_RAD256_Trav4.dat	( radiometric data for lines 14011 - 15401)
AREA_C_RAD256_Trav5.dat	( radiometric data for lines 15411 - 17371)
AREA_C_RAD256_Ties.dat	( radiometric data for tie lines)

##### Area E - D'Aquilar Range:

AREA_E_MAG.dat	(magnetic data for all lines)
AREA_E_RAD.dat	(radiometric data for all lines)
AREA_E_RAD256.dat	(radiometric 256 data for all lines)

##### Test Lines - complete survey.

TESTLINES_MAG.dat	(magnetic data for test lines)
TESTLINES_RAD256.dat	(radiometric 256 data for test lines)

**MAGNETIC LOCATED DATA FORMAT**

Field	Null Value	Description
Column 1	99999	line number
Column 2	99	flight
Column 3	99999999	date (YYYYMMDD)
Column 4	9999999	julian_day (YYYYDDD)
Column 5	999999	fiducial
Column 6	99.99999	time (decimal hours)
Column 7	999999.99	AGD66 easting (metres, TMAMG Zone 55)
Column 8	999999.99	AGD66 northing (metres, TMAMG Zone 55)
Column 9	999999.99	GDA94 easting (metres, MGA Zone 55)
Column 10	999999.99	GDA94 northing (metres, MGA Zone 55)
Column 11	999.99999999	GDA94 longitude (decimal degrees, GEODETIC)
Column 12	-99.99999999	GDA94 latitude (decimal degrees, GEODETIC)
Column 13	99999.999	Raw uncompensated magnetics (nanoTeslas)
Column 14	99999.999	Compensated magnetics (nanoTeslas)
Column 15	99999.999	Diurnal & IGRF corrected magnetics (nanoTeslas)
Column 16	99999.999	Levelled magnetics (nanoTeslas)
Column 17	99999.999	Final magnetics microlevelled(nanoTeslas)
Column 18	99999.999	Diurnal (nanoTeslas)
Column 19	99999.999	IGRF (nanoTeslas)
Column 20	9999.9	Final digital terrain model (metres, AHD)
Column 21	9999.9	Final barometric pressure (millibars)
Column 22	9999.9	Final radar altimeter (metres)
Column 23	9999.9	Final barometric pressure (metres)
Column 24	9999.9	Final gps height (metres)
Column 25	999.9	Final temperature (degrees celsius)
Column 26	9	Data used_flag (0=unused, 1=used)

**ASEG GDF2 .dfn FILE FOR MAGNETIC LOCATED DATA:**

```

DEFN 1 ST=RECD,RT=;lineNumber_FINAL:I6:NULL=99999
DEFN 2 ST=RECD,RT=;FlightNumber:I3:NULL=99
DEFN 3 ST=RECD,RT=;Date_YYYYMMDD:I9:NULL=99999999
DEFN 4 ST=RECD,RT=;JulianDay_YYYYDDD:I8:NULL=9999999
DEFN 5 ST=RECD,RT=;Fiducial:I7:NULL=999999
DEFN 6 ST=RECD,RT=;Local_Time_DeclHrs:F9.5:NULL=99.99999
DEFN 7 ST=RECD,RT=;AGD66TMAMG55_EAST:F10.2:NULL=999999.99
DEFN 8 ST=RECD,RT=;AGD66TMAMG55_NORTH:F11.2:NULL=999999.99
DEFN 9 ST=RECD,RT=;GDA94MGA55_EAST:F10.2:NULL=999999.99
DEFN 10 ST=RECD,RT=;GDA94MGA55_NORTH:F11.2:NULL=999999.99
DEFN 11 ST=RECD,RT=;GDA94GEODETIC_LAT:F13.8:NULL=999.99999999
DEFN 12 ST=RECD,RT=;GDA94GEODETIC_LONG:F13.8:NULL=-99.99999999
DEFN 13 ST=RECD,RT=;Magnetics_Raw_Uncompensated:F10.3:NULL=99999.999
DEFN 14 ST=RECD,RT=;Magnetics_Compensated:F10.3:NULL=99999.999
DEFN 15 ST=RECD,RT=;Magnetics_DiurnalIGRFCorrected:F10.3:NULL=99999.999
DEFN 16 ST=RECD,RT=;Magnetics_levelled:F10.3:NULL=99999.999
DEFN 17 ST=RECD,RT=;Magnetics_Final_microlevelled:F10.3:NULL=99999.999
DEFN 18 ST=RECD,RT=;Diurnal:F10.3:NULL=99999.999
DEFN 19 ST=RECD,RT=;IGRF:F10.3:NULL=99999.999
DEFN 20 ST=RECD,RT=;Digital_Terrain_Model_AHD_metres:F7.1:NULL=9999.9
DEFN 21 ST=RECD,RT=;Pressure_Millibars:F7.1:NULL=9999.9

