REPORT

ON

On-site Dechlorination of PCB contaminated oil using CPRI mobile de-chlorination unit

Project Site: Kerala State Electricity Board, 220Kv Substation Nallalam

Period: 03.03.2023 to 31.05.2023

Dielectric Materials Division
Central Power Research Institute
Bengaluru-560 080, India.

Work Oder No: 121/2022-23, Dt. 27.01.2023

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Report on PCB De-Chlorination Activity at KSEB, 220KV Substation Nallalam

1. Introduction:

Polychlorinated Biphenyls (PCBs) are materials that were used as a liquid dielectrics in Power Transformers and capacitors prior 1980s. Due to their high chemical stability, hazardous properties and ability to persist in the environment, these materials have serious pollution potential. These chemicals are classified under Persistent Organic Pollutants (POPs). Such materials, if left untraced or identified, will continue contaminating food, water, soil and bio accumulating for very long periods. Therefore, if proper care is not taken in the collection and safe disposal of these materials, the cost incurred to correct the consequences will be very high.

Awareness about pollution and toxicity of PCBs had resulted in the international treaty, "Stockholm Convention on Persistent Organic Pollutants". Under this convention, more than 196 countries have resolved to eliminate such polluting materials from their countries. India is also a signatory to this convention and is obliged to eliminate these types of materials. Under the guidelines of MoEFCC(Ministry of Environment, Forest and Climate Change) and UNIDO (United Nations Industrial Development Organization), the project " Reduction and Elimination of PCBs, prioritizing the Power sector in India" has been taken up. Central Power Research Institute (CPRI) has been identified as the nodal organization for coordinating the disposal activity in the country.

2. Background:

Dr. P. Thomas, Additional Director/ HOD, Dielectric Materials Division, Central Power Research Institute, Bangalore visited 220 kV Substasion, Nallalam , Kozhicode on 30/06/2022.

Detailed presentation about the PCB dechlorination activity was made by (Hybrid mode)

Engineers connected with 220kV Substation from outside Nallalam, have attended the meeting by virtual mode.

Dr. P. Thomas, Additional Director/ HOD, Dielectric Materials Division, Central Power Research Institute, Bangalore visited 220 kV s/s, Nallalam , Kozhicode on 30/06/2022

After the presentation, site preparation for undertaking PCB de-chlorination was discussed and a MOM was signed on 30.06.2022 between KSEB and CPRI. The correspondence between CPRI and KSEB is attached for the reference. **Annexure 2 (Ref: page no.59)**

CPRI had received a email request from KSEB 220Kv Substation Nallalam, to take up this PCB de-chlorination activity as soon as possible. **Annexure 3 (Ref: page no.60)**

After series of emails received from KSEB, Dr. P. Thomas, PCB Project Leader, visited 220 kV Substation, Kerala State Electricity Board Ltd. Nallalam, Kozhikode, on 07.01.2023. and a MOM was signed between KSEB and CPRI. and had discussed about PCB de-chlorination and payment terms. **Annexure 4 (Ref: page no.61-63)**

Dr. P. Thomas, Additional Director/ HOD, Dielectric Materials Division, Central Power Research Institute, Bangalore visited 220 kV s/s, Nallalam , Kozhicode on 07/01/2023

A budgetary offer along with site requirement has been sent to office of the Assistant Executive Engineer, 220 Kv Substation Subdivision, Kerala State Electricity Board Ltd. Nallalam, Kozhikode. **Annexure 5 (Ref: page no.64)**

CPRI has received a letter from KSEB that 50% advance payment could not be initiated and requested CPRI to waive off 50% advance. **Annexure 6 (Ref: page no.66)**

After approval from CPRI management, CPRI agreed to undertake PCB de-chlorination work at 220 kV Substation Subdivision, Kerala State Electricity Board Ltd. Nallalam, without any advance with the condition that full amount to be paid immediately, (within15days) after the completion of work.

Finally, CPRI has received work order from KSEB Nallalam for the dechlorination of around 136KL of PCB contaminated oil**,** Work Oder No: 121/2022-23, Dt. 27.01.2023. **Annexure 7(Ref: page no.67)**

3. PCB De-chlorination Activities Carried out at KSEB, 220KV Substation Nallalam from 03.03.2023 to 31.05.2023.

Based on the confirmation received from Mr. Pradeep Kumar Assistant Executive Engineer, 220kV Substation Nallalam, CPRI team consisting of following personals visited KSEB 220kV Substation Nallalam on 3 March 2023 to take up the PCB de-chlorination activity.

(1) Mr. Thilak A, Project Engineer
(2) Mr. Anil Chavan, Project Engineer
(3) Mr. Tom Jose, Project Engineer
(4) Mr. M.Senthamilarasan, Project Engineer
(5) Mr. Vinay A Revankar, Project Engineer
(6) Mr. Nagaraju C B, Technician
(7) Mr. Santhana Kumar G, Driver
(8) Mr. Sathish Kumar M,Driver

PCB team inspected the preparedness at 220kV Substation Nallalam, and found that the following arrangements were made ready by KSEB.

- Levelling of ground by cementing the area near the PCB contaminated oil Transformers.
- A storage room covered with tarpaulin and window closed with plastic sheet made ready for storing the sodium dispersion barrels.
- Tanks for storing the de-chlorinated oil was provided.
- PCB team made necessary arrangement, such as powering the stepdown transformer, checking the power connection, made connection from PCB contaminated transformer to PCB unit, water supply connection and nitrogen cylinders, etc.

Fig.(1)

Fig.(2)

Figure 1&2: Levelling done for placing PCB De-chlorination unit.

Fig.(3)	*Fig.(4)*
	

Figure 3&4: PCB contaminated 220/110kV GE Make Single-Phase Transformers @ 220kV Substation Nallalam

The room was covered with tarpaulin sheet to ensure there was no leaking during rain.

15KL tank for unloading of PCB treated oil is kept near the PCB unit.

	
Figure 5: PCB accessories storage Room was covered with tarpaulin sheet.	***Figure 6: 15KL tank for unloading of treated oil kept near the PCB unit.***

The Earthing pole has been done and Power circuit breaker has been installed.

Figure 7: Earthing pole Installed.

Figure 8: Power circuit breaker box.

PCB accessories storage room cleaned and windows closed with plastic sheet.

Figure 9: Storage room for storing PCB accessories.

Figure 10: Window of the room closed with plastic sheet to avoid rainwater.

The Prakash parcel services vehicle bearing Reg.No-MH04FJ9844 has reached KSEB, 220kv Substation Nallalam premises on 08.03.2023. All the PCB accessories such as step down transformer, sodium dispersion drums etc were unloaded.

Figure 11: Unloading of sodium dispersion drums

Figure 12: Unloading of sodium mixture

Figure13: Sodium dispersion drums kept in safe custody in storeroom.

Volvo truck bearing Reg. No-KA04MU6886 has reached KSEB, 220kv Substation Nallalam, premises on 09.03.2023.

The PCB unit has parked atthe appropriate location, after levelling done with jack.

Figure14: Parking of Volvo Truck

Figure15: Checking the level of PCB unit

Figure 16: Fixing of exhaust vent to PCB unit.

Figure 17: Sodium mixture Rotary motor

The fixing of ladder and other electrical connections are done.

Nitrogen gas line for GC was found to be in broken condition and the same was rectified and put to use.

Figure 18: Ladders fixed to the PCB unit

Figure 19: Nitrogen manifold connected to PCB unit

The stepdown transformer connections, secondary connections, ladders, nitrogen manifold connection has been done.

Figure 20: The step down transformer connected to PCB unit.

During the transit, the oil in the step down transformer was leaked and the same has been filled with the fresh transformer oil. The BDV of transformer oil was checked and found to be 78 kV.

Figure 21: The step down transformer filling with fresh new oil

After the power connection and setting up of the plant, the mobile PCB de-chlorination unit was checked.

Electrical connections in control panel before the commencement of operation such as electrical heater, pump, compressor, valves, sensors etc. also was checked.

Figure 22: Checking the Electrical connections for main control panel

Figure 23: Checking the nitrogen gas line control

4.0Setting up of laboratory for PCB extraction.

The laboratory setup was made for the PCB extraction in the space provided in KSEB.

GC-ECD used for the PCB testing was switched on and the same was calibrated using PCB standard 1242,1254 &1260 Aroclor.

Figure 24: Chemical lab setup for PCB extraction

Figure 25: GC-ECD instrument used for PCB analysis

Sodium Dispersion Preparation Process: Around 1,360 Kg of Sodium dispersion was prepared using sodium dispersion unit stationed at CPRI, Bengaluru. The details of the sodium dispersion prepared is given in the below Table No.1.

Table No. 1: Details of sodium dispersion prepared using Sodium dispersion unit at CPRI, Bengaluru.

Batch No.	Duration Date	Sodium metal in Kg.	Oil in Kg.	Total Sodium dispersion Quantity in kg	Sodium dispersion preparation in Hrs.	Particle size in microns.
1	13.02.2023 to 15.02.2023	136	204	340	18	10-15
2	15.02.2023 to 18.02.2023	136	204	340	18	10-15
3	20.02.2023 to 22.02.2023	136	204	340	18	10-15
4	22.02.2023 to 24.02.2023	136	204	340	18	10-15
Total:1360 Kg						

Optical microscope image analysis is carried out to measure the particle size for the sodium-dispersed oil (NaD) and optical images of the size of the particle (Fig. 29- Fig.32) are given below:

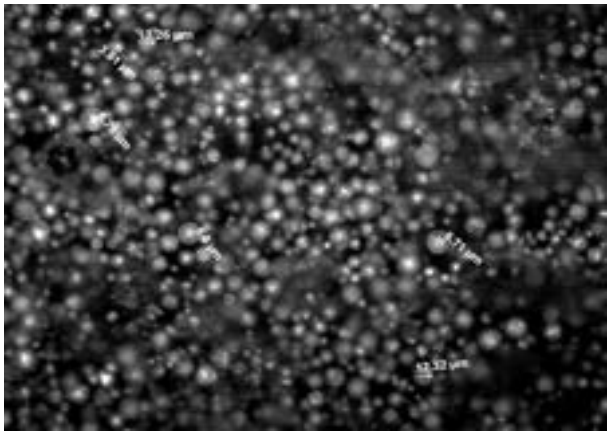

Fig. 26 :Batch 1 : Particle size in the range 10-15 µm

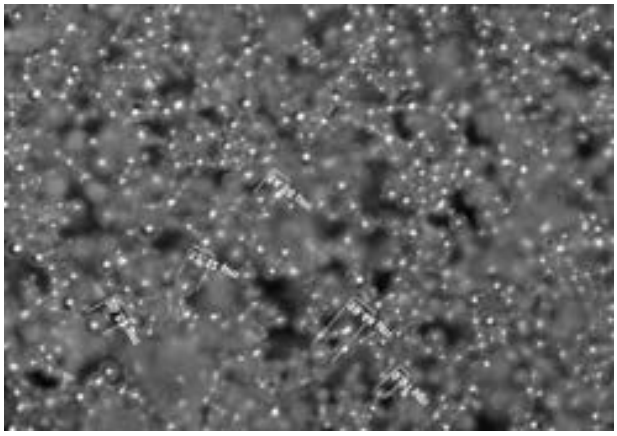

Fig. 27 :Batch 2 : Particle size in the range 10-15 µm

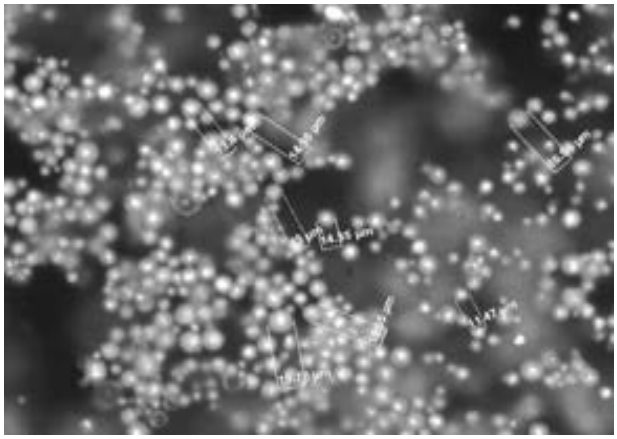

Fig. 28 :Batch 3: Particle size in the range 10-15 µm

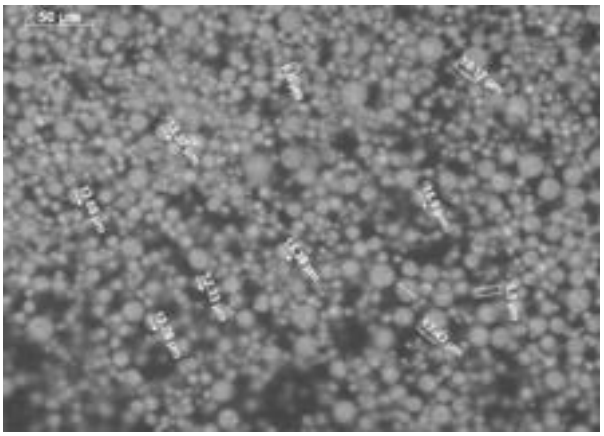

Fig. 29 :Batch 4 : Particle size in the range 10-15 µm

First Batch of PCB oil loaded into the reactor on 13.03.2023.

