



### CERTIFICATE OF ANALYSIS

<i>Client</i>	: ERM HONG KONG	<i>Laboratory</i>	: ALS Technichem (HK) Pty Ltd	<i>Page</i>	: 1 of 7
<i>Contact</i>	: MS KAREN LUI	<i>Contact</i>	: Alice Wong	<i>Work Order</i>	: <b>HK0718591</b>
<i>Address</i>	: 21/F, LINCOLN HOUSE, 979 KING'S ROAD, TAIKOO PLACE, ISLAND EAST HONG KONG	<i>Address</i>	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	<i>Amendment No.</i>	: 1
<i>E-mail</i>	: Karen.Lui@erm.com	<i>E-mail</i>	: Alice.Wong@alsenviro.com	<i>Date received</i>	: 26 Dec 2007
<i>Telephone</i>	: 2271 3000	<i>Telephone</i>	: +852 2610 1044	<i>Date of issue</i>	: 23 Jan 2008
<i>Facsimile</i>	: 2723 5660	<i>Facsimile</i>	: +852 2610 2021	<i>No. of samples</i>	- Received : 18
<i>Project</i>	: EM&A FOR THE PERMANENT AVIATION FUEL FACILITY	<i>Quote number</i>	: ---		- Analysed : 18
<i>Order number</i>	: ---				
<i>C-O-C number</i>	: ---				
<i>Site</i>	: ---				

### Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK0718591 supersedes any previous reports with this reference. The completion date of analysis is 14 Jan 2008. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK0718591 : **Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.  
Water sample(s) analysed and reported on an as received basis.**

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<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:-</u>
Anh Ngoc Huynh	Senior Chemist	Organics



## Analytical Results

				Client Sample ID :	MPB1 ME	MPB1 ME DUP	MPB2 ME	MPB2 ME DUP	MP ME
				Laboratory Sample ID :	HK0718591-001	HK0718591-002	HK0718591-003	HK0718591-004	HK0718591-005
				Sample Date / Time :	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]
Submatrix: MARINE WATER									
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065B: Organochlorine Pesticides</b>									
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>									
Surrogate control limits listed at end of this report.									
Decachlorobiphenyl	2051-24-3	0.1	%	<b>103</b>	<b>98.2</b>	<b>99.9</b>	<b>98.1</b>	<b>102</b>	
Tetrachlorometaxylene	877-09-8	0.1	%	<b>104</b>	<b>98.8</b>	<b>97.8</b>	<b>96.5</b>	<b>102</b>	
Dibutylchloroendate	1770-80-5	0.1	%	<b>102</b>	<b>97.3</b>	<b>101</b>	<b>103</b>	<b>105</b>	



## Analytical Results

				Client Sample ID :	MP ME DUP	C2(NM5) ME	C2(NM5) ME DUP	MPB1 MF	MPB1 MF DUP
				Laboratory Sample ID :	HK0718591-006	HK0718591-007	HK0718591-008	HK0718591-009	HK0718591-010
				Sample Date / Time :	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]
Submatrix: MARINE WATER									
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065B: Organochlorine Pesticides</b>									
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>								Surrogate control limits listed at end of this report.	
Decachlorobiphenyl	2051-24-3	0.1	%	<b>106</b>	<b>101</b>	<b>102</b>	<b>102</b>	<b>101</b>	<b>98.5</b>
Tetrachlorometaxylene	877-09-8	0.1	%	<b>101</b>	<b>98.5</b>	<b>104</b>	<b>101</b>	<b>101</b>	<b>101</b>
Dibutylchloroendate	1770-80-5	0.1	%	<b>96.9</b>	<b>102</b>	<b>100</b>	<b>97.6</b>	<b>97.6</b>	<b>98.5</b>



## Analytical Results

				Client Sample ID :	MPB2 MF	MPB2 MF DUP	MP MF	MP MF DUP	C1(NM3) MF
				Laboratory Sample ID :	HK0718591-011	HK0718591-012	HK0718591-013	HK0718591-014	HK0718591-015
				Sample Date / Time :	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]
Submatrix: MARINE WATER									
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065B: Organochlorine Pesticides</b>									
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>								Surrogate control limits listed at end of this report.	
Decachlorobiphenyl	2051-24-3	0.1	%	<b>106</b>	<b>99.1</b>	<b>100</b>	<b>106</b>	<b>102</b>	
Tetrachlorometaxylene	877-09-8	0.1	%	<b>100</b>	<b>102</b>	<b>96.8</b>	<b>99.7</b>	<b>103</b>	
Dibutylchlorendate	1770-80-5	0.1	%	<b>101</b>	<b>102</b>	<b>102</b>	<b>96.2</b>	<b>100</b>	



## Analytical Results

				Client Sample ID :	C1(NM3) MF DUP	C3(NM6) MF	C3(NM6) MF DUP		
				Laboratory Sample ID :	HK0718591-016	HK0718591-017	HK0718591-018		
				Sample Date / Time :	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]	[ 26 Dec 2007 ]		
				Submatrix: MARINE WATER					
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
<b>EP-065B: Organochlorine Pesticides</b>									
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
4.4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
4.4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>									
Surrogate control limits listed at end of this report.									
Decachlorobiphenyl	2051-24-3	0.1	%	<b>102</b>	<b>97.2</b>	<b>102</b>			
Tetrachlorometaxylene	877-09-8	0.1	%	<b>98.2</b>	<b>101</b>	<b>96.0</b>			
Dibutylchlorendate	1770-80-5	0.1	%	<b>98.1</b>	<b>104</b>	<b>97.8</b>			