```

```

DEFN 22 ST=RECD,RT=;Radar_Altimeter_metres:F7.1:NULL=9999.9
DEFN 23 ST=RECD,RT=;Barometric_Height_metres:F7.1:NULL=9999.9
DEFN 24 ST=RECD,RT=;GPS_Height_metres:F7.1:NULL=9999.9
DEFN 25 ST=RECD,RT=;Temperature_DegC:F6.1:NULL=999.9
DEFN 26 ST=RECD,RT=;Data_Used_yes1:I2:NULL=9;END DEFN

```

**RADIOMETRIC LOCATED DATA FORMAT:**

Field	Null Value	Description
Column 1	99999	line number
Column 2	99	flight
Column 3	999999999	date (YYYYMMDD)
Column 4	99999999	julian_day (YYYYDDD)
Column 5	999999	fiducial
Column 6	99.99999	time (decimal hours)
Column 7	999999.99	AGD66 easting (metres, AMG Zone 55)
Column 8	999999.99	AGD66 northing (metres, AMG Zone 55)
Column 9	999999.99	GDA94 easting (metres, MGA Zone 55)
Column 10	999999.99	GDA94 northing (metres, MGA Zone 55)
Column 11	999.99999999	GDA94 longitude (decimal degrees, GEODETIC)
Column 12	-99.99999999	GDA94 latitude (decimal degrees, GEODETIC)
Column 13	99999.999	Final magnetics (nanoTeslas)
Column 14	999.99	live time (milliseconds)
Column 15	9999	Cosmic_background (cps)
Column 16	9999	Raw potassium (cps)
Column 17	9999	Raw uranium (cps)
Column 18	9999	Raw thorium (cps)
Column 19	99999	Raw total count (cps)
Column 20	9999.999	Final Potassium_percent
Column 21	9999.999	Final Uranium ppm
Column 22	9999.999	Final Thorium (ppm)
Column 23	99999.999	Final Total Count (nG/h)
Column 24	9999.9	Final digital terrain model (metres, AHD)
Column 25	9999.9	Final barometric pressure (metres)
Column 26	9999.9	Final barometric pressure (millibars)
Column 27	9999.9	Effective_STP_Height_metres
Column 28	9999.9	Final radar altimeter (metres)
Column 29	9999.9	Final gps height (metres)
Column 30	999.9	Final temperature (degrees celsius)
Column 31	9	Data used_flag (0=unused, 1=used)

**ASEG GDF2 .dfn FILE FOR RADIOMETRIC LOCATED DATA:**

```

DEFN 1 ST=RECD,RT=;lineNumber_FINAL:I6:NULL=999999
DEFN 2 ST=RECD,RT=;FlightNumber:I3:NULL=99
DEFN 3 ST=RECD,RT=;Date_YYYYMMDD:I9:NULL=999999999
DEFN 4 ST=RECD,RT=;JulianDay_YYYYDDD:I8:NULL=99999999
DEFN 5 ST=RECD,RT=;Fiducial:I7:NULL=9999999
DEFN 6 ST=RECD,RT=;Local_Time_DecHrs:F9.5:NULL=99.99999
DEFN 7 ST=RECD,RT=;AGD66T MAMG55_EAST:F10.2:NULL=999999.99
DEFN 8 ST=RECD,RT=;AGD66T MAMG55_NORTH:F11.2:NULL=999999.99