New oil flushing line was found to be leaking (Near Sodium tank) during the de-chlorination process and later, it was rectified. **(Figure 31)**

Oil loading line was chocked, suction strainer was removed and after throughly cleaning, it was put back to use. **(Figure 32)**

Figure 30: Sample is collected for PCB analysis

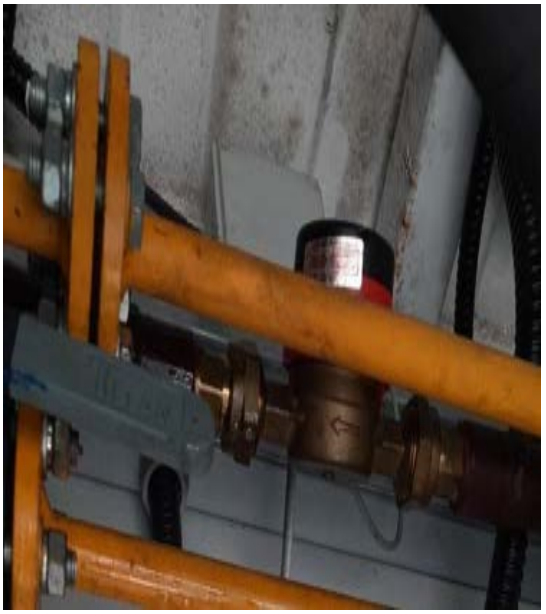

Figure 31: Oil Leakage observed in flushing line

Figure 32: Chocked suction strainer

Figure 33: Oil drain line and suction line connection

During the unloading, the pipe was found to be leaking and later it was fixed. **(Figure 34)**

Fine filter removed and cleaned. **(Figure 37)**

Figure 34: Fixing of outlet pipe for Unloading the dechlorinated oil

Figure 35: Unloading of water from settling tank

Figure 36: Loading of sodium dispersion drum

Figure 37: Fine filter removed and cleaned

5. PCB de-chlorination Process:

The PCB de-chlorination process was operated in batches with maximum batch size about 4250 l/Batch and can be treated upto 10000 ppm. PCB de-chlorination process was carried out by loading a known volume of oil into the reaction vessel. The oil was passed through two heaters and degasifier, where water and volatile compounds were removed. This PCB contaminated oil was stirred for one hour at a temperature of 120ºC and a sample was drawn from the reactor to check the initial concentration of PCB content. Depending upon the initial concentration of PCB content in the oil, calculated amount of sodium dispersion was added into the reactor.

The PCB de-chlorination reaction was carried out at a temperature of 120 ºC with nitrogen purging in the reactor. The samples were drawn at every hour and analyzed using GC-ECD to check the level of PCB content. The reaction was continued till the PCB content less than 2 ppm is achieved.
After the completion of reaction, excess of sodium in the reaction vessel was neutralized by adding water and the hydrogen gas released during the neutralization is purged with nitrogen and vented to atmosphere. Then the treated oil containing sludge in the reaction vessel is transferred to settling tank. The treated oil containing sludge, was kept for one day to separate sludge by gravity and it was settled at the bottom of the settling tank. The sludge generated in the PCB de-chlorination contains sodium chloride, sodium hydroxide, water and biphenyls and this was drained into barrels and kept in safe custody for disposal. The treated oil from the settling tank also drained to the barrels.

The PCB de-chlorination activity was commenced on 13.03.2023 onwards. The Batch wise details are given in Table No 2. The PCB analysis was carried out on all batches before and after the de-chlorination.

The PCB analysis chromatographs report of Batches 1 to 30 are enclosed **in Annexure -1 (Page 20 - 58)**. Around 126 KL PCB oil was treated.

Table No. 2: Details of PCB de-chlorination activity. From 13.03.2023 to 27.05.2023

Transformers . Serial No	**Batch No**	**Date**		**Qty. of oil (In Litre)**	**Qty of sodium dispersion added (in Litre)**	**Initial PCB conc.(in ppm)**	**Final PCB conc. in ppm)**
		From	**To**				
D577157	1.	13.03.23	15.03.23	4302	40	25.1	0.17
	2.	16.03.23	17.03.23	4250	40		0.22
	3.	20.03.23	21.03.23	4278	45		0.07
	4.	22.03.23	23.03.23	4269	40		0.05
	5	24.03.23	28.03.23	4250	40		0.07
	6	29.03.23	30.03.23	3897	40	2.2	0.06
D577155	7.	31.03.23	01.04.23	4250	40	21.85	0.06
	8.	03.04.23	04.04.23	4250	40		0.15
	9.	05.04.23	06.04.23	4278	40		0.09
	10.	07.04.23	08.04.23	4250	40		0.10
	11.	10.04.23	12.04.23	3940	40		0.09
	12.	13.04.23	14.04.23	4250	40	2.53	0.10
D577154	13	17.04.23	18.04.23	4250	40	29.48	0.16
	14.	19.04.23	20.04.23	4250	40		0.12
	15.	21.04.23	22.04.23	4250	40		0.15
	16.	24.04.23	25.04.23	4250	40		0.088
	17.	26.04.23	27.04.23	4120	40		0.083
	18.	28.04.23	29.04.23	4250	40	3.64	0.09
	19.	01.05.23	02.05.23	4250	40		0.11

D577156	20.	03.05.23	04.05.23	4250	40	30.10	0.24
	21.	05.05.23	06.05.23	4250	40		0.26
	22.	08.05.23	09.05.23	4250	40		0.07
	23.	10.05.23	11.05.23	4250	40		0.29
	24.	12.05.23	13.05.23	4250	40	3.52	0.13
D577153 –	25.	15.05.23	16.05.23	4250	40	26.6	0.29
	26.	17.05.23	18.05.23	4250	40		0.12
	27.	19.05.23	20.05.23	4250	40		0.29
	28.	22.05.23	23.05.23	4250	40		0.17
	29.	24.05.23	25.05.23	4250	40		0.17
	30.	26.05.23	27.05.23	4250	40	2.84	0.32
	Total quantity dechlorinated			**1,26,834ltrs**			

Annexure 1 (PCB Chromatograms)

Transformer. Serial No: D577157

Software Version	: 6.3.2.0646	Date	: 15-03-2023 11:42:20
Operator	: manager	Sample Name	: BATCH-1-BD-SLNO-D577157-PCB
Sample Number	: 002	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 15-03-2023 10:58:30	Dilution Factor	: 1.00
		Cycle	: 1

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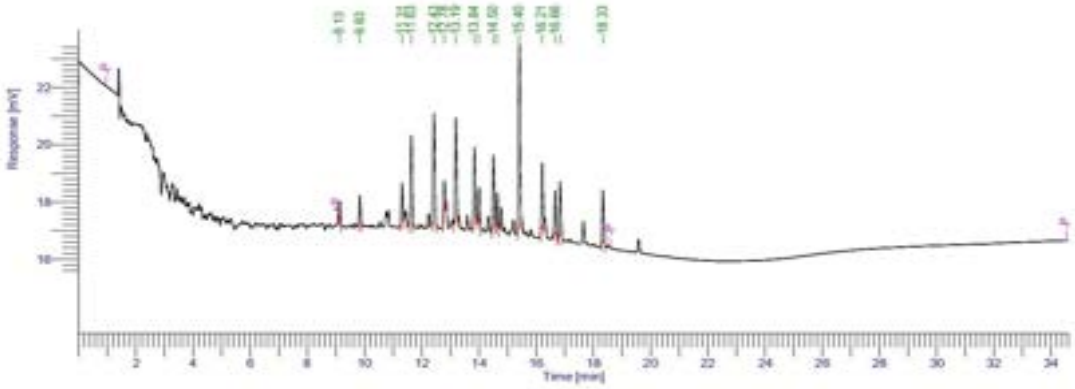

PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	11.800	113915.67	30416.13	100.00	25.1483
			113915.67	30416.13	100.00	25.1483

Batch 1 - PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 15-03-2023 16:27:39
Operator	: manager	Sample Name	: BATCH-1-AD-SLNO.D577157-PCB
Sample Number	: 002	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 15-03-2023 15:46:17	Dilution Factor	: 1.00
		Cycle	: 1

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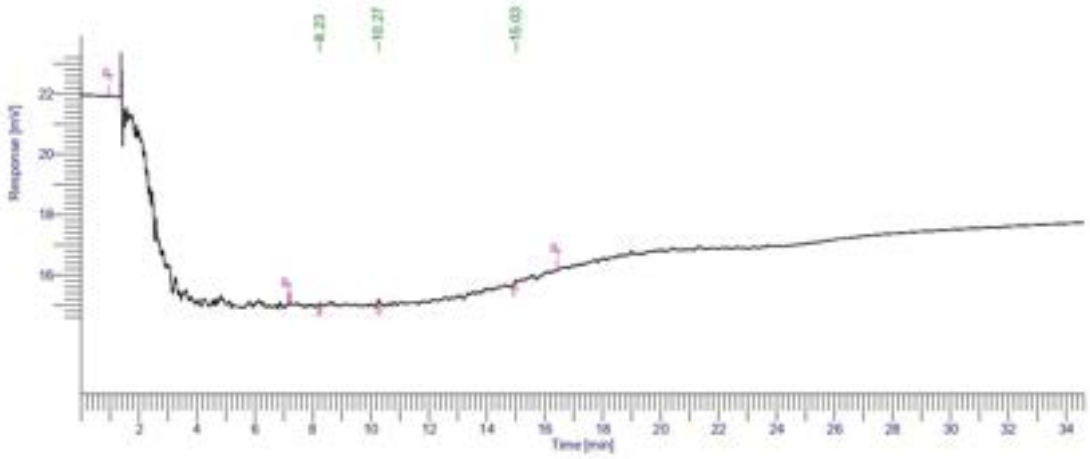

PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	11.800	812.72	202.35	100.00	0.1794
			812.72	202.35	100.00	0.1794

Batch 1 - PCB Chromatogram – After Dechlorination

Page 1 of 1

Software Version	: 6.3.2.0646	Date	: 17-03-2023 15:46:42
Operator	: manager	Sample Name	: BATCH-2-AD-SLNO.D577157-PCB
Sample Number	: 004	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
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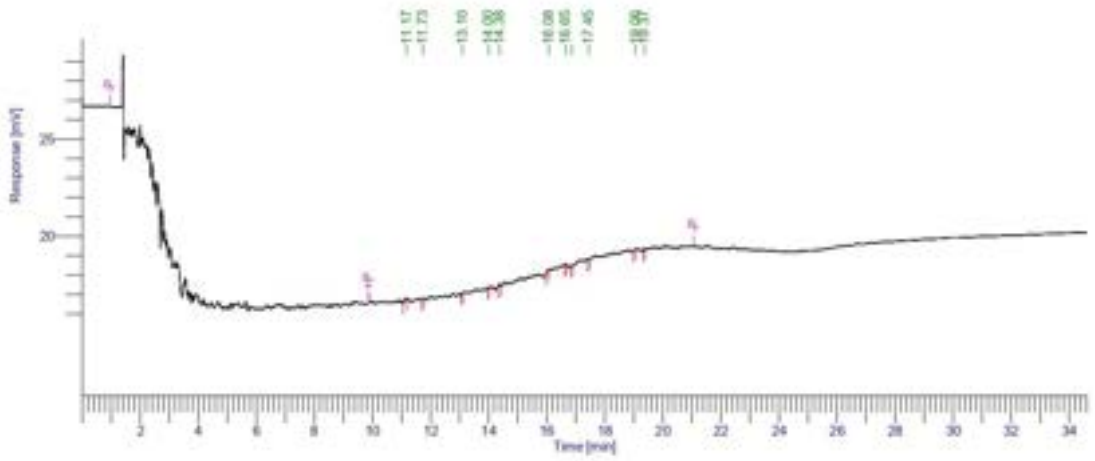

PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	2234.77	519.53	100.00	0.2241
			2234.77	519.53	100.00	0.2241

Batch 2 - PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 21-03-2023 16:49:03
Operator	: tcprocess	Sample Name	: BATCH-3-AD-SLNO-D577157-PCB
Sample Number	: 001	Study	: pcb
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
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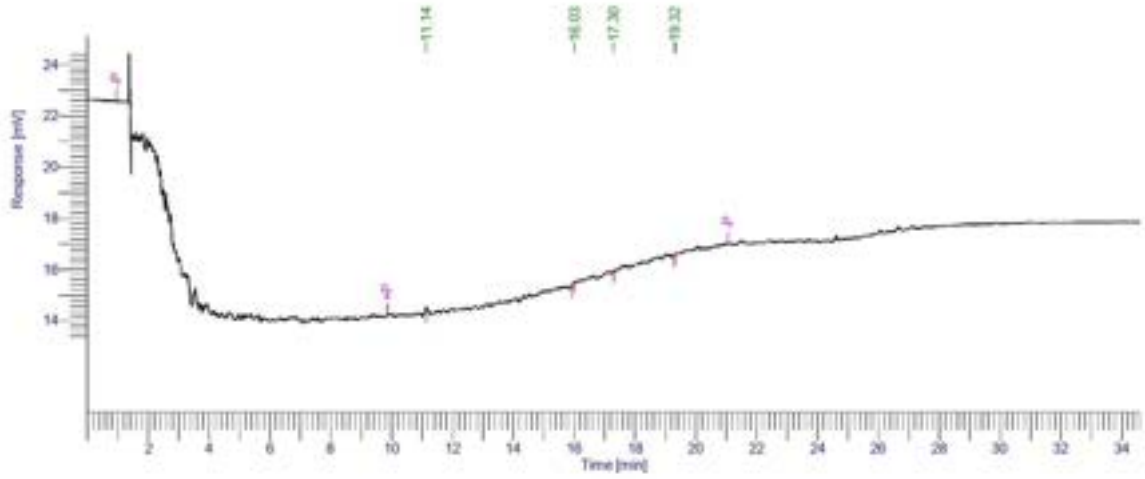

PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	771.33	230.63	100.00	0.0773
			771.33	230.63	100.00	0.0773

Batch 3 - PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 23-03-2023 15:18:17
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Sample Number	: 002	Study	: pcb
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Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
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Sample Volume	: 1.000000 ul		
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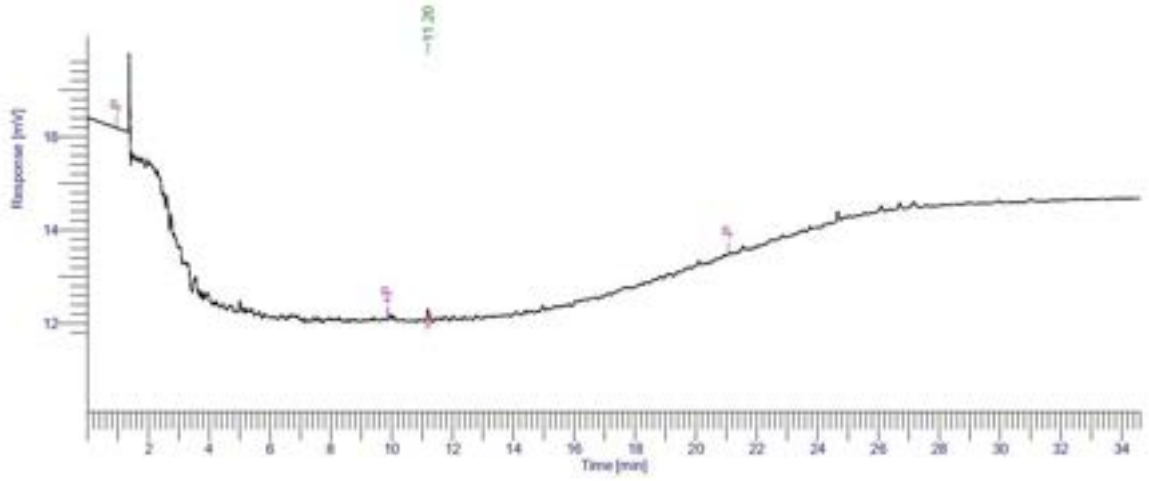


PCB ANALYSIS REPORT

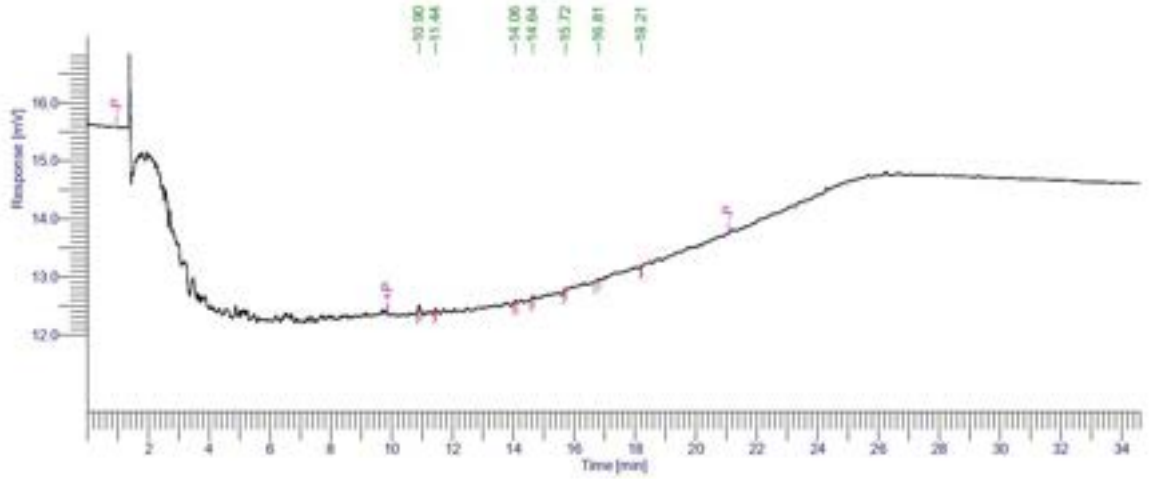
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	525.64	163.51	100.00	0.0527
			525.64	163.51	100.00	0.0527

Batch 4 - PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 28-03-2023 15:30:36
Operator	: manager	Sample Name	: BATCH-5-AD-SLNO-D577157-PCB
Sample Number	: 002	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 1.00
Data Acquisition Time	: 28-03-2023 14:37:45	Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\28-03-2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\28-03-2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\28-03-2023 .seq



PCB ANALYSIS REPORT

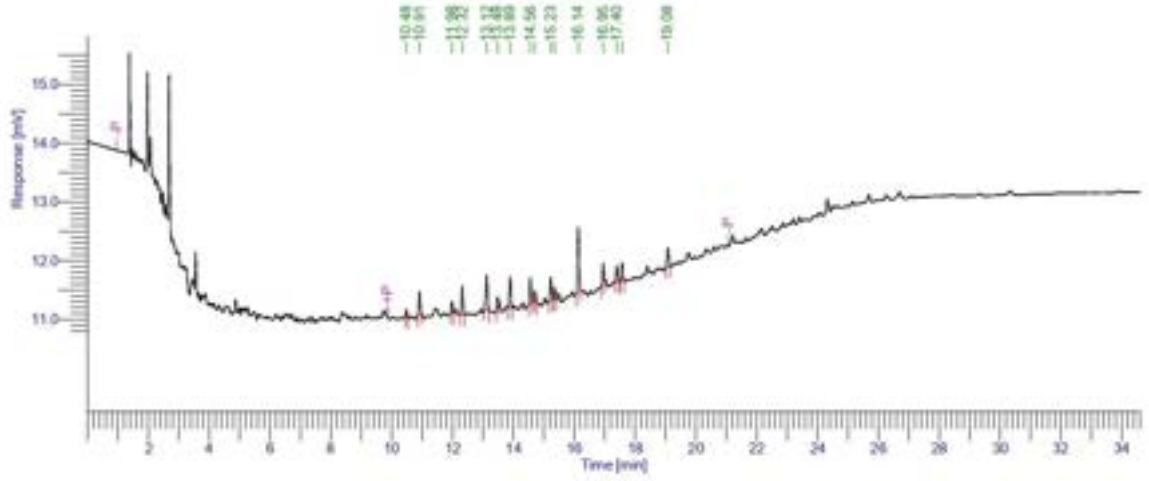
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	739.70	194.06	100.00	0.0742
			739.70	194.06	100.00	0.0742

Batch 5 - PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 30-03-2023 11:03:50
Operator	: manager	Sample Name	: BATCH-6-BD-SLNO-D577157-FLUSHING
Sample Number	: 003		
AutoSampler	: NONE	Study	: PCB ANALYSIS
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 30-03-2023 10:26:39	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\30.03.2023\1003.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\30.03.2023\1003.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\30.03.2023.seq



PCB ANALYSIS REPORT

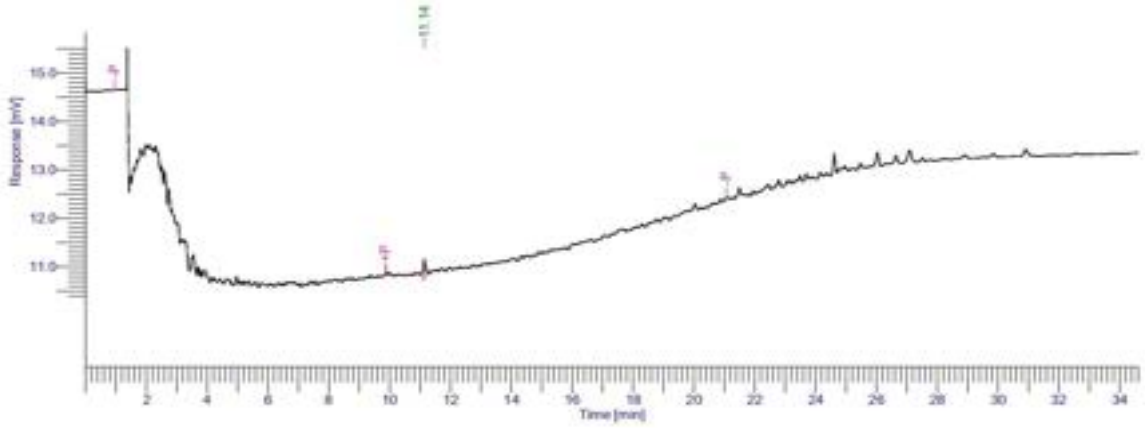
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	22281.36	5996.11	100.00	2.2341
			22281.36	5996.11	100.00	2.2341

Batch 6 - PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 30-03-2023 15:28:37
Operator	: manager	Sample Name	: BATCH-6-AD-SLNO-D577157-PCB
Sample Number	: 005	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 30-03-2023 14:50:16	Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\30.03.2023\1005.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\30.03.2023\1005.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\30.03.2023.seq



PCB ANALYSIS REPORT

CPRI DMD

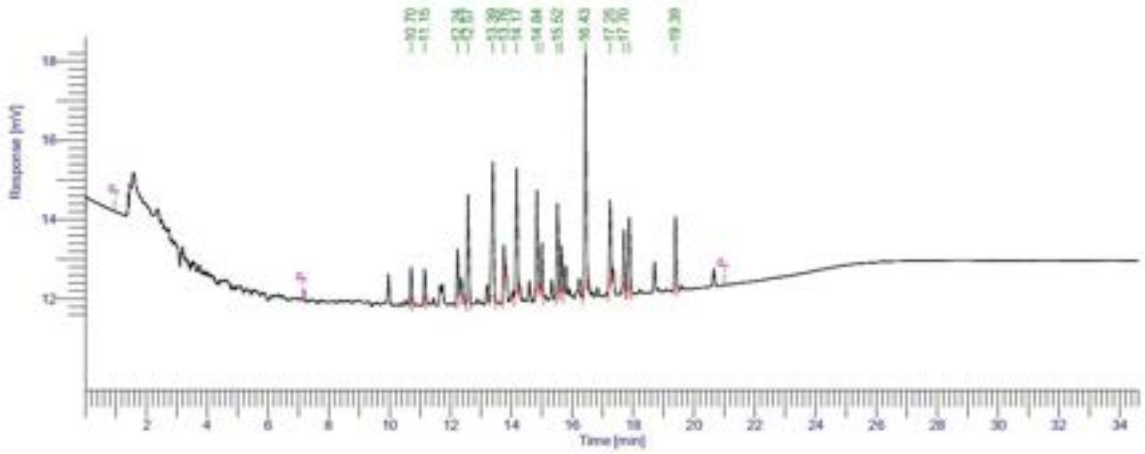
Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	656.31	206.51	100.00	0.0658
			656.31	206.51	100.00	0.0658

Batch 6 - PCB Chromatogram – After Dechlorination

Transformer. Serial No: D577155

Software Version	: 6.3.2.0646	Date	: 01-04-2023 10:24:30
Operator	: manager	Sample Name	: BATCH-7-BD-SLNO-577155-PCB
Sample Number	: 002	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 01-04-2023 09:44:52	Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\01.04.23\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\01.04.23\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1254.14.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1254.14.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\01.04.23.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	11.800	99001.63	25544.87	100.00	21.8559
			99001.63	25544.87	100.00	21.8559

Batch 7 - PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 01-04-2023 14:05:33
Operator	: manager	Sample Name	: BATCH-7-AD-SLNO-577155-PCB
Sample Number	: 005	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 01-04-2023 13:29:18	Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\01.04.23\1005.raw
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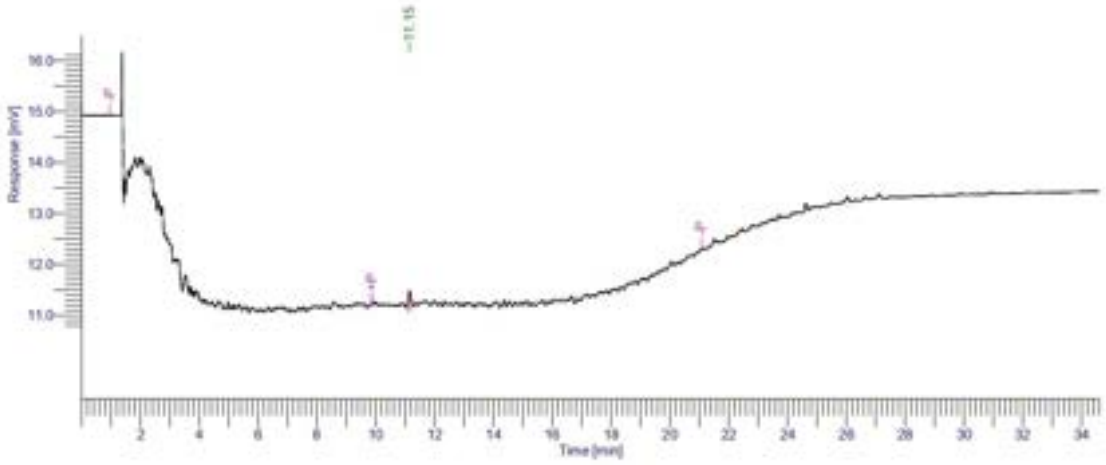
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\01.04.23.seq



