



# Cefas



European Community Reference laboratory  
for monitoring bacteriological and viral  
contamination of bivalve molluscs



## **Report on the CRL/HPA EQA Shellfish scheme 2007**

**CRL ring trial reference: RT 26 (*E.coli/Salmonella* spp. 2007)**

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## 1. Introduction

Council Regulation (EC) 882/2004 designates the Centre for Environment, Fisheries and Aquaculture (Cefas) Weymouth as the European Community Reference Laboratory (CRL) for monitoring bacteriological and viral contamination of bivalve molluscs. The CRL collaborates with the UK Health Protection Agency (HPA) on the application of a Shellfish External Quality Assurance (EQA) Scheme for proficiency testing among laboratories analysing bivalve molluscan shellfish. The EQA Shellfish scheme is primarily targeted at analysis of the statutory determinants *Escherichia coli* and *Salmonella* spp. in bivalve molluscan shellfish.

At the 6<sup>th</sup> annual workshop of NRLs Galway 2007, one resolution was agreed on relating to proficiency testing:

**Resolution 5.** NRLs agreed that their participation in proficiency testing for the legislative requirements (*E.coli* and *Salmonella*) was mandatory and agreed to continue participation in the CRL/HPA EQA shellfish scheme.

This report covers the 3 EQA distributions between March 2007 and November 2007. Annual reports from 2002 to 2006 detailing ongoing participation and laboratory performance in the EQA scheme are available on the CRL website ([www.crlcefas.org](http://www.crlcefas.org)).

## 2. Sample

### 2.1. Sample preparation and analysis

The samples consisted of lenticule discs containing fully characterised bacterial isolates. The proportions and types of organisms in the reconstituted samples were designed to mirror those that may be found in freshly harvested bivalve molluscs. It is anticipated that examination should be by methods stipulated in Regulations (EC) 854/2004/EEC and (EC) 2073/2005 which, set out requirements and methodology *inter alia* for levels of *E. coli* in 100g of flesh and absence of *Salmonella* spp. in 25g of flesh. Determined by ISO TS 16649-3 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of  $\beta$ -glucuronidase positive *Escherichia coli* Part 3: Most probable number techniques using 5-bromo-4-chloro-3-indolyl  $\beta$ -D-glucuronide and ISO 6579 Microbiology of food and animal feeding stuffs - Horizontal method for the detection of *Salmonella* spp.

### 2.2 Distribution of samples

Sample vials were packaged according to IATA regulations, UN3373 as biological samples, division 6.2 under the packing instruction code 650. Relevant transport documentation, examination request forms, instructions on handling and sample reconstitution accompanied sample vials. The date for return of results was indicated at the foot of the request forms. Report forms were included with the samples.

### 2.3. Quality control of dispatch

The examinations required, as listed on the request form, were re performed in the HPA Food EQA Laboratory on 10 samples during the examination period. The results from these samples were considered the reference results. Methods used to obtain the reference results were ISO TS 16649-3 (*E. coli* enumeration) and ISO 6579 (*Salmonella* spp.).

### 2.4 Participation

Participation in the Shellfish EQA scheme was high amongst NRLs, with 26 now registered.

**Table 1. Participation in the CRL/HPA EQA Shellfish scheme by NRLs**

<b>Member State</b>	<b>Participation in Shellfish EQA for</b>	
	<b><i>E. coli</i></b>	<b><i>Salmonella</i></b>
Austria	Yes	Yes
Belgium & Luxembourg	Yes	Yes
Bulgaria	No	No
Cyprus	No	No
Czech Republic	Yes	Yes
Denmark	Yes	Yes
Estonia	Yes	Yes
Finland	Yes	Yes
France	Yes	Yes
Germany	Partial	Partial
Greece	Partial	Partial
Hungary	No	No
Ireland	Yes	Yes
Italy 1	Yes	Yes
Italy 2	Yes	Yes
Latvia	No	No
Lithuania	Yes	Yes
Malta	No	No
Netherlands	Partial	Partial
Poland	Yes	Yes
Portugal	Yes	Yes
Romania	Yes	Yes
Slovakia	Yes	Yes
Slovenia	Yes	Yes
Spain	Yes	Yes
Sweden	Yes	Partial
United Kingdom	Partial	Partial
<b>Accession country</b>		
Croatia 1 <sup>a</sup>	Yes	Yes
Croatia 2 <sup>a</sup>	Yes	Yes
Turkey	Yes	Yes
<b>ETFA</b>		
Norway	Yes	Yes
Iceland	No	No

<sup>a</sup> Croatia has not yet formerly designated an NRL 2 Croatian laboratories undertaking shellfish testing currently correspond regularly with the CRL and are participants in the scheme.

## 2.5 Participants' Results

NRLs' were asked to carry out *E.coli* and *Salmonella* spp. analysis for each distributed sample. Results were assessed by comparison with those of all participating NRLs'. Scores were allocated for the reported results for *E. coli* MPNs and presence of *Salmonella* spp.

### 3. Results analysis and scoring system

The results reported by participants for *E. coli* and *Salmonella* spp. examination are shown in Section 6.

#### 3.1 Analysis of *E.coli* MPN results

The reported *E. coli* MPN values were compared to the median MPN from all NRL participants' results. The results chart were compiled using  $\log_{10}$  transformed MPN values (Figures 1 - 5). The results chart indicates the median MPN value calculated from NRL participants' results. Reference results were omitted from this calculation. Upper and lower limits were calculated as the participants' median  $\pm 3$  standard deviations (SD) and  $\pm 5$  SD. SD calculations were based on the expected inherent variability of the five tube MPN method which is  $0.26 \log_{10}$ . Performance assessment was performed according to the algorithm in Table 2.

**Table 2: *E.coli* MPN scoring**

Result	Points allocated
Return of results	2
All replicate MPN results within the expected range	10
Or	
One replicate MPN result reported is outside the expected range and falls between the median $\pm 3$ SD and median $\pm 5$ SD value	7
Or	
Both replicate MPN results are outside the expected range and fall between the median $\pm 3$ SD and median $\pm 5$ SD value	4
Or	
One replicate MPN result reported is outside the median $\pm 5$ SD value	5
Or	
Both replicate MPN results reported is outside the median $\pm 5$ SD value	0
Or	
Single MPN result reported only	5
Or	
Tube combination inconsistent with MPN reported (one replicate)	7
Or	
Tube combination inconsistent with MPN reported (both replicates)	5
Or	
Sample not examined or results returned late - no explanation received	0
Or	
High censored result (e.g. MPN = >18000 per 100g)	Score not allocated

#### 3.2 Analysis of *Salmonella* spp. results

Performance assessment was performed on reported NRLs' results for presence of *Salmonella* spp. according to the procedures described in Table 3.