**Quality Control - Laboratory Duplicate (DUP) Results**

Matrix Type: WATER				Duplicate (DUP) Results				
Laboratory Sample ID	Client Sample ID	Method: Analysis Description	CAS number	LOR	Units	Original Result	Duplicate Result	RPD (%)
<b>EP-065A: PCB Single Congeners (QC Lot: 564543)</b>								
HK0718591-001	MPB1 ME	PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	0.0
		PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	0.0
		PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	0.0
		PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	0.0
		PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	0.0
		PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	0.0
		PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	0.0
		PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	0.0
		PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	0.0
		PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	0.0
		PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	0.0
		PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	0.0
<b>EP-065B: Organochlorine Pesticides (QC Lot: 564543)</b>								
HK0718591-001	MPB1 ME	4,4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	0.0

**Quality Control - Method Blank (MB), Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results**

Matrix Type: WATER		Method Blank (MB) Results			Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results						
Method: Analysis Description	CAS number	LOR	Units	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						SCS	DCS	Low	High	Value	Control Limit
<b>EP-065A: PCB Single Congeners (QCLot: 564543)</b>											
PCB 8	34883-43-7	0.01	µg/L	<0.01	10 µg/L	98.2	----	50	130	----	----
PCB 18	37680-65-2	0.01	µg/L	<0.01	10 µg/L	108	----	50	130	----	----
PCB 28	7012-37-5	0.01	µg/L	<0.01	10 µg/L	108	----	50	130	----	----
PCB 52	35693-99-3	0.01	µg/L	<0.01	10 µg/L	95.8	----	50	130	----	----
PCB 44	41464-39-5	0.01	µg/L	<0.01	10 µg/L	105	----	50	130	----	----
PCB 66	32598-10-0	0.01	µg/L	<0.01	10 µg/L	98.8	----	50	130	----	----
PCB 101	37680-73-2	0.01	µg/L	<0.01	10 µg/L	104	----	50	130	----	----
PCB 77	32598-13-3	0.01	µg/L	<0.01	10 µg/L	103	----	50	130	----	----
PCB 149	38380-04-0	0.01	µg/L	<0.01	10 µg/L	101	----	50	130	----	----



**Matrix Type: WATER**

Method: Analysis Description		Method Blank (MB) Results			Single Control Spike (SCS) and Duplicate Control Spike (DCS) Results							
		CAS number	LOR	Units	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
							SCS	DCS	Low	High	Value	Control Limit
<b>EP-065A: PCB Single Congeners (QCLot: 564543) - continued</b>												
PCB 118	31508-00-6	0.01	µg/L	<0.01	10 µg/L	103	----	50	130	----	----	
PCB 153	35065-27-1	0.01	µg/L	<0.01	10 µg/L	99.6	----	50	130	----	----	
PCB 105	32598-14-4	0.01	µg/L	<0.01	10 µg/L	96.3	----	50	130	----	----	
PCB 126	57465-28-8	0.01	µg/L	<0.01	10 µg/L	98.8	----	50	130	----	----	
PCB 187	52663-68-0	0.01	µg/L	<0.01	10 µg/L	105	----	50	130	----	----	
PCB 128	38380-07-3	0.01	µg/L	<0.01	10 µg/L	103	----	50	130	----	----	
PCB 156	38380-08-4	0.01	µg/L	<0.01	10 µg/L	101	----	50	130	----	----	
PCB 180	35065-29-3	0.01	µg/L	<0.01	10 µg/L	99.8	----	50	130	----	----	
PCB 169	60044-26-0	0.01	µg/L	<0.01	10 µg/L	109	----	50	130	----	----	
PCB 170	35065-30-6	0.01	µg/L	<0.01	10 µg/L	109	----	50	130	----	----	
PCB 195	52663-78-2	0.01	µg/L	<0.01	10 µg/L	105	----	50	130	----	----	
<b>EP-065B: Organochlorine Pesticides (QCLot: 564543)</b>												
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	10 µg/L	Not Determined	----	50	130	----	----	

**Surrogate Control Limits**

**Submatrix Type: MARINE WATER**

Method: Analysis Description	Units	Lower Limit	Upper Limit
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>			
Decachlorobiphenyl	%	50	130
Tetrachlorometaxylene	%	50	130
Dibutylchloroendate	%	50	130



## CERTIFICATE OF ANALYSIS

**CONTACT:** MS KAREN LUI  
**CLIENT:** ERM HONG KONG  
**ADDRESS:** 21/F., LINCOLN HOUSE,  
979 KING'S ROAD, TAIKOO PLACE,  
ISLAND EAST, HONG KONG  
**PROJECT:** EM&A FOR THE PERMANENT AVIATION FUEL FACILITY

**Batch:** HK0718591  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 26/12/2007  
**DATE OF ISSUE:** 18/01/2008  
**SAMPLE TYPE:** WATER  
**No. of SAMPLES:** 12

### COMMENTS

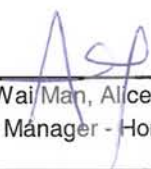
Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.  
PAHs was subcontracted and tested by ALS Sydney.  
ALS Sydney details report was attached. The attached report contains a total of 13 pages.