PCB ANALYSIS REPORT

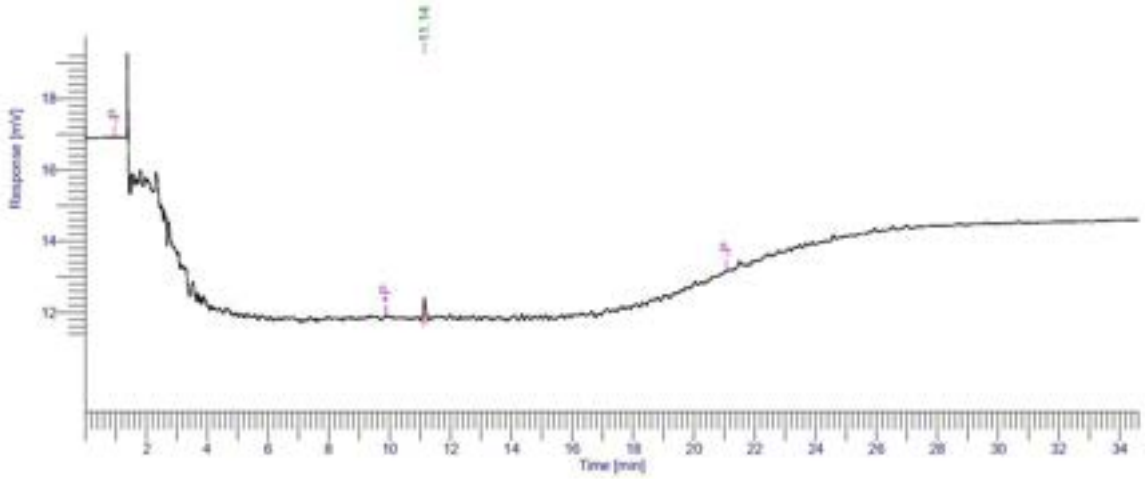
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	602.89	188.33	100.00	0.0604
			602.89	188.33	100.00	0.0604

Batch 7- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 04-04-2023 15:48:26
Operator	: manager	Sample Name	: BATCH-8-AD-SLNO-D577155-PCB
Sample Number	: 003	Study	: pcb
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000	Area Reject	: 0.000000
Data Acquisition Time	: 04-04-2023 14:13:45	Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\04.04.2023\1003.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\04.04.2023\1003.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\04.04.2023 NEW.seq



PCB ANALYSIS REPORT

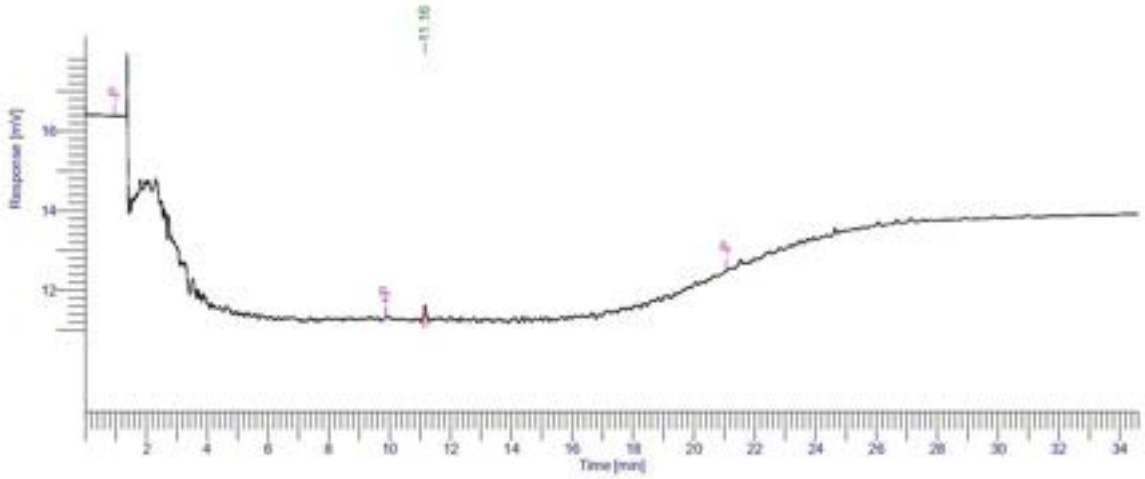
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1503.16	441.13	100.00	0.1507
			1503.16	441.13	100.00	0.1507

Batch 8- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 06-04-2023 14:19:46
Operator	: manager	Sample Name	: BATCH-9-AD-SLNO-D577155-PCB
Sample Number	: 002	Study	: pcb
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 1.00
Data Acquisition Time	: 06-04-2023 13:44:03	Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\06-04-2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\06-04-2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\06.04.2023.seq



PCB ANALYSIS REPORT

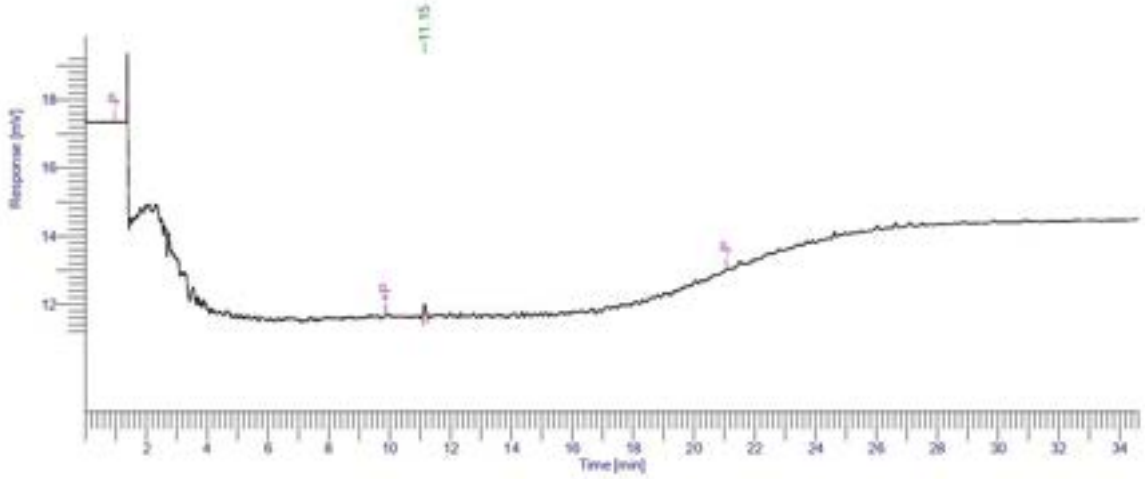
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	919.50	271.10	100.00	0.0922
			919.50	271.10	100.00	0.0922

Batch 9- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 08-04-2023 14:46:56
Operator	: manager	Sample Name	: BATCH-10-AD-SLNO-D577155-PCB
Sample Number	: 003		
AutoSampler	: NONE	Study	: pcb
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 08-04-2023 14:04:30	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\08.04.2023\1003.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\08.04.2023\1003.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\08.04.2023 NEW 1.seq



PCB ANALYSIS REPORT

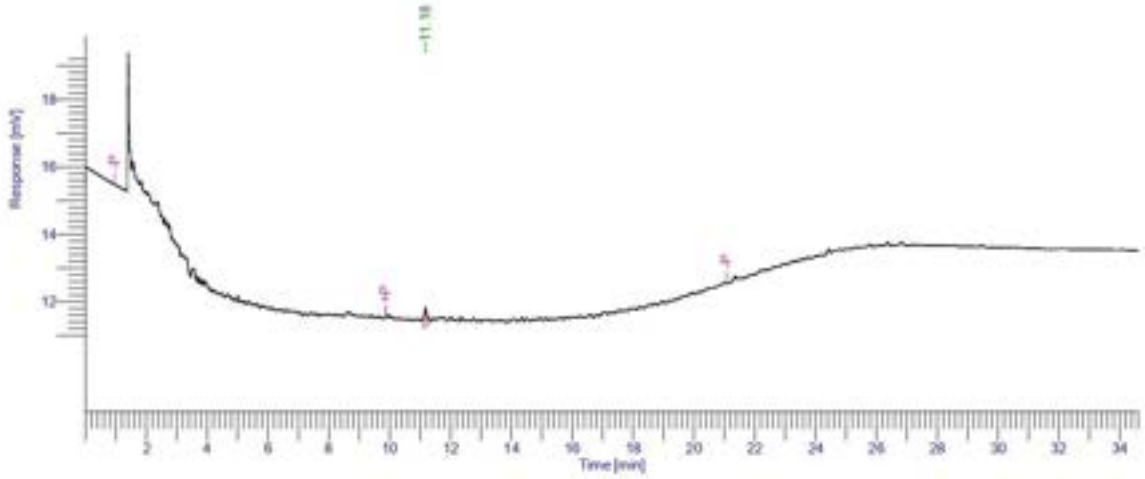
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1009.60	278.06	100.00	0.1012
			1009.60	278.06	100.00	0.1012

Batch 10- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 12-04-2023 12:14:55
Operator	: manager	Sample Name	: BATCH-11-AD-SLNO-D577155-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 12-04-2023 11:24:44	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\12.04.2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\12.04.2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\12.04.2023.seq



PCB ANALYSIS REPORT

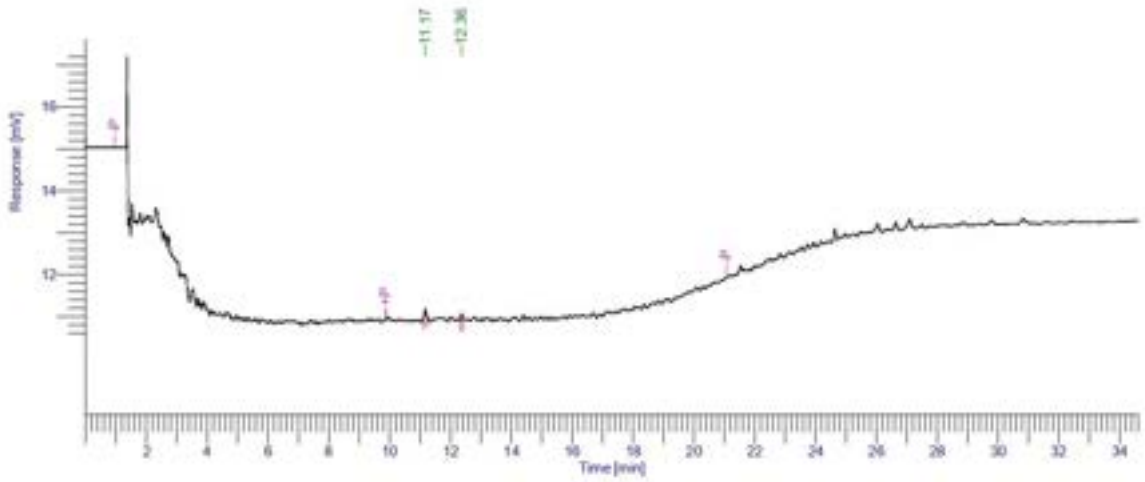
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	905.85	269.44	100.00	0.0908
			905.85	269.44	100.00	0.0908

Batch 11- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 14-04-2023 15:04:45
Operator	: manager	Sample Name	: BATCH-12-AD-SLNO-D577155-FLUSHING OIL
Sample Number	: 004		
AutoSampler	: NONE	Study	: PCB ANALYSIS
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 14-04-2023 14:26:08	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\14.04.23\1004.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\14.04.23\1004.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\14.04.23.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1061.49	323.62	100.00	0.1064
			1061.49	323.62	100.00	0.1064

Batch 12- PCB Chromatogram – After Dechlorination

Transformer. Serial No: D577154

Software Version	: 6.3.2.0646	Date	: 18-04-2023 11:44:24
Operator	: manager	Sample Name	: BATCH-13-BD-SLNO-D577154-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 18-04-2023 10:33:18	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\18.04.23\1002.raw
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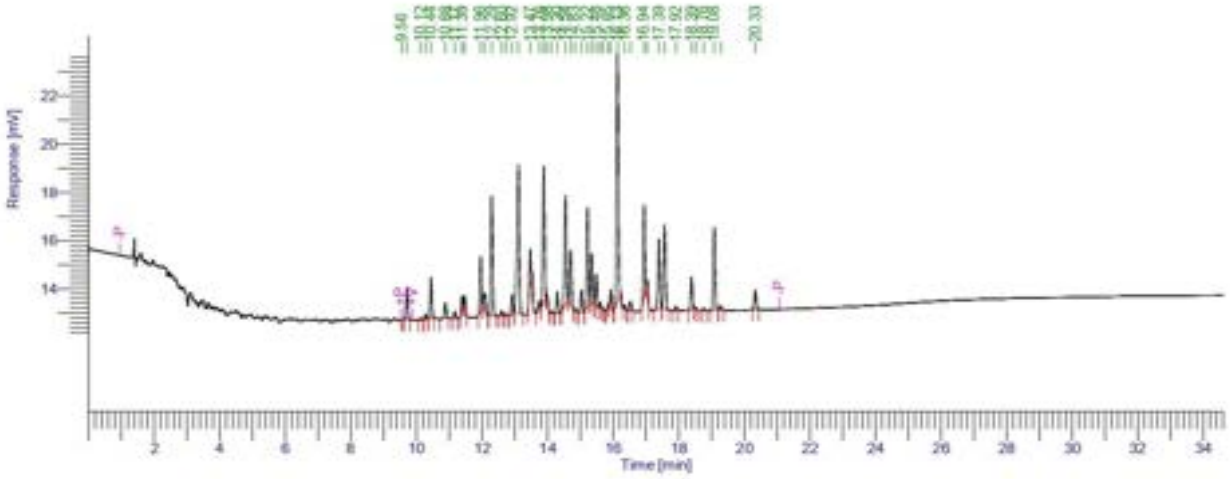
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\18.04.23 N.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	294075.85	72369.52	100.00	29.4858
			294075.85	72369.52	100.00	29.4858