**Table 3: *Salmonella* spp. scoring**

Result	Points allocated
Fully correct results	2
Result partially misleading e.g. (incorrect serotype designation)	1
Grossly misleading result, e.g (failure to isolate <i>Salmonella</i> )	0

## 4 Results

### 4.1 DISTRIBUTION SF026: SAMPLE SF0060

**Sample** - Raw shellfish from a new shellfish bed

**Contents** - *Enterobacter agglomerans*, *Enterobacter cloacae*, *Escherichia coli* and *Salmonella Wentworth*.

#### Reference results

**Salmonella spp.** - *Salmonella* spp. present in 25g of shellfish flesh.

*Salmonella* spp. was detected in samples selected for quality control testing before and during the distribution period.

**E. coli MPN** -  $5.4 \times 10^4$  -  $5.4 \times 10^5$  per 100g of shellfish flesh.

	Median MPN/100g	Median MPN/100g -3SD	Median MPN/100g -5SD	Median MPN/100g +3SD	Median MPN/100g +5SD
Reference results	$1.4 \times 10^5$	$2.3 \times 10^4$	$7.0 \times 10^3$	$8.4 \times 10^5$	$2.8 \times 10^6$
NRL results	$1.6 \times 10^5$	$2.7 \times 10^4$	$8.0 \times 10^3$	$9.6 \times 10^5$	$3.2 \times 10^6$

#### NRL results - SF0060 (Table 4 and Figure 1)

**Table 4: Results reported by participants and scores allocated - SF0060**

Lab number	<i>E. coli</i> (per 100g)		Score	<i>Salmonella</i> spp. (per 25g)	
	Replicate 1	Replicate 2		<i>Salmonella</i> spp.	Score
121	172382	140557	12	Present	2
391	92000	35000	12	Present	2
403	110000	240000	12	Present	2
493	130000	240000	12	Present	2
583	NE	NE		NE	
593	110000	110000	12	Present	2
594	220000	240000	12	Present	2
596	160000	91000	12	Present	2
597	70000	49000	12	Present	2
601	75000	240000	12	Present	2
604	240000	170000	12	Present	2
629	170000	130000	12	Present	2
649	160000	240000	12	Present	2
651	170000	54000	12	Present	2
653	540000	31000	12	Present	2
658	350000	910000	12	Present	2
660	350000	130000	12	Present	2
662	170000	170000	12	Present	2
701	35000	220000	12	Present	2
703	170000	31000	12	Present	2
704	>180000	160000	7	Present	2
715	3500	1300	2	Not detected	0
718	240000	170000	12	Present	2
719	160000	350000	12	Present	2
720	110000	75000	12	Present	2
744	NE	NE		NE	

NE – not examined

**Discussion****SF0060 *E.coli* MPN**

NRL 583 and 744 did not examine SF0060. NRL 704 reported one replicate as a high censored result (>180000). The results reported by all other NRLs for *E. coli* sample SF0060 are plotted in Figure 1, the reference results are also included. NRL 715 reported both replicate MPN result greater than participants' median + 5SD value. All other NRLs reported results within the expected range.

**SF0060 *Salmonella* spp.**

NRL 583 and 744 did not examine SF0060. NRL 715 failed to detect *Salmonella* spp. All other NRLs who undertook the examination correctly detected *Salmonella* spp. in the sample and received a maximum score of 2.

## 4.2 DISTRIBUTION SF026: SAMPLE SF0061

**Sample** - Raw shellfish from a new shellfish bed

**Contents** - *Citrobacter freundii*, *Enterobacter cloacae*, *Escherichia coli*, and *Enterococcus faecalis*.

### Reference results

**Salmonella spp.** - *Salmonella* spp. not detected in 25g of shellfish flesh.

*Salmonella* spp. was not detected in samples selected for quality control testing before and during the distribution period.

**E. coli MPN** -  $7.0 \times 10^2$  -  $3.5 \times 10^3$  per 100g of shellfish flesh.

	Median MPN/100g	Median MPN/100g -3SD	Median MPN/100g -5SD	Median MPN/100g +3SD	Median MPN/100g +5SD
Reference results	$2.1 \times 10^3$	$3.5 \times 10^2$	$1.1 \times 10^2$	$1.3 \times 10^4$	$4.2 \times 10^4$
NRL results	$1.3 \times 10^3$	$2.2 \times 10^2$	65	$7.8 \times 10^3$	$2.6 \times 10^4$

### NRL results - SF0061 (Table 5 and Figure 2)

Table 5: Results reported by participants and scores allocated - SF0061

Lab number	<i>E. coli</i> (per 100g)		Score	<i>Salmonella</i> spp. (per 25g)	
	Replicate 1	Replicate 2		<i>Salmonella</i> spp.	Score
121	1384	4932	12	Not detected	2
391	700	490	12	Not detected	2
403	3500	750	12	Not detected	2
493	22000	2400	9	Not detected	2
583	NE	NE		NE	
593	2400	2400	12	Not detected	2
594	1300	1300	12	Not detected	2
596	500	1100	12	Not detected	2
597	1700	1100	12	Not detected	2
601	1100	1300	12	Not detected	2
604	1300	500	12	Not detected	2
629	1300	2400	12	Not detected	2
649	1300	3500	12	Not detected	2
651	500	500	12	Not detected	2
653	2400	750	12	Not detected	2
658	1300	2400	12	Not detected	2
660	5000	3100	12	Not detected	2
662	2000	1300	12	Not detected	2
701	700	500	12	Not detected	2
703	8500	11000	6	Not detected	2
704	1400	1700	12	Not detected	2
715	>18000	>18000	2	Present	0
718	1100	790	12	Not detected	2
719	750	1100	12	Not detected	2
720	1300	1100	12	Not detected	2
744	NE	NE		NE	

NE -not examined



**Discussion****SF0061 *E.coli* MPN**

NRL 583 and 744 did not examine SF0061. NRL 715 reported both replicates at >18000. The results reported by all other NRLs for *E. coli* sample SF0061 are plotted in Figure 2, the reference results are also included. NRLs 493 reported one and NRL 703 reported both MPN results outside of the expected range falling between the participants' median + 3SD and median + 5SD values. All other NRLs reported results within the expected range.