```

```

DEFN 9 ST=RECD,RT=;GDA94MGA55_EAST:F10.2:NULL=999999.99
DEFN 10 ST=RECD,RT=;GDA94MGA55_NORTH:F11.2:NULL=9999999.99
DEFN 11 ST=RECD,RT=;GDA94GEODETTIC_LAT:F13.8:NULL=999.99999999
DEFN 12 ST=RECD,RT=;GDA94GEODETTIC_LONG:F13.8:NULL=-99.99999999
DEFN 13 ST=RECD,RT=;Magnetics_Final_microlevelled:F10.3:NULL=999999.999
DEFN 14 ST=RECD,RT=;live_time_milliseconds:F6.0:NULL=99999
DEFN 15 ST=RECD,RT=;Cosmic_background_cps:F5.0:NULL=9999
DEFN 16 ST=RECD,RT=;Raw_potassium_cps:F5.0:NULL=9999
DEFN 17 ST=RECD,RT=;Raw_uranium_cps:F5.0:NULL=9999
DEFN 18 ST=RECD,RT=;Raw_thorium_cps:F5.0:NULL=9999
DEFN 19 ST=RECD,RT=;Raw_total_cps:F5.0:NULL=99999
DEFN 20 ST=RECD,RT=;Final_Potassium_percent:F8.4:NULL=999.9999
DEFN 21 ST=RECD,RT=;Final_Uranium_ppm:F8.4:NULL=999.9999
DEFN 22 ST=RECD,RT=;Final_Thorium_ppm:F8.4:NULL=999.9999
DEFN 23 ST=RECD,RT=;Final_Total_Count_nGh:F9.3:NULL=99999.999
DEFN 24 ST=RECD,RT=;Digital_Terrain_Model_metres:F7.1:NULL=9999.9
DEFN 25 ST=RECD,RT=;Barometric_Height_metres:F7.1:NULL=9999.9
DEFN 26 ST=RECD,RT=;Pressure_Millibars:F7.1:NULL=9999.9
DEFN 27 ST=RECD,RT=;Effective_STP_Height_metres:F7.1:NULL=9999.9
DEFN 28 ST=RECD,RT=;Radar_Altimeter_metres:F7.1:NULL=9999.9
DEFN 29 ST=RECD,RT=;GPS_Height_metres:F7.1:NULL=9999.9
DEFN 30 ST=RECD,RT=;Temperature_DegC:F6.1:NULL=999.9
DEFN 31 ST=RECD,RT=;Data_Used_yes1:I2:NULL=9;END DEFN

```

\*\*\*\*\*

#### RADIOMETRIC 256 CHANNEL DATA:

```

Files:          2016Rad256.LDT.dat
                2016Rad256.LDT.dfn
Format:         ASEG GDF2 : ASCII Columns
Null:          -999

```

Field	Description
Line_Number	Line number (1000+ for Traverses, 7000+ for Tie Lines)
Fiducial	Fiducial Geo Instruments system
Time_Seconds	Time (Decimal Hours)
Julian	Julian_day (DDD, year 2000)
Y1	Northing ( WGS84 metres, SUTM55)
X1	Easting ( WGS84 metres, SUTM55)
Y2	Northing ( GDA94 metres, MGA55)
X2	Easting ( GDA94 metres, MGA55)
Y3	Northing ( ISG553 metres, TMAMG55)
X3	Easting ( ISG553 metres, TMAMG55)
Radalt	Radar altimeter (metres)
Baroalt	Baroalt (raw)
Temperature	Temperature (deg C)
LiveTime	System livetime (milliseconds)
Cosmic	Cosmic (counts)
Potas_Raw	Potassium Raw (counts)
Thor_Raw	Thorium Raw (counts)
Uran_Raw	Uranium Raw (counts)
Totalc_Raw	Total count Raw (counts)
Potas_Corrected	Potassium Corrected (Percent)

Thor_Corrected	Thorium Corrected (PPM)
Uran_Corrected	Uranium Corrected (PPM)
Totalc_Corrected	Total count Corrected (counts)
TMI_FINAL	Final magnetics (microlevelled) (nanoTeslas)
DTM_FINAL	Final digital terrain model (metres)
Spectrum	GR820 257 channel radiometric spectrum (counts)

