

# **Appendix A2**

## **Petrol**

### **MON – Results**

**Petrol - Motor Octane Number (MON) - Monthly Results**

**July '08 to Jun '09**

Participant	Jul '08	Aug '08	Sep '08	Oct '08	Nov '08	Dec '08	Jan '09	Feb'09	Mar '09	Apr '09	May '09	Jun '09		
BP Refinery (QLD) Bulwer Island Eng No. 2	77.3	<b>No samples dispatched</b>	86.2	85.6	<b>No samples dispatched</b>		82.5	85.3	83.4	85.8	84.3	81.4		
BP Refinery (WA) Kwinana Eng No. 2				85.2			81.9							
BP Refinery (WA) Kwinana Eng No. 5	75.8			85.6				81.8	85.1	84.0	85.2	83.4		
Caltex Refineries (NSW) Kurnell Eng No. 2	76.0			86.0		85.6		82.3	81.9	85.0	84.2	85.1	84.0	82.1
Caltex Refineries (QLD) Lytton Eng No. 2	75.1			85.4		85.1		81.6	81.6	84.7	83.4	85.0		82.1
Independent Petroleum Laboratory (NZ) Whangarei Eng No. 3				85.6		85.6		83.4	§ 81.6	84.5			84.0	81.8
Intertek Testign Services (VIC) Melbourne	76.0			85.6		85.4		82.0	81.5	84.5	83.7	85.2	83.2	81.8
Mobil Refining (VIC) Altona	76.0			85.8		86.0		82.1	81.7	85.0	84.3	85.6	83.6	82.1
Intertek Testing Services (NSW) Clyde	76.1			85.2		86.0		82.1	82.1	84.8	84.5	85.2	83.9	82.4
	<i>No. of Results:</i>		7	8		8		7	8	8	7	7	7	7
	<i>Median:</i>	76.00	85.60	85.60		82.10	81.75	84.90	84.00	85.20	83.90	82.10		
	<i>Normalised IQR:</i>	0.44	0.22	0.26		0.19	0.26	0.28	0.52	0.19	0.37	0.22		
	<i>Robust CV:</i>	0.3%	0.3%	0.3%		0.2%	0.3%	0.3%	0.6%	0.2%	0.3%	0.3%		
	<i>Minimum:</i>	75.1	85.2	85.1		81.6	81.5	84.5	83.4	85.0	83.2	81.4		
	<i>Maximum:</i>	77.3	86.2	86.0		83.4	82.5	85.3	84.5	85.8	84.3	82.4		
	<i>Range:</i>	2.2	1.0	0.9		1.8	1.0	0.8	1.1	0.8	1.1	1.0		

A2.1

§ - denotes an outlier result (i.e. a result for which |z-score| > 3).

**Petrol - MON - Z-scores**

**July '08 to Jun '09**

Participants	Jul '08	Aug '08	Sep '08	Oct '08	Nov '08	Dec '08	Jan '09	Feb '09	Mar '09	Apr '09	May '09	Jun '09		
BP Refinery (QLD) Bulwer Island Eng No. 2	4.00	<b>No samples dispatched</b>	1.85	0.00	<b>No samples dispatched</b>		2.31	1.23	-1.85	1.85	1.23	-2.16		
BP Refinery (WA) Kwinana Eng No. 2				-1.23			-0.62							
BP Refinery (WA) Kwinana Eng No. 5	-0.62			0.00				0.15	0.62	0.00	0.00	-1.54	0.00	
Caltex Refineries (NSW) Kurnell Eng No. 2	0.00			1.23		0.00		0.62	0.46	0.31	0.62	-0.31	0.31	0.00
Caltex Refineries (QLD) Lytton Eng No. 2	-2.77			-0.62		-1.54		-1.54	-0.46	-0.62	-1.85	-0.62		0.00
Independent Petroleum Laboratory (NZ) Whangarei Eng No. 3				0.00		0.00		<b>4.00</b>	-0.46	-1.23			0.31	-0.92
Intertek Testign Services (VIC) Melbourne	0.00			0.00		-0.62		-0.31	-0.77	-1.23	-0.92	0.00	-2.16	-0.92
Mobil Refining (VIC) Altona	0.00			0.62		1.23		0.00	-0.15	0.31	0.92	1.23	-0.92	0.00
Intertek Testing Services (NSW) Clyde	0.31			-1.23		1.23		0.00	1.08	-0.31	1.54	0.00	0.00	0.92

**A2.2**

**Note:**

[1] Outlier results are those for which  $|z\text{-score}| > 3$ , where  $z\text{-score} = (\text{participant result} - \text{consensus median}) \div \text{normalised IQR}$ . They are indicated in **bold**

[2] Samples for July '08 were deemed inconsistent therefore any z-scores  $> 3$  have not been identified as outliers

**Petrol - MON - BTSF Deviations from Specification**

**July '08 to June '09**

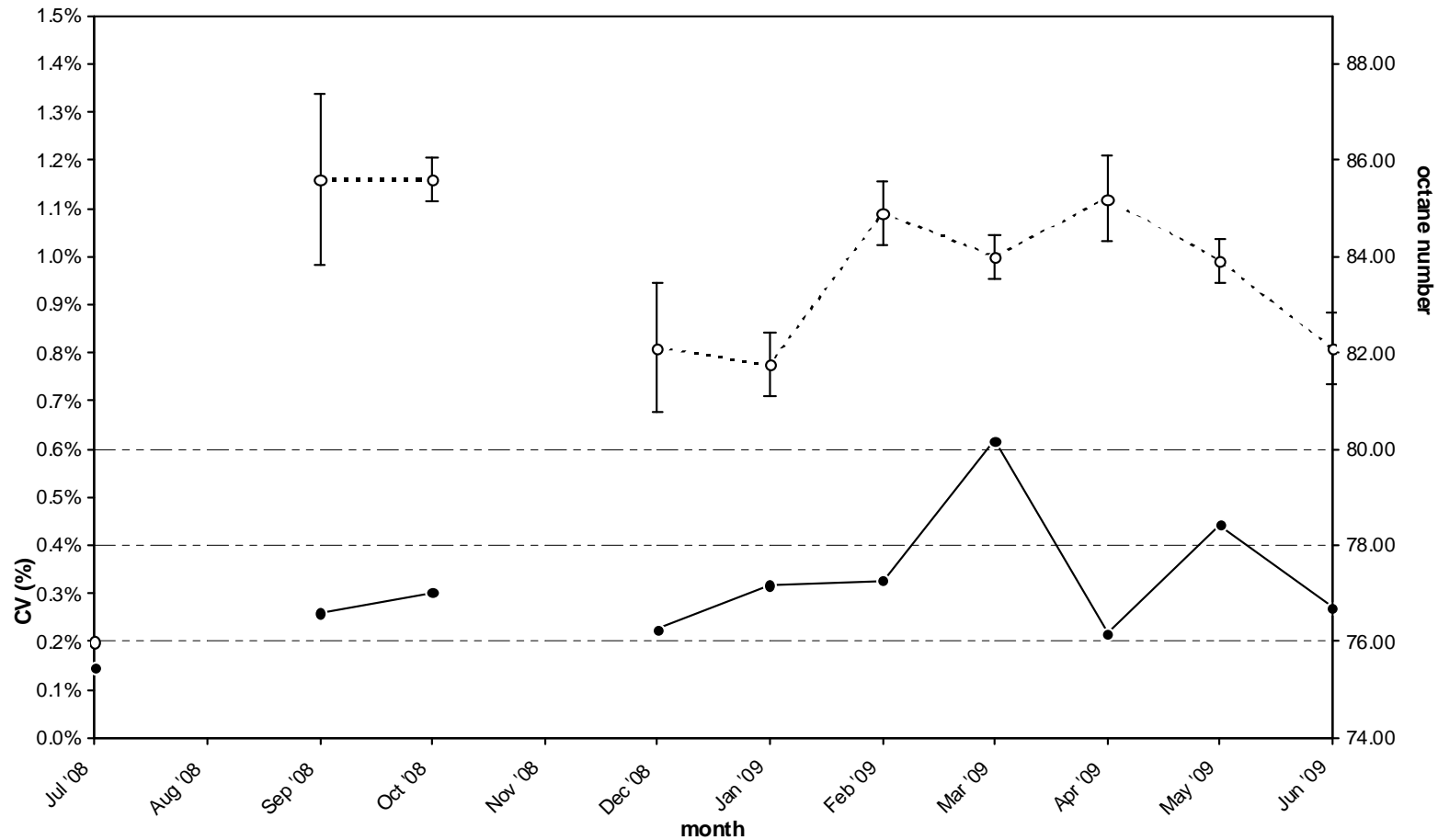
<b>Participants</b>	<b>Jul '08</b>	<b>Aug '08</b>	<b>Sep '08</b>	<b>Oct '08</b>	<b>Nov '08</b>	<b>Dec '08</b>	<b>Jan '09</b>	<b>Feb '09</b>	<b>Mar '09</b>	<b>Apr '09</b>	<b>May '09</b>	<b>Jun '09</b>		
BP Refinery (QLD) Bulwer Island Eng No. 2	0.0	<b>No samples dispatched</b>	-0.1	0.2	<b>No samples dispatched</b>		0.1	0.3	0.0	-0.2	-0.2	-0.3		
BP Refinery (WA) Kwinana Eng No. 2				-0.2			-0.1							
BP Refinery (WA) Kwinana Eng No. 5	0.0			0.0				0.1	0.2	0.1	0.0	-0.2		
Caltex Refineries (NSW) Kurnell Eng No. 2	0.1			0.0		-0.1		0.1	0.0	0.1	0.0	-0.1	0.0	0.0
Caltex Refineries (QLD) Lytton Eng No. 2	0.0			0.2		-0.2		0.0	0.0	0.2	-0.3	-0.2		0.1
Independent Petroleum Laboratory (NZ) Whangarei Eng No. 3	0.1			0.1		-0.1		0.0	0.0	-0.1			0.1	-0.2
Intertek Testign Services (VIC) Melbourne	0.5					0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobil Refining (VIC) Altona	0.0			0.0		0.0		0.1	0.0	0.0	0.0	0.1	0.0	0.0
Intertek Testing Services (NSW) Clyde	-0.1			0.1		0.2		0.0	0.0	0.1	0.1	0.0	0.1	0.1

**A2.3**

**Note:**

[1] "BTSF Deviation" = "Actual/Resultant BTSF value" - "BTSF Specification"