**SF0061 *Salmonella* spp.**

NRL 583 and 744 did not examine SF0061. NRL 715 detected *Salmonella* spp. All other NRLs who undertook the examination reported *Salmonella* spp. not detected in the sample and received a maximum score of 2.

#### 4.3 DISTRIBUTION SF027: SAMPLE SF0062

**Sample** - Raw shellfish from a new shellfish bed

**Contents** – *Bacillus pumilis*, *Citrobacter freundii*, *Escherichia coli* and *Pseudomonas fluorescens*.

##### Reference results

**Salmonella spp.** - *Salmonella* spp. not detected in 25g of shellfish flesh.

*Salmonella* spp. was not detected in samples selected for quality control testing before and during the distribution period.

**E. coli MPN** - 70 -  $7.0 \times 10^2$  per 100g of shellfish flesh.

	Median MPN/100g	Median MPN/100g -3SD	Median MPN/100g -5SD	Median MPN/100g +3SD	Median MPN/100g +5SD
Reference results	$2.1 \times 10^2$	35	10	$1.3 \times 10^3$	$4.2 \times 10^4$
NRL results	$2.0 \times 10^2$	33	10	$1.2 \times 10^3$	$4.0 \times 10^3$

##### NRL results - SF0062 (Table 6 and Figure 3)

Table 6: Results reported by participants and scores allocated – SF0062

Lab number	<i>E. coli</i> (per 100g)			<i>Salmonella</i> spp. (per 25g)	
	Replicate 1	Replicate 2	Score	<i>Salmonella</i> spp.	Score
121	NE	NE		NE	
391	490	330	12	Not detected	2
403	310	20	9	Not detected	2
493	NE	NE		NE	
583	500	200	12	Not detected	2
593	500	310	12	Not detected	2
594	490	170	12	Not detected	2
596	140	220	12	Not detected	2
597	330	130	12	Not detected	2
601	220	90	12	Not detected	2
604	220	310	12	Not detected	2
629	310	110	12	Not detected	2
649	130	78	12	Not detected	2
651	110	160	12	Not detected	2
653	160	90	12	Not detected	2
658	160	200	12	Not detected	2
660	110	160	12	Not detected	2
662	500	500	12	Not detected	2
701	110	130	12	Not detected	2
703	220	310	12	Not detected	2
704	750	110	12	Not detected	2
715	70	NE	7	Not detected	2
718	700	330	12	Not detected	2
719	310	310	12	Not detected	2
720	70	90	12	Not detected	2
744	130	90	12	Not detected	2

NE - not examined

**Discussion****SF0062 *E.coli* MPN**

NRLs 121 and 493 did not examine SF0062. NRL 715 did not analyse in duplicate. The results reported by all other NRLs for *E. coli* sample SF0062 are plotted in Figure 3, the reference results are also included. NRL 403 reported one MPN result outside of the expected range falling between the participants' median - 3SD and median - 5SD values. All other NRLs reported results within the expected range.

**SF0062 *Salmonella* spp.**

NRL 121 did not examine SF0062. All other NRLs who undertook the examination received a maximum score of 2.

#### 4.4 DISTRIBUTION SF027: SAMPLE SF0063

**Sample** - Raw shellfish from a new shellfish bed

**Contents** - *Citrobacter freundii*, *Enterobacter closacae*, *Escherichia coli* and *Salmonella Wentworth*.

##### Reference results

**Salmonella spp.** - *Salmonella* spp. present in 25g of shellfish flesh.

*Salmonella* spp. was detected in samples selected for quality control testing before and during the distribution period.

**E. coli MPN** -  $5.0 \times 10^3$  -  $3.5 \times 10^5$  per 100g of shellfish flesh.

	Median MPN/100g	Median MPN/100g -3SD	Median MPN/100g -5SD	Median MPN/100g +3SD	Median MPN/100g +5SD
Reference results	$3.5 \times 10^4$	$5.8 \times 10^3$	$1.8 \times 10^3$	$2.1 \times 10^5$	$7.0 \times 10^5$
NRL results	$3.5 \times 10^4$	$5.8 \times 10^3$	$1.8 \times 10^3$	$2.1 \times 10^5$	$7.0 \times 10^5$

##### NRL results - SF0063 (Table 7 and Figure 4)

Table 7: Results reported by participants and scores allocated – SF0063

Lab number	<i>E. coli</i> (per 100g)			<i>Salmonella</i> spp. (per 25g)	
	Replicate 1	Replicate 2	Score	<i>Salmonella</i> spp.	Score
121	NE	NE		NE	
391	35000	35000	12	Present	2
403	91000	35000	12	Present	2
493	NE	NE		NE	
583	14000	35000	12	Present	2
593	50000	24000	12	Present	2
594	49000	79000	12	Present	2
596	24000	24000	12	Present	2
597	49000	22000	12	Present	2
601	31000	31000	12	Present	2
604	31000	20000	12	Present	2
629	54000	35000	12	Present	2
649	35000	35000	12	Present	2
651	35000	91000	12	Present	2
653	17000	35000	12	Present	2
658	24000	54000	12	Present	2
660	220000	130000	9	Present	2
662	35000	24000	12	Present	2
701	NE	NE		NE	
703	13000	91000	12	Present	2
704	70000	54000	12	Present	2
715	540000	540000	6	Present	2
718	79000	79000	12	Present	2
719	50000	31000	12	Present	2
720	24000	24000	12	Present	2
744	50000	130000	12	Present	2

NE - not examined

**Discussion****SF0063 *E.coli* MPN**

NRL 121, 493 and 701 did not examine SF0063. The results reported by all other NRLs for *E. coli* sample SF0063 are plotted in Figure 4, the reference results are also included. NRL 660 reported one MPN results outside of the expected range falling between the participants' participants' median + 3SD and median + 5SD values. NRL 715 reported both replicate MPN results greater than participants' median + 5SD value. All other NRLs reported results within the expected range.

**SF0063 *Salmonella* spp.**

NRL 121, 493 and 701 did not examine SF0063. All other NRLs who undertook the examination received a maximum score of 2.

#### 4.5 DISTRIBUTION SF028: SAMPLE SF0064

**Sample** - Raw shellfish from a new shellfish bed

**Contents** - *Citrobacter freundii*, *Enterobacter cloacae*, *Escherichia coli* and *Salmonella* Wentworth

#### Reference results

**Salmonella spp.** - *Salmonella* spp. present in 25g of shellfish flesh.

*Salmonella* spp. was detected in samples selected for quality control testing before and during the distribution period.

**E. coli MPN** -  $1.4 \times 10^4$  -  $9.1 \times 10^4$  per 100g of shellfish flesh.

	Median MPN/100g	Median MPN/100g -3SD	Median MPN/100g -5SD	Median MPN/100g +3SD	Median MPN/100g +5SD
Reference results	$3.1 \times 10^4$	$5.2 \times 10^3$	$1.6 \times 10^3$	$1.9 \times 10^5$	$6.2 \times 10^5$
NRL results	$3.4 \times 10^4$	$5.6 \times 10^3$	$1.7 \times 10^3$	$2.0 \times 10^5$	$6.7 \times 10^5$

#### NRL results - SF0064 (Table 8 and Figure 5)

Table 8: Results reported by participants and scores allocated – SF0064

Lab number	<i>E. coli</i> (per 100g)			<i>Salmonella</i> spp. (per 25g)	
	Replicate 1	Replicate 2	Score	<i>Salmonella</i> spp.	Score
121	32906	2160	9	Present	2
391	46000	92000	12	Present	2
403	35000	35000	12	Present	2
493	22000	28000	12	Present	2
583	35000	54000	12	Present	2
593	>18000	>18000	2	Present	2
594	70000	49000	12	Present	2
596	31000	29000	12	Present	2
597	33000	24000	12	Present	2
601	24000	31000	12	Present	2
604	54000	34500	12	Present	2
629	35000	54000	12	Present	2
649	24000	35000	12	Present	2
651	22000	14000	12	Present	2
653	24000	50000	12	Present	2
658	35000	54000	12	Present	2
660	17000	35000	12	Present	2
662	35000	43000	12	Present	2
701	28000	17000	12	Present	2
703	54000	35000	12	Present	2
704	31000	20000	12	Present	2
715	24000	24000	12	Present	2
718	28000	70000	12	Present	2
719	24000	13000	12	Present	2
720	75000	31000	12	Present	2
744	43000	43000	12	Present	2

**Discussion****SF0064 *E.coli* MPN**

The results reported by all NRLs for *E. coli* sample SF0064 are plotted in Figure 5, the reference results are also included. NRL 660 reported one MPN results outside of the expected range falling between the participants' median - 3SD and median - 5SD values. NRL 593 reported both replicate MPN results as high censored results (>18000). All other NRLs reported results within the expected range.

**SF0064 *Salmonella* spp.**

All other NRLs who undertook the examination received a maximum score of 2.

#### 4.6 DISTRIBUTION SF028: SAMPLE SF0065

**Sample** - Raw shellfish from a new shellfish bed

**Contents** – Sterile sample

##### Reference results

**Salmonella spp.** - *Salmonella* spp. not detected in 25g of shellfish flesh.

*Salmonella* spp. was not detected in samples selected for quality control testing before and during the distribution period.

**E. coli MPN** - <20 per 100g of shellfish flesh.

##### NRL results - SF0065 (Table 9)

**Table 9: Results reported by participants and scores allocated – SF0065**

Lab number	<i>E. coli</i> (per 100g)		Score	<i>Salmonella</i> spp. (per 25g)	
	Replicate 1	Replicate 2		<i>Salmonella</i> spp.	Score
121	0	0	12	Not detected	2
391	<20	<20	12	Not detected	2
403	<20	<20	12	Not detected	2
493	<20	<20	12	Not detected	2
583	<20	<20	12	Not detected	2
593	<20	<20	12	Not detected	2
594	<18	<18	12	Not detected	2
596	<20	<20	12	Not detected	2
597	<18	<18	12	Not detected	2
601	<20	<20	12	Not detected	2
604	<20	<20	12	Not detected	2
629	<20	<20	12	Not detected	2
649	<18	<18	12	Not detected	2
651	<20	<20	12	Not detected	2
653	<20	<20	12	Not detected	2
658	<20	<20	12	Not detected	2
660	<20	<20	12	Not detected	2
662	20	20	6	Not detected	2
701	<20	<20	12	Not detected	2
703	<20	<20	12	Not detected	2
704	<20	<20	12	Not detected	2
715	<20	<20	12	Not detected	2
718	<20	<20	12	Not detected	2
719	<20	<20	12	Not detected	2
720	<20	<20	12	Not detected	2
744	<20	<20	12	Not detected	2

##### Discussion

###### SF0065 *E.coli* MPN

NRL 662 reported an *E.coli* MPN results outside of the expected range falling between the participants' median - 3SD and median - 5SD values. All other NRLs reported results within the expected range.

###### SF0065 *Salmonella* spp.

All other NRLs who undertook the examination received a maximum score of 2.



## 5 Performance Assessments

Cumulative performance assessment was undertaken on participant's results over three consecutive distributions SF026, SF027 and SF028 for both *E. coli* MPNs and *Salmonella* spp. Examinations for participating NRLs are summarised in Tables 10 and 11 respectively. Participant's who achieved <40% of the maximum possible score in a single distribution, or <70% over three distributions for *E. coli* enumeration and/or those who achieved scores of <70% for *Salmonella* spp detection over three distributions should in the first instance refer to the troubleshooting guide included as Appendix I of this report. In addition NRLs will be offered advice by the CRL.

### 5.1 *E. coli* MPN assessment

Twenty-three NRLs completed all 3 distributions in 2007 and were therefore subject to a full performance assessment. Fifteen NRLs achieved a maximum 100% score for the three distributions. Of the remaining ten NRLs 7 scored a cumulative total of >70% for the three distributions. One NRL scored <70%.