**AGEG GDF2 FORMAT '.DFN' FILE INCLUDED FOR RADIOMETRIC 256 CHANNEL DATA:**

```

DEFN 1 ST=RECD,RT=;LineNumber:I8:NULL=-999
DEFN 2 ST=RECD,RT=;Fiducial:I9:NULL=-999
DEFN 3 ST=RECD,RT=;Time_Decimal_Hours:F13.6:NULL=-999
DEFN 4 ST=RECD,RT=;Julian_Day:I7:NULL=-999
DEFN 5 ST=RECD,RT=;WGS84_SUTM55_NORTH:F12.2:NULL=-999
DEFN 6 ST=RECD,RT=;WGS84_SUTM55_EAST:F12.2:NULL=-999
DEFN 7 ST=RECD,RT=;GDA94_MGA55_NORTH:F12.2:NULL=-999
DEFN 8 ST=RECD,RT=;GDA94_MGA55_EAST:F12.2:NULL=-999
DEFN 9 ST=RECD,RT=;ISG553_TMAMG55_NORTH:F12.2:NULL=-999
DEFN 10 ST=RECD,RT=;ISG553_TMAMG55_EAST:F12.2:NULL=-999
DEFN 11 ST=RECD,RT=;Radar_Altimeter:F10.2:NULL=-999
DEFN 12 ST=RECD,RT=;Baroalt_Raw:F10.2:NULL=-999
DEFN 13 ST=RECD,RT=;Temperature_degC:F10.2:NULL=-999
DEFN 14 ST=RECD,RT=;LiveTime_milliseconds:F10.2:NULL=-999
DEFN 15 ST=RECD,RT=;Cosmic:F10.2:NULL=-999
DEFN 16 ST=RECD,RT=;Potassium_RawCounts:F10.2:NULL=-999
DEFN 17 ST=RECD,RT=;Thorium_RawCounts:F10.2:NULL=-999
DEFN 18 ST=RECD,RT=;Uranium_RawCounts:F10.2:NULL=-999
DEFN 19 ST=RECD,RT=;TotalCount_RawCounts:F10.2:NULL=-999
DEFN 20 ST=RECD,RT=;Potassium_Percent:F10.3:NULL=-999
DEFN 21 ST=RECD,RT=;Thorium_PPM:F10.3:NULL=-999
DEFN 22 ST=RECD,RT=;Uranium_PPM:F10.3:NULL=-999
DEFN 23 ST=RECD,RT=;TotalCount_CorrCounts:F10.3:NULL=-999
DEFN 24 ST=RECD,RT=;TMI_FINAL:F10.2:NULL=-999
DEFN 25 ST=RECD,RT=;DTM_FINAL:F10.2:NULL=-999
DEFN 26 ST=RECD,RT=;spectrum:I7:NULL=-999
DEFN 27 ST=RECD,RT=;spectrum:I7:NULL=-999
DEFN 28 ST=RECD,RT=;spectrum:I7:NULL=-999
DEFN 282 ST=RECD,RT=;spectrum:I7:NULL=-999
DEFN 283 ST=RECD,RT=;spectrum:I7:NULL=-999;END DEFN

```

**GRIDDED DATA FILES:**

Format: ER Mapper  
Cell size: 40 metres  
Datum: AGD66  
Projection: TMAMG  
Zone: 55

Files: TMI..GRID	Total magnetic intensity (nanoTeslas)
TMI_1VD..GRID	First vertical derivative TMI (nT/m)
DTM..GRID	Digital terrain model (metres)
Potassium_Perc..GRID	Potassium (percent)
Thorium_PPM..GRID	Thorium (ppm)

Uranium_PPM..GRID	Uranium (ppm)
TotalC_Ngph..GRID	Total Dose Rate (Ngph)
Radar_Altimeter..GRID	Radar_Altimeter (metres)

**QC PLOT FILES:**

Format: HPGL2

Files: As listed below

**AREA C - Western Tasmania. FIELD QC MAPS:**

100K\_TAS\_N\_4thDIFF.prn  
100K\_TAS\_N\_Flight\_FieldLines.prn  
100K\_TAS\_N\_Misclosure.prn  
100K\_TAS\_N\_Radalt.prn  
100K\_TAS\_S\_4thDIFF.prn  
100K\_TAS\_S\_Flight\_FieldLines.prn  
100K\_TAS\_S\_Misclosure.prn  
100K\_TAS\_S\_Radalt.prn  
200K\_TAS\_NS\_Flight\_FieldLines.prn

**AREA C - Western Tasmania. FINAL QC MAPS:**

100K\_TAS\_N\_Flight\_FinalLines.prn  
100K\_TAS\_S\_Flight\_FinalLines.prn  
250K\_Tas\_1VD\_Sun.prn  
250K\_Tas\_DTM\_Sun.prn  
250K\_Tas\_Potas\_Sun.prn  
250K\_Tas\_RGB.prn  
250K\_Tas\_TMI\_Sun.prn  
250K\_Tas\_Thor\_Sun.prn  
250K\_Tas\_TotalC\_Sun.prn  
250K\_Tas\_Uran\_Sun.prn

**AREA E - D'Aguilar Range. FIELD QC MAPS:**

50K\_TAS\_SmallA\_4thDIFF.prn  
50K\_TAS\_SmallA\_Flight\_Fieldlines.prn  
50K\_TAS\_SmallA\_Misclosure.prn  
50K\_TAS\_SmallA\_Radalt.prn