Batch 13- PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 18-04-2023 15:57:47
Operator	: manager	Sample Name	: BATCH-13-AD-SLNO-D577154-PCB
Sample Number	: 008		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 18-04-2023 15:20:42	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

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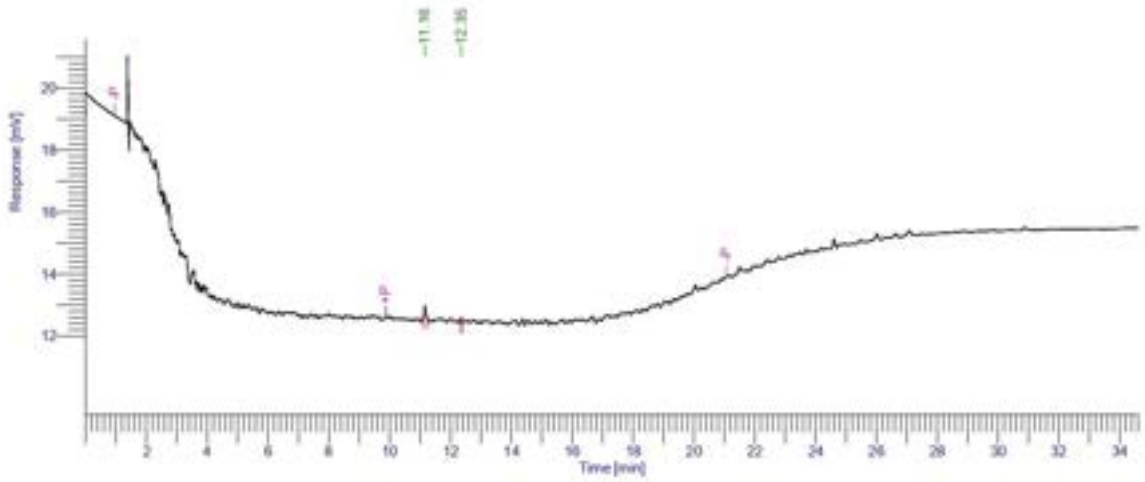
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\18.04.23\1008.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\18.04.23 N.seq



PCB ANALYSIS REPORT

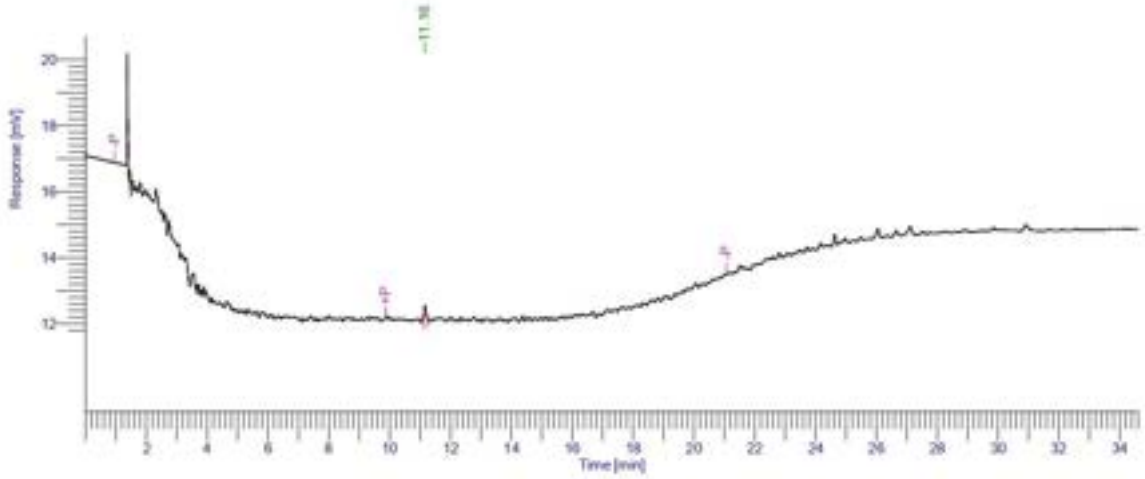
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1605.13	484.75	100.00	0.1609
			1605.13	484.75	100.00	0.1609

Batch 13- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 20-04-2023 15:09:39
Operator	: manager	Sample Name	: BATCH-14-AD-SLNO-D577154-PCB
Sample Number	: 005		
AutoSampler	: NONE	Study	: PCB ANALYSIS
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 20-04-2023 14:31:30	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\20.04.23\1005.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\20.04.23\1005.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\20.04.23.seq



PCB ANALYSIS REPORT

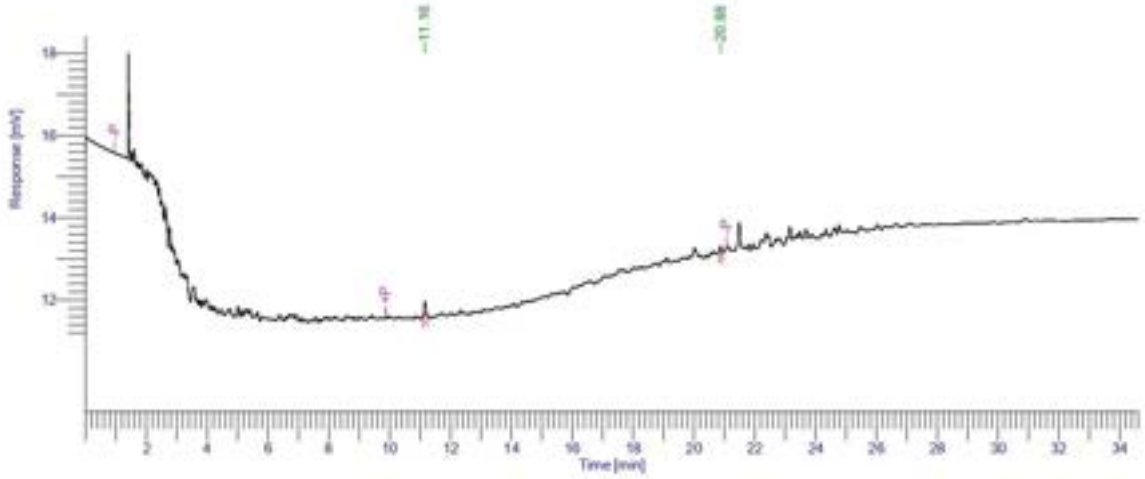
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1218.63	342.40	100.00	0.1222
			1218.63	342.40	100.00	0.1222

Batch 14- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 22-04-2023 13:05:29
Operator	: manager	Sample Name	: BATCH-15-AD-SLNO-D577154-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB ANALYSIS
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 22-04-2023 12:27:07	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\22.04.23\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\22.04.23\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\22.04.23.seq



PCB ANALYSIS REPORT

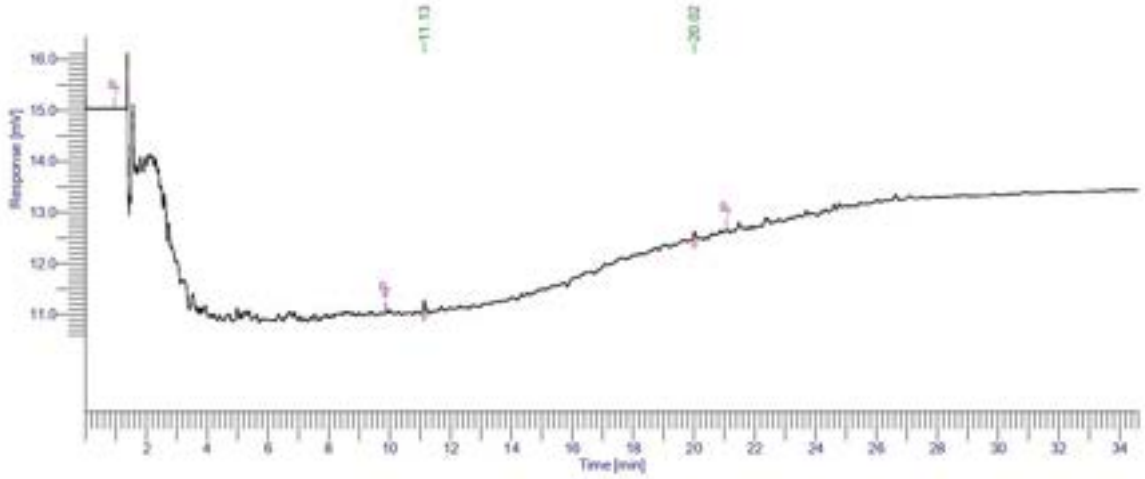
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1594.55	466.65	100.00	0.1599
			1594.55	466.65	100.00	0.1599

Batch 15- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 25-04-2023 13:48:00
Operator	: manager	Sample Name	: BATCH-16-AD-SLNO-D577154-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 25-04-2023 13:07:49	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\25.04.23\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\25.04.23\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\25.04.23.seq



PCB ANALYSIS REPORT

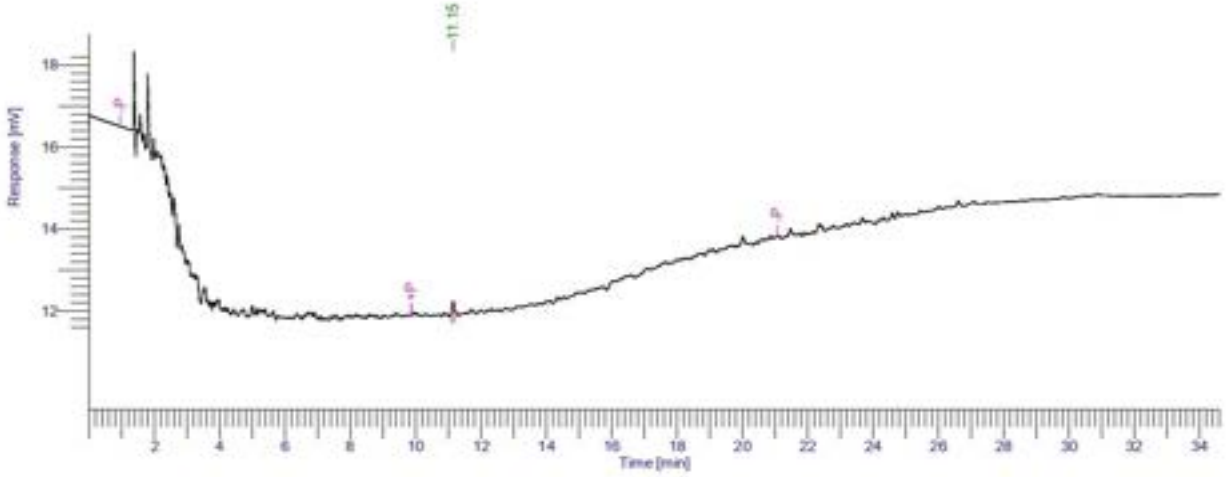
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	886.47	272.09	100.00	0.0889
			886.47	272.09	100.00	0.0889

Batch 16- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 27-04-2023 14:58:03
Operator	: manager	Sample Name	: BATCH-17-AD-SLNO-D577154-PCB
Sample Number	: 001		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: 680S16090202	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 27-04-2023 14:22:05	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\27.04.23\1001.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\27.04.23\1001.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\27.04.2023.seq



PCB ANALYSIS REPORT

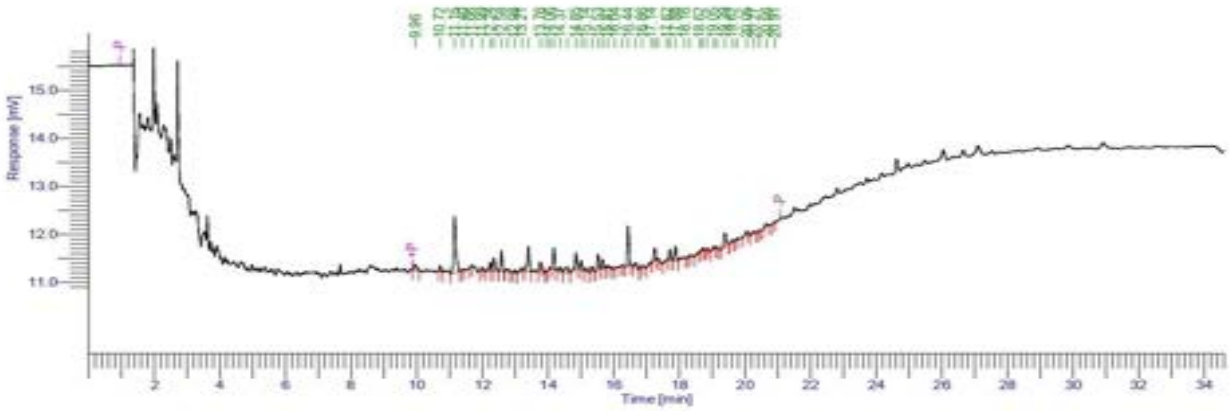
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	830.78	255.72	100.00	0.0833
			830.78	255.72	100.00	0.0833