**Table 10. Summary of performance of NRLs over three Shellfish EQA distributions, SF026, SF027 and SF028 - *E. coli***

Lab no.	Distribution SF026		Distribution SF027		Distribution SF028		All distributions		
	SF0060	SF0061	SF0062	SF0063	SF0064	SF0065	Cumulative score	Max score	%
121 <sup>a</sup>	12	12	-	-	9	12			
391	12	12	12	12	12	12	72	72	100
403	12	12	9	12	12	12	69	72	96
493 <sup>a</sup>	12	9	-	-	12	12			
583 <sup>a</sup>	-	-	12	12	12	12			
593	12	12	12	12	2	12	62	72	86
594	12	12	12	12	12	12	72	72	100
596	12	12	12	12	12	12	72	72	100
597	12	12	12	12	12	12	72	72	100
601	12	12	12	12	12	12	72	72	100
604	12	12	12	12	12	12	72	72	100
629	12	12	12	12	12	12	72	72	100
649	12	12	12	12	12	12	72	72	100
651	12	12	12	12	12	12	72	72	100
653	12	12	12	12	12	12	72	72	100
658	12	12	12	12	12	12	72	72	100
660	12	12	12	9	12	12	69	72	96
662	12	12	12	12	12	6	66	72	92
701	12	12	12	-	12	12	60	60	100
703	12	6	12	12	12	12	66	72	92
704	7	12	12	12	12	12	67	72	93
715	2	2	7	6	12	12	41	72	57
718	12	12	12	12	12	12	72	72	100
719	12	12	12	12	12	12	72	72	100
720	12	12	12	12	12	12	72	72	100
744	-	-	12	12	12	12			

<sup>a</sup> full performance assessment was not carried as laboratories completed less than three distributions in 2007

## 5.2 *Salmonella* spp. assessment

Twenty-three NRLs completed all 3 distributions in 2007 and were therefore subject to a full performance assessment. Twenty-two NRLs achieved a maximum 100% score for the three distributions. NRL 715 incorrectly reported *Salmonella* spp. in sample SF0060 and SF0061 and therefore achieved a cumulative score over three distributions of <70%.

**Table 11. Summary of performance of NRLs over three Shellfish EQA distributions, SF026, SF027 and SF028 *Salmonella* spp.**

Lab no.	Distribution SF026		Distribution SF027		Distribution SF028		All distributions		
	SF0060	SF0061	SF0062	SF0063	SF0064	SF0065	Cumulative score	Max score	%
121 <sup>a</sup>	2	2	-	-	2	2			
391	2	2	2	2	2	2	12	12	100
403	2	2	2	2	2	2	12	12	100
493 <sup>a</sup>	2	2	-	-	2	2			
583 <sup>a</sup>	-	-	2	2	2	2			
593	2	2	2	2	2	2	12	12	100
594	2	2	2	2	2	2	12	12	100
596	2	2	2	2	2	2	12	12	100
597	2	2	2	2	2	2	12	12	100
601	2	2	2	2	2	2	12	12	100
604	2	2	2	2	2	2	12	12	100
629	2	2	2	2	2	2	12	12	100
649	2	2	2	2	2	2	12	12	100
651	2	2	2	2	2	2	12	12	100
653	2	2	2	2	2	2	12	12	100
658	2	2	2	2	2	2	12	12	100
660	2	2	2	2	2	2	12	12	100
662	2	2	2	2	2	2	12	12	100
701	2	2	2	-	2	2	10	10	100
703	2	2	2	2	2	2	12	12	100
704	2	2	2	2	2	2	12	12	100
715	0	0	2	2	2	2	8	12	67
718	2	2	2	2	2	2	12	12	100
719	2	2	2	2	2	2	12	12	100
720	2	2	2	2	2	2	12	12	100
744	-	-	2	2	2	2			

<sup>a</sup> full performance assessment was not carried as laboratories completed less than three distributions in 2007

## 6 Summary

In 2007 26 NRLs were registered for the CRL/HPA EQA Shellfish scheme. Twenty-three NRLs completed three distributions between March 2007 and November 2007 and therefore were subject to a full performance assessment. Partial participation was due to NRLs not examining all distributions. For *E. coli* examination one NRL (NRL 715) achieved a score of <40% in a single distribution. NRLs failing to achieve either 40% in a single distribution or cumulative scores of <70% over three distributions were referred to the troubleshooting guide and offered advice. For *Salmonella* spp. detection all NRLs with the exception of NRL 715 achieved 100% over the three consecutive distributions. See Appendix I for troubleshooting guide.

The responsibilities of the Community and National Reference Laboratories with regard to proficiency testing are clearly stated in both regulation and through NRL resolution. The CRL/HPA EQA Shellfish scheme is the principal mechanism for *E.coli* and *Salmonella* proficiency testing between NRLs. It is imperative that NRLs maintain their commitment to this scheme and it is recommended that NRLs that are not currently registered do so.

Figure 1. DISTRIBUTION SF026: SAMPLE SF0060

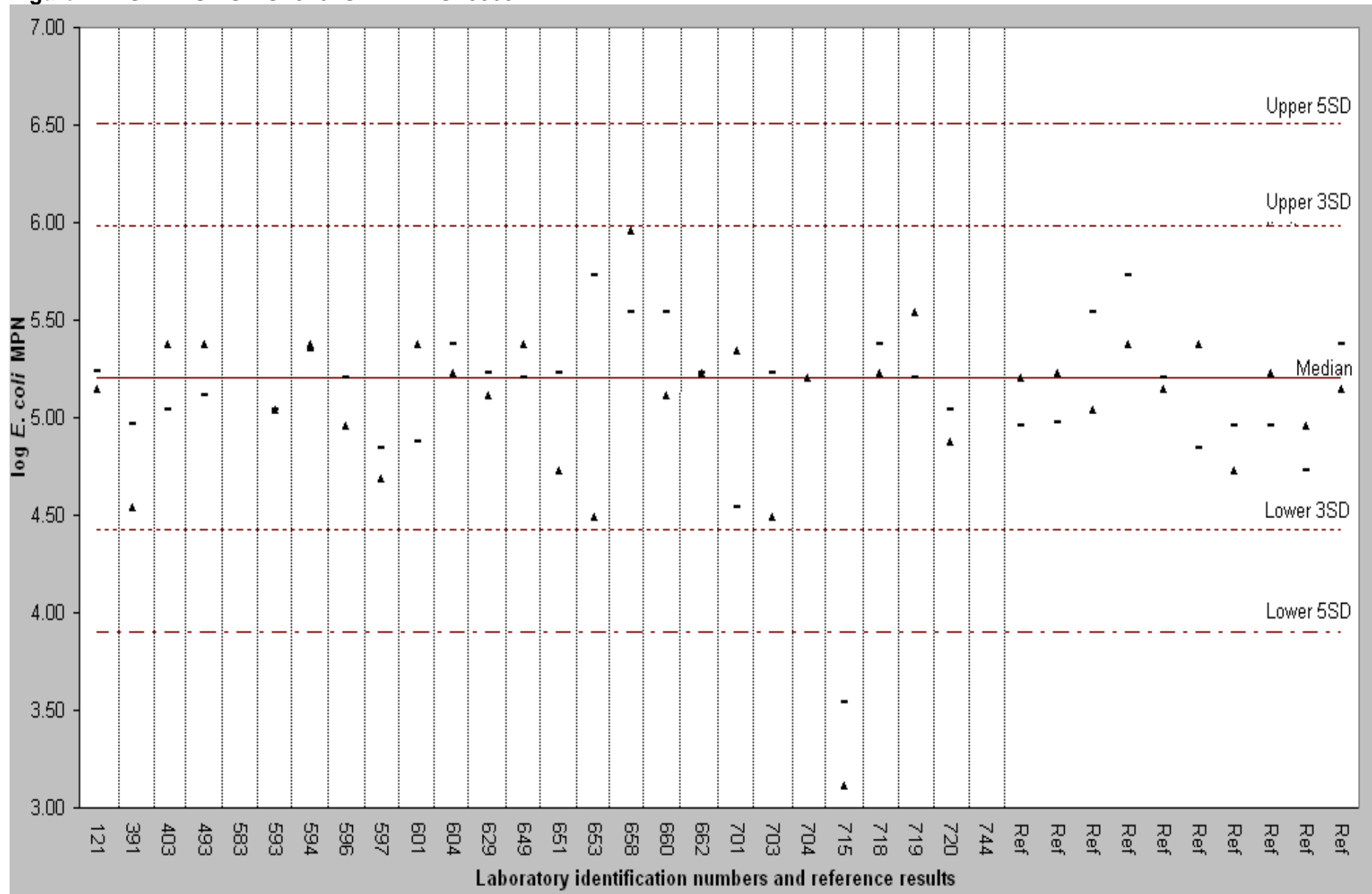


Figure 2. DISTRIBUTION SF026: SAMPLE SF0061

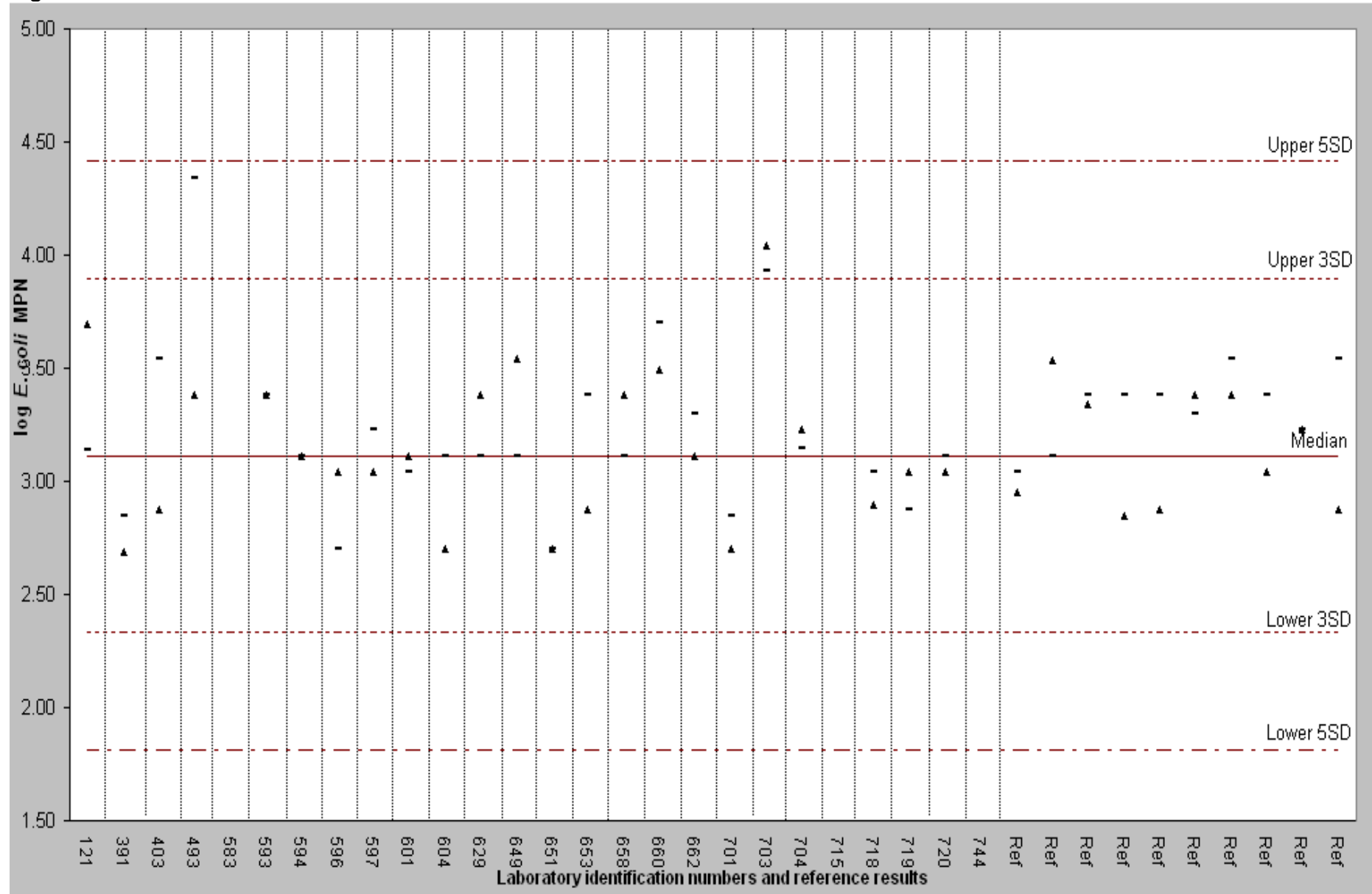


Figure 3. DISTRIBUTION SF027: SAMPLE SF0062

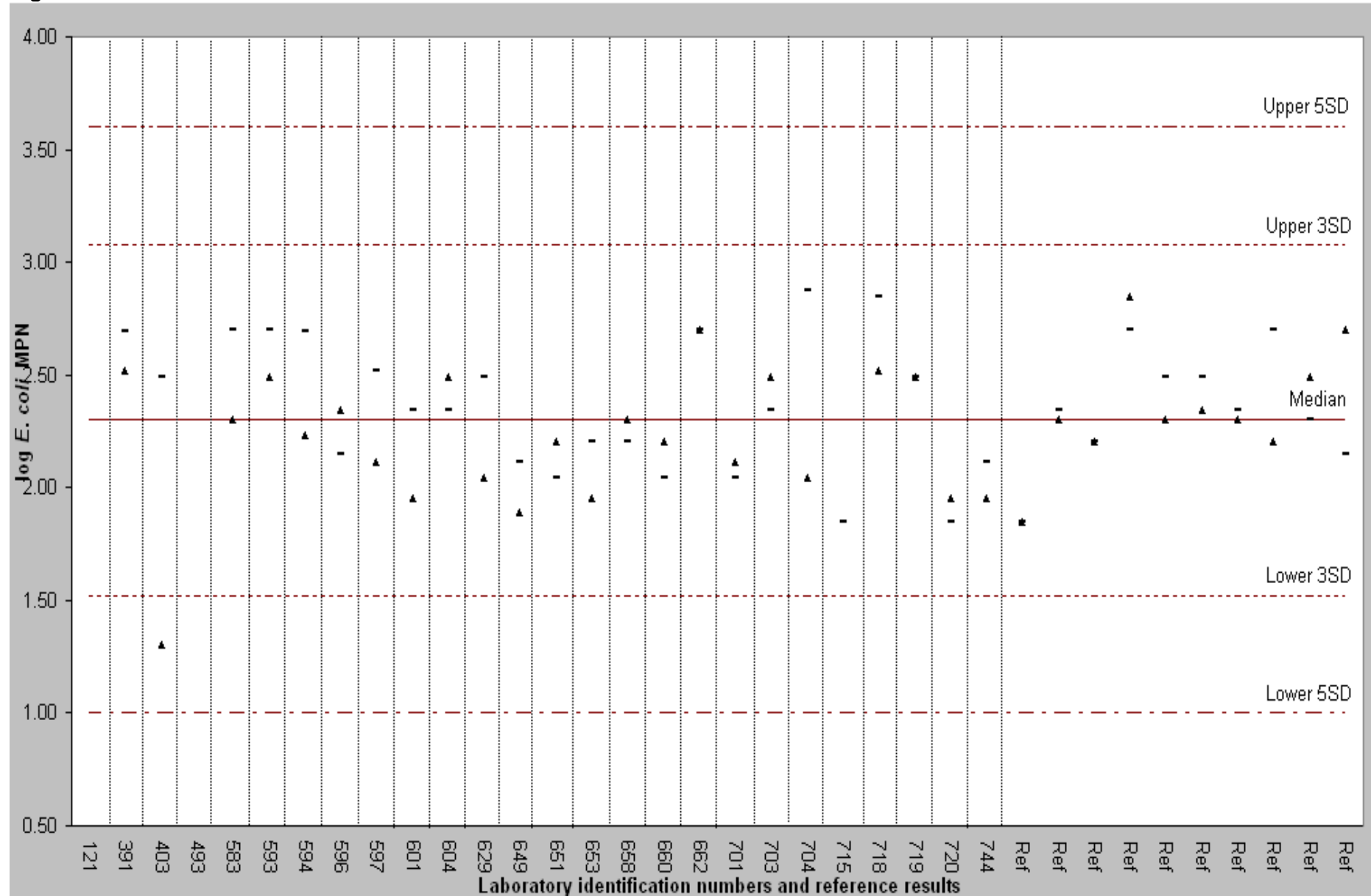


Figure 4. DISTRIBUTION SF027: SAMPLE SF0063

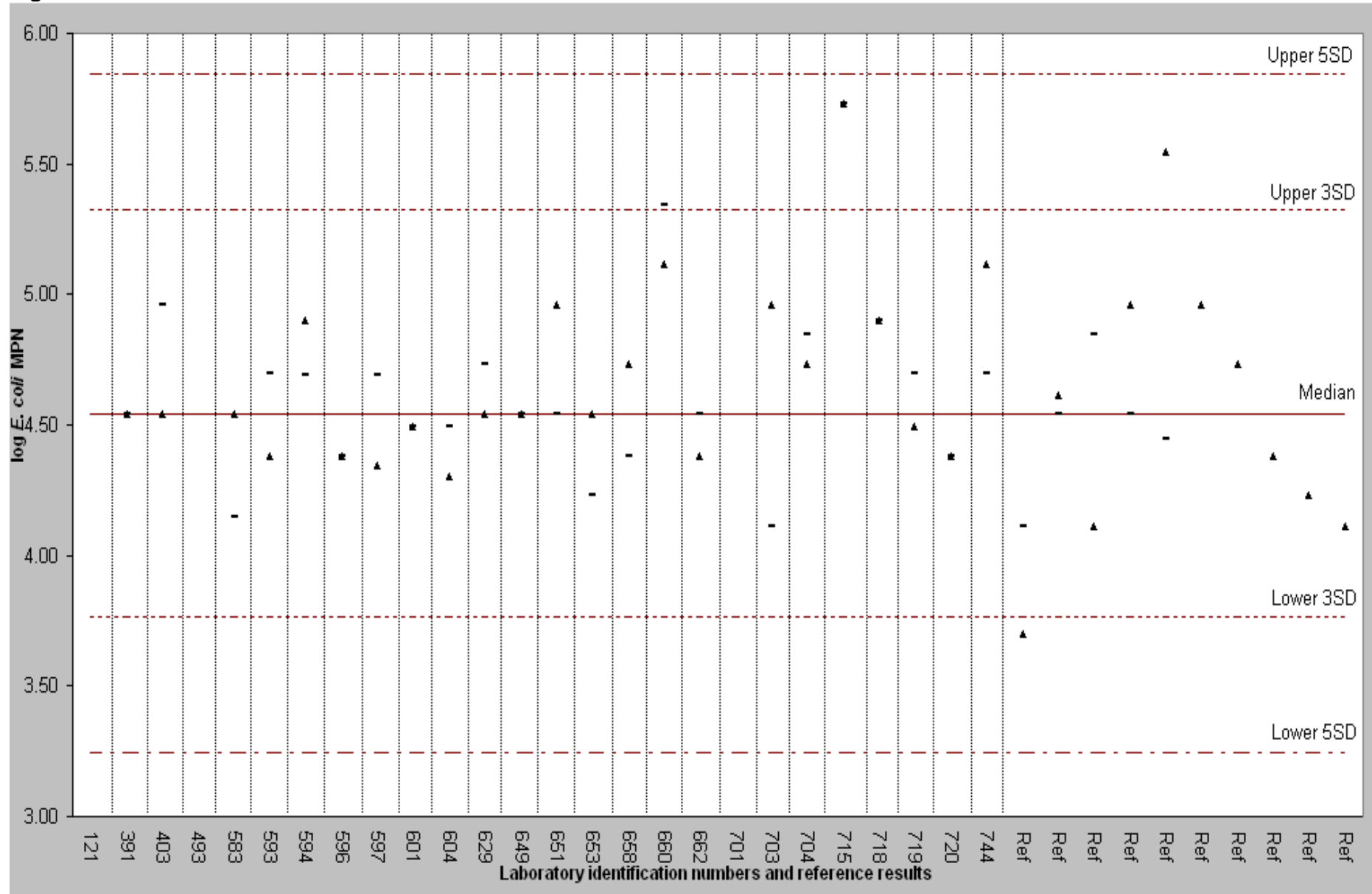
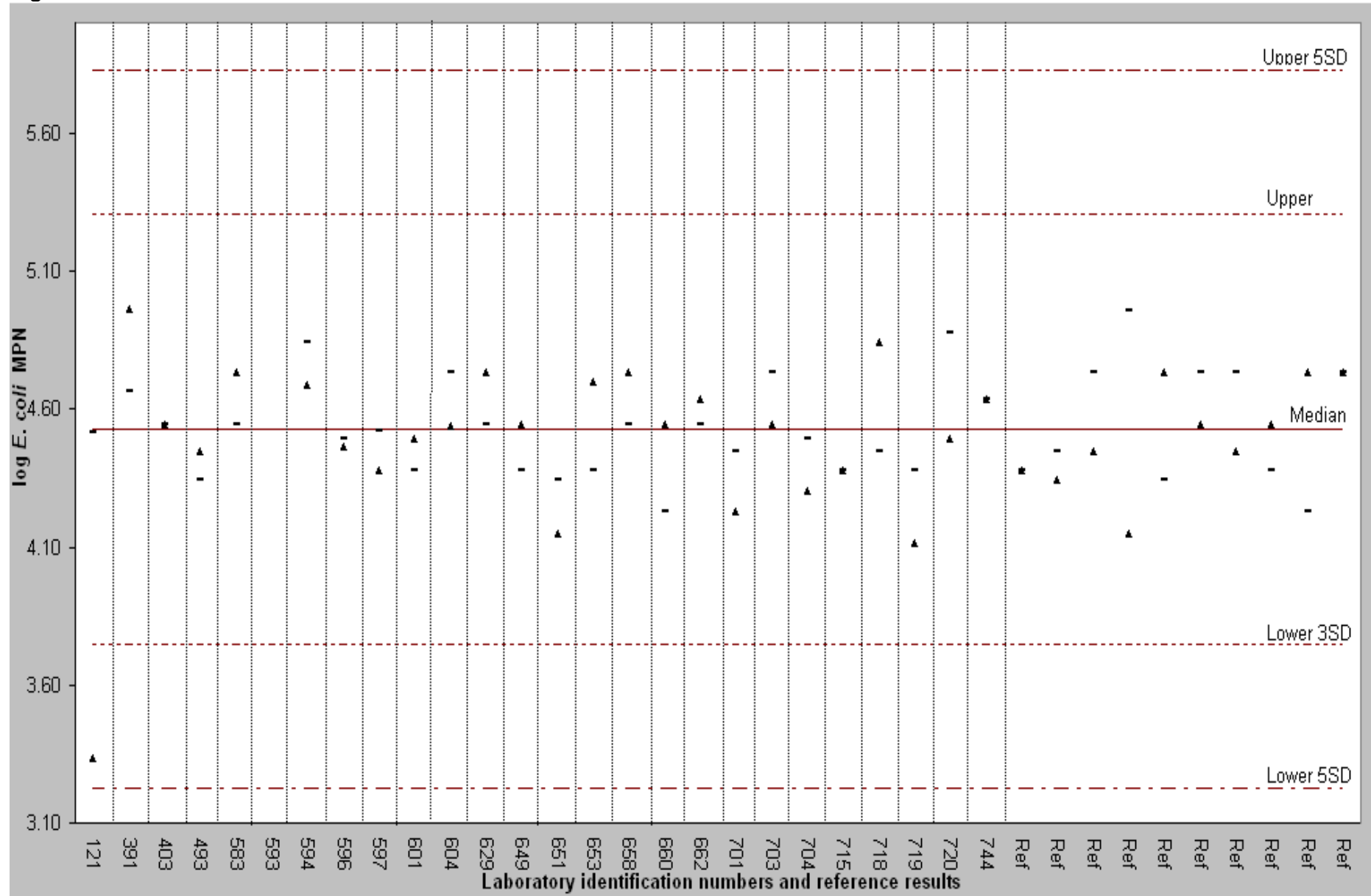


Figure 5. DISTRIBUTION SF028: SAMPLE SF0064





## Appendix I

### Troubleshooting guide

1. Methods 1. Are you using the stipulated reference method in Regulation EC No. 854/2004 as amended by Regulation (EC) 2074/2005 and Regulation (EC) No. 2073/2005 (i.e. ISO TS 16649-3) or equivalent validated according to ISO 16140.
  - a. Are staff calculating dilutions correctly and reading MPN tables (if used) correctly?
2. Methods 2. Are you using the stipulated reference method in Regulation (EC) No. 2073/2005 (i.e. EN/ISO 6579).
3. Culture Medium - Check the quality control data sheet produced by the media department to ensure media is performing adequately.
4. Equipment - Check that the equipment used for the procedures (incubators, refrigerators, measuring instruments) are calibrated and performing adequately.
5. Staff Training - Check that the staff performing the tests are fully trained and familiar with all the procedural steps.
6. Clerical Procedures - Check that the sample labeling, laboratory numbering and clerical procedures are adequate have you procedures for ensuring that test results are reported accurately and on time?
7. Accreditation- Do staff adhere to documented quality procedures at all times?
8. Internal quality controls (IQC) - Do you have procedures in place ensuring use of adequate controls? And documentation for dealing with IQC failures?