**AREA E - D'Aguilar Range. FINAL QC MAPS:**

100K\_TAS\_DTM\_Sun.prn  
100K\_TAS\_Flight\_FinalLines.prn  
100K\_TAS\_Potas\_Sun.prn  
100K\_TAS\_RGB.prn  
100K\_TAS\_TMI\_1VD\_Sun.prn  
100K\_TAS\_TMI\_Sun.prn  
100K\_TAS\_Thor\_Sun.prn  
100K\_TAS\_Tot\_Sun.prn  
100K\_TAS\_Uran\_Sun.prn

**DATA ACQUISITION****AIRBORNE SURVEY SPECIFICATIONS**

Survey flown: January 2001 - March 2001  
 Traverse line spacing: 200 metres  
 Traverse line direction: 090/270 degrees  
 Tie line spacing: 2000 metres  
 Tie line direction: 000/180 degrees  
 Survey height: Magnetometer on boom at 80m agl  
 Spectrometer detector in aircraft at 80m agl  
 Data acquisition: Geo Instruments Model G2001 system  
 Aircraft: Bell 206BIII helicopter VH-JWF

**MAGNETOMETER**

Type: Geometrics G822A Caesium vapour  
 Resolution: 0.001 nT  
 Recording interval: 0.1 sec (approx. 3.0 metres sampling)  
 Compensation: RMS AADCII real time system  
 Installation: Magnetometer mounted on forward boom

**GAMMA SPECTROMETER**

Type: Exploranium GR820 256 channel  
 Crystal volume: Downward looking 16.8 litres  
 Recording interval: 1.0 sec (approx. 30 metres sampling)  
 Spectral windows IAEA:

	Window Range		Energy (MeV)	
	From	To	From	To
Total Count:	34	233	0.41	2.81
Potassium (K40):	115	131	1.37	1.57
Uranium (Bi214):	139	155	1.66	1.86
Thorium (Th232):	202	233	2.41	2.81
Cosmic:	-	-	3.00	>6.00

Calibration: Real-time automatic gain stabilization based on tracking of the Thorium peak

**NAVIGATION**

Flight path navigation: Real time satellite  
 Differential GPS system  
 Navigation equipment: Fugro OMNISTAR GPS receivers  
 Flight path record: WGS84 Easting/ Northing coordinates converted to  
 AGD66 XY coordinates  
 Radar altimeter: Collins Alt50  
 DGPS base station: Fugro OMNISTAR(Wide Area Network)

**DATA PROCESSING****MAGNETIC DATA**

The magnetic data has been corrected for regional gradient by subtraction of IGRF model 2001.2 and secular variation model 1995-2000. Diurnal variations have been removed. System parallax has been removed. Tieline levelling has been applied. Microlevelling has been applied. The mean diurnal value and the IGRF base value have been added to the data.

### **GAMMA SPECTROMETRIC DATA**

NASVD noise reduction applied using 4 retained components  
Live time corrected, Cosmic and aircraft background removed  
Radon correction method: Spectral ratioing C1= 1.90 C2= 0.65  
Temperature and pressure corrected  
Compton stripping: VH-JWF  
Alpha: 0.2728  
Beta: 0.4435  
Gamma: 0.7861  
Height attenuated to: 73 metres mean terrain clearance  
Total count: 0.00630/metre  
Potassium count: 0.00910/metre  
Uranium count: 0.00510/metre  
Thorium count: 0.00730/metre  
Sensitivity constants: VH-JWF  
Total Count - 1gray/hr: 19.97 cps  
Potassium - 1%: 76.00 cps  
Uranium - 1ppm: 6.88 cps  
Thorium - 1ppm: 4.20 cps  
Calibration ranges: Bruthen Range (hovering), Londonderry, NSW (CSIRO pads)

### **GRIDDING**

Algorithm: Akima spline  
Grid mesh size: 40 x 40 metres  
Grid filter: None

### **LINE NUMBERING**

Line numbers are in the form 'AbcdE' where  
A = Line type (1 = traverse, 7 = tie, 9 = test)  
bcd = line sequence number  
E = line attempt number  
eg: 10021 is traverse line 2 attempt 1  
70482 is tie line 48 attempt 2  
91161 is the first test line from flight 116

### **TECHNICAL SUPERVISION**

Mineral Resources Tasmania and Geo Instruments Pty Ltd.

### **BIBLIOGRAPHIC REFERENCE**

Surveyed by: Geo Instruments Pty Ltd, Sydney  
Geo Instruments job number: 2101  
Processed by: Geo Instruments Pty Ltd  
Grid production by: Geo Instruments Pty Ltd