Batch 17- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 29-04-2023 12:28:03
Operator	: manager	Sample Name	: BATCH-18-BD-SLNO-D577154-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 29-04-2023 11:48:01	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\29.04.23\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\29.04.23\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\29.04.23.seq



PCB ANALYSIS REPORT

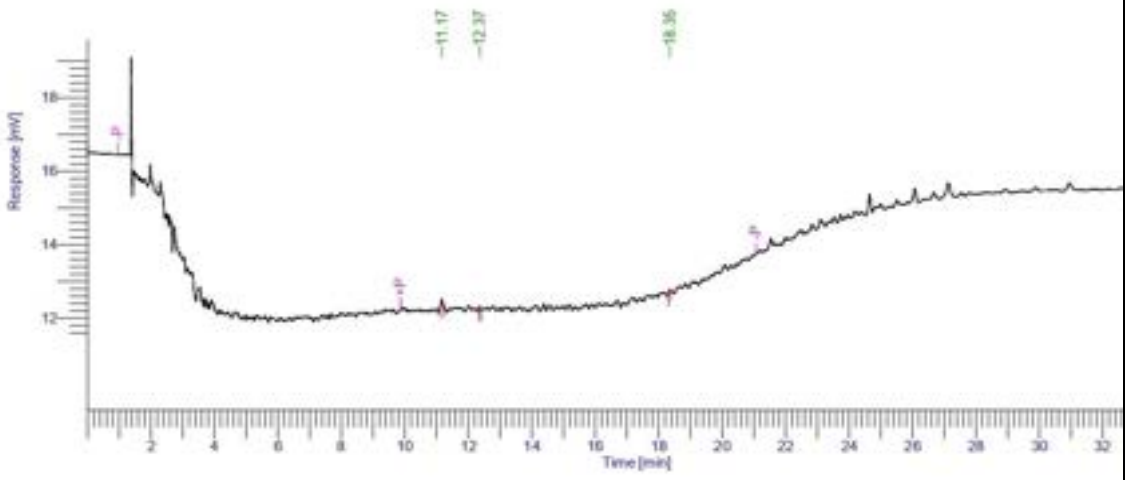
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	36391.09	8038.20	100.00	3.6488
			36391.09	8038.20	100.00	3.6488

Batch 18- PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 29-04-2023 15:52:00
Operator	: manager	Sample Name	: BATCH-18-AD-SLNO-D5771
Sample Number	: 005		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 29-04-2023 15:08:48	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\29.04.23\1005.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\29.04.23\1005.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\29.04.23.seq



PCB ANALYSIS REPORT

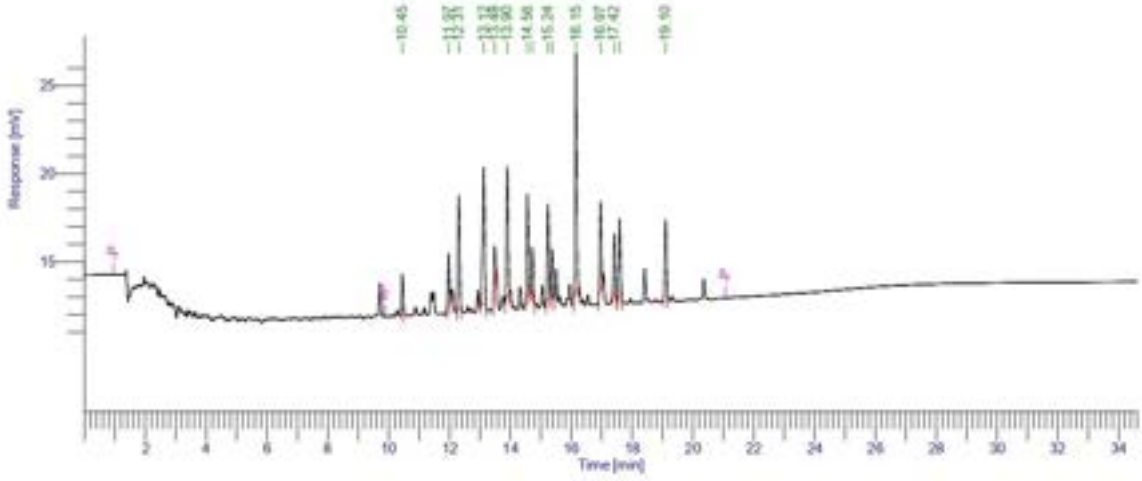
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	960.42	301.83	100.00	0.0963
			960.42	301.83	100.00	0.0963

Batch 18- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 02-05-2023 12:50:07
Operator	: manager	Sample Name	: BATCH-19-BD-SLNO-D577156-PCB
Sample Number	: 003		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: 680S16090202	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 02-05-2023 11:53:11	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\02-05-23\1003.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\02-05-23\1003.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\02.05.23.seq



PCB ANALYSIS REPORT

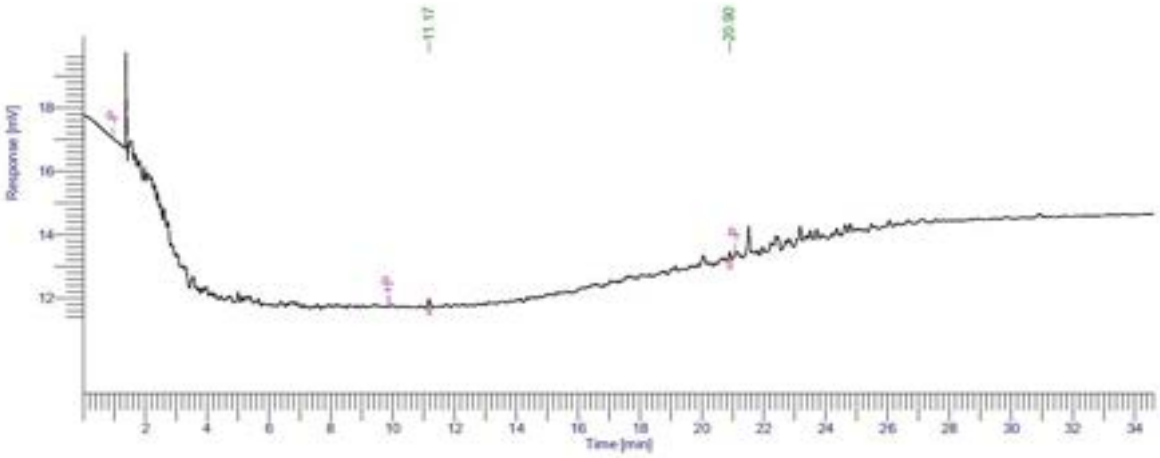
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	300214.36	75711.71	100.00	30.1012
			300214.36	75711.71	100.00	30.1012

Batch 19- PCB Chromatogram –Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 02-05-2023 14:13:01
Operator	: manager	Sample Name	: BATCH-19-AD-SLNO-D577156-PCB
Sample Number	: 005		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: 680S16090202	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 02-05-2023 13:30:02	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\02-05-23\1005.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\02-05-23\1005.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\02.05.23.seq



PCB ANALYSIS REPORT

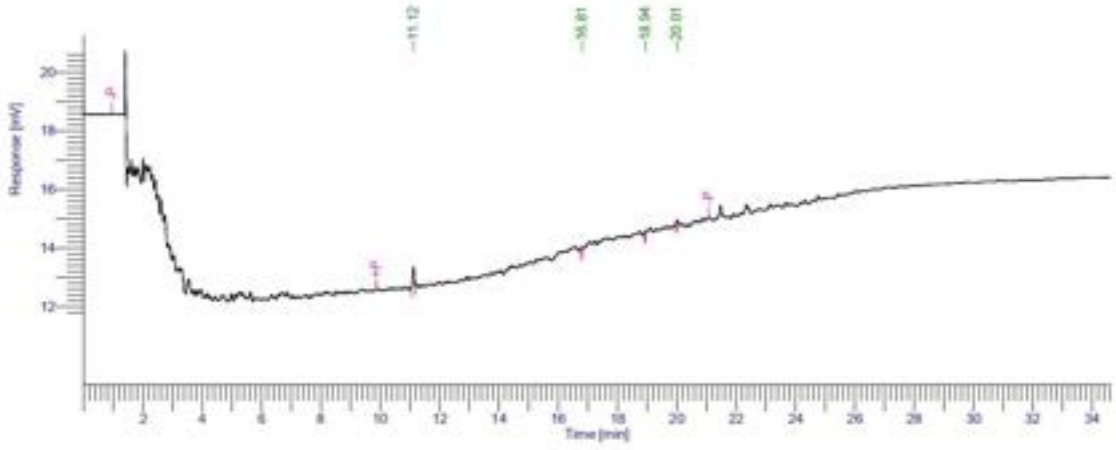
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1116.85	361.88	100.00	0.1120
			1116.85	361.88	100.00	0.1120

Batch 19- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 04-05-2023 14:35:35
Operator	: manager	Sample Name	: BATCH-20-AD-SLNO-D577156-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB ANALYSIS
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 04-05-2023 13:20:17	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\04.05.23\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\04.05.23\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\04.05.23.seq



PCB ANALYSIS REPORT

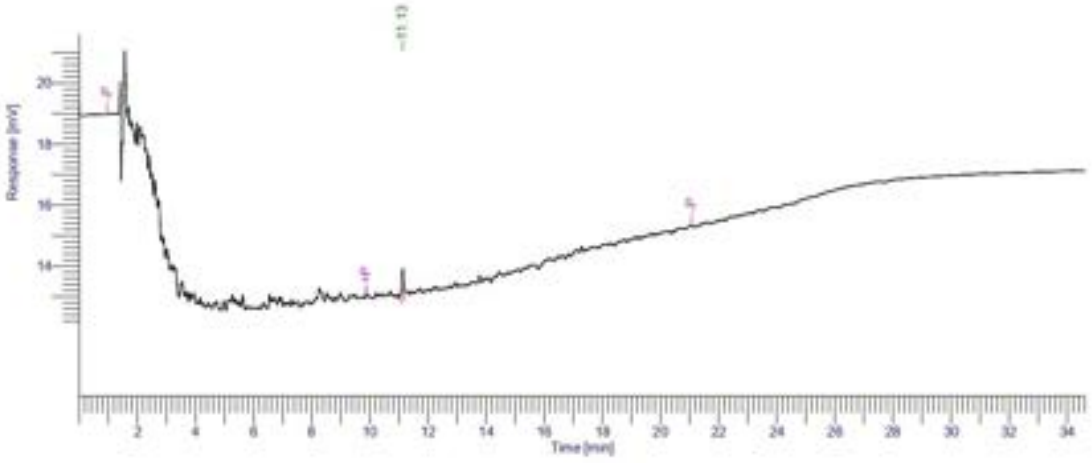
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	2476.90	684.13	100.00	0.2483
			2476.90	684.13	100.00	0.2483

Batch 20- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 06-05-2023 12:48:25
Operator	: manager	Sample Name	: BATCH-21-AD-SLNO-577156-PCB
Sample Number	: 002	Study	: PCB ANALYSIS
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 1.00
Data Acquisition Time	: 06-05-2023 11:43:46	Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\06.05.23\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\06.05.23\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\06.05.23.seq



PCB ANALYSIS REPORT

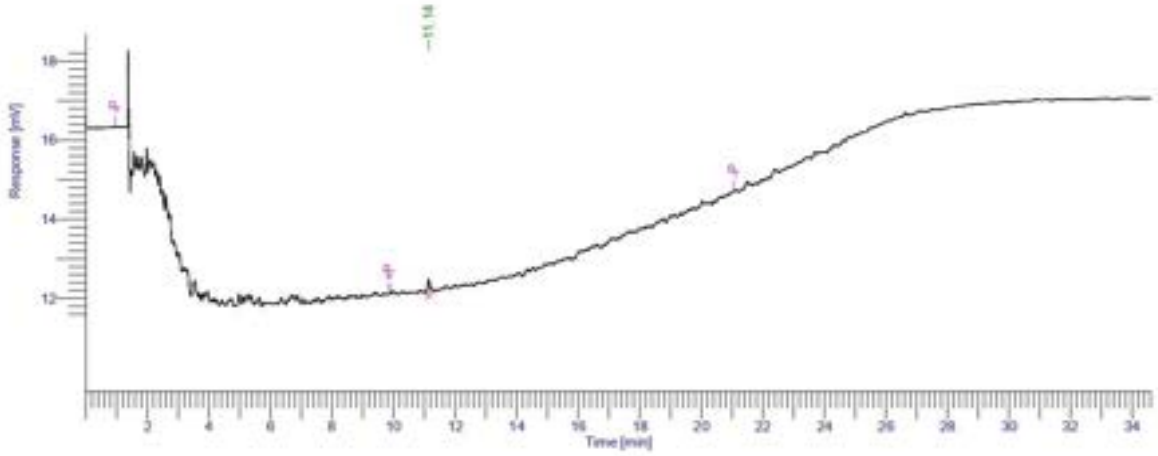
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	2635.43	729.34	100.00	0.2642
			2635.43	729.34	100.00	0.2642

Batch 21- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 09-05-2023 11:49:33
Operator	: manager	Sample Name	: BATCH-22-AD-SLNO-D577156-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 09-05-2023 11:08:45	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\09-5-2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\09-5-2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\09-05-2023.seq