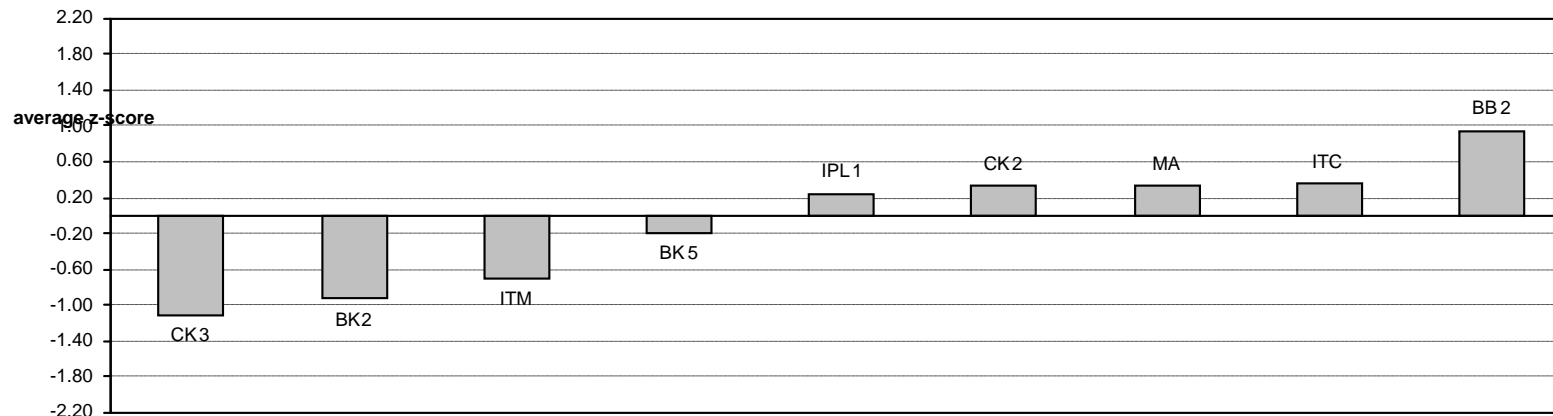
**MON - July '08 to June '09**  
**Monthly Consensus Medians and Coefficients of Variation**



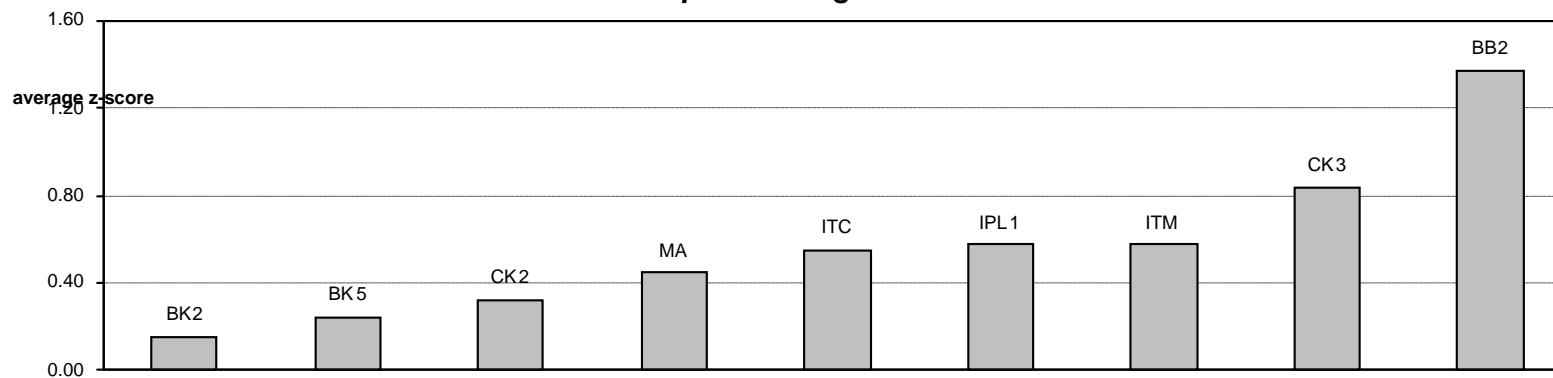
**A2.4**

**Top:** Monthly consensus medians (○) with associated error bars ( $\pm 3$  normalised IQRs)  
**Bottom:** Corresponding monthly CVs (●) as a percentage.

**MON - Participant Average Z-scores**



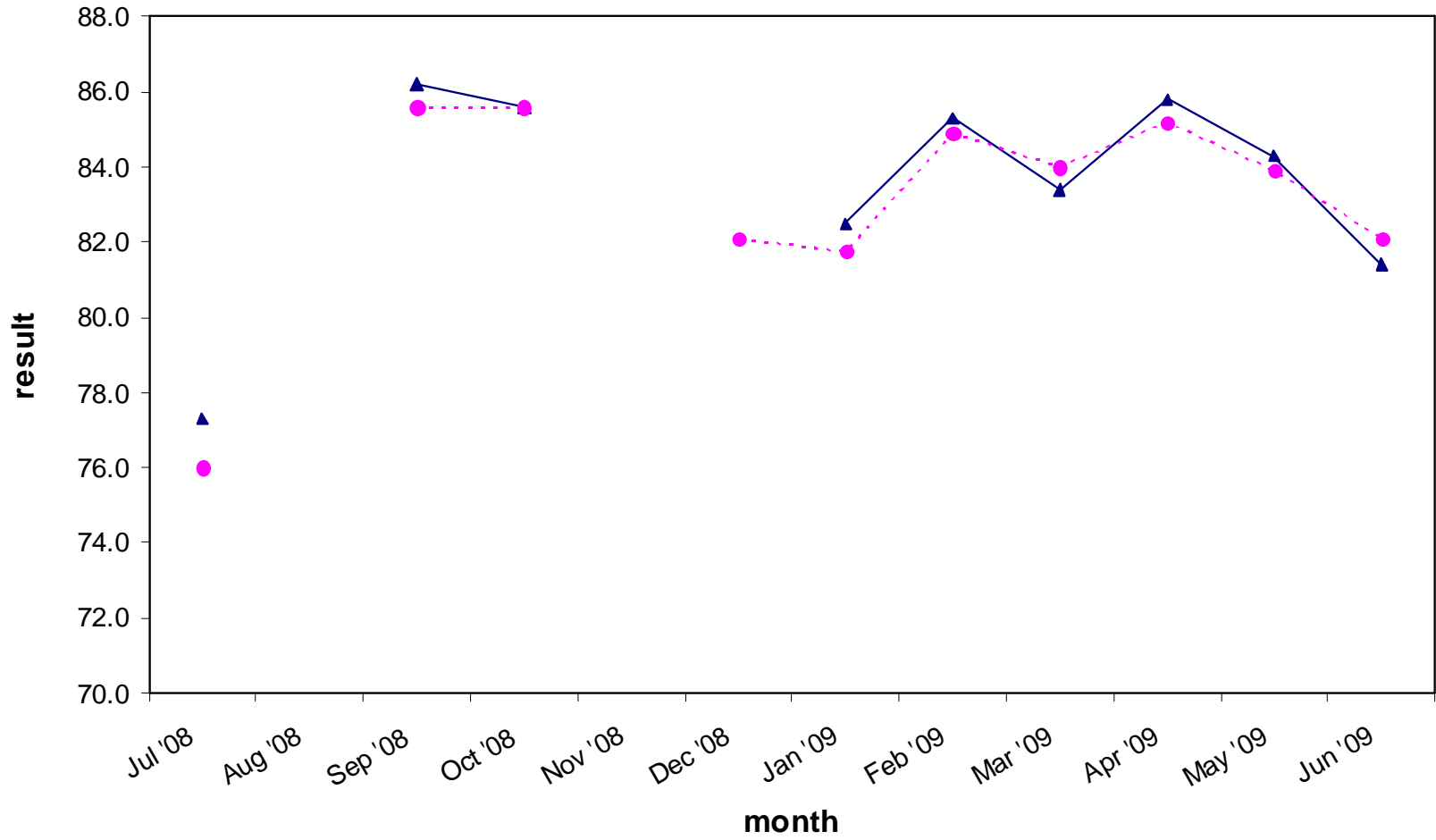
**MON - Participant Average Absolute Z-scores**



A2.5

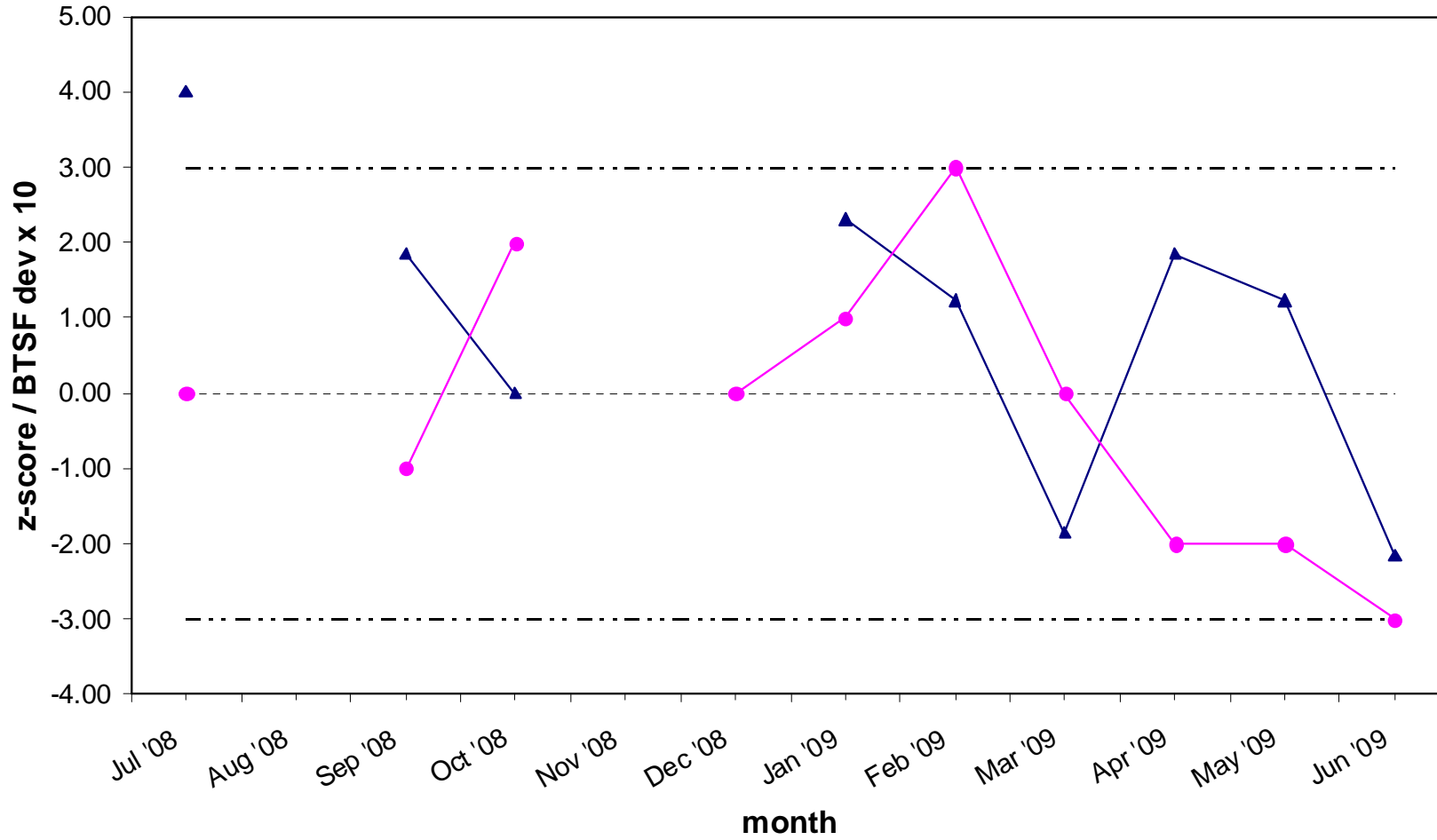
Average z-scores (top) and average absolute z-scores (bottom) shown for: BP - Bulwer Isl - No. 2 (BB2); BP - Kwinana - No. 2 (BK2); BP - Kwinana - No. 5 (BK5); Caltex - Kurnell - No. 2 (CK2); Caltex - Kurnell - No.3 (CK3); Caltex - Lytton - No. 2 (CL2); Independent- Whangarei - Nos. 1, 2 & 3 (IPL1, IPL2 & IPL3); Intertek - Melbourne (ITM); Mobil - Altona (MA); Intertek - Clyde (ITC)