### ISSUING LABORATORY: HONG KONG

#### Address

ALS Technichem (HK) Pty Ltd  
11/F Chung Shun Knitting Centre  
1-3 Wing Yip Street  
Kwai Chung  
HONG KONG

**Phone:** 852-2610 1044  
**Fax:** 852-2610 2021  
**Email:** hongkong@alsenviro.com

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong

#### Other ALS Environmental Laboratories

**AUSTRALIA**  
Brisbane  
Melbourne  
Sydney  
Newcastle

Hong Kong  
Singapore  
Kuala Lumpur  
Bogor

**AMERICAS**  
Vancouver  
Santiago  
Amtofagasta  
Lima

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Abbreviations: % SPK REC denotes percentage spike recovery  
CHK denotes duplicate check sample  
LOR denotes limit of reporting  
LCS % REC denotes Laboratory Control Sample percentage recovery





# CERTIFICATE OF ANALYSIS

Batch: HK0718591  
Date of Issue: 18/01/2008  
Client: ERM HONG KONG  
Client Reference: EM&A FOR THE PERMANENT AVIATION FUEL FACILITY

ALS Sydney report is attached for the analysis of PAHs in water.  
This attached report contains a total of 13 pages.

## Sample Details

<i>ALS Lab ID</i>	<i>ALS Melbourne Lab ID</i>	<i>Client's Sample ID</i>	<i>Sampling Date</i>
HK0718591-1	ES0800433-1	MPB1 ME	26/12/2007
HK0718591-2	ES0800433-2	MPB1 ME DUP	26/12/2007
HK0718591-3	ES0800433-3	MPB2 ME	26/12/2007
HK0718591-4	ES0800433-4	MPB2 ME DUP	26/12/2007
HK0718591-5	ES0800433-5	MP ME	26/12/2007
HK0718591-6	ES0800433-6	MP ME DUP	26/12/2007
HK0718591-7	ES0800433-7	C2(NM5) ME	26/12/2007
HK0718591-8	ES0800433-8	C2(NM5) ME DUP	26/12/2007
HK0718591-9	ES0800433-9	MPB1 MF	26/12/2007
HK0718591-10	ES0800433-10	MPB1 MF DUP	26/12/2007
HK0718591-11	ES0800433-11	MPB2 MF	26/12/2007
HK0718591-12	ES0800433-12	MPB2 MF DUP	26/12/2007
HK0718591-13	ES0800433-13	MP MF	26/12/2007
HK0718591-14	ES0800433-14	MP MF DUP	26/12/2007
HK0718591-15	ES0800433-15	C1(NM3) MF	26/12/2007
HK0718591-16	ES0800433-16	C1(NM3) MF DUP	26/12/2007
HK0718591-17	ES0800433-17	C3(NM6) MF	26/12/2007
HK0718591-18	ES0800433-18	C3(NM6) MF DUP	26/12/2007



Environmental Division

**CERTIFICATE OF ANALYSIS**

Work Order	: <b>ES0800433</b>	Page	: 1 of 8
Client	: <b>ALS TECHNICHEM (HK)</b>	Laboratory	: Environmental Division Sydney
Contact	: <b>MS ALICE WONG</b>	Contact	: <b>Victor Kedicioglu</b>
Address	: <b>11/F CHUNG SHUN KNITTING CNTR 1-3 WING YIP STREET KWAI CHUNG, N.T HONG KONG HONG KONG</b>	Address	: <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>
E-mail	: <b>alice.wong@alsenviro.com</b>	E-mail	: <b>Victor.Kedicioglu@alsenviro.com</b>
Telephone	: <b>+852 001585226101044</b>	Telephone	: <b>+61-2-8784 8555</b>
Facsimile	: <b>+852 26102021</b>	Facsimile	: <b>+61-2-8784 8500</b>
Project	: <b>MACAU PROJECT</b>	QC Level	: <b>NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
Order number	: ---	Date Samples Received	: <b>07-JAN-2008</b>
C-O-C number	: ---	Issue Date	: <b>18-JAN-2008</b>
Sampler	: ---	No. of samples received	: <b>18</b>
Site	: ---	No. of samples analysed	: <b>18</b>
Quote number	: ---		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



WORLD RECOGNISED  
ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
EDWANDY FADJAR	Senior Organic Chemist	Organics



---

### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Key :           CAS Number = Chemistry Abstract Services number  
                  LOR = Limit of reporting  
                  ^ = This result is computed from individual analyte detections at or above the level of reporting

Page : 4 of 8  
 Work Order : ES0800433  
 Client : ALS TECHNICHEM (HK)  
 Project : MACAU PROJECT