PCB ANALYSIS REPORT

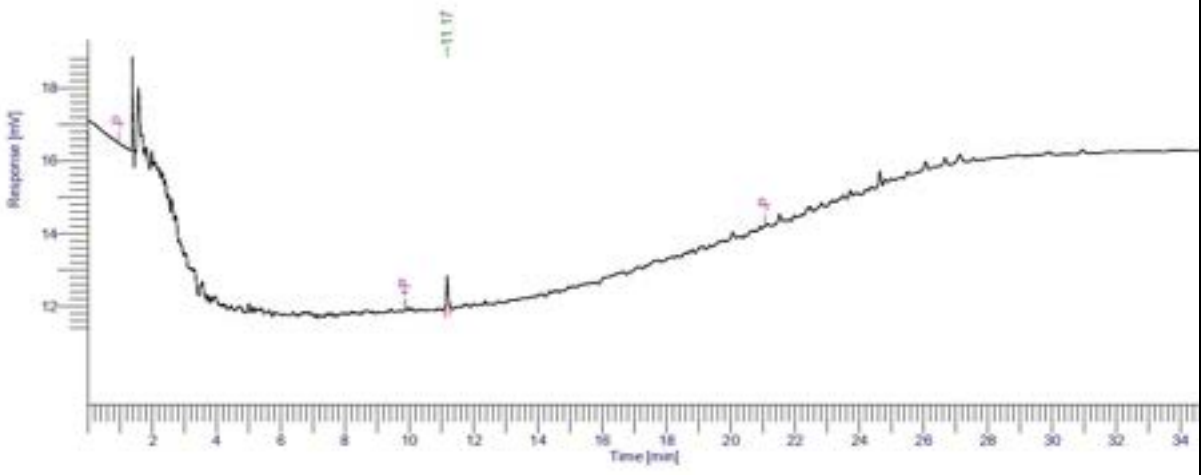
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	727.00	224.52	100.00	0.0729
			727.00	224.52	100.00	0.0729

Batch 22- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 11-05-2023 15:06:45
Operator	: manager	Sample Name	: BATCH-23-AD-SLNO-D577156-P
Sample Number	: 003		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 11-05-2023 13:38:17	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\11-05-2023\1003.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\11-05-2023\1003.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\11-05-2023.seq



PCB ANALYSIS REPORT

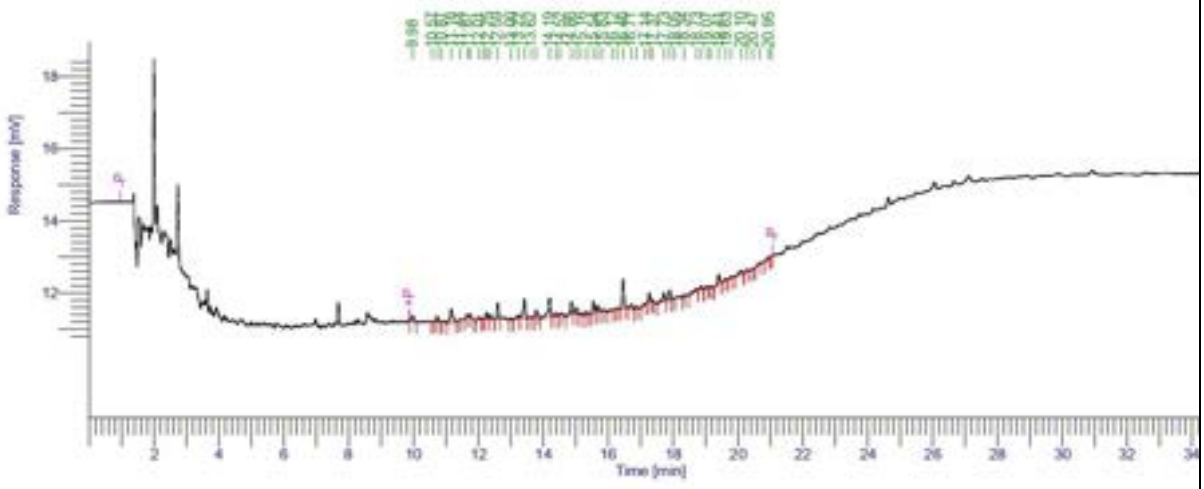
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	2959.96	813.20	100.00	0.2968
			2959.96	813.20	100.00	0.2968

Batch 23- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 13-05-2023 11:34:33
Operator	: manager	Sample Name	: BATCH-24-BD-SLNO-D577156-F
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 13-05-2023 10:57:51	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\13-05-2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\13-05-2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\13-05-2023.seq



PCB ANALYSIS REPORT

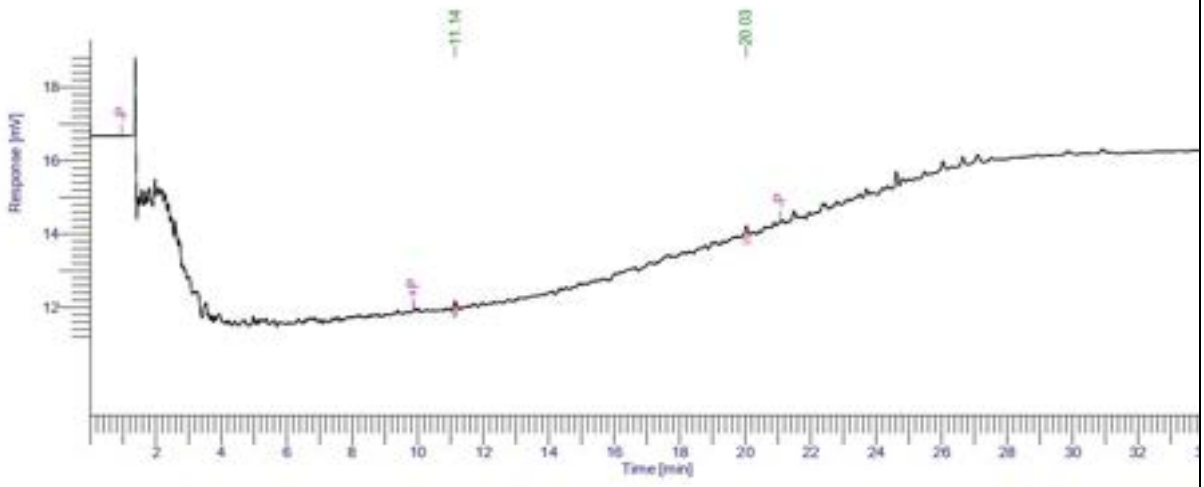
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	35111.45	7499.12	100.00	3.5205
			35111.45	7499.12	100.00	3.5205

Batch 24- PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 13-05-2023 13:59:06
Operator	: manager	Sample Name	: BATCH-24-AD-SLNO-D577156-
Sample Number	: 004		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 13-05-2023 13:22:26	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\13-05-2023\1004.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\13-05-2023\1004.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\13-05-2023.seq



PCB ANALYSIS REPORT

CPRI DMD

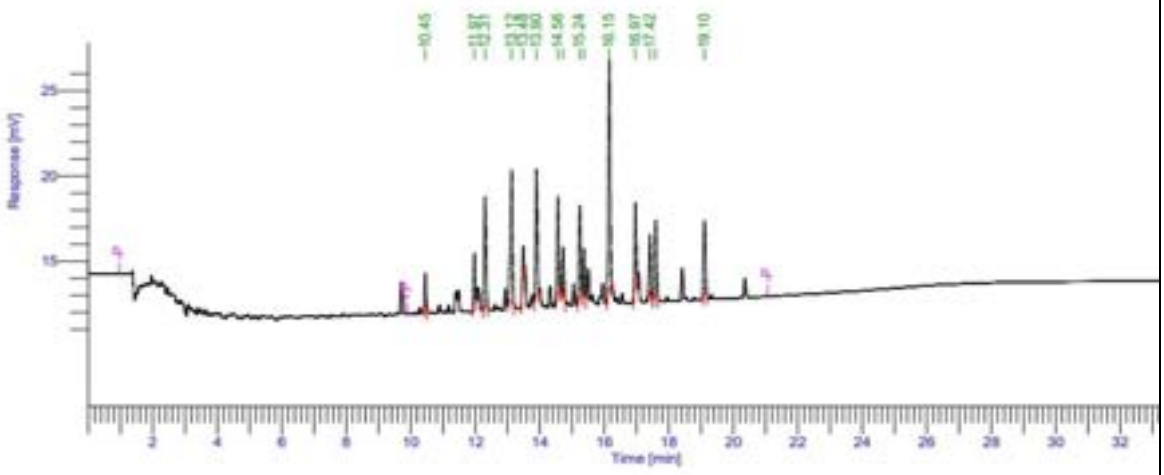
Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1302.86	338.43	100.00	0.1306
			1302.86	338.43	100.00	0.1306

Batch 24- PCB Chromatogram – After Dechlorination

Transformer. Serial No: D577153

Software Version	: 6.3.2.0646	Date	: 16-05-2023 14:31:23
Operator	: manager	Sample Name	: BATCH-25-BD-SLNO-D57715
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 16-05-2023 12:46:37	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\16-05-2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\16-05-2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\16-05-2023.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	265940.96	68758.57	100.00	26.6648
			265940.96	68758.57	100.00	26.6648

Batch 25- PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 16-05-2023 15:46:54
Operator	: manager	Sample Name	: BATCH-25-AD-SLNO-D577153-PCB
Sample Number	: 004		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 16-05-2023 15:06:00	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\16-05-2023\1004.raw
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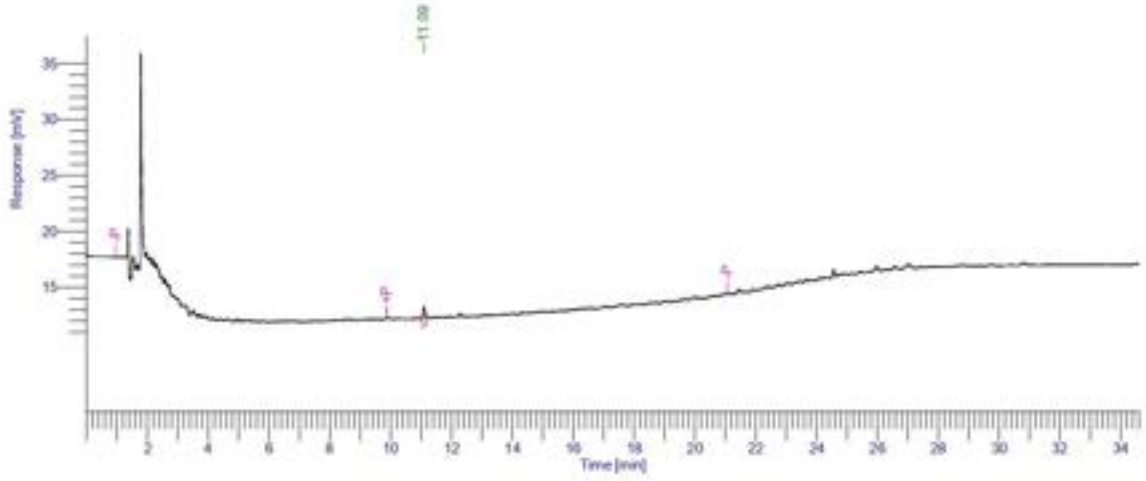
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\16-05-2023.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	2912.73	836.07	100.00	0.2920
			2912.73	836.07	100.00	0.2920

Batch 25- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 18-05-2023 15:06:53
Operator	: manager	Sample Name	: BATCH-26-AD-SLNO-D577153-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: 680S16090202	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 18-05-2023 14:30:51	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\18-05-2023\1002.raw
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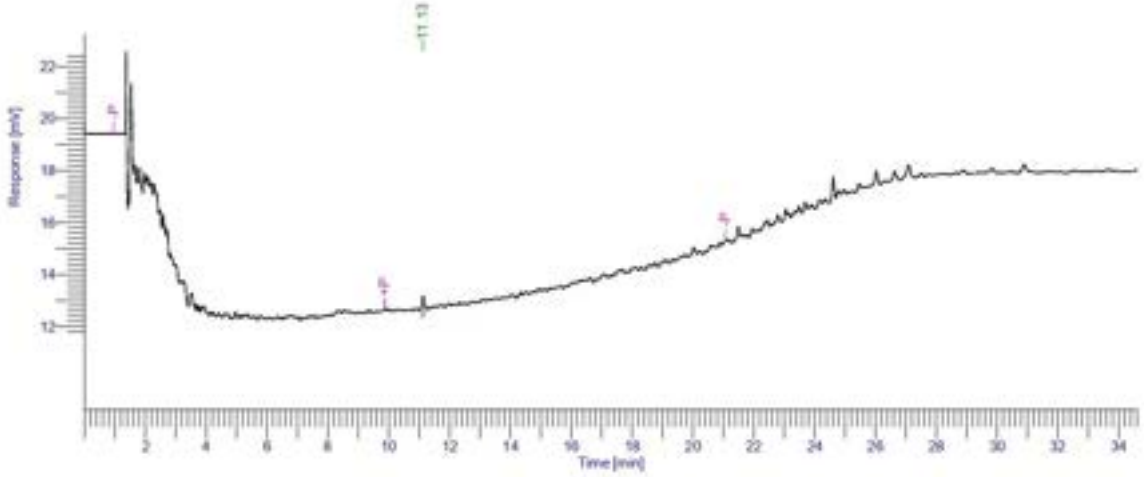
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\18-05-2023.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1246.92	371.79	100.00	0.1250
			1246.92	371.79	100.00	0.1250