### MON - BP - Bulwer Engine No. 2



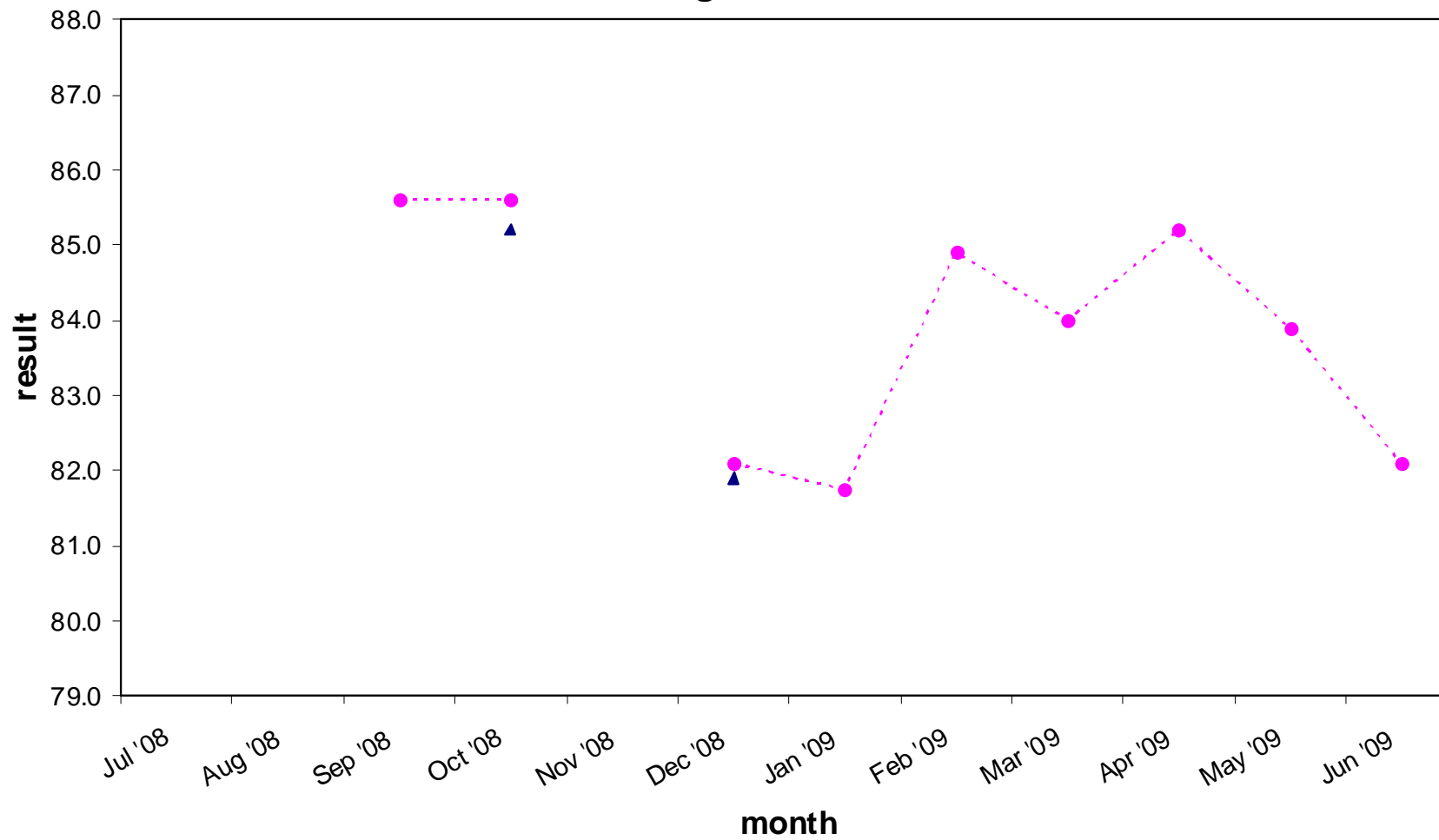
A2.6

### MON - BP - Bulwer Engine No. 2



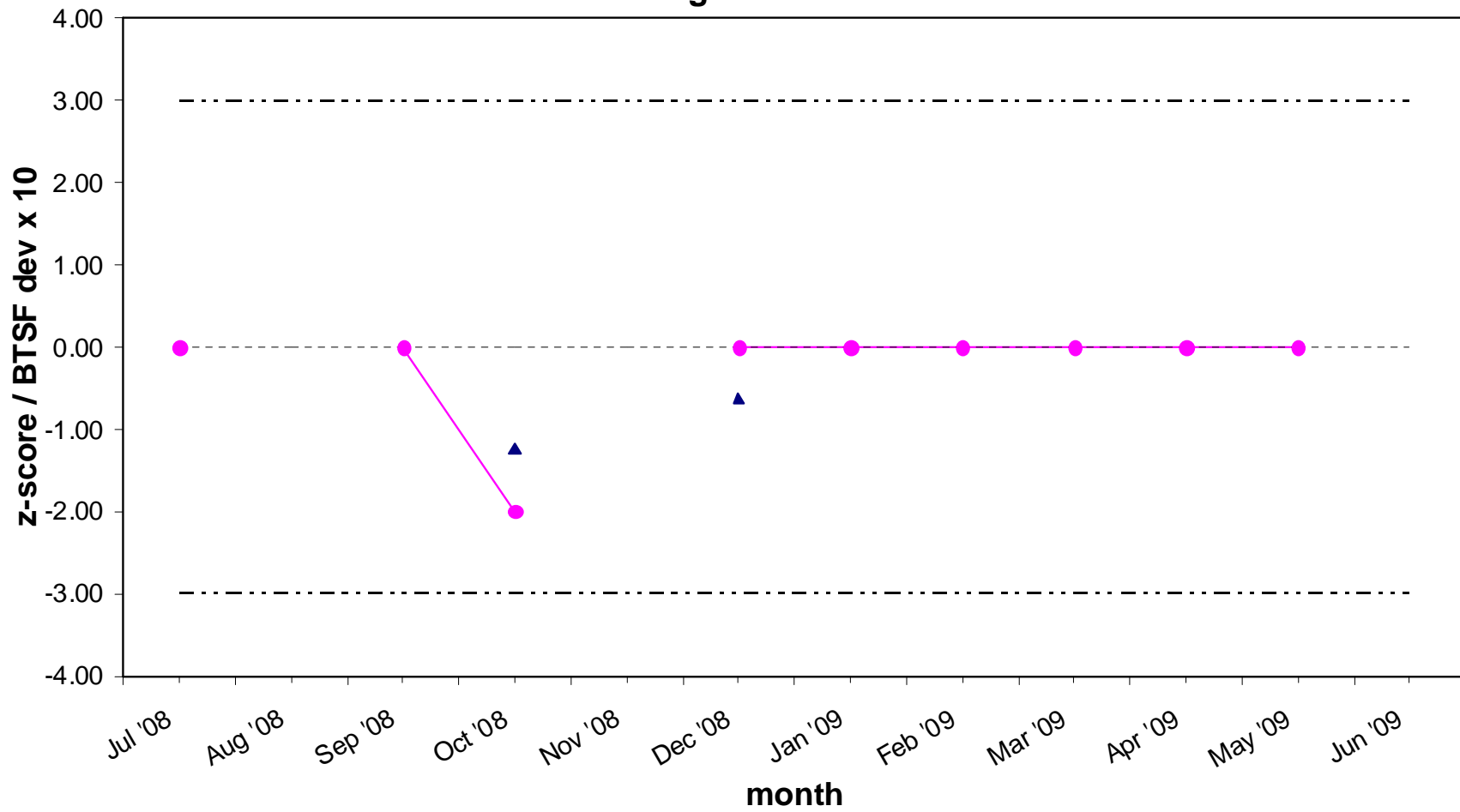
A2.7

# MON - BP - Kwinana Engine No. 2



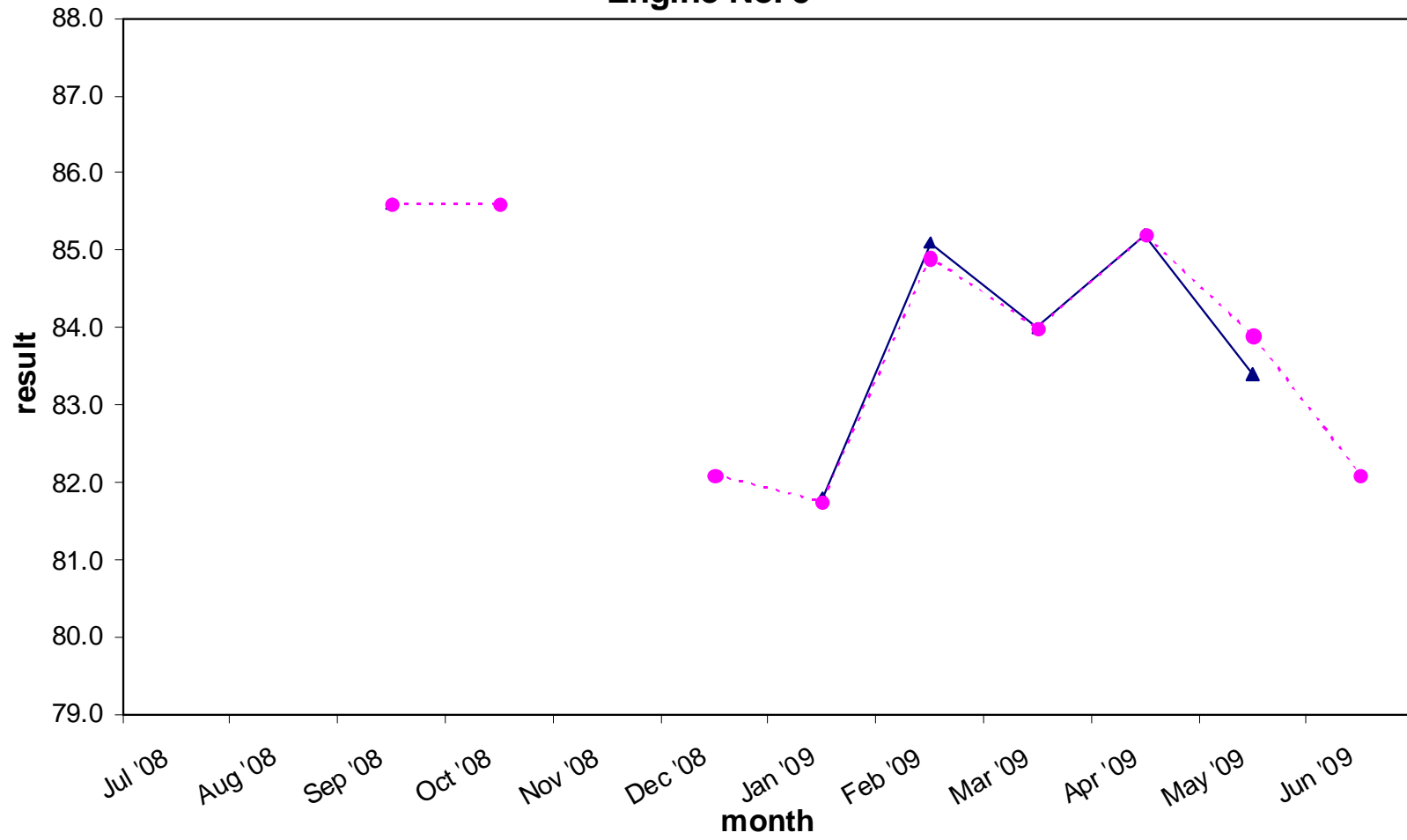