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Compound	CAS Number	LOR	Unit	HK0718591-1	HK0718591-2	HK0718591-3	HK0718591-4	HK0718591-5
				MPB1-ME	MPB1-ME DUP	MPB2-ME	MPB2-ME DUP	MP-ME
				26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00
Client sampling date / time				ES0800433-001	ES0800433-002	ES0800433-003	ES0800433-004	ES0800433-005
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	79.0	85.6	86.4	76.9	79.8
Anthracene-d10	1719-06-8	0.1	%	94.4	97.3	95.9	86.2	90.4
4-Terphenyl-d14	1718-51-0	0.1	%	85.7	89.7	88.4	78.8	83.3

Page : 5 of 8  
 Work Order : ES0800433  
 Client : ALS TECHNICHEM (HK)  
 Project : MACAU PROJECT



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	HK0718591-6	HK0718591-7	HK0718591-8	HK0718591-9	HK0718591-10
				MP-ME DUP	C2 (NM5) - ME	C2 (NM5) - ME DUP	MPB1-MF	MPB1-MF DUP
				26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00
				ES0800433-006	ES0800433-007	ES0800433-008	ES0800433-009	ES0800433-010
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
7,12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	83.9	80.4	70.3	73.2	77.6
Anthracene-d10	1719-06-8	0.1	%	95.3	89.7	79.2	83.2	90.4
4-Terphenyl-d14	1718-51-0	0.1	%	97.4	92.7	80.5	86.2	93.0

Page : 6 of 8  
 Work Order : ES0800433  
 Client : ALS TECHNICHEM (HK)  
 Project : MACAU PROJECT



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	HK0718591-11	HK0718591-12	HK0718591-13	HK0718591-14	HK0718591-15
				MPB2-MF	MPB2-MF DUP	MP-MF	MP-MF DUP	C1 (NM3) - MF
				26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00	26-DEC-2007 15:00
				ES0800433-011	ES0800433-012	ES0800433-013	ES0800433-014	ES0800433-015
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	83.3	76.8	77.8	84.1	76.2
Anthracene-d10	1719-06-8	0.1	%	96.0	88.8	89.0	93.0	89.2
4-Terphenyl-d14	1718-51-0	0.1	%	99.2	92.3	93.2	95.3	90.3

Page : 7 of 8  
 Work Order : ES0800433  
 Client : ALS TECHNICHEM (HK)  
 Project : MACAU PROJECT



## Analytical Results

Sub-Matrix: WATER

Client sample ID

HK0718591-16  
C1 (NM3) - MF DUP

HK0718591-17  
C3 (NM60 - MF

HK0718591-18  
C3 (NM60 - MF DUP

----

----

Client sampling date / time

26-DEC-2007 15:00

26-DEC-2007 15:00

26-DEC-2007 15:00

----

----

Compound	CAS Number	LOR	Unit	ES0800433-016	ES0800433-017	ES0800433-018	----	----
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	----	----
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	68.6	68.3	73.3	----	----
Anthracene-d10	1719-06-8	0.1	%	80.0	79.9	88.8	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	81.9	82.2	92.4	----	----

Page : 8 of 8  
Work Order : ES0800433  
Client : ALS TECHNICHEM (HK)  
Project : MACAU PROJECT



### Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		Low	High
<b>EP132T: Base/Neutral Extractable Surrogates</b>			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141





Environmental Division

**QUALITY CONTROL REPORT**

<b>Work Order</b>	: <b>ES0800433</b>	<b>Page</b>	: 1 of 5
<b>Client</b>	: <b>ALS TECHNICHEM (HK)</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: <b>MS ALICE WONG</b>	<b>Contact</b>	: Victor Kedicioglu
<b>Address</b>	: <b>11/F CHUNG SHUN KNITTING CNTR 1-3 WING YIP STREET KWAI CHUNG, N.T HONG KONG HONG KONG</b>	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: <b>alice.wong@alsenviro.com</b>	<b>E-mail</b>	: <b>Victor.Kedicioglu@alsenviro.com</b>
<b>Telephone</b>	: <b>+852 001585226101044</b>	<b>Telephone</b>	: <b>+61-2-8784 8555</b>
<b>Facsimile</b>	: <b>+852 26102021</b>	<b>Facsimile</b>	: <b>+61-2-8784 8500</b>
<b>Project</b>	: <b>MACAU PROJECT</b>	<b>QC Level</b>	: <b>NEPM 1999 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	: ----	<b>Date Samples Received</b>	: <b>07-JAN-2008</b>
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: <b>18-JAN-2008</b>
<b>Sampler</b>	: ----	<b>No. of samples received</b>	: <b>18</b>
<b>Order number</b>	: ----	<b>No. of samples analysed</b>	: <b>18</b>
<b>Quote number</b>	: ----		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



WORLD RECOGNISED  
ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
EDWANDY FADJAR	Senior Organic Chemist	Organics

**Environmental Division Sydney**

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Page : 2 of 5  
Work Order : ES0800433  
Client : ALS TECHNICHEM (HK)  
Project : MACAU PROJECT



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = Chemistry Abstract Services number  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

Page : 3 of 5  
Work Order : ES0800433  
Client : ALS TECHNICHEM (HK)  
Project : MACAU PROJECT

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### **Laboratory Duplicate (DUP) Report**