Batch 26- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 20-05-2023 15:19:40
Operator	: manager	Sample Name	: BATCH-27-AD-SLNO-D577153-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 20-05-2023 14:41:47	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\20-05-2023\1002.raw
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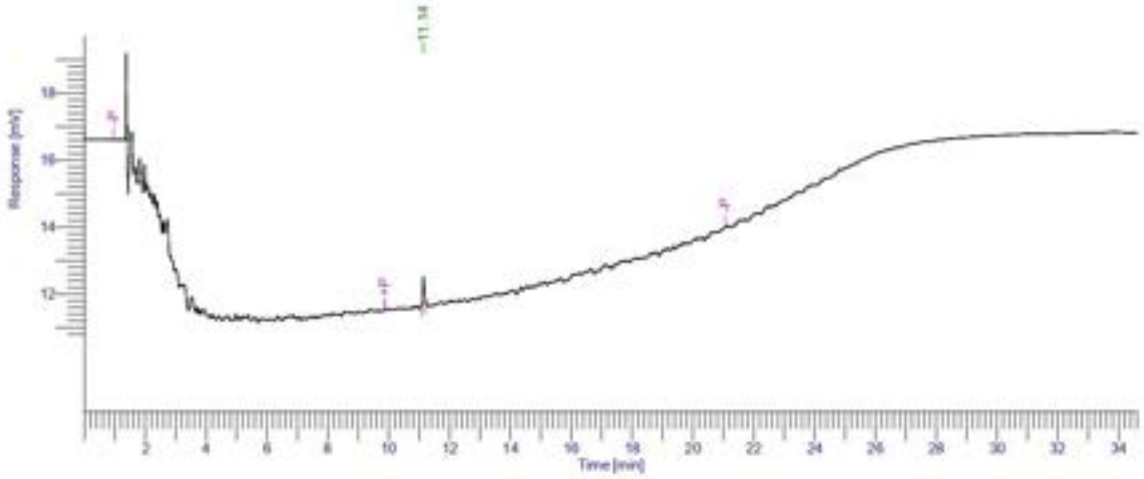
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\20-05-23.seq



PCB ANALYSIS REPORT

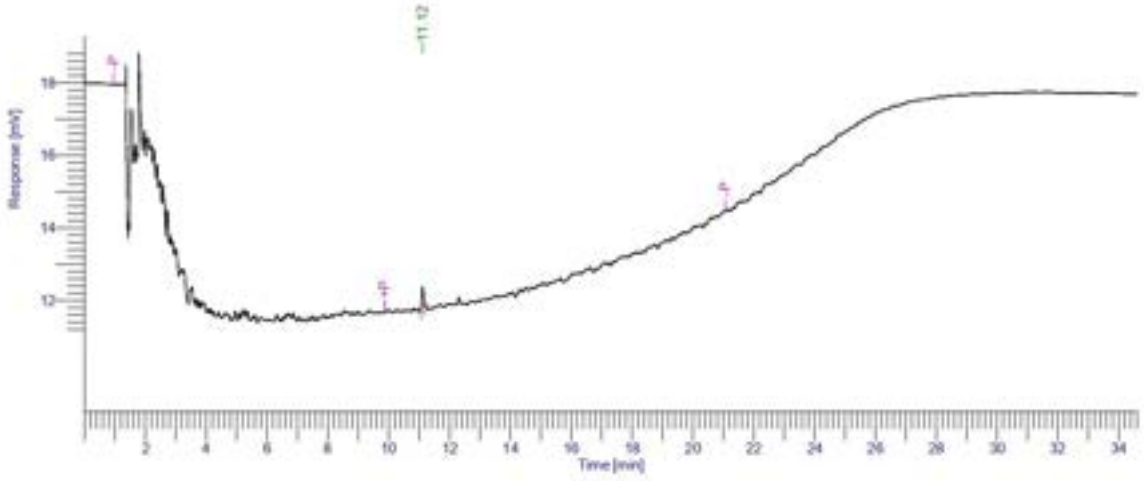
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	2929.36	791.64	100.00	0.2937
			2929.36	791.64	100.00	0.2937

Batch 27- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 23-05-2023 13:21:25
Operator	: manager	Sample Name	: BATCH-28-AD-SLNO-D577153-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: pcb
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 23-05-2023 12:40:39	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\23.05.2023\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\23.05.2023\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\23.05.2023.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1703.55	501.00	100.00	0.1708
			1703.55	501.00	100.00	0.1708

Batch 28- PCB Chromatogram – After Dechlorination

Software Version	: 6.3.2.0646	Date	: 25-05-2023 14:05:18
Operator	: manager	Sample Name	: BATCH-29-AD-SN-D577153-PCB
Sample Number	: 002	Study	: PCB
AutoSampler	: NONE	Rack/Vial	: 0/0
Instrument Name	: Clarus 680	Channel	: A
Instrument Serial #	: None	A/D mV Range	: 1000
Delay Time	: 0.00 min	End Time	: 34.60 min
Sampling Rate	: 12.5000 pts/s		
Sample Volume	: 1.000000 ul	Area Reject	: 0.000000
Sample Amount	: 1.0000	Dilution Factor	: 1.00
Data Acquisition Time	: 25-05-2023 13:03:18	Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\25.05.2023\1002.raw
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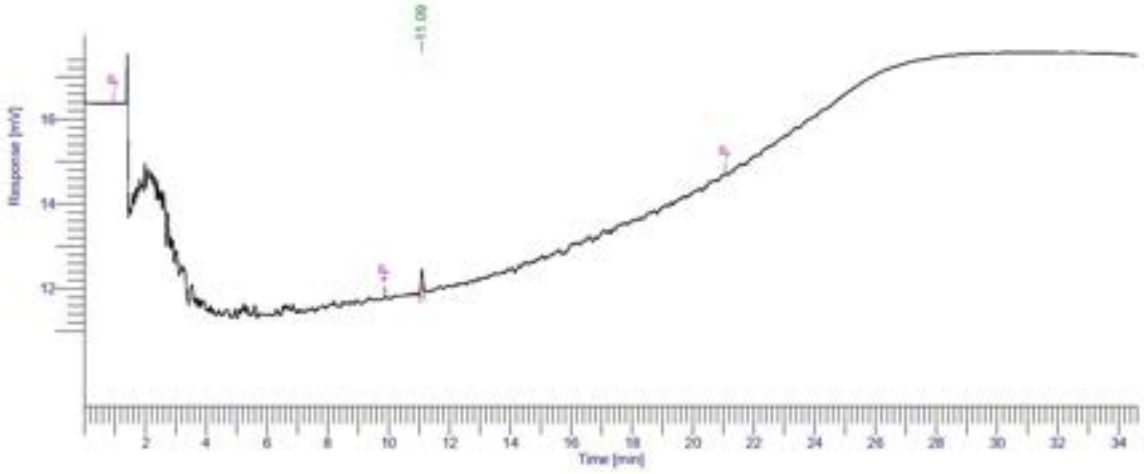
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\25.05.2023.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	1761.99	490.91	100.00	0.1767
			1761.99	490.91	100.00	0.1767

Batch 29- PCB Chromatogram – After Dechlorination

Transformer. Serial No: D577153

Software Version	: 6.3.2.0646	Date	: 27-05-2023 11:56:45
Operator	: manager	Sample Name	: BATCH-30-BD-SLNO-D577153-PCB
Sample Number	: 003		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 27-05-2023 11:05:20	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\27.05.23 PCB\1003.raw
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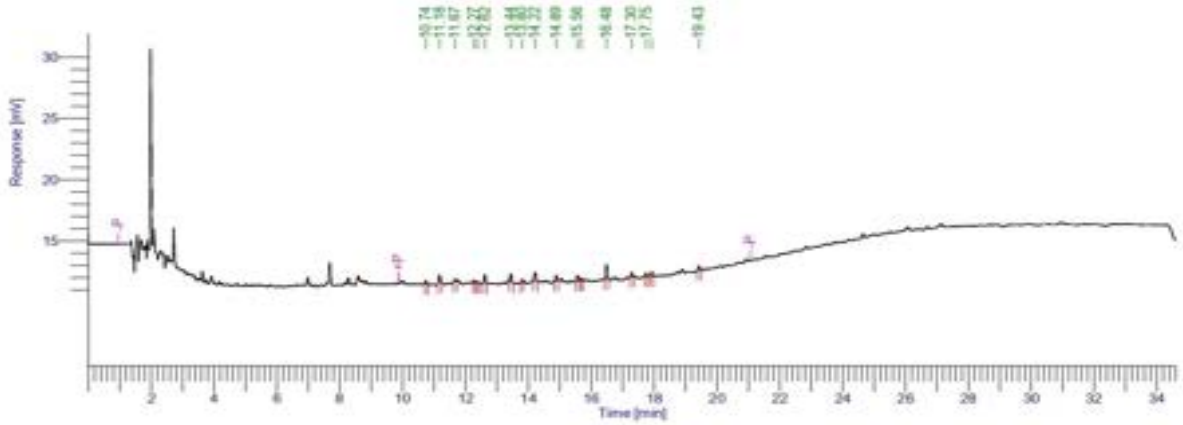
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\27.05.23.seq



PCB ANALYSIS REPORT

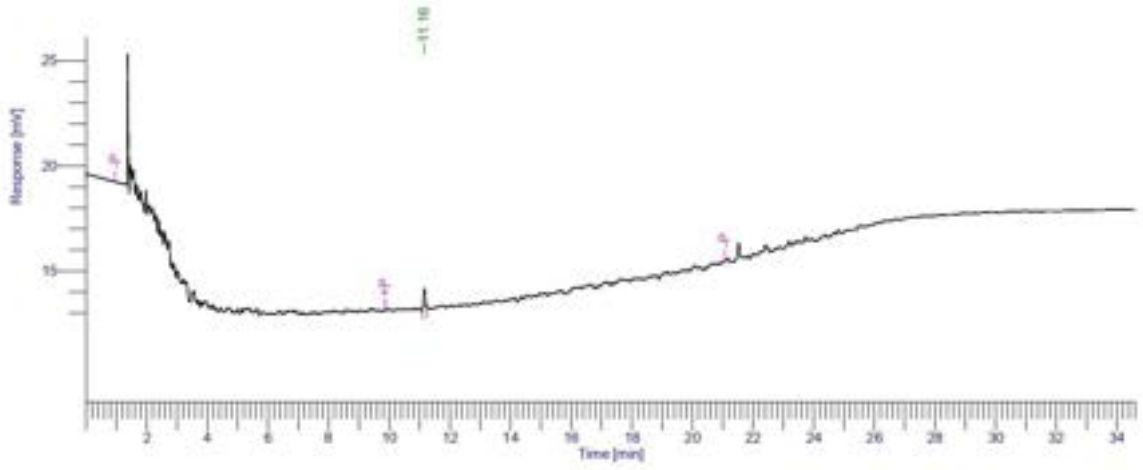
CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	28389.15	7721.58	100.00	2.8465
			28389.15	7721.58	100.00	2.8465

Batch 30- PCB Chromatogram – Before Dechlorination

Software Version	: 6.3.2.0646	Date	: 29-05-2023 12:32:17
Operator	: manager	Sample Name	: BATCH-30-AD-SLN0-D577153-PCB
Sample Number	: 002		
AutoSampler	: NONE	Study	: PCB
Instrument Name	: Clarus 680	Rack/Vial	: 0/0
Instrument Serial #	: None	Channel	: A
Delay Time	: 0.00 min	A/D mV Range	: 1000
Sampling Rate	: 12.5000 pts/s	End Time	: 34.60 min
Sample Volume	: 1.000000 ul		
Sample Amount	: 1.0000		
Data Acquisition Time	: 27-05-2023 15:37:31	Area Reject	: 0.000000
		Dilution Factor	: 1.00
		Cycle	: 1

Raw Data File : C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\27.05.2023R\1002.raw
Inst Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1 from C:\GC PCB Analysis\Data\PCB KSEB NALLALAM-2023\27.05.2023R\1002.raw
Proc Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Calib Method : C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.mth from
Report Format File: C:\GC PCB Analysis\Method\METHODS 2023\1260.16.03.2023-1.rpt
Sequence File : C:\GC PCB Analysis\Sequence\27.05.2023R.seq



PCB ANALYSIS REPORT

CPRI DMD

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB 1260	15.465	3224.54	893.97	100.00	0.3233
			3224.54	893.97	100.00	0.3233

Batch 30- PCB Chromatogram – After Dechlorination

Annexure 2 (Minutes of Meeting)

MOM between CPRI representative and KSEBL on 30.06.2022 at 220kV Substation Conference hall , Nallalam, Kozhikode, Kerala.

This minutes of meeting is prepared between CPRI representative and KSEBL on 30.06.2022, at 220kV Substation Conference hall , Nallalam, Kozhikode, Kerala in connection with Dechlorination of PCB content oil in dismantled, 20MVA, 220/110kV GE make Single phase transformers- 5 Nos-at 220kV Substation Nallalam, Kozhikode.

Dr.Thomas.P, Additional Director/ HOD, Dielectric Materials Division, Central Power Research Institute, Bangalore took a presentation on "Condition Monitoring of transformer by Oil Analysis and Safe Handling of PCB Contaminated Oