MkII Airborne Laser Fluorosensor Survey Reprocessing And Interpretation Report: Perth Basin, Western Australia

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Contents

Summary

The Perth Basin airborne laser fluorosensor (ALF) MkII survey was flown in 1989 by BP. The survey was designed to detect natural oil seepage over a large region of the Perth Basin, Western Australia, in an effort to refine the petroleum prospectivity assessment.

An area of about 80km by 400km was surveyed at 5km line spacing. A total of 510,500 fluorosensor spectra were recorded.

This report is a re-interpretation of the BP data by Signalworks Pty Ltd using the *ALF Explorer™* software. A total of 1,355 fluors were picked out of the 510,500 recorded spectra in the final interpretation. This is an average fluor density of 2.65 fluors per thousand spectra.

The fluorescence response over most of the survey area consisted mainly of relatively low confidence fluors (compared to the more reliable MkIII survey data). High intensity fluors are located in several zones in the middle of the survey, probably over small islands, being caused by the exposed island material fluorescing.

While fluor density variations can be seen on the fluor map the geological implications are not clear. Because of its susceptibility to noise, the MkII ALF system produces less confident fluor maps than the MkIII system. Some mapped fluor density variations may be influenced by sea state or water property variations.

1. Introduction

The Perth Basin airborne laser fluorosensor (ALF) MkII survey (Figure 1) was flown in 1989 by BP. The MkII system used a 308nm laser wavelength, which is longer than the 266nm used in the later MkIII system. The Raman peak wavelength is 344nm (293nm MkIII) and the fluorescence region is 370nm to 580nm (320nm to 580nm MkIII).

Each recorded spectrum is the average of ten detected spectra. The averaging was done by BP to reduce the data recording rate, which was limited by the available 1980's hardware. The MkIII system uses faster hardware and records all detected spectra without averaging.

This report presents a re-interpretation of the BP data using the *ALF Explorer™* software that consists of a database linked to a set of data processing, analysis and display modules. BP documented the original data processing and interpretation in a report by Williams and Mackintosh (1990*).

110 lines were acquired at a line spacing of about 5,000m in a WSW-ENE orientation (Figure 2) and a flying height of 100m. A total of 510,500 spectra were collected at an average spacing of 14.5m to 19.3m. About 8,400 km of line data were acquired.

Some lines in a MkII ALF survey may use the same Line and Point values as other lines. The main ALF data table in the *ALF Explorer™* database (RawAlfData) uses the Line and Point fields as key fields, which cannot contain duplicates. Lines that contain duplicated Line and Point values are stored in separate tables (eg. RawAlfData2).

The main ALF data table contains 373,470 ALF spectra. The additional tables named RawAlfData2, RawAlfData3 and RawAlfData4 contain 34,390, 57,844 and 44,796 ALF spectra respectively.

A total of 1,355 fluors were picked out of the 510,500 recorded spectra in the final interpretation. This is an average fluor density of 2.65 fluors per thousand spectra.

* Bibliographic reference:
Williams, A.K. and Mackintosh, J.M. 1990. ALF Survey of the western margin of Australia. 2. Perth Basin. Volume 1, A – Basic Data Report; Volume 2, B – Interpretive Data Report; Volume 3, C – BP In-house Report. Remote Sensing Group, BP Exploration (unpubl. report).

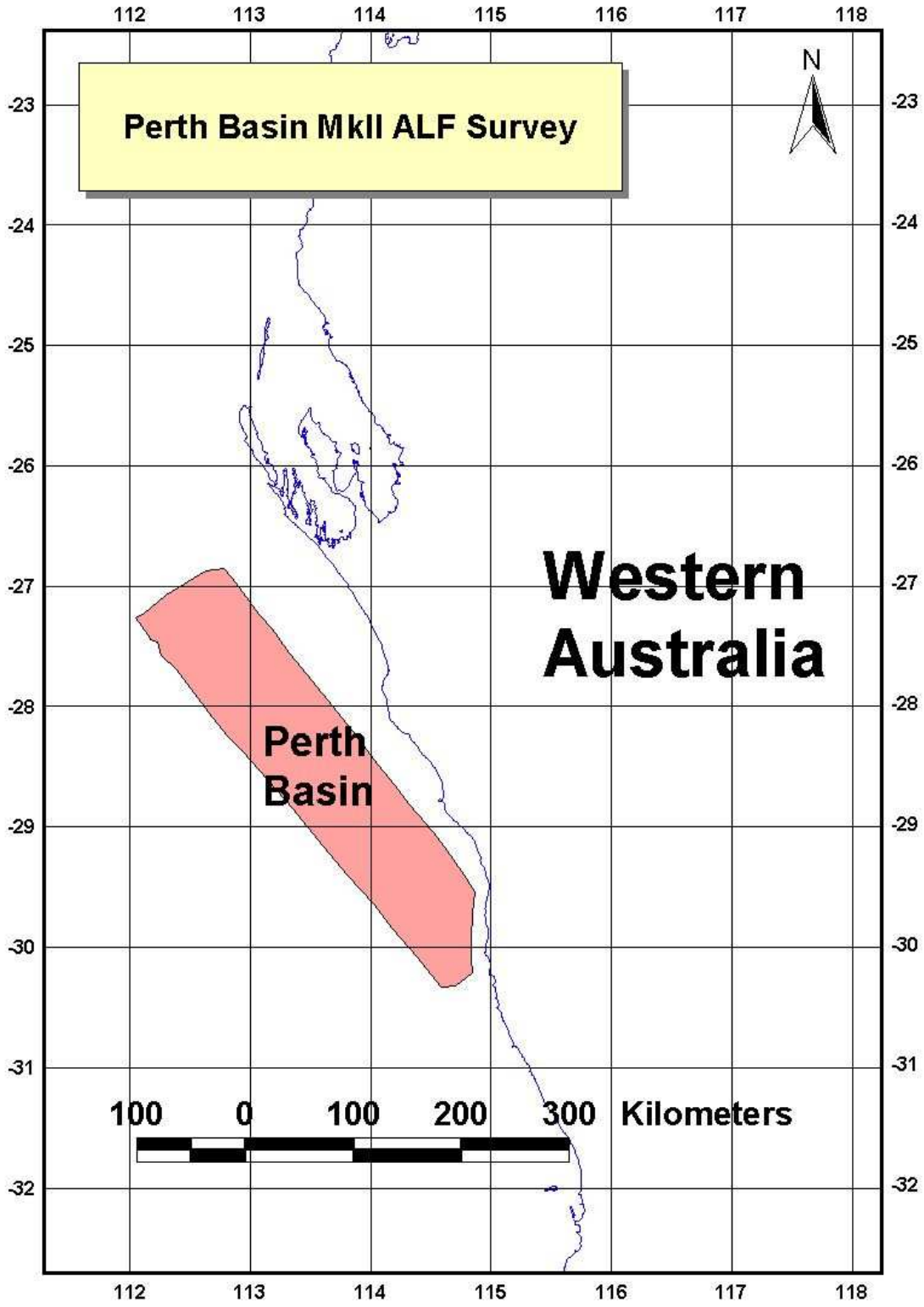


Figure 1. Perth Basin MkII ALF Survey Location Map.

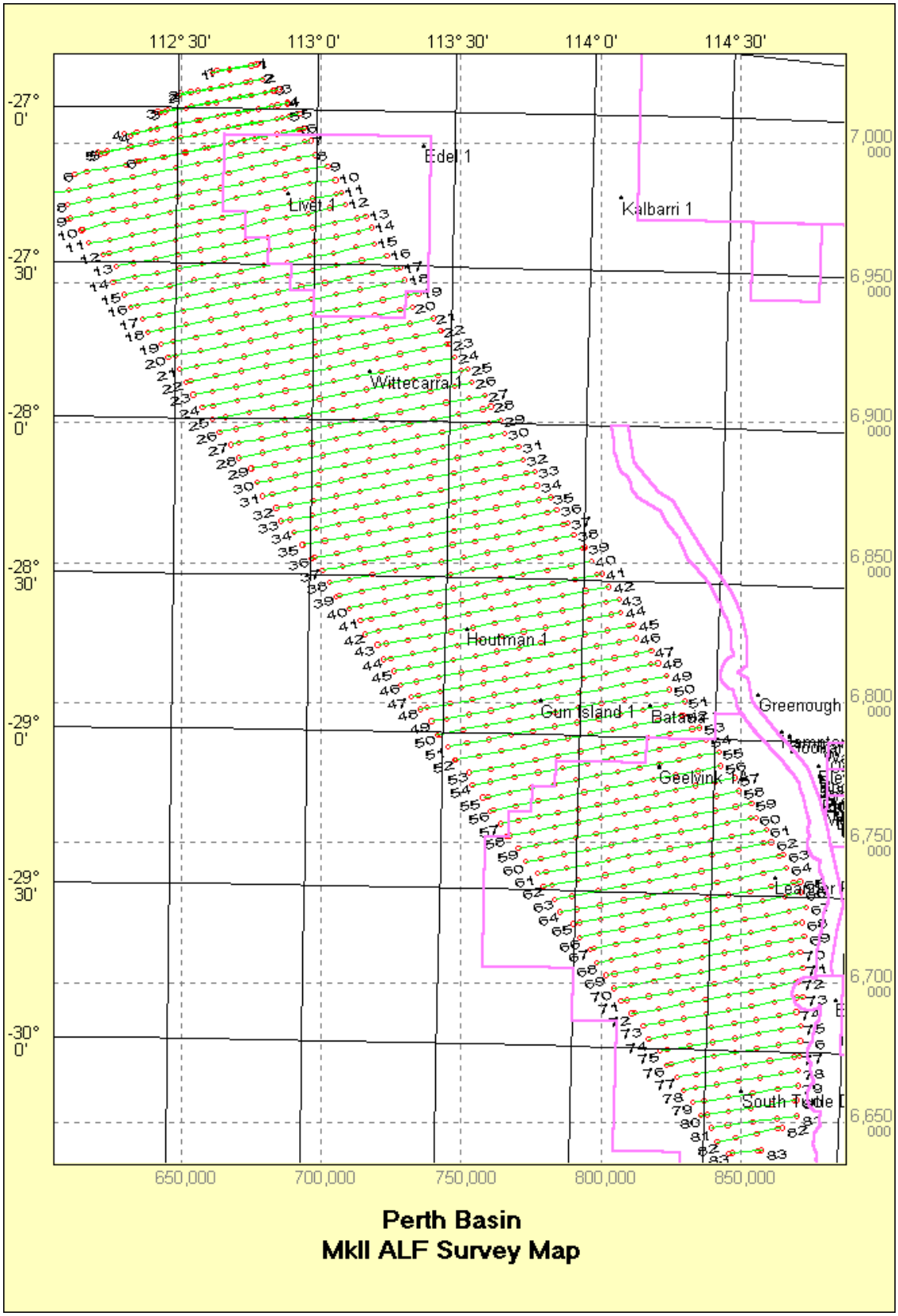


Figure 2. Perth Basin MkII ALF Survey.

Figure 2 shows a map of the Perth Basin MkII ALF survey with point symbols annotated in red at a spacing of 500 points.

Mapping Specifications:
The geodetic coordinates of the supplied ALF data used the AGD66 geodetic datum. Because of inconsistencies in the AGD66 datum, there is no single set of transformation parameters that can accurately transform the coordinates into the WGS84 or AGD84 datums. The AGD66 datum coordinates were assumed to be approximately equal to the AGD84 coordinates for the accuracy of mapping required in this report.

Projection: Southern UTM Zone 49 (Central Meridian 111 degrees east)

Min Easting:	595,000
Max Easting:	890,000
Min Northing:	6,635,000
Max Northing:	7,032,000

2. ALF Survey Analysis

2.1. Fluor Mapping

A fluorescence anomaly (fluor) is detected by an increase in the area of the fluorescence response region of the ALF spectrum. For a variety of reasons the magnitude of each ALF spectrum can vary significantly from shot to shot. The fluorescence area value is usually normalized using the Raman area to produce a more consistent measure of fluorescence intensity. The ratio is called the fluorescence on Raman area ratio, usually denoted as F/R.

In this analysis, the Raman area is calculated between the wavelengths 330.77nm and 360.13nm (channels 26 to 54). The fluorescence area is calculated between the wavelengths 360.13nm to 600.83nm (channels 54 to 154). Oil fluorescence usually extends over the Raman region but the Raman response distorts the value if it is calculated over this region.

The F/R ratio typically shows varying intensity trends over a survey area, probably because of changing water properties. A map of the averaged F/R ratio over the Perth Basin survey is shown in Figure 14 (Appendix 1). Localized increases in the ratio are usually seen consistently over several lines.

Figure 3 shows the F/R plot for line 10. The values are high over the eastern half of the line. There is also a regional trend grading from high in the north to low in the south. The map of the smoothed F/R ratio over the entire survey (Figure 14, Appendix 1) shows the high trend extending in a NE-SW band over the northern part of the survey. Several other high F/R regions are also evident.

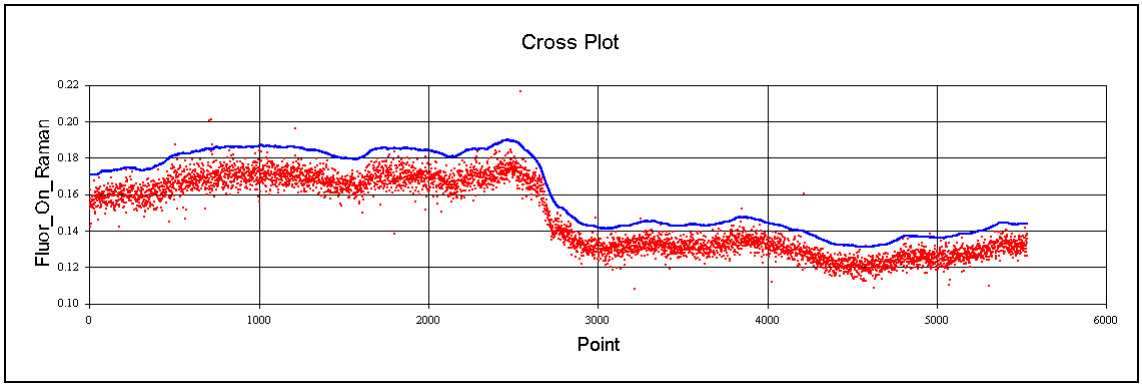


Figure 3. F/R Plot for Line 10.

Because of the changing F/R trends, a constant F/R cutoff level cannot be used to detect fluorescence anomalies (fluors). An average of the F/R ratio is used as an estimate of the background F/R level at any point. Only spectra having an F/R value significantly above the background level are selected as possible fluors.

The blue line shown in Figure 3 is the (101 point) average F/R rescaled by a factor of 1.09. The rescaling moves the averaged curve above the F/R values of most of the spectra. Only spectra having an F/R value above the blue curve are selected as possible fluors. The scaling factor is usually selected between values of 1.05 and 1.5 for each line depending on the amount of scatter in the F/R plot.

In the first pass interpretation 4649 possible fluors were selected from the raw ALF data tables (3,789 from RawAlfData, 93 from RawAlfData2, 388 from RawAlfData3 and 379 from RawAlfData4). Figure 4 shows a map of the possible first pass fluors.

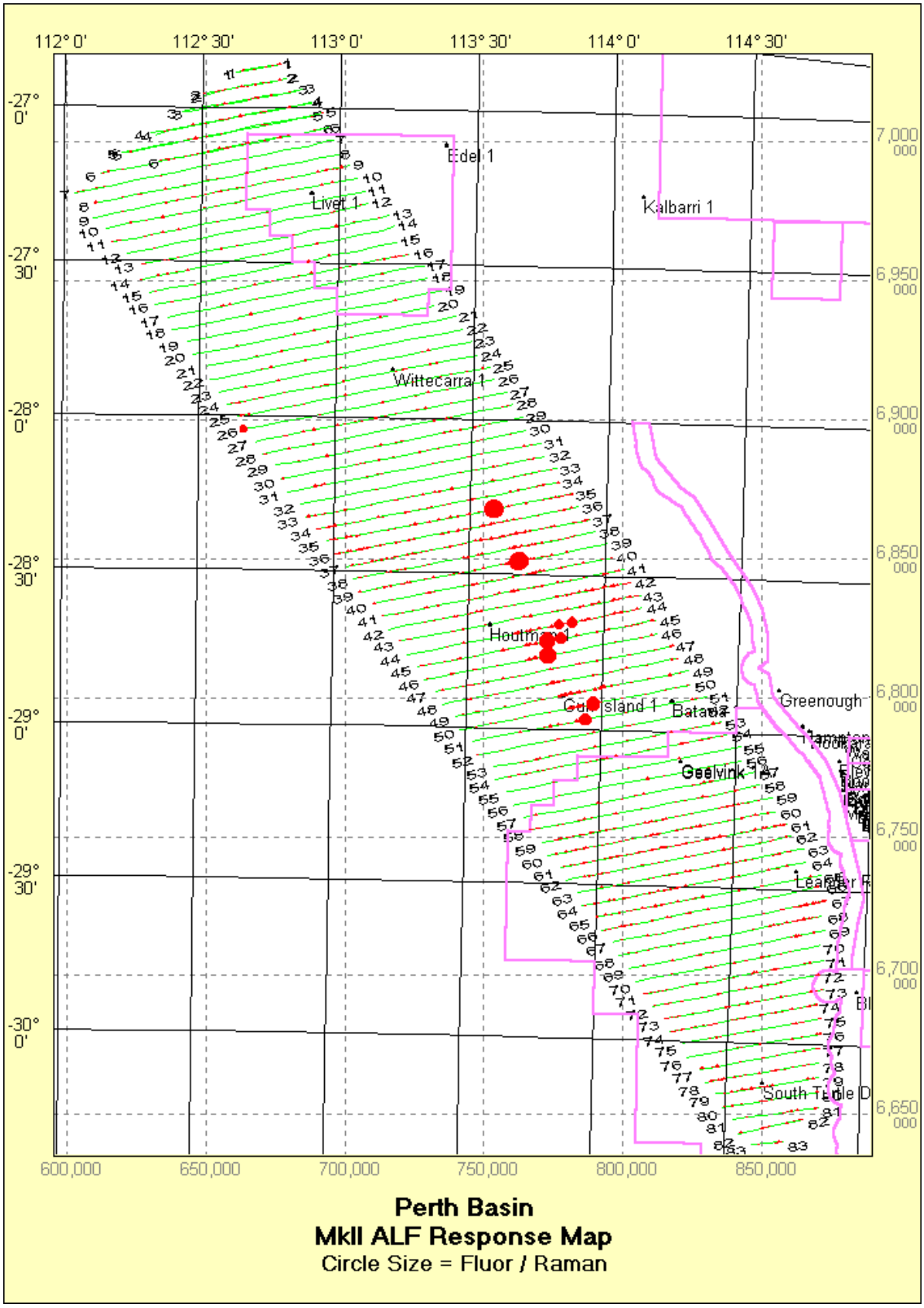


Figure 4. First Pass Fluor Map.

The most intense fluors are located in clusters near the middle of the survey and are probably caused by fluorescence response over islands.

Noisy fluors were removed from the table of spectrum parameters using the following query in the View Calculation Tables form:
SELECT * FROM [Picked Fluors 1 Spectra Params] Where Fluor_Jitter_On_Area > 0 And Fluor_Jitter_On_Area < 0.001

Corresponding ALF spectra were selected using the following query in the View Records form:
SELECT [Picked Fluors 1].* FROM [Picked Fluors 1], [Conf Picked Fluors 1 Spectra Params] WHERE [Picked Fluors 1.Line] = [Conf Picked Fluors 1 Spectra Params.Line] AND [Picked Fluors 1.Point] = [Conf Picked Fluors 1 Spectra Params.Point]

1,419 confident fluors were selected from the raw ALF data tables (1,363 from RawAlfData, 17 from RawAlfData2, 18 from RawAlfData3 and 21 from RawAlfData4). Figure 5 shows a map of the more confident fluors.

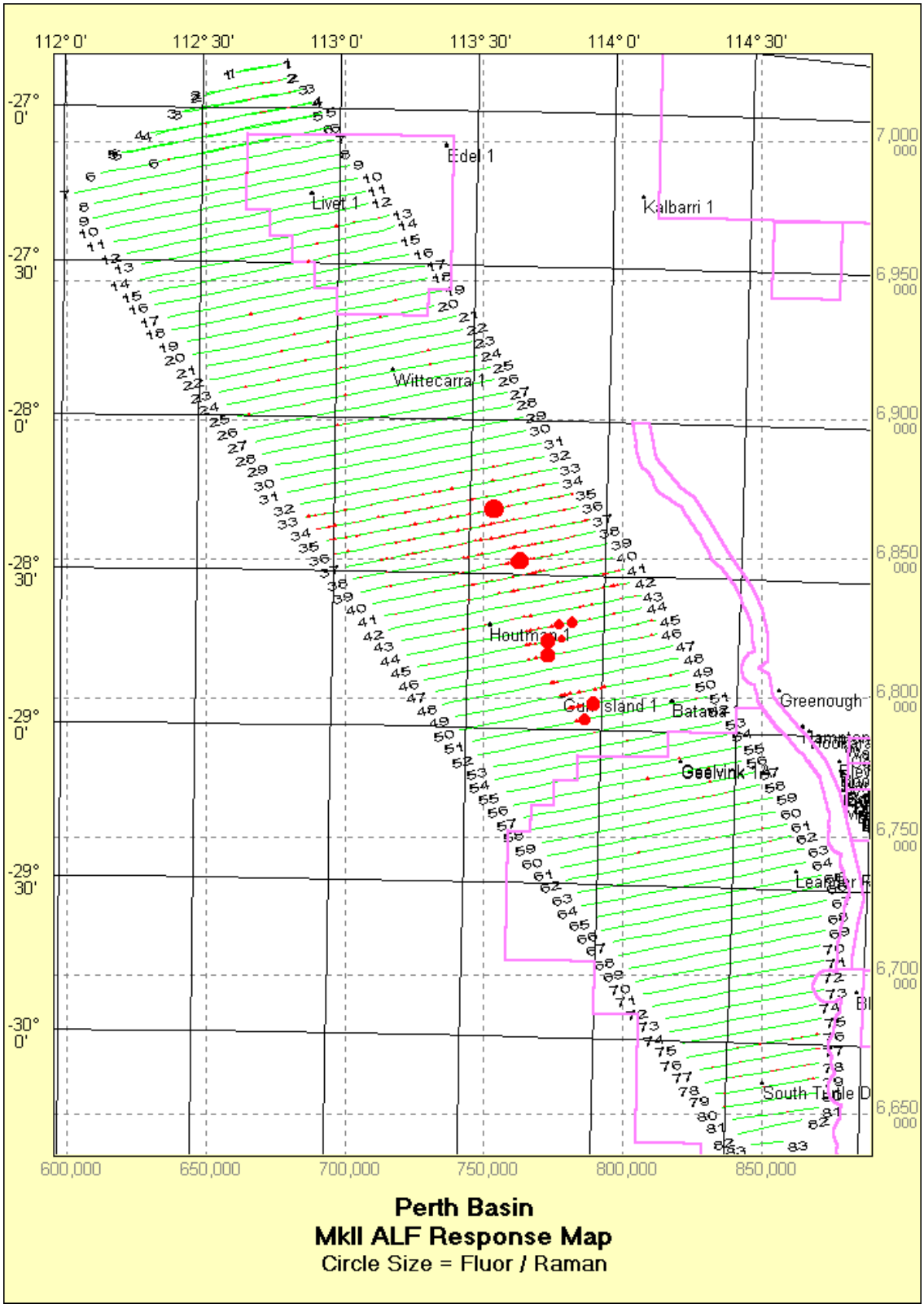


Figure 5. Confident Fluor Map.

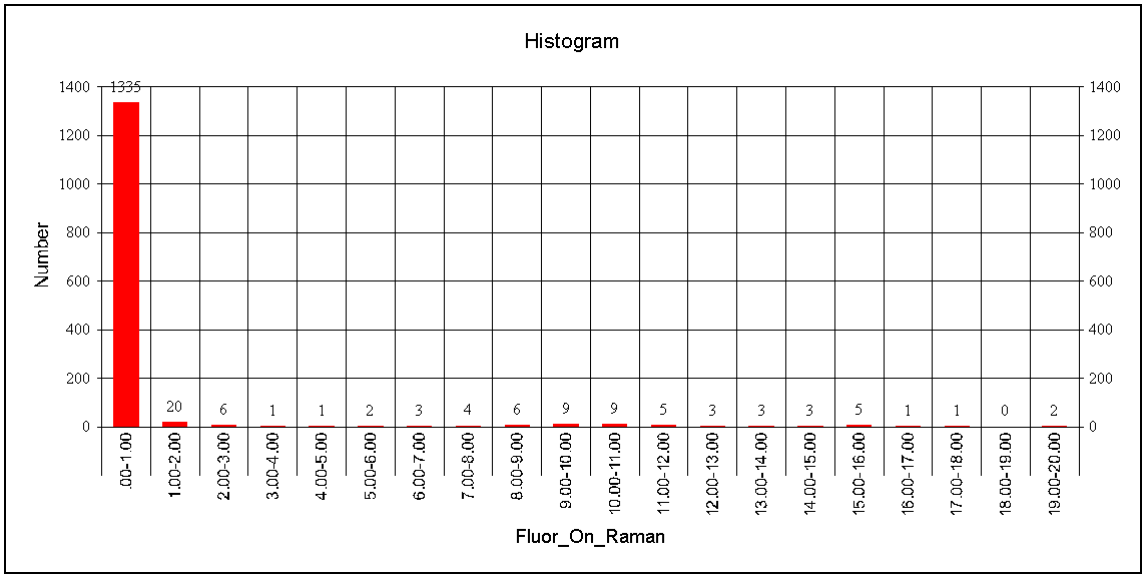


Figure 6. F/R Histogram for the Picked Fluors.

Figure 6 shows the fluors intensity (F/R) histogram for the edited fluor picks. Most of the fluors have a F/R ratio less than 1.0.

The fluors havinge very high F/R values are probably caused by small islands. These anomalous fluors were removed by selecting the fluors with an F/R value less than 2.0.

1,355 small confident fluors were selected from the raw ALF data tables (1,302 from RawAlfData, 17 from RawAlfData2, 18 from RawAlfData3 and 18 from RawAlfData4). Figure 7 shows a map of the small confident fluors.

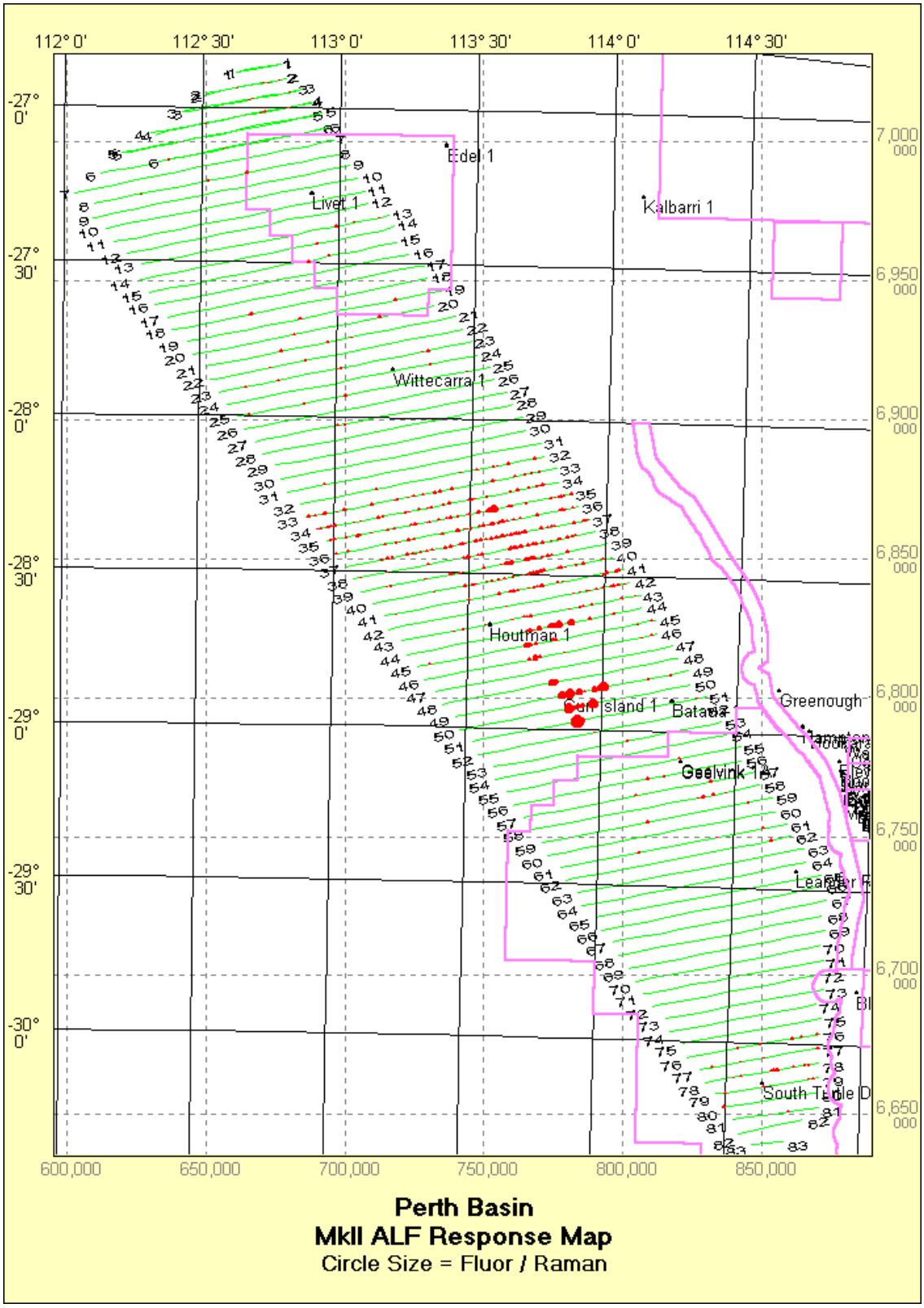


Figure 7. Confident Small Fluor Map.

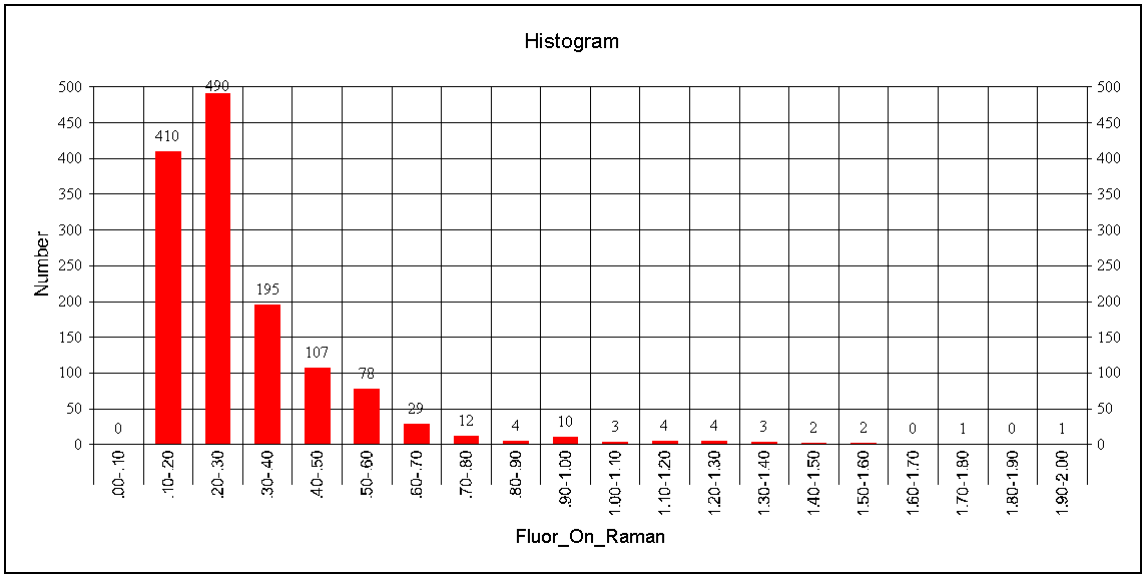
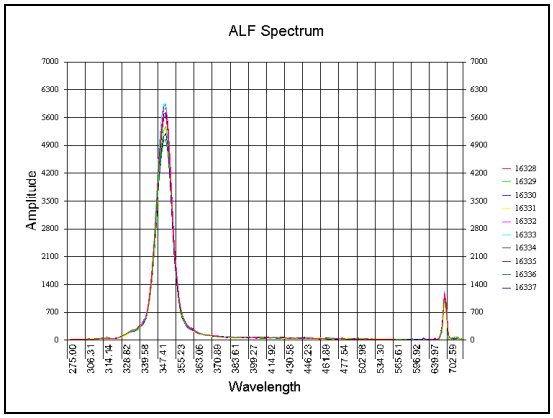
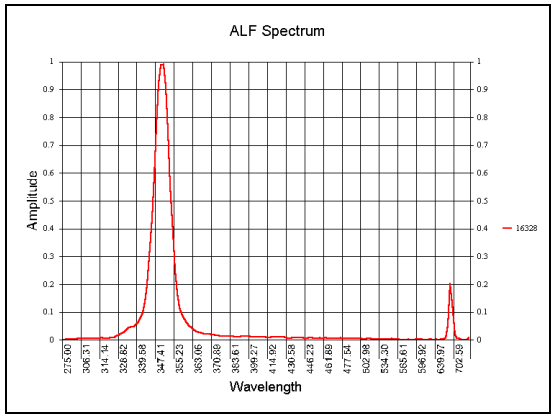


Figure 8. Confident Small Fluor F/R Histogram.

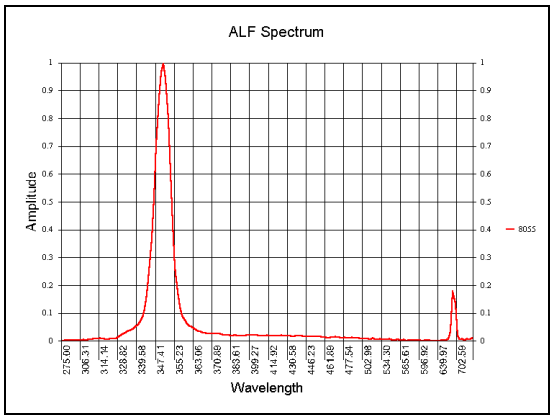
Figure 8 shows the F/R histogram for the confident small fluors. The number of fluors is very low for an F/R greater than about 0.8. The F/R cutoff value of 2.0 may not have removed all of the spectra affected by islands.



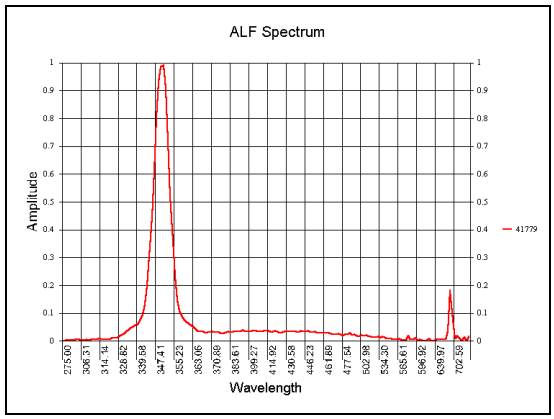
a) Line 6 Ten Adjacent Spectra.



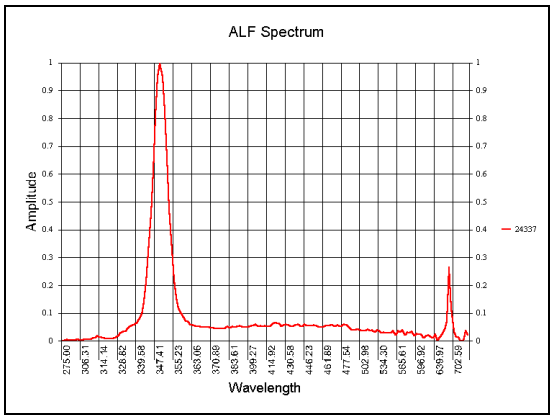
b) Line 6 No Fluor



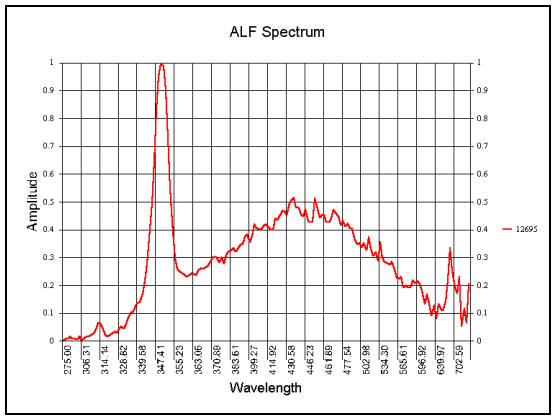
c) Line 33 Small Fluor



d) Line 39 Small to Medium Fluor



e) Line 46 Medium to Large Fluor.



f) Line 44 Large Fluor.

Figure 9. Perth Basin MkII ALF Survey, Selected Spectra.

Figure 9 shows a selection of spectra from the Perth Basin MkII ALF survey. Non-fluorescing spectra are shown in Figures 9a and b. Fluor intensity increases from examples 9c to f. The largest fluors shown in Figure 9f is probably caused by recording over an island.

3. Conclusions and Recommendations

The fluorescence response over most of the survey area consisted mainly of relatively low confidence fluors, at least compared to the more reliable and modern MkIII survey data. High intensity fluors are located in several zones in the middle of the survey, probably over small islands.

The 10 spectra averaging method used to record the MkII data tends to filter out the isolated fluorescence response and enhance anomalous water response.

The ~5km line spacing is not sufficiently close to detect most fluor clusters. For example, the line spacing of 300m used on the MkIII ALF survey over the Skua field in the Timor Sea (Cowley 2000*) was only just sufficient to detect the fluor cluster lying near that accumulation.

Some of the regions of increased fluor density correspond to regions having generally higher F/R values, probably caused by changing water properties. These areas may not necessarily have increased levels of hydrocarbon leakage.

The Perth Basin MkII ALF data is probably not suitable for identifying the isolated, low intensity fluors that are usually detectable on ALF MkIII surveys in the region.

*Bibliographic reference:
Cowley, R., 2000. 1996 Vulcan Sub-basin Airborne Laser Fluorosensor Survey Interpretation Report. Record 2000/33.

Appendix 1. Data Acquisition QC

Line	Sections	Clipped	Avg Raman Peak	Avg Raman Variance
1	6	0	4	3
2	20	0	13	10
3	23	0	23	20
4	39	0	26	20
5	39	0	29	24
6	55	0	30	25
10	54	0	19	14
11	55	0	26	20
12	54	0	30	25
13	54	0	32	28
14	57	0	35	30
15	53	0	35	30
16	50	0	18	15
17	53	0	30	30
18	51	0	39	40
19	54	0	41	38
20	48	0	41	38
21	52	0	40	36
22	50	0	41	38
23	54	0	41	39
24	51	0	37	38
25	53	0	38	35
26	51	0	40	41
27	54	0	38	39
28	50	0	38	39
29	52	0	37	38
30	49	0	37	38
31	55	0	37	41
32	51	0	37	32
33	57	0	39	33
34	52	0	37	29
35	57	0	33	27
36	52	0	31	22
37	55	0	29	21
38	52	0	30	23
39	55	0	29	23
40	51	0	32	25

Table 1a. Perth Basin MkII ALF Survey Data Acquisition Summary.

Line	Sections	Clipped	Avg Raman Peak	Avg Raman Variance
41	53	0	31	22
42	51	0	26	20
43	54	0	28	24
44	53	0	26	23
45	54	0	26	20
46	51	0	26	18
47	54	0	26	17
48	52	0	24	17
49	53	0	24	18
50	49	0	25	18
51	53	0	24	19
52	50	0	25	16
53	50	0	24	17
54	47	0	21	18
55	55	0	29	25
56	50	0	29	23
57	58	0	28	23
58	50	0	29	23
59	57	0	28	24
60	49	0	29	26
61	54	0	29	25
62	42	0	31	27
63	43	0	30	25
64	47	0	27	23
65	52	0	27	23
66	46	0	27	23
67	49	0	28	30
68	44	0	27	29
69	43	0	28	26
70	40	0	29	29
71	40	0	30	32
72	35	0	32	33
73	35	0	32	36
74	31	0	33	37
75	30	0	32	34
76	30	0	31	22
77	24	0	27	19

Table 1b. Perth Basin MkII ALF Survey Data Acquisition Summary.

Line	Sections	Clipped	Avg Raman Peak	Avg Raman Variance
78	25	0	25	17
79	21	0	23	15
80	21	0	23	17
81	16	0	23	17
82	15	0	23	16
83	5	0	23	14
1	9	0	40	48
2	17	0	41	45
3	26	0	39	43
4	32	0	39	41
5	44	0	40	41
6	35	0	40	42
7	60	0	39	43
8	52	0	33	33
9	59	0	18	15
5	45	0	29	22
10	50	0	30	24
11	54	0	30	23
12	50	0	30	23
13	49	0	31	26
14	45	0	31	24
15	47	0	32	28
16	43	0	31	28
17	43	0	28	23
18	48	0	28	21
19	44	0	25	19
20	48	0	23	17
1	46	0	24	20
2	53	0	25	19
3	46	0	24	20
4	48	0	25	21
5	47	0	25	20
6	49	0	24	19
7	46	0	25	20
8	52	0	29	24
9	51	0	29	73

Table 1c. Perth Basin MkII ALF Survey Data Acquisition Summary.

The average Raman peak levels (averaged over each line) ranged from 4 to 41. This parameter is mapped over the survey in Figure 12.

The Raman variance, calculated over 100 point windows and averaged over each line, ranged from 3 to 73. This parameter is mapped over the survey in Figure 13.

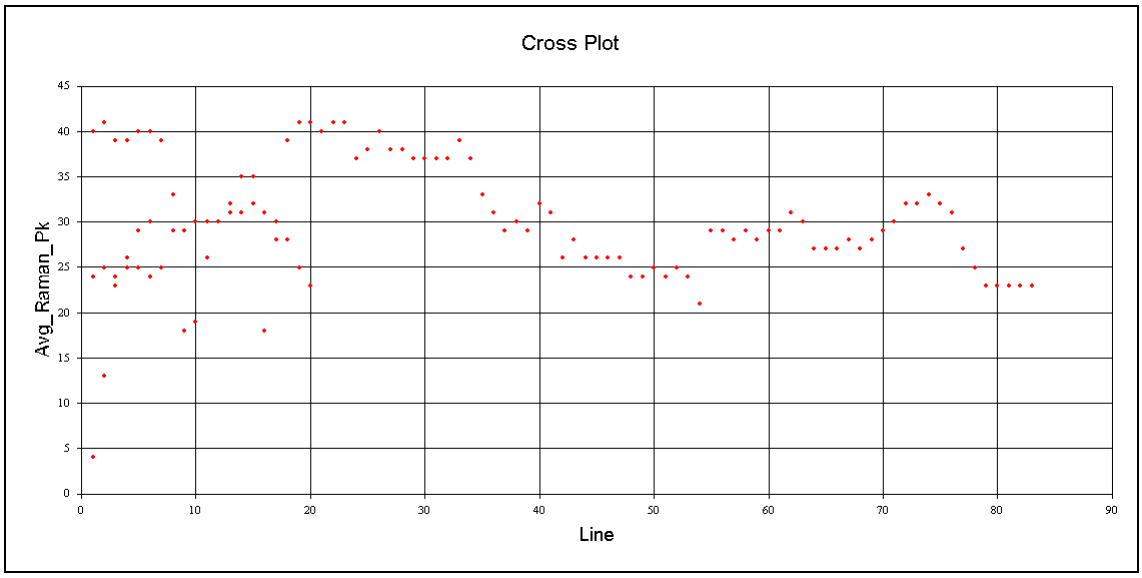


Figure 10. The Average Raman Peak Plotted for All Lines.

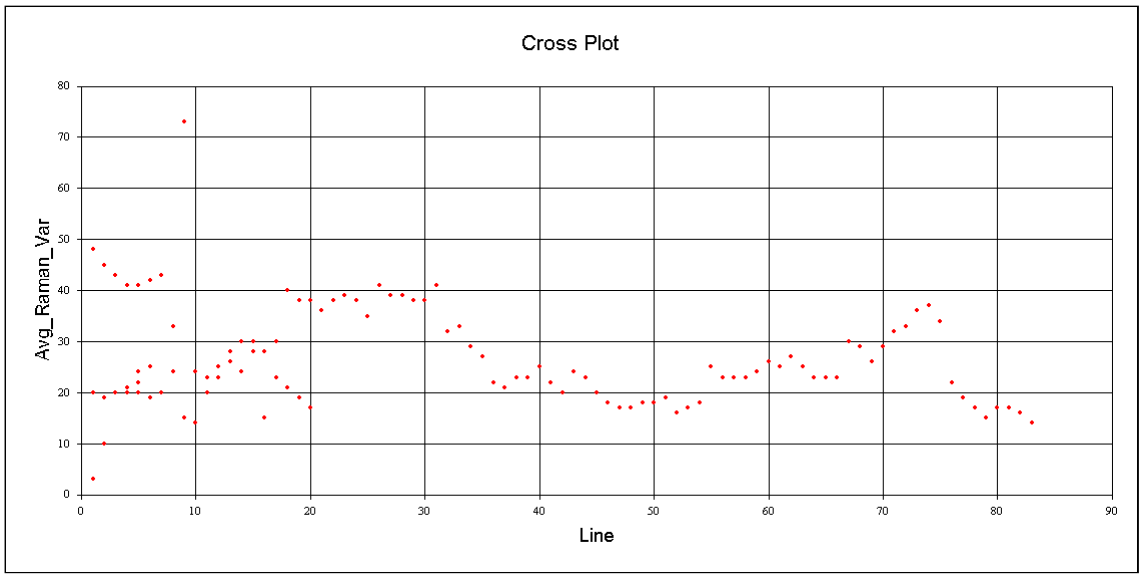


Figure 11. The Average Raman Variance Plotted for All Lines.

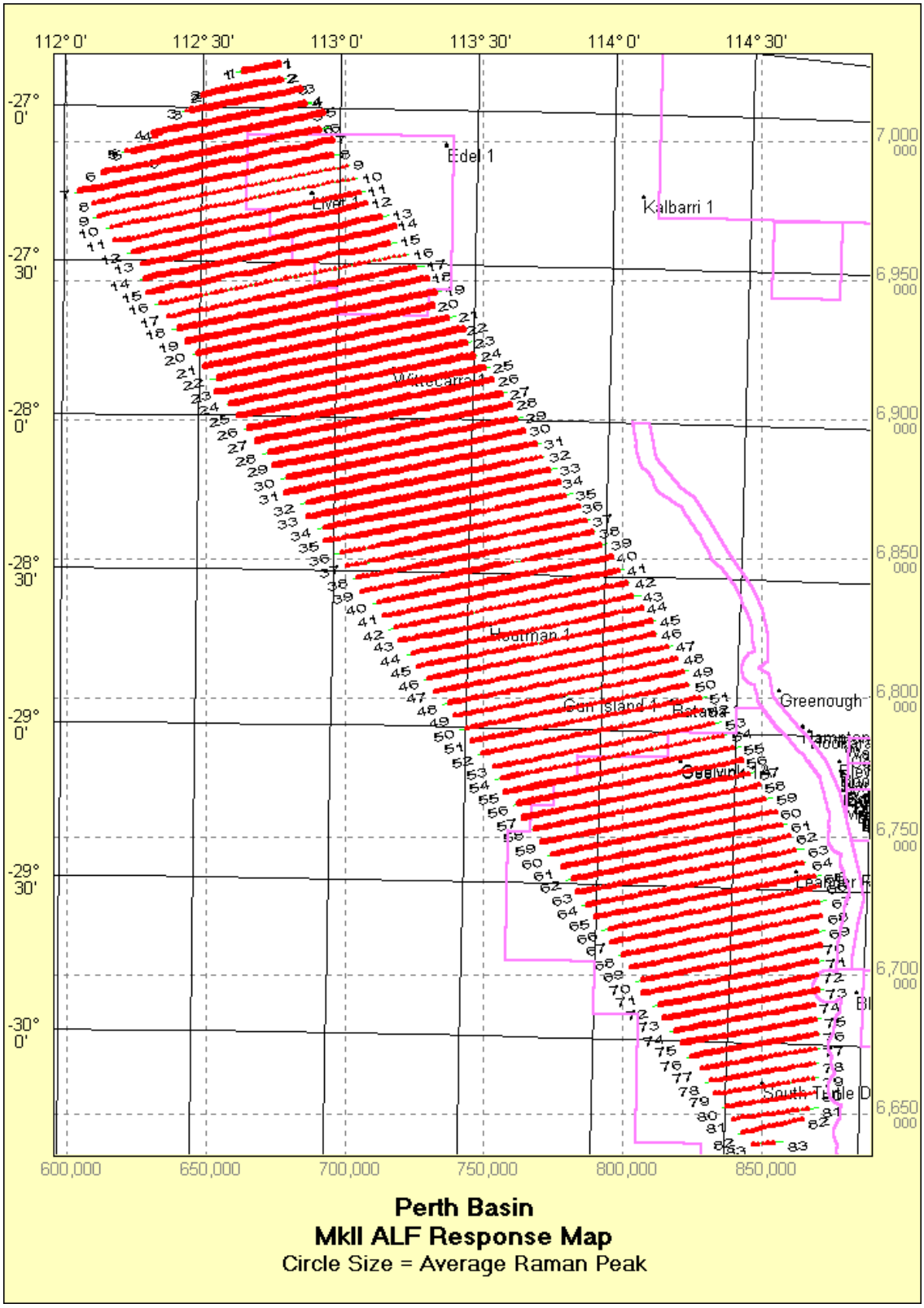


Figure 12. Average Raman Peak Map.

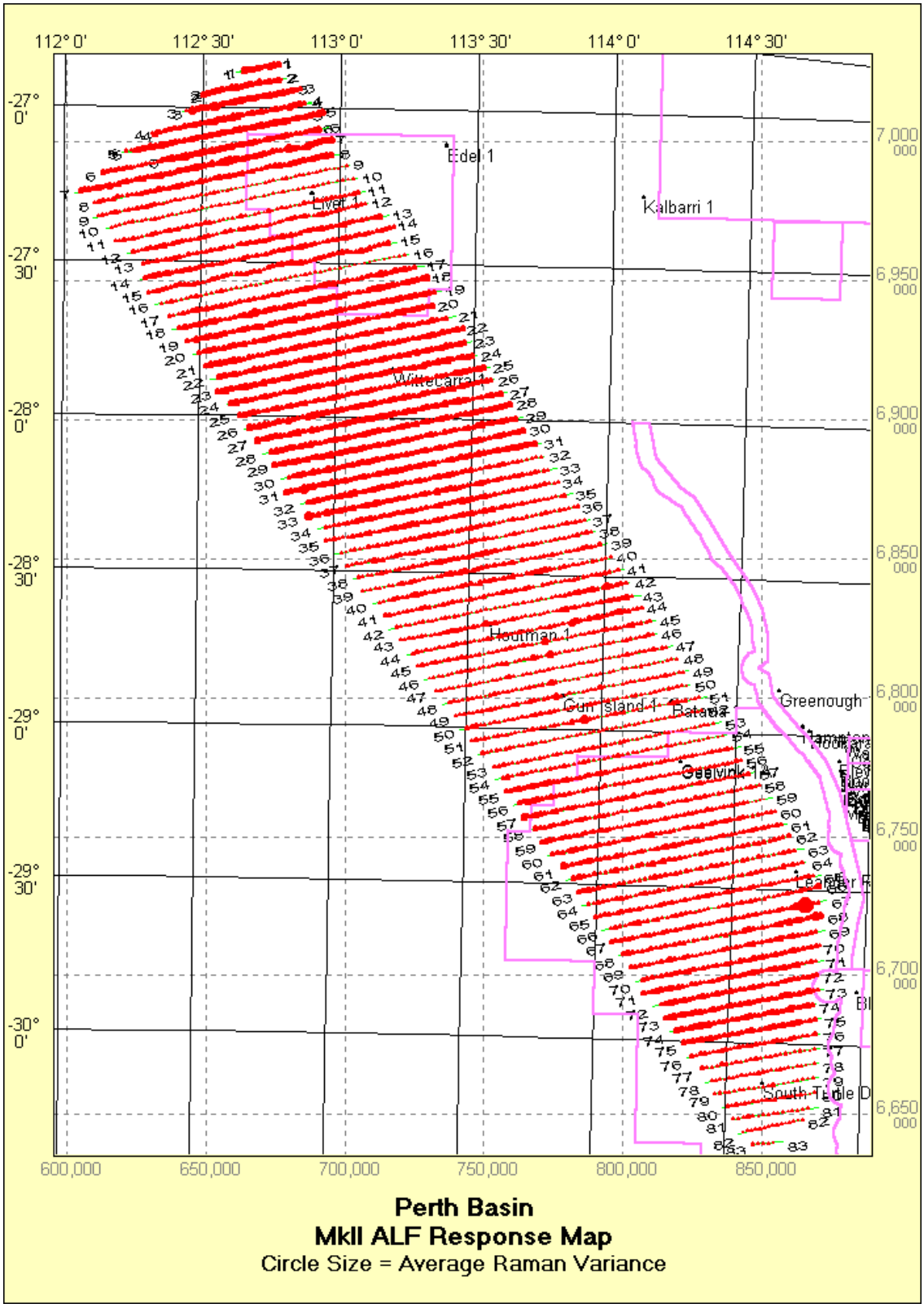


Figure 13. Raman Variance Map.

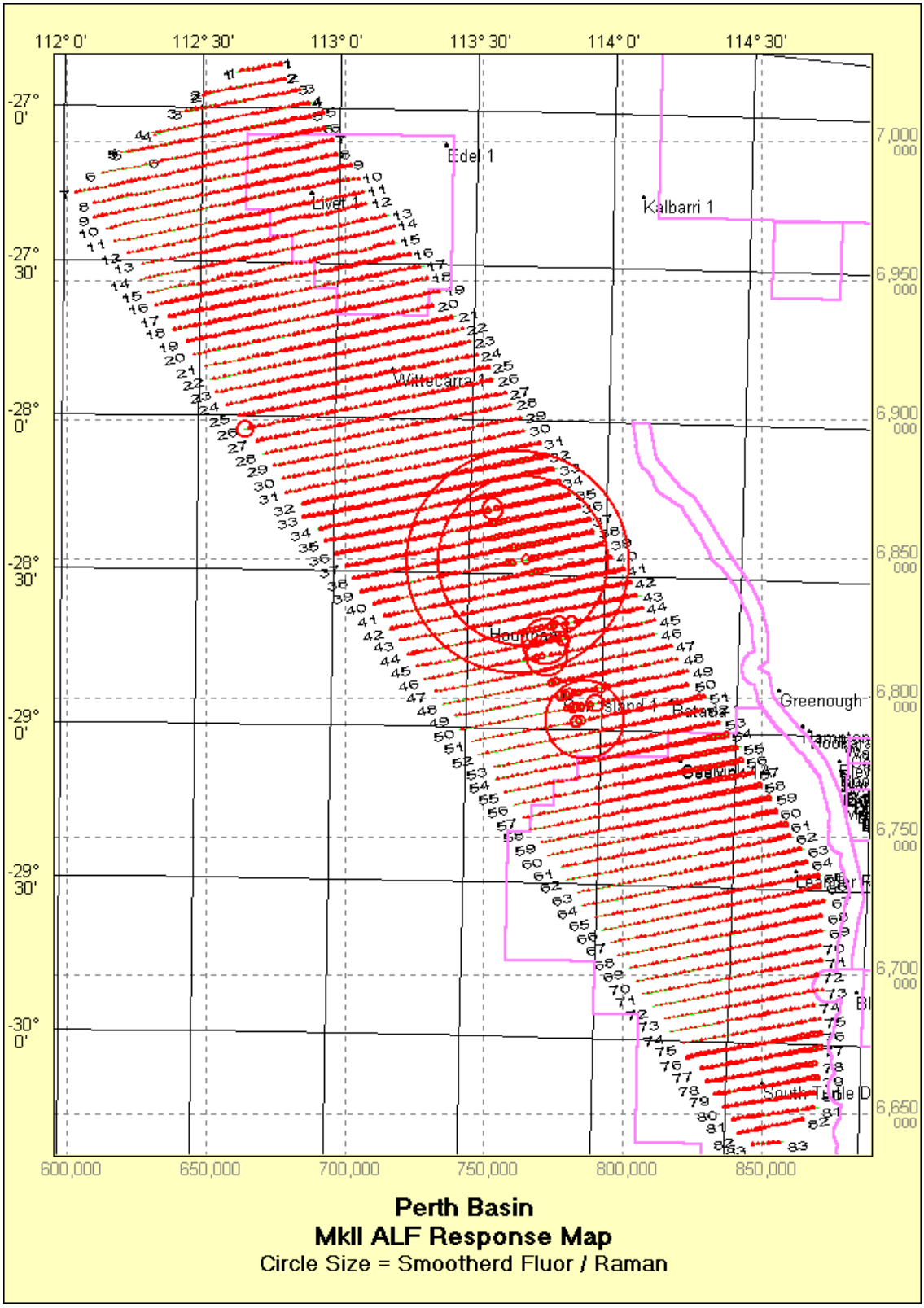


Figure 14. Smoothed F/R Map.

Figure 14 shows the smoothed F/R value over the survey area. The map shows F/R variations that can be correlated between lines.

Appendix 2. Data Navigation QC

Line	Heading (Deg)	Straight Line Distance (m)	Acquisition Time (seconds)	Avg Straight Line Velocity (km/hr)	Points	Flight Distance (m)	Avg Flying Velocity	Avg Point Spacing (m)
1	261.2	14425.53	0	0	750	14458.03	0	19.33
2	80.04	29801.64	0	0	2055	29871.36	0	14.55
3	259.71	42451.01	0	0	2399	42591.28	0	17.77
4	79.57	59149.19	0	0	4050	59286.59	0	14.65
5	259.39	69500.93	0	0	3949	69607.34	0	17.64
6	78.68	81570.48	0	0	5655	81763.11	0	14.46
10	258.9	92682.27	0	0	5535	92846.42	0	16.78
11	78.89	92395.71	0	0	5598	92491.69	0	16.53
12	258.37	88594.93	0	0	5505	88824.13	0	16.14
13	78.73	90984.96	0	0	5550	91168.38	0	16.43
14	258.19	94686	0	0	5800	94829.2	0	16.36
15	78.55	91316.16	0	0	5395	91806.83	0	17.02
16	258.74	93415.47	0	0	5140	93483.98	0	18.19
17	78.86	94157.93	0	0	5453	94291.56	0	17.3
18	258.6	93897.95	0	0	5169	94011.98	0	18.19
19	78.84	93804.8	0	0	5490	93925.24	0	17.11
20	258.57	89155.7	0	0	4895	89266.65	0	18.24
21	78.7	92457.11	0	0	5345	92515.78	0	17.32
22	258.66	92947	0	0	5100	93005.69	0	18.24
23	78.84	93346.93	0	0	5451	93430.09	0	17.15
24	258.93	92123.61	0	0	5215	92278.5	0	17.7
25	79.07	93059.94	0	0	5425	93132.23	0	17.17
26	258.84	92067.59	0	0	5196	92171.02	0	17.75
27	79.03	92498.54	0	0	5505	92604.88	0	16.83
28	258.51	91991.52	0	0	5156	92104.06	0	17.87
29	79.09	90933.91	0	0	5245	91031.23	0	17.36
30	258.78	90318.55	0	0	5044	90352.33	0	17.92
31	79.09	93365.05	0	0	5538	93457.66	0	16.88
32	258.9	90076.06	0	0	5300	90181.29	0	17.02
33	79.12	92483.3	0	0	5895	92586.07	0	15.71
34	259.1	88609.27	0	0	5300	88704.8	0	16.74
35	79.26	90550.8	0	0	5802	90667.81	0	15.63
36	258.86	89316.8	0	0	5260	89443.96	0	17.01
37	79.13	89365.05	0	0	5557	89478.65	0	16.11
38	259.08	88860.45	0	0	5310	88907.34	0	16.75
39	78.87	90724.47	0	0	5630	90848.59	0	16.14
40	258.92	88338.14	0	0	5199	88468.3	0	17.02

Table 2a. Perth Basin MkII ALF Survey Line Navigation Summary.

Line	Heading (Deg)	Straight Line Distance (m)	Acquisition Time (seconds)	Avg Straight Line Velocity (km/hr)	Points	Flight Distance (m)	Avg Flying Velocity	Avg Point Spacing (m)
41	79.13	87921.26	0	0	5349	88075.49	0	16.47
42	259.01	88774.98	0	0	5295	88929.38	0	16.8
43	79.39	87782.15	0	0	5504	87923.33	0	15.98
44	258.83	86424.88	0	0	5353	86572.78	0	16.18
45	79.11	87333.8	0	0	5457	87462.13	0	16.03
46	258.88	85707.2	0	0	5223	85809.65	0	16.44
47	79.18	87591.39	0	0	5510	87675.73	0	15.92
48	259.08	86747.74	0	0	5319	86927.42	0	16.35
49	79.08	85741.22	0	0	5350	85878.88	0	16.06
50	258.94	84740.84	0	0	5057	84799.3	0	16.78
51	79.19	86184.28	0	0	5378	86262.47	0	16.05
52	258.87	83226.43	0	0	5086	83322.59	0	16.39
53	78.99	83839.06	0	0	5140	83929.52	0	16.34
54	259.09	85277.29	0	0	4875	85341.12	0	17.51
55	79.22	86041.59	0	0	5620	86126.9	0	15.33
56	258.92	83926.56	0	0	5069	83984.16	0	16.57
57	78.92	85344.25	0	0	5919	85477.12	0	14.45
58	258.99	84982.36	0	0	5077	85039.28	0	16.76
59	78.99	84846.89	0	0	5829	84946.95	0	14.58
60	259.22	83747.68	0	0	4925	83781.95	0	17.02
61	79.29	83207.81	0	0	5520	83316.63	0	15.1
62	259.03	83096.88	0	0	4330	83182.89	0	19.22
63	79.07	83226.63	0	0	4420	83279.47	0	18.85
64	259	82538.84	0	0	4865	82587.98	0	16.98
65	79.5	82382.29	0	0	5285	82504.25	0	15.62
66	258.42	80527.22	0	0	4749	80658.32	0	16.99
67	78.97	78683.2	0	0	4970	78741.78	0	15.85
68	258.85	74711.27	0	0	4445	74818.94	0	16.84
69	79.06	72140.6	0	0	4475	72227.1	0	16.15
70	259.16	67946.2	0	0	4085	68016.33	0	16.66
71	79.65	66147.04	0	0	4080	66250.41	0	16.25
72	259.28	60760.62	0	0	3625	60820.59	0	16.79
73	79.81	57988.03	0	0	3536	58045.49	0	16.42
74	259.42	53587.43	0	0	3230	53670.43	0	16.63
75	80.07	50974.22	0	0	3085	51012.97	0	16.55
76	259.79	48721.79	0	0	3121	48786.23	0	15.64
77	80.27	44334.42	0	0	2480	44385.02	0	17.91

Table 2b. Perth Basin MkII ALF Survey Line Navigation Summary.

Line	Heading (Deg)	Straight Line Distance (m)	Acquisition Time (seconds)	Avg Straight Line Velocity (km/hr)	Points	Flight Distance (m)	Avg Flying Velocity	Avg Point Spacing (m)
78	260.6	41800.96	0	0	2680	41868.67	0	15.63
79	81.2	38097.22	0	0	2135	38132.1	0	17.88
80	260.89	35017.25	0	0	2240	35093.13	0	15.68
81	82.28	31100.5	0	0	1740	31138.4	0	17.92
82	257.87	23721.93	0	0	1533	23763.79	0	15.52
83	84.56	11632.67	0	0	645	11640.67	0	18.1
1	259.31	16712.54	0	0	1050	16734.34	0	15.97
2	78.79	30270.73	0	0	1750	30316.99	0	17.34
3	258.93	43256.77	0	0	2750	43318.68	0	15.76
4	78.11	57431.13	0	0	3250	57611.91	0	17.74
5	258.55	72626.15	0	0	4496	72731.71	0	16.18
6	78.93	61250.09	0	0	3644	61325.92	0	16.84
7	258.62	95391.51	0	0	6100	95638.77	0	15.68
8	78.78	90248.08	0	0	5300	90388.34	0	17.06
9	258.48	94884.78	0	0	6050	95009.35	0	15.71
5	269.24	71719.08	0	0	4680	71942.1	0	15.38
10	92.31	85545.54	0	0	5064	85684.55	0	16.93
11	271.95	85679.61	0	0	5510	85890.37	0	15.59
12	92.32	86896.27	0	0	5115	87058.69	0	17.03
13	272.04	77978.88	0	0	4961	78062.3	0	15.74
14	92.46	77983.28	0	0	4619	78140.95	0	16.92
15	271.89	75429.08	0	0	4859	75529.56	0	15.55
16	92.48	73037.51	0	0	4325	73512.55	0	17
17	92.34	71600.13	0	0	4320	71758	0	16.62
18	271.91	75176.84	0	0	4915	75322.35	0	15.33
19	92.2	76392.31	0	0	4565	76575.24	0	16.78
20	271.92	74300.74	0	0	4911	74446.33	0	15.17
1	272.05	78983.42	0	0	4770	79013.22	0	16.57
2	92.18	87736.05	0	0	5406	87858.59	0	16.26
3	272.06	78429.71	0	0	4670	78493.22	0	16.82
4	92.6	79129.98	0	0	4907	79299.67	0	16.17
5	272.2	79285.84	0	0	4770	79625.05	0	16.7
6	92.34	79240.93	0	0	5009	79400.76	0	15.86
7	272.34	77168.82	0	0	4715	77272.13	0	16.4
8	92.07	85488.19	0	0	5255	85580.82	0	16.29
9	272.31	85871.97	0	0	5294	85991.86	0	16.25
Total:		**8,429,097.58**			**510,500**	**8,441,636.11**		

Table 2c. Perth Basin MkII ALF Survey Line Navigation Summary.

A total of 872,412 ALF spectra were recorded on 182 lines. Nearly 15,000 km of lines were flown during the survey.

A total of 510,500 ALF spectra were recorded on 110 lines. About 8,400 km of lines were flown during the survey.

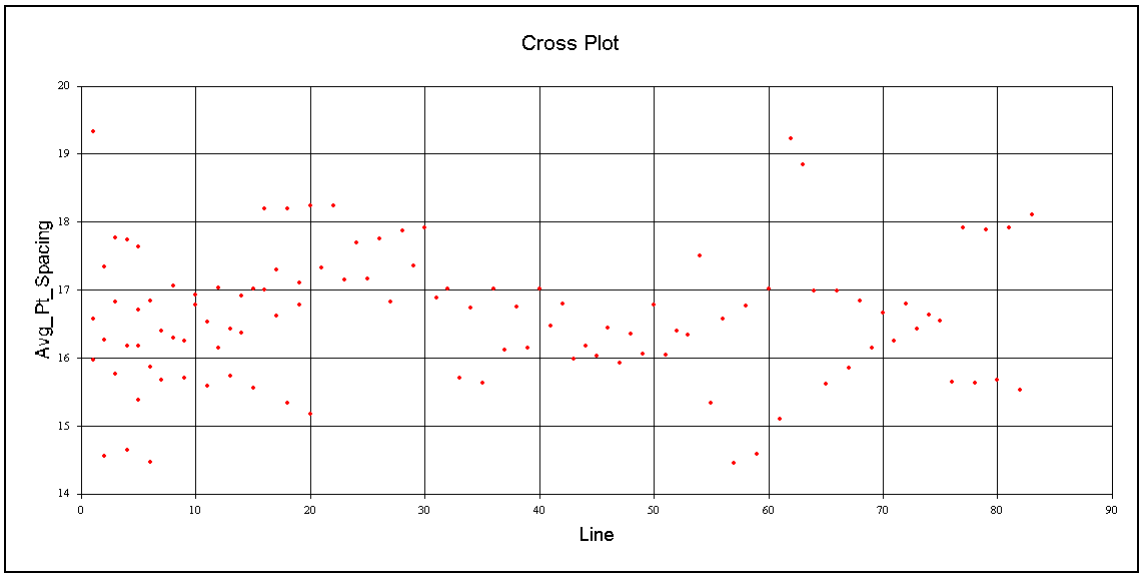
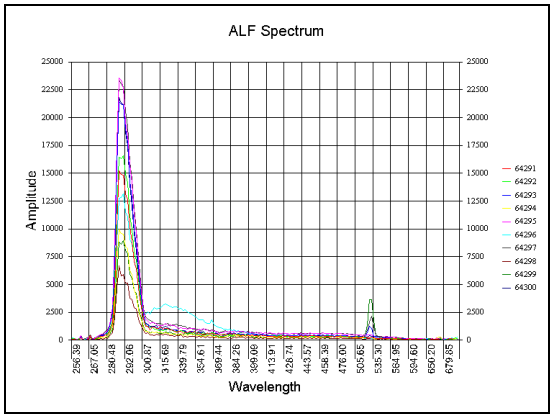


Figure 15. The Average Point Spacing Plotted for All Lines.

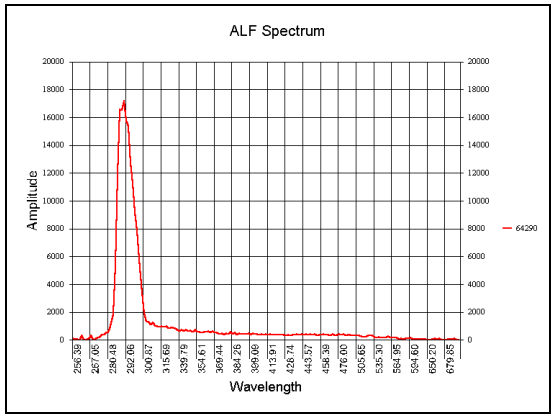
Appendix 3. Comparison of MkII and MkIII ALF Survey Data

Figure 16 shows a comparison of ALF MkIII survey data from the Skua region with the Timor ALF MkII data. Figure 16a shows a typical isolated MkIII fluor within ten adjacent spectra. Figure 16b shows a typical non-fluorescing spectrum. A medium intensity fluor is shown in Figure 16c. When the fluor is averaged with the surrounding non-fluor spectra (Figure 16d), the response is difficult to distinguish from the non-fluor spectra. The averaging process has tended to filter out the fluorescence response and enhance the more consistent water response.

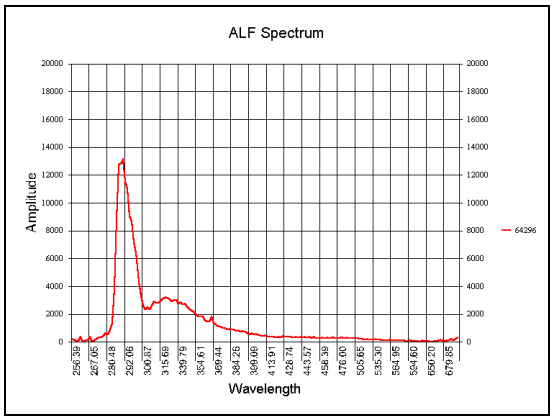
Figures 16e and 16f show a typical non-fluor and interpreted medium intensity fluor from the Timor MkII ALF survey. The refined interpretation method is required to distinguish the more subtle MkII fluors.



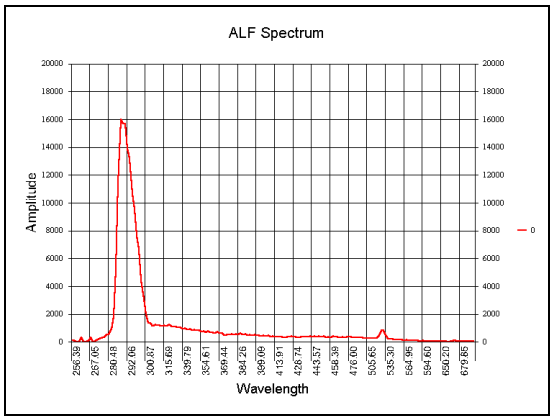
a) Skua ALF MkIII Ten Adjacent Spectra



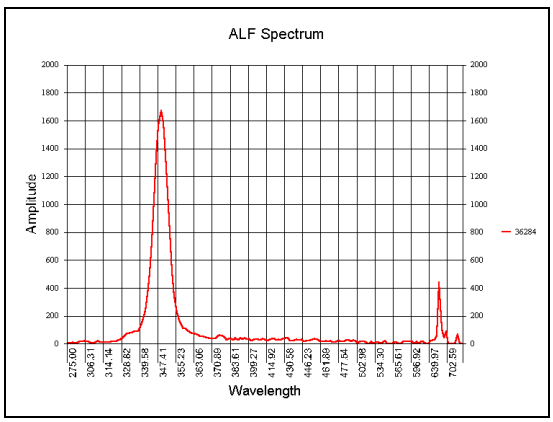
b) Skua Line 30130 No Fluor



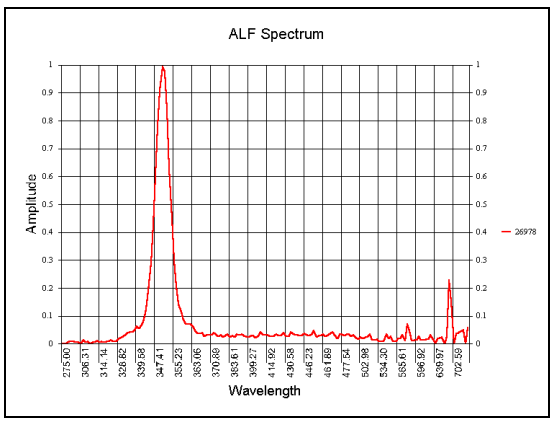
c) Skua Line 30130 Medium Fluor



d) Skua Line 30130 Ten Spectra Averaged



e) Timor MkII Line 15 No Fluor



f) Timor MkII Line 21 Medium Fluor.

Figure 16. Comparison of Skua MkIII and Timor Sea MkII ALF Data.

Appendix 4. CD Contents

The CD contains the following files:

Perth Basin MkII ALF Project.zip
: the *ALF Explorer™* project

Perth Basin MkII ALF Survey Interpretation Report.doc
: the interpretation report document file

Perth Basin MkII ALF Survey Picked Fluors.txt
: an ASCII data file of the fluors selected during the interpretation

Perth Basin MkII ALF Survey Summary.xls
: Excel spreadsheet containing the survey acquisition and navigation QC summaries

Figures
: Directory containing figures used in the interpretation report