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) Report				
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 572214)</b>									
EP132: 3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	2 µg/L	101	65.8	121	
EP132: 2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	2 µg/L	95.1	67.7	112	
EP132: 7,12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	2 µg/L	98.3	11.6	146	
EP132: Acenaphthene	83-32-9	0.1	µg/L	<0.1	2 µg/L	99.5	73.2	111	
EP132: Acenaphthylene	208-96-8	0.1	µg/L	<0.1	2 µg/L	107	72.4	112	
EP132: Anthracene	120-12-7	0.1	µg/L	<0.1	2 µg/L	102	73.4	113	
EP132: Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	2 µg/L	104	73.6	114	
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	99.8	75.2	117	
EP132: Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	2 µg/L	110	71.4	119	
EP132: Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	2 µg/L	102	75.3	118	
EP132: Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	2 µg/L	108	66.6	121	
EP132: Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	2 µg/L	86.2	74.8	118	
EP132: Chrysene	218-01-9	0.1	µg/L	<0.1	2 µg/L	104	69.6	120	
EP132: Coronene	191-07-1	0.1	µg/L	<0.1	2 µg/L	105	47.4	131	
EP132: Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	2 µg/L	103	71.5	117	
EP132: Fluoranthene	206-44-0	0.1	µg/L	<0.1	2 µg/L	101	74.8	117	
EP132: Fluorene	86-73-7	0.1	µg/L	<0.1	2 µg/L	101	72.9	114	
EP132: Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	2 µg/L	106	67.8	119	
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	20 µg/L	97.8	53.6	131	
EP132: Naphthalene	91-20-3	0.1	µg/L	<0.1	2 µg/L	98.2	68.3	116	
EP132: Perylene	198-55-0	0.1	µg/L	<0.1	2 µg/L	100	68	122	
EP132: Phenanthrene	85-01-8	0.1	µg/L	<0.1	2 µg/L	104	74.8	112	
EP132: Pyrene	129-00-0	0.1	µg/L	<0.1	2 µg/L	101	75.1	117	



### ***Matrix Spike (MS) Report***

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**



### CERTIFICATE OF ANALYSIS

<i>Client</i>	: ERM HONG KONG	<i>Laboratory</i>	: ALS Technichem (HK) Pty Ltd	<i>Page</i>	: 1 of 6
<i>Contact</i>	: MS KAREN LUI	<i>Contact</i>	: Alice Wong	<i>Work Order</i>	: HK0800307
<i>Address</i>	: 21/F, LINCOLN HOUSE, 979 KING'S ROAD, TAIKOO PLACE, ISLAND EAST, QUARRY BAY HONG KONG	<i>Address</i>	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
<i>E-mail</i>	: Karen.Lui@erm.com	<i>E-mail</i>	: Alice.Wong@alsenviro.com	<i>Date received</i>	: 9 Jan 2008
<i>Telephone</i>	: 2271 3000	<i>Telephone</i>	: +852 2610 1044	<i>Date of issue</i>	: 30 Jan 2008
<i>Facsimile</i>	: 2723 5660	<i>Facsimile</i>	: +852 2610 2021	<i>No. of samples</i>	- Received : 18
<i>Project</i>	: EM&A FOR THE PERMANENT AVIATION FUEL FACILITY	<i>Quote number</i>	: ---		- Analysed : 18
<i>Order number</i>	: ---				
<i>C-O-C number</i>	: ---				
<i>Site</i>	: ---				

### Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK0800307 supersedes any previous reports with this reference. The completion date of analysis is 18 Jan 2008. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK0800307 : **Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.**  
**Water sample(s) analysed and reported on an as received basis.**

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the 'Electronic Transactions Ordinance' of Hona Kona. Chapter 553. Section 6.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:-</u>
Anh Ngoc Huynh	Senior Chemist	Organics



## Analytical Results

				Client Sample ID :	MPB1 ME	MPB1 ME DUP	MPB2 ME	MPB2 ME DUP	MP ME
				Laboratory Sample ID :	HK0800307-001	HK0800307-002	HK0800307-003	HK0800307-004	HK0800307-005
				Sample Date / Time :	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]
Submatrix: MARINE WATER									
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065B: Organochlorine Pesticides</b>									
4,4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>								Surrogate control limits listed at end of this report.	
Decachlorobiphenyl	2051-24-3	0.1	%	<b>105</b>	<b>96.7</b>	<b>103</b>	<b>104</b>	<b>103</b>	
Tetrachlorometaxylene	877-09-8	0.1	%	<b>102</b>	<b>99.5</b>	<b>103</b>	<b>103</b>	<b>98.9</b>	
Dibutylchloroendate	1770-80-5	0.1	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>101</b>	<b>103</b>	



## Analytical Results

				Client Sample ID :	MP ME DUP	C2 (NM5) ME	C2 (NM5) ME DUP	MPB1 MF	MPB1 MF DUP
				Laboratory Sample ID :	HK0800307-006	HK0800307-007	HK0800307-008	HK0800307-009	HK0800307-010
				Sample Date / Time :	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]
Submatrix: MARINE WATER									
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065B: Organochlorine Pesticides</b>									
4,4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4,4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>									
Surrogate control limits listed at end of this report.									
Decachlorobiphenyl	2051-24-3	0.1	%	<b>97.8</b>	<b>102</b>	<b>98.1</b>	<b>101</b>	<b>101</b>	<b>101</b>
Tetrachlorometaxylene	877-09-8	0.1	%	<b>102</b>	<b>104</b>	<b>98.7</b>	<b>101</b>	<b>100</b>	<b>100</b>
Dibutylchloroendate	1770-80-5	0.1	%	<b>99.6</b>	<b>98.4</b>	<b>103</b>	<b>97.9</b>	<b>101</b>	<b>101</b>





## Analytical Results

				Client Sample ID :	MPB2 MF	MPB2 MF DUP	MP MF	MP MF DUP	C1 (NM3) MF
				Laboratory Sample ID :	HK0800307-011	HK0800307-012	HK0800307-013	HK0800307-014	HK0800307-015
				Sample Date / Time :	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]
Submatrix: MARINE WATER									
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065B: Organochlorine Pesticides</b>									
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4.4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>								Surrogate control limits listed at end of this report.	
Decachlorobiphenyl	2051-24-3	0.1	%	<b>101</b>	<b>100</b>	<b>106</b>	<b>103</b>	<b>96.0</b>	
Tetrachlorometaxylene	877-09-8	0.1	%	<b>101</b>	<b>102</b>	<b>104</b>	<b>102</b>	<b>101</b>	
Dibutylchlorendate	1770-80-5	0.1	%	<b>97.0</b>	<b>105</b>	<b>104</b>	<b>103</b>	<b>97.9</b>	



## Analytical Results

				Client Sample ID :	C1 (NM3) MF DUP	C3 (NM6) MF	C3 (NM6) MF DUP		
				Laboratory Sample ID :	HK0800307-016	HK0800307-017	HK0800307-018		
				Sample Date / Time :	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]	[ 9 Jan 2008 ]		
				Submatrix: MARINE WATER					
Method: Analysis Description	CAS number	LOR	Units						
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 149	38380-04-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 156	38380-08-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 169	60044-26-0	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
PCB 195	52663-78-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
<b>EP-065B: Organochlorine Pesticides</b>									
4.4'-DDT	50-29-3	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
4.4'-DDE	72-55-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
4.4'-DDD	72-54-8	0.01	µg/L	<0.01	<0.01	<0.01	<0.01		
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>									
Surrogate control limits listed at end of this report.									
Decachlorobiphenyl	2051-24-3	0.1	%	103	99.1	103			
Tetrachlorometaxylene	877-09-8	0.1	%	104	97.0	98.8			
Dibutylchlorendate	1770-80-5	0.1	%	103	105	102			



## Surrogate Control Limits

Submatrix Type: MARINE WATER

Method: Analysis Description	Units	Lower Limit	Upper Limit
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>			
Decachlorobiphenyl	%		
Tetrachlorometaxylene	%		
Dibutylchlorendate	%		



**CERTIFICATE OF ANALYSIS**

**CONTACT:** MS KAREN LUI  
**CLIENT:** ERM HONG KONG  
**ADDRESS:** 21/F., LINCOLN HOUSE,  
979 KING'S ROAD, TAIKOO PLACE,  
ISLAND EAST, HONG KONG  
**PROJECT:** EM&A FOR THE PERMANENT AVIATION FUEL FACILITY

**Batch:** HK0800307  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 09/01/2008  
**DATE OF ISSUE:** 30/01/2008  
**SAMPLE TYPE:** WATER  
**No. of SAMPLES:** 12

**COMMENTS**

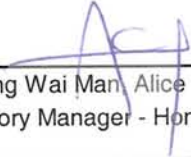
Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.  
PAHs was subcontracted and tested by ALS Sydney.  
ALS Sydney details report was attached. The attached report contains a total of 15 pages.

**ISSUING LABORATORY: HONG KONG**

**Address**

ALS Technichem (HK) Pty Ltd  
11/F Chung Shun Knitting Centre  
1-3 Wing Yip Street  
Kwai Chung  
HONG KONG

**Phone:** 852-2610 1044  
**Fax:** 852-2610 2021  
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Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong

**Other ALS Environmental Laboratories**

**AUSTRALIA**

Brisbane  
Melbourne  
Sydney  
Newcastle

Hong Kong  
Singapore  
Kuala Lumpur  
Bogor

**AMERICAS**

Vancouver  
Santiago  
Amtofagasta  
Lima

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Abbreviations: % SPK REC denotes percentage spike recovery  
CHK denotes duplicate check sample  
LOR denotes limit of reporting  
LCS % REC denotes Laboratory Control Sample percentage recovery



# CERTIFICATE OF ANALYSIS

Batch: HK0800307  
Date of Issue: 30/01/2008  
Client: ERM HONG KONG  
Client Reference: EM&A FOR THE PERMANENT AVIATION FUEL FACILITY

ALS Sydney report is attached for the analysis of PAHs in water.  
This attached report contains a total of 15 pages.

## Sample Details

<i>ALS Lab ID</i>	<i>ALS Melbourne Lab ID</i>	<i>Client's Sample ID</i>	<i>Sampling Date</i>
HK0800307-1	ES0800673-1	MPB1 ME	09/01/2008
HK0800307-2	ES0800673-2	MPB1 ME DUP	09/01/2008
HK0800307-3	ES0800673-3	MPB2 ME	09/01/2008
HK0800307-4	ES0800673-4	MPB2 ME DUP	09/01/2008
HK0800307-5	ES0800673-5	MP ME	09/01/2008
HK0800307-6	ES0800673-6	MP ME DUP	09/01/2008
HK0800307-7	ES0800673-7	C2(NM5) ME	09/01/2008
HK0800307-8	ES0800673-8	C2(NM5) ME DUP	09/01/2008
HK0800307-9	ES0800673-9	MPB1 MF	09/01/2008
HK0800307-10	ES0800673-10	MPB1 MF DUP	09/01/2008
HK0800307-11	ES0800673-11	MPB2 MF	09/01/2008
HK0800307-12	ES0800673-12	MPB2 MF DUP	09/01/2008
HK0800307-13	ES0800673-13	MP MF	09/01/2008
HK0800307-14	ES0800673-14	MP MF DUP	09/01/2008
HK0800307-15	ES0800673-15	C1(NM3) MF	09/01/2008
HK0800307-16	ES0800673-16	C1(NM3) MF DUP	09/01/2008
HK0800307-17	ES0800673-17	C3(NM6) MF	09/01/2008
HK0800307-18	ES0800673-18	C3(NM6) MF DUP	09/01/2008



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES0800673	Page	: 1 of 8
Client	: ALS TECHNICHEM (HK)	Laboratory	: Environmental Division Sydney
Contact	: MS KERRY YUEN	Contact	: Victor Kedicioglu
Address	: 11/F CHUNG SHUN KNITTING CNTR 1-3 WING YIP STREET KWAI CHUNG, N.T HONG KONG HONG KONG	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: kerry.yuen@alsenviro.com	E-mail	: Victor.Kedicioglu@alsenviro.com
Telephone	: +852 001585226101044	Telephone	: +61-2-8784 8555
Facsimile	: +852 26102021	Facsimile	: +61-2-8784 8500
Project	: ---	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ---	Date Samples Received	: 18-JAN-2008
C-O-C number	: ---	Issue Date	: 30-JAN-2008
Sampler	: ---	No. of samples received	: 18
Site	: ---	No. of samples analysed	: 18
Quote number	: ---		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



WORLD RECOGNISED  
ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

*Signatories*

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
EDWANDY FADJAR	Senior Organic Chemist	Organics

Page : 3 of 8  
Work Order : ES0800673  
Client : ALS TECHNICHEM (HK)  
Project : ----



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### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Key :       CAS Number = Chemistry Abstract Services number  
          LOR = Limit of reporting  
          ^ = This result is computed from individual analyte detections at or above the level of reporting

Page : 4 of 8  
 Work Order : ES0800673  
 Client : ALS TECHNICHEM (HK)  
 Project : ----



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	HK0800307-1	HK0800307-2	HK0800307-3	HK0800307-4	HK0800307-5
				09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00
				ES0800673-001	ES0800673-002	ES0800673-003	ES0800673-004	ES0800673-005
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	88.5	86.8	81.2	79.2	84.5
Anthracene-d10	1719-06-8	0.1	%	91.1	86.5	82.9	82.8	86.6
4-Terphenyl-d14	1718-51-0	0.1	%	97.8	86.5	88.2	88.0	93.5





## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	HK0800307-6	HK0800307-7	HK0800307-8	HK0800307-9	HK0800307-11
				09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00
				ES0800673-006	ES0800673-007	ES0800673-008	ES0800673-009	ES0800673-010
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	76.3	76.8	78.6	80.8	82.4
Anthracene-d10	1719-06-8	0.1	%	77.6	87.9	90.3	90.3	91.9
4-Terphenyl-d14	1718-51-0	0.1	%	80.7	91.5	98.2	96.4	100

Page : 6 of 8  
 Work Order : ES0800673  
 Client : ALS TECHNICHEM (HK)  
 Project : ----



## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	HK0800307-12	HK0800307-14	HK0800307-15	HK0800307-17	HK0800307-18
				09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00
				ES0800673-011	ES0800673-012	ES0800673-013	ES0800673-014	ES0800673-015
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
7,12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	74.6	77.1	60.5	75.1	84.2
Anthracene-d10	1719-06-8	0.1	%	79.9	87.3	66.1	87.2	97.4
4-Terphenyl-d14	1718-51-0	0.1	%	89.5	93.4	66.8	94.0	104

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## Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				HK0800307-10	HK0800307-13	HK0800307-16	----	----
				09-JAN-2008 15:00	09-JAN-2008 15:00	09-JAN-2008 15:00	----	----
				ES0800673-016	ES0800673-017	ES0800673-018	----	----
Compound	CAS Number	LOR	Unit					
<b>EP132B: Polynuclear Aromatic Hydrocarbons</b>								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	<0.1	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Indeno(1,2,3,cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	----	----
<b>EP132T: Base/Neutral Extractable Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	75.5	72.8	77.8	----	----
Anthracene-d10	1719-06-8	0.1	%	82.3	75.7	84.2	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	87.4	81.2	90.4	----	----

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### Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP132T: Base/Neutral Extractable Surrogates</b>			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141



Environmental Division

**QUALITY CONTROL REPORT**

Work Order	: ES0800673	Page	: 1 of 7
Client	: ALS TECHNICHEM (HK)	Laboratory	: Environmental Division Sydney
Contact	: MS KERRY YUEN	Contact	: Victor Kedicioglu
Address	: 11/F CHUNG SHUN KNITTING CNTR 1-3 WING YIP STREET KWAI CHUNG, N.T HONG KONG HONG KONG	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: kerry.yuen@alsenviro.com	E-mail	: Victor.Kedicioglu@alsenviro.com
Telephone	: +852 001585226101044	Telephone	: +61-2-8784 8555
Facsimile	: +852 26102021	Facsimile	: +61-2-8784 8500
Project	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-JAN-2008
C-O-C number	: ----	Issue Date	: 30-JAN-2008
Sampler	: ----	No. of samples received	: 18
Order number	: ----	No. of samples analysed	: 18
Quote number	: ----		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
EDWANDY FADJAR	Senior Organic Chemist	Organics

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### General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :            Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
                  CAS Number = Chemistry Abstract Services number  
                  LOR = Limit of reporting  
                  RPD = Relative Percentage Difference  
                  # = Indicates failed QC

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### **Laboratory Duplicate (DUP) Report**

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						Result	LCS	Low	High
<b>EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 575484)</b>									
EP132: 3-Methylcholanthrene	56-49-5	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 82.6	---- 65.8	---- 121	
EP132: 2-Methylnaphthalene	91-57-6	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 88.1	---- 67.7	---- 112	
EP132: 7,12-Dimethylbenz(a)anthracene	57-97-6	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 88.4	---- 11.6	---- 146	
EP132: Acenaphthene	83-32-9	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 90.9	---- 73.2	---- 111	
EP132: Acenaphthylene	208-96-8	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 94.8	---- 72.4	---- 112	
EP132: Anthracene	120-12-7	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 92.9	---- 73.4	---- 113	
EP132: Benz(a)anthracene	56-55-3	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 89.6	---- 73.6	---- 114	
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	91.5	75.2	117	
EP132: Benzo(b)fluoranthene	205-99-2	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 98.5	---- 71.4	---- 119	
EP132: Benzo(e)pyrene	192-97-2	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 86.9	---- 75.3	---- 118	
EP132: Benzo(g,h,i)perylene	191-24-2	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 85.9	---- 66.6	---- 121	
EP132: Benzo(k)fluoranthene	207-08-9	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 92.0	---- 74.8	---- 118	
EP132: Chrysene	218-01-9	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 92.2	---- 69.6	---- 120	
EP132: Coronene	191-07-1	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 88.3	---- 47.4	---- 131	
EP132: Dibenz(a,h)anthracene	53-70-3	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 86.9	---- 71.5	---- 117	
EP132: Fluoranthene	206-44-0	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 93.2	---- 74.8	---- 117	
EP132: Fluorene	86-73-7	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 96.6	---- 72.9	---- 114	
EP132: Indeno(1,2,3-cd)pyrene	193-39-5	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 85.3	---- 67.8	---- 119	
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.1 0.10	µg/L µg/L	<0.1 ----	---- 20 µg/L	---- 88.8	---- 53.6	---- 131	
EP132: Naphthalene	91-20-3	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 89.4	---- 68.3	---- 116	



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 Project : ----



Sub-Matrix: WATER

Method/Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
<b>EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 575484) - continued</b>									
EP132: Perylene	198-55-0	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	87.5	68	122	
EP132: Phenanthrene	85-01-8	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	93.6	74.8	112	
EP132: Pyrene	129-00-0	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	94.2	75.1	117	
<b>EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 578025)</b>									
EP132: 3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	86.1	65.8	121	
EP132: 2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	88.8	67.7	112	
EP132: 7,12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	87.5	11.6	146	
EP132: Acenaphthene	83-32-9	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	94.1	73.2	111	
EP132: Acenaphthylene	208-96-8	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	97.3	72.4	112	
EP132: Anthracene	120-12-7	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	94.1	73.4	113	
EP132: Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	89.9	73.6	114	
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	94.8	75.2	117	
EP132: Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	90.9	71.4	119	
EP132: Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	87.9	75.3	118	
EP132: Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	92.4	66.6	121	
EP132: Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	103	74.8	118	
EP132: Chrysene	218-01-9	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	94.4	69.6	120	
EP132: Coronene	191-07-1	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	88.7	47.4	131	
EP132: Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	93.7	71.5	117	
EP132: Fluoranthene	206-44-0	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	93.6	74.8	117	
EP132: Fluorene	86-73-7	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	97.9	72.9	114	
EP132: Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	----	----	----	----	----
		0.10	µg/L	----	2 µg/L	89.3	67.8	119	

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 Project : ----



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
<b>EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 578025) - continued</b>									
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 108	---- 53.6	---- 131	
EP132: Naphthalene	91-20-3	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 92.4	---- 68.3	---- 116	
EP132: Perylene	198-55-0	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 91.9	---- 68	---- 122	
EP132: Phenanthrene	85-01-8	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 92.1	---- 74.8	---- 112	
EP132: Pyrene	129-00-0	0.1 0.10	µg/L µg/L	<0.1 ----	---- 2 µg/L	---- 95.8	---- 75.1	---- 117	



### **Matrix Spike (MS) Report**

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**