A2.8

**MON - BP - Kwinana  
Engine No. 2**



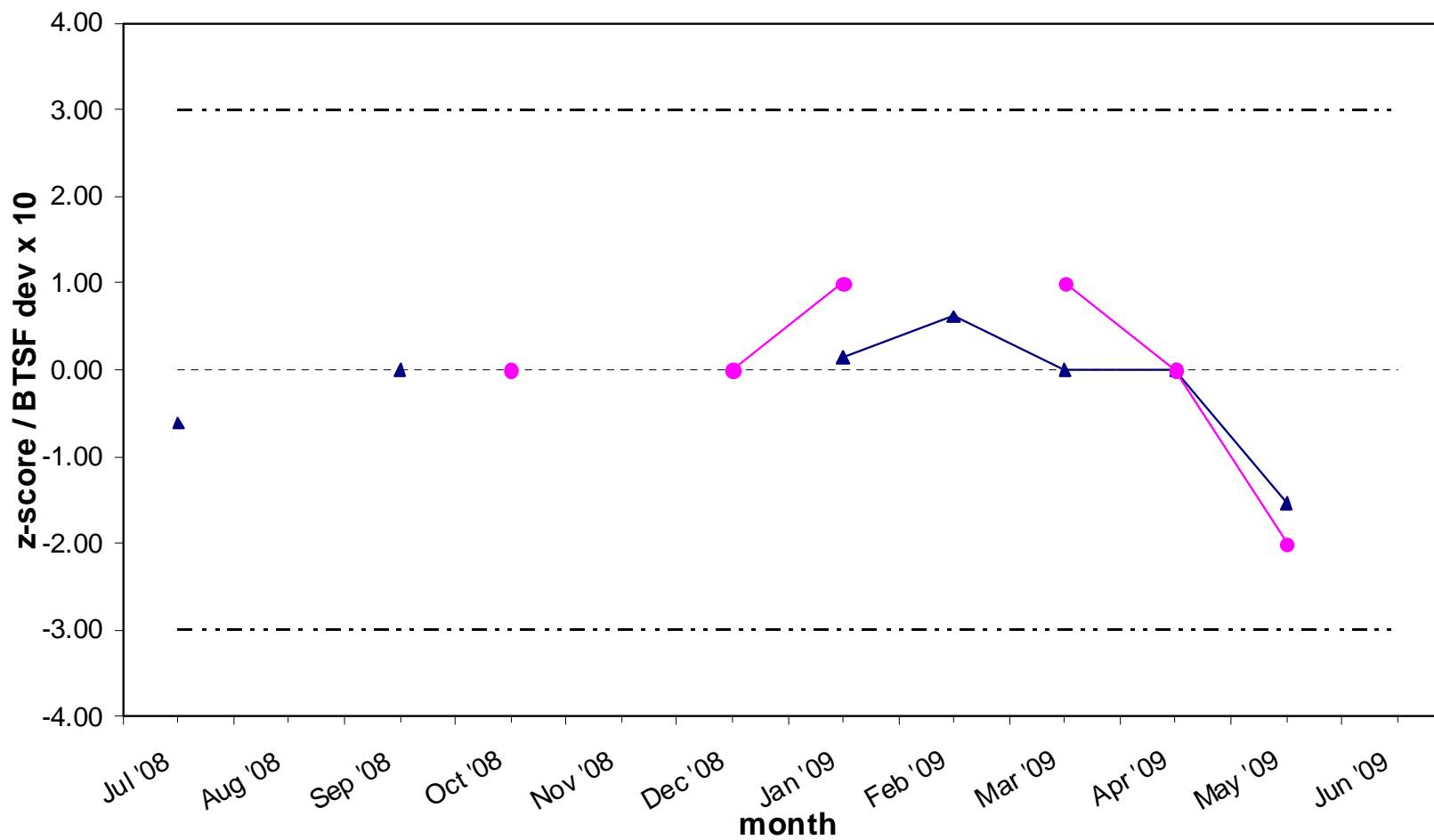
**A2.9**

**MON - BP - Kwinana  
Engine No. 5**



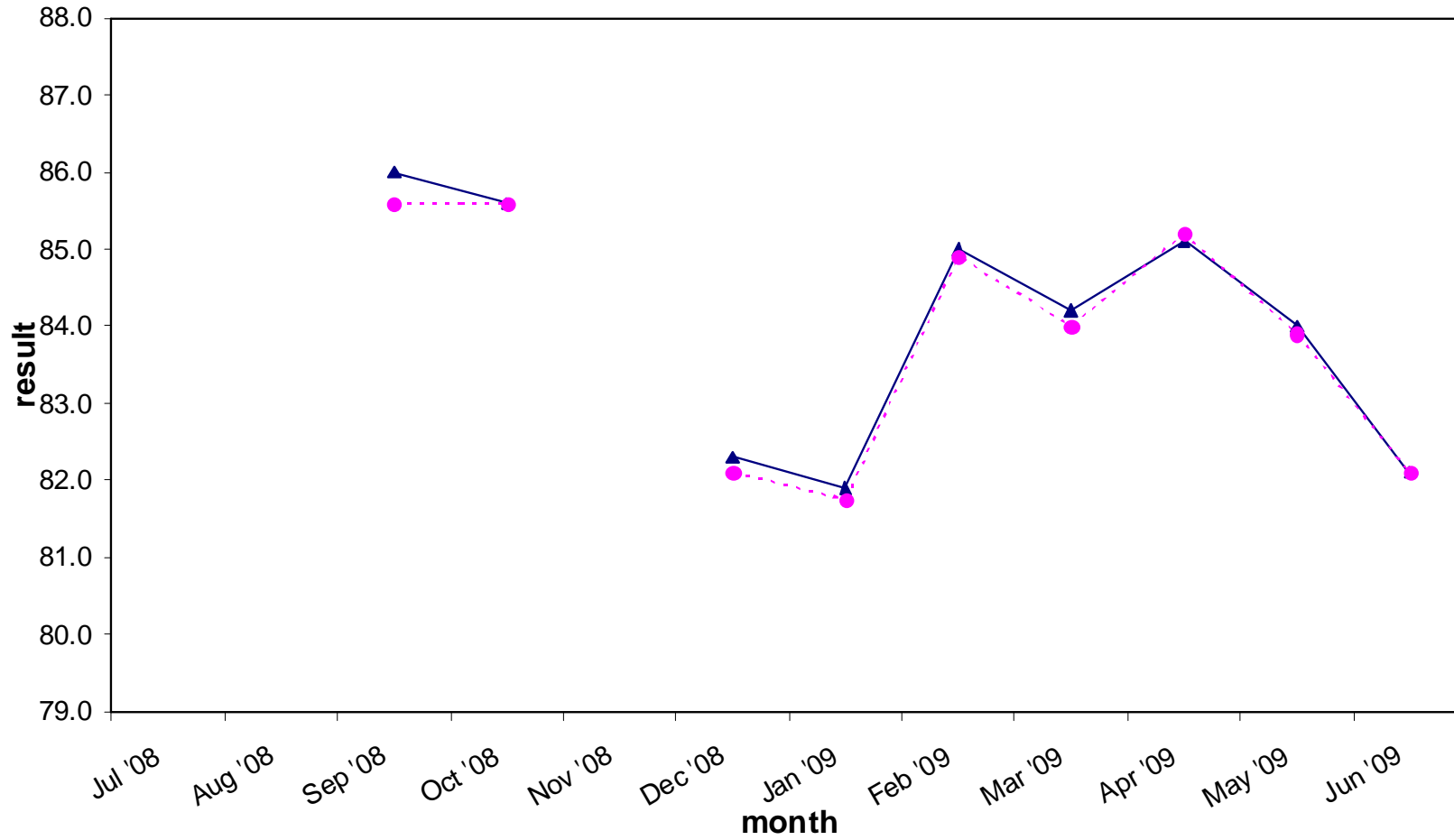
**A2.10**

**MON - BP - Kwinana  
Engine No. 5**



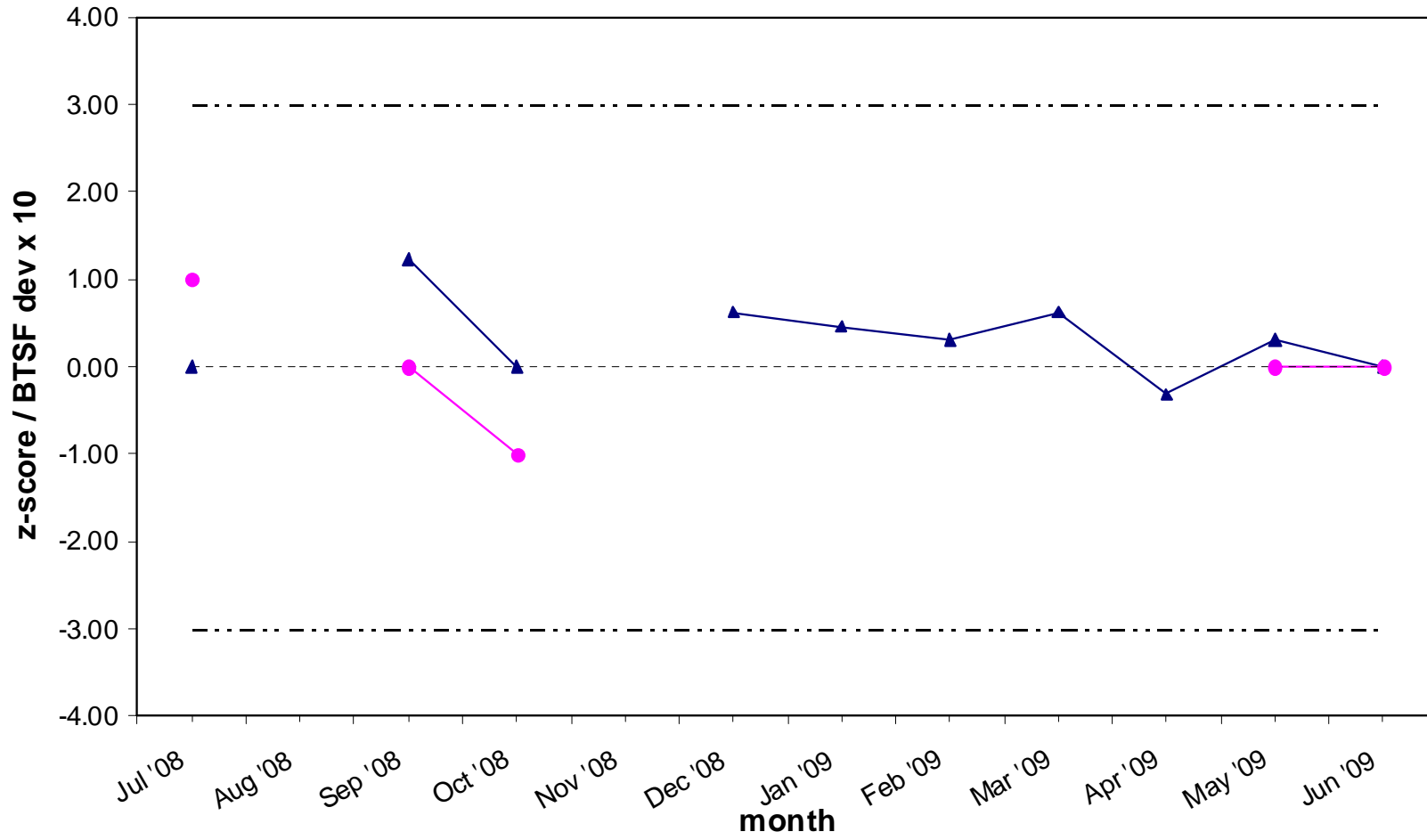
A2.11

### MON - Caltex - Kurnell Engine No. 2



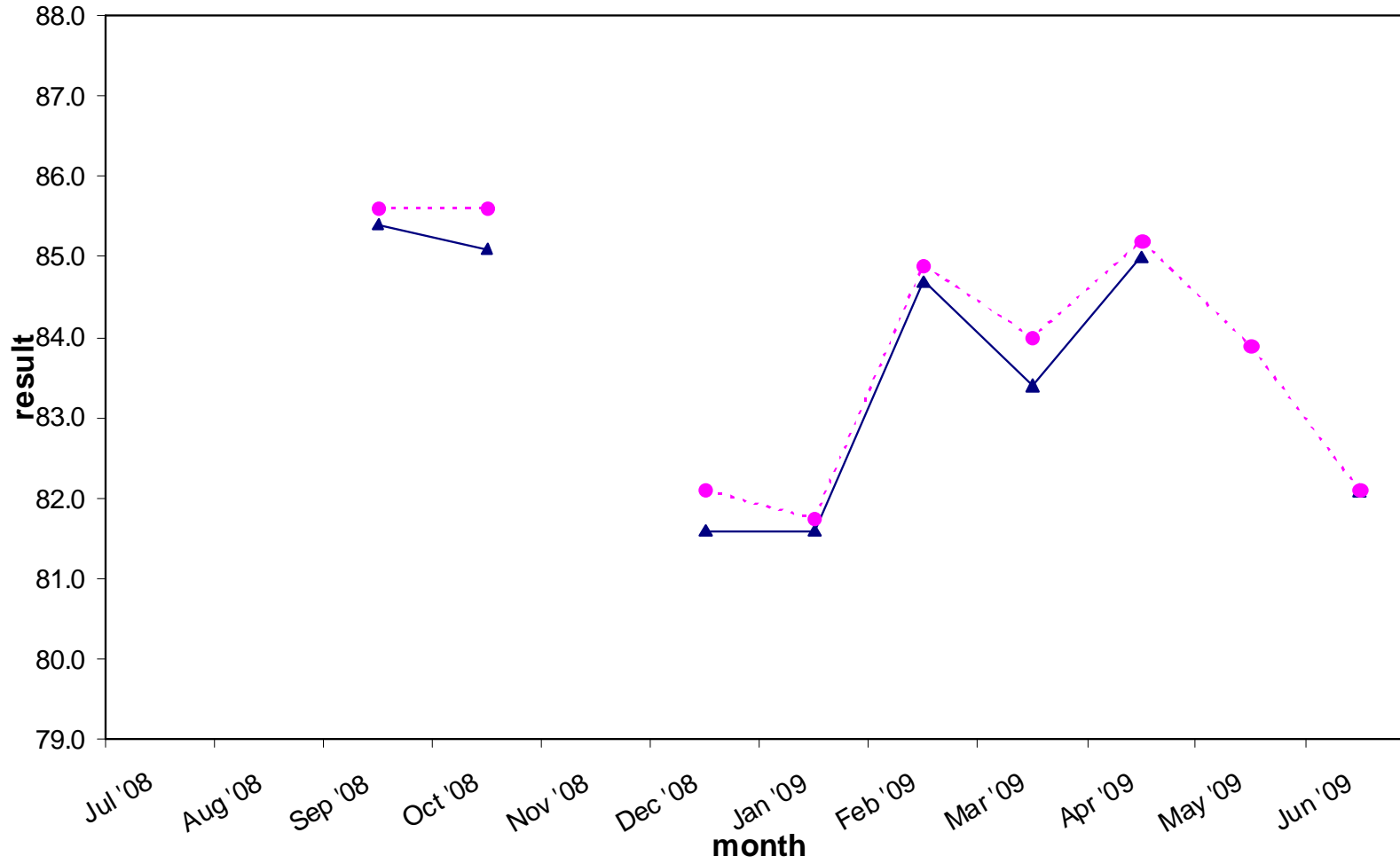
A2.12

# MON - Caltex - Kurnell Engine No. 2



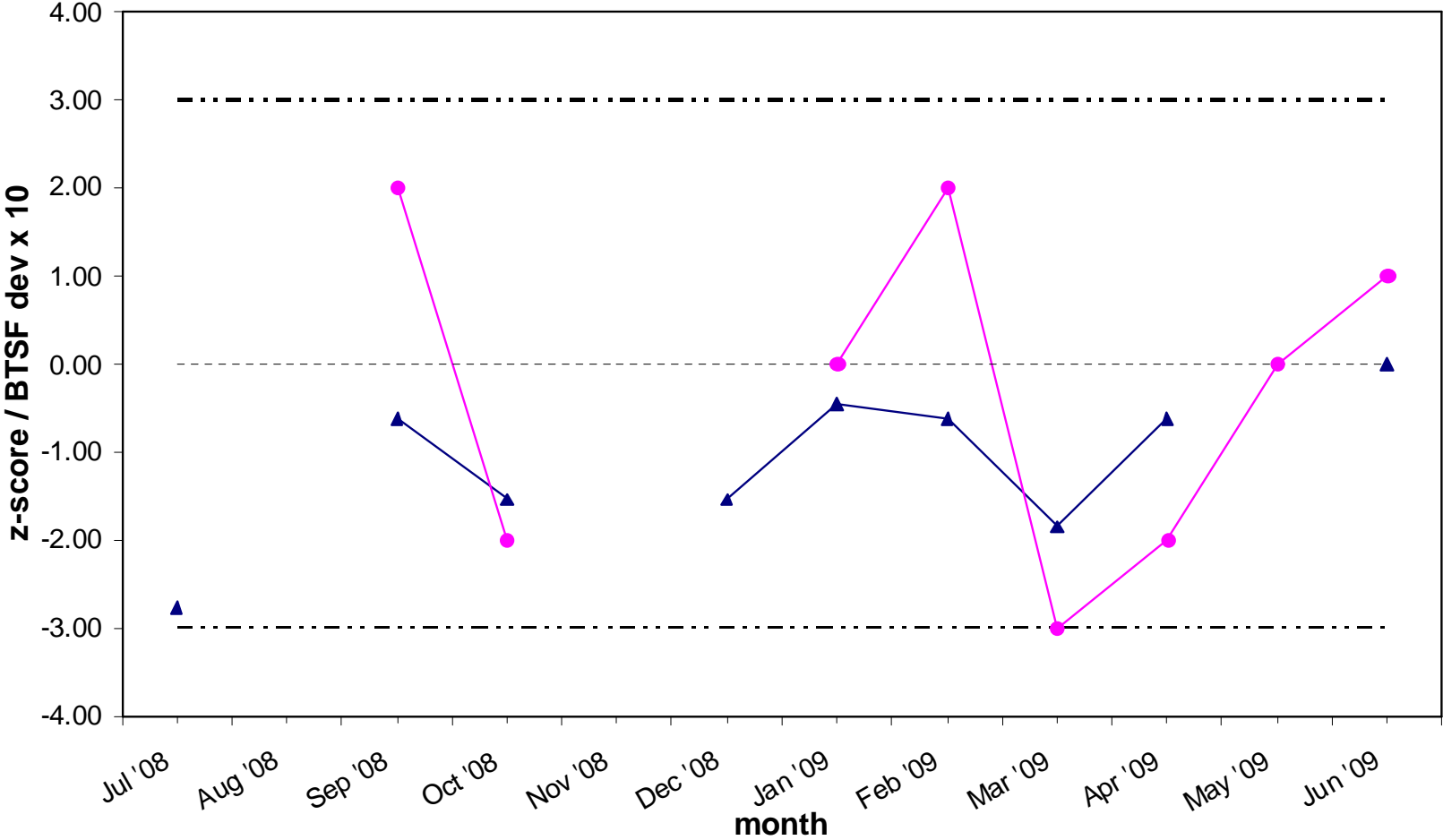
A2.13

### MON - Caltex - Lytton Engine No. 2



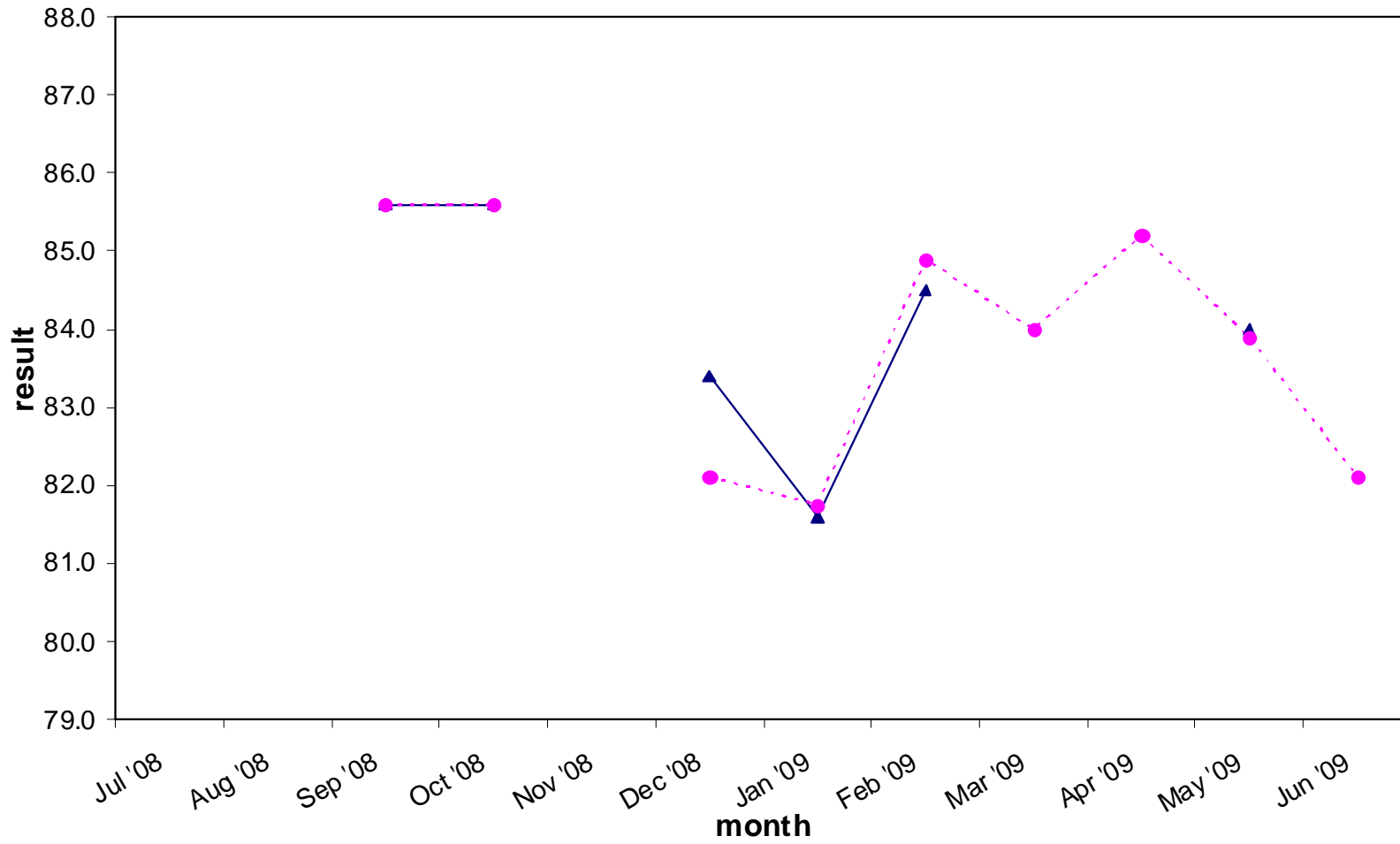
A2.14

### MON - Caltex - Lytton Engine No. 2



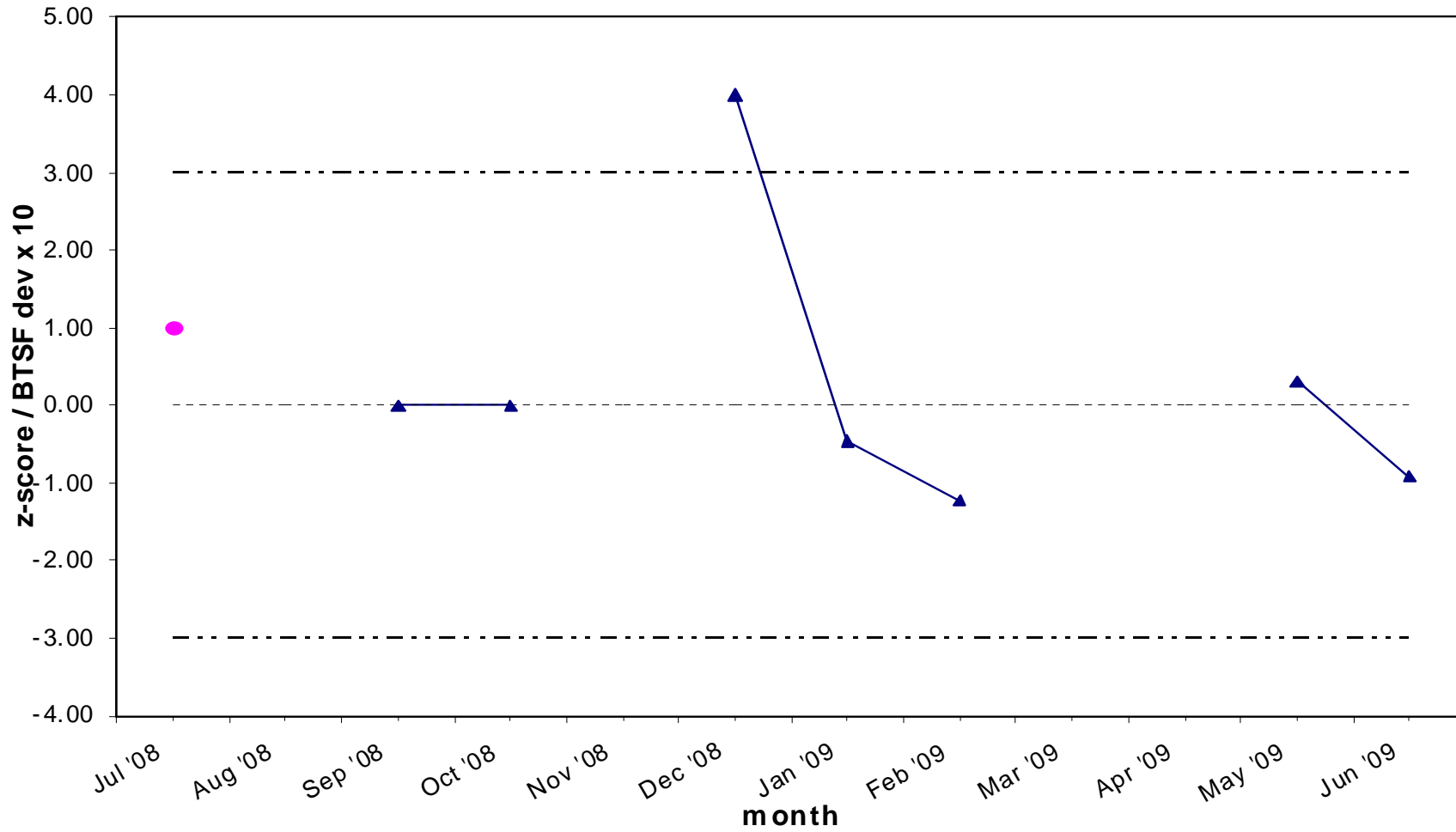
A2.15

### MON - Independent - Whangarei Engine No. 3



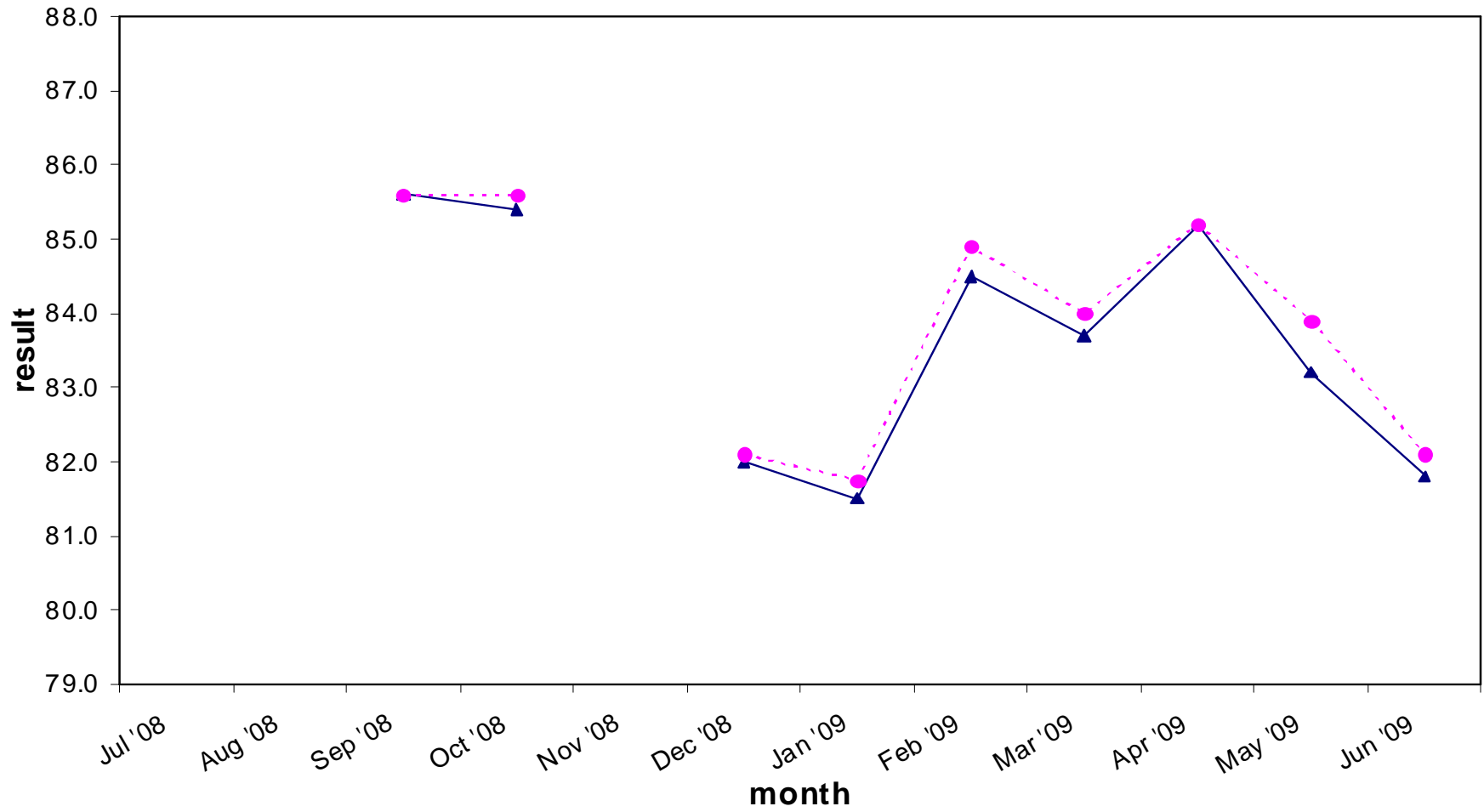
A2.16

### MON - Independent- Whangarei Engine No. 3



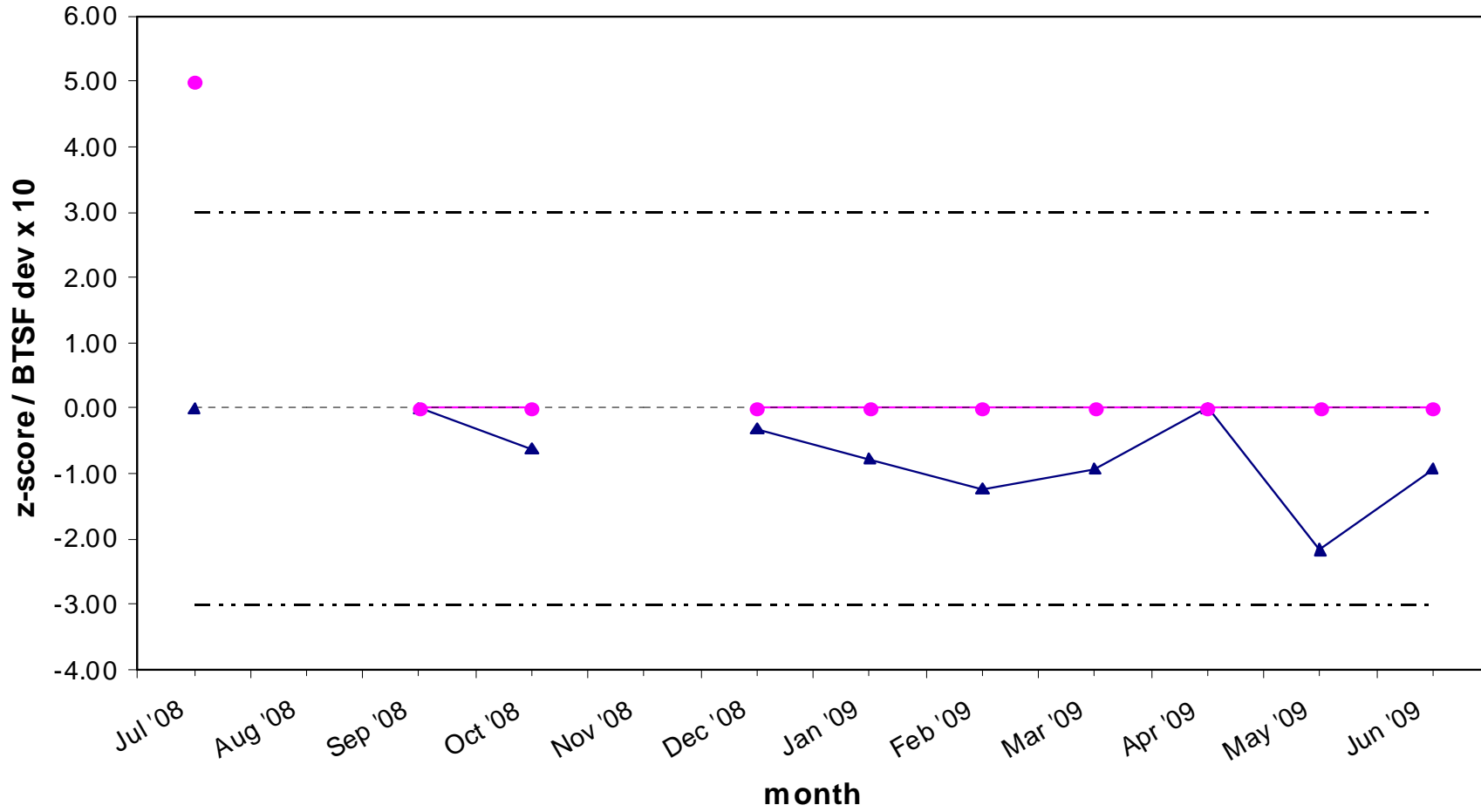
A2.17

# MON - Intertek - Melbourne



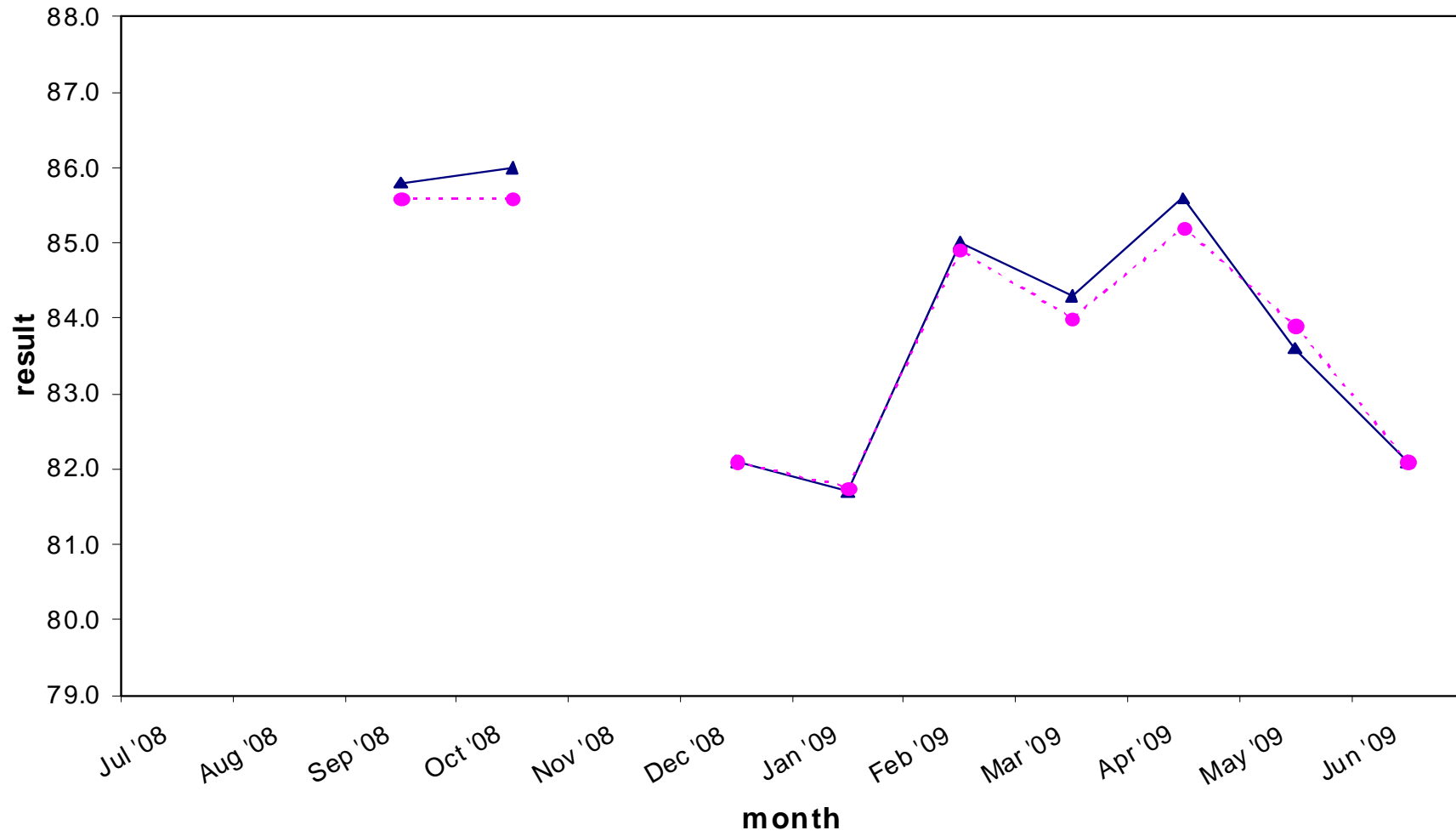
A2.18

### MON - Intertek- Melbourne



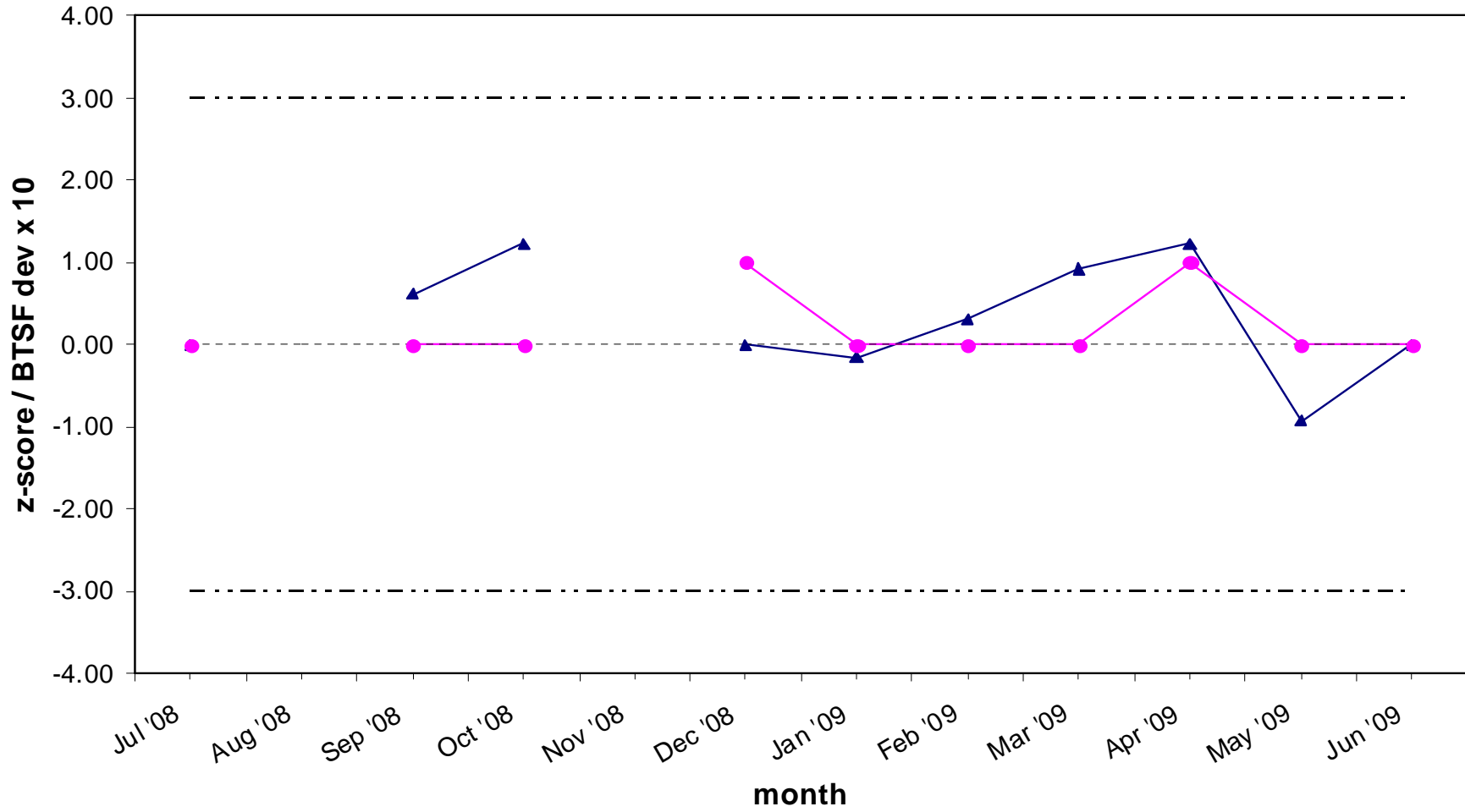
A2.19

### MON - Mobil - Altona



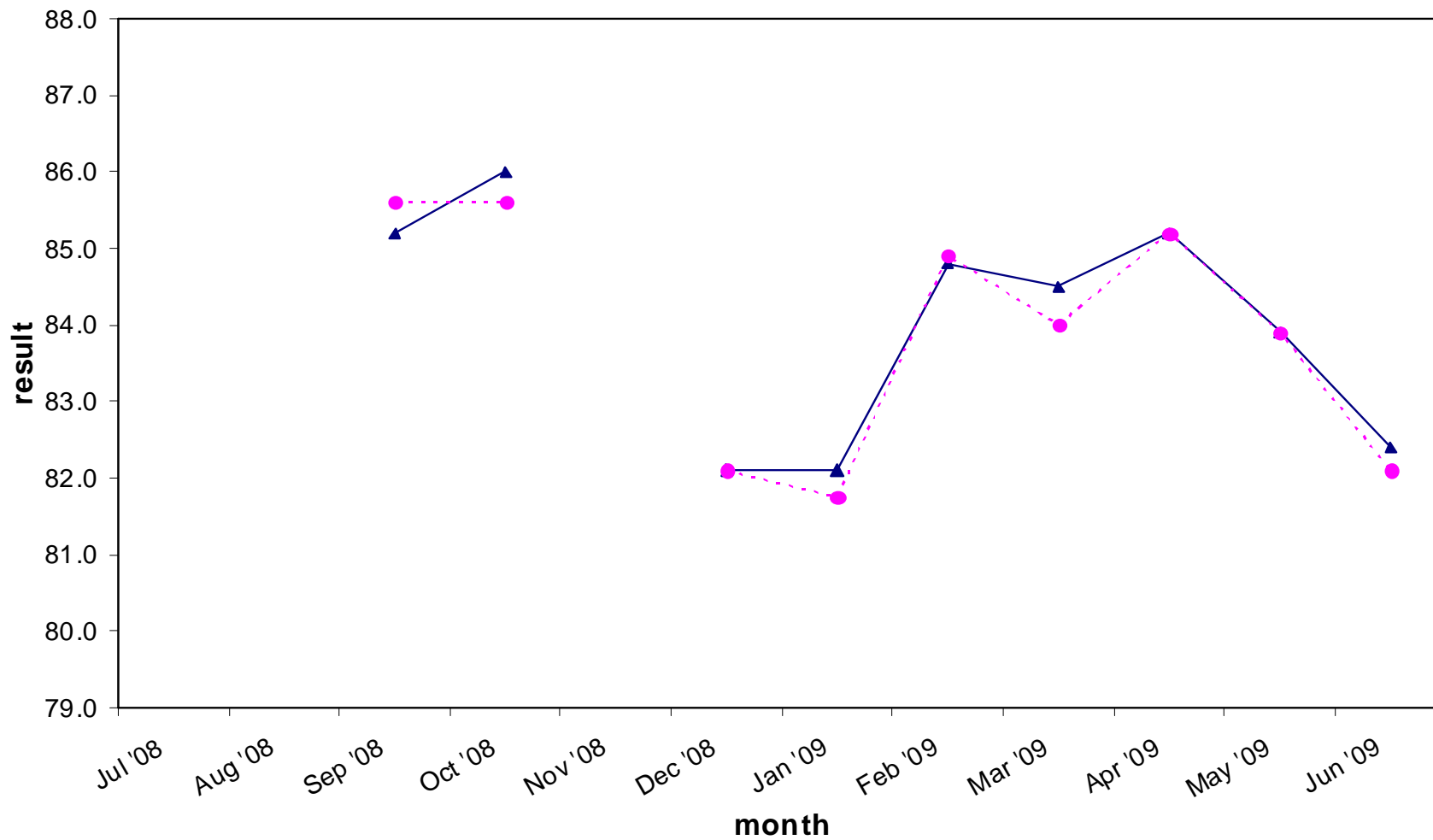
A2.20

### MON - Mobil - Altona



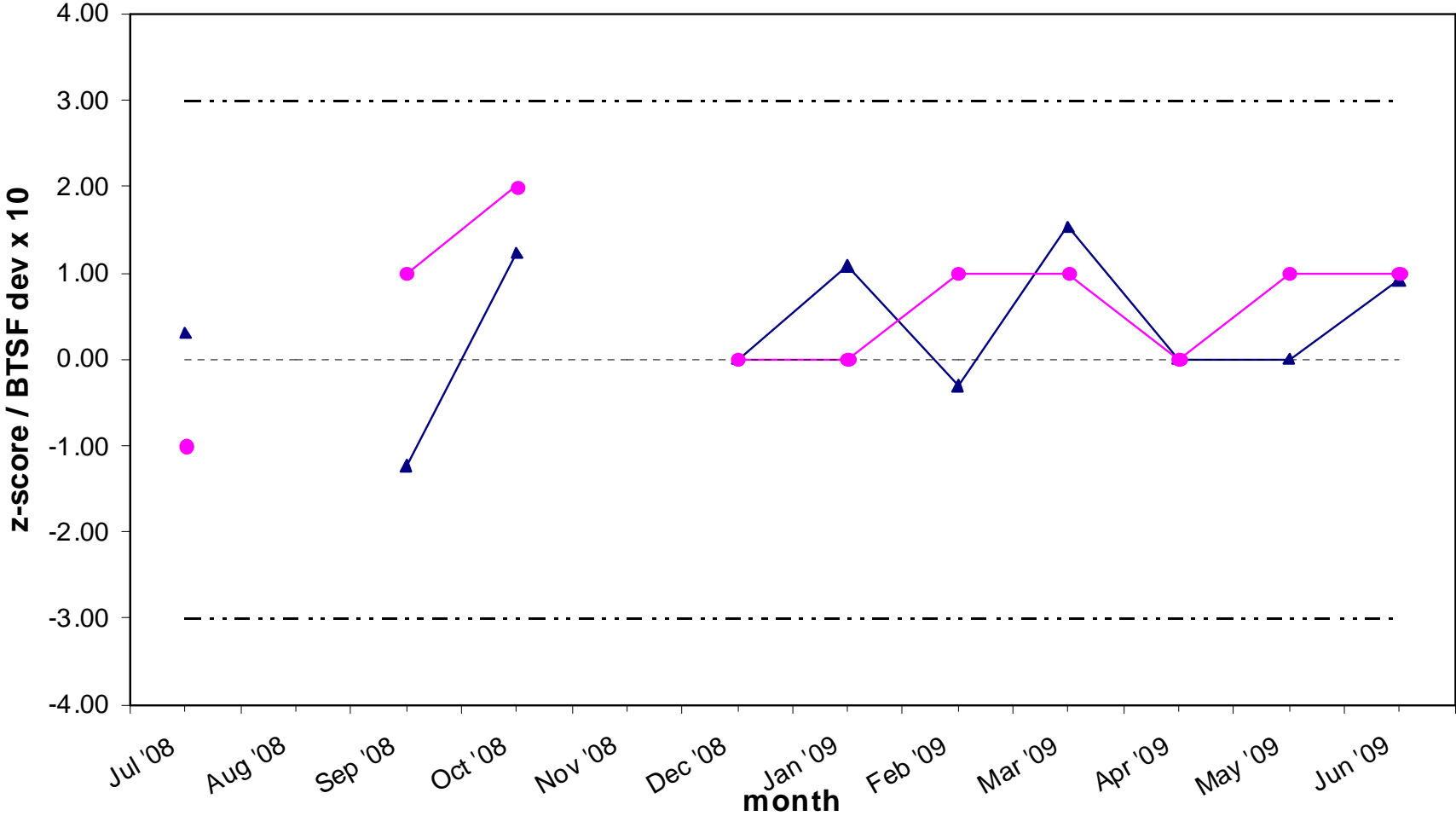
A2.21

### MON - Intertek - Clyde



A2.22

**MON - Intertek - Clyde**



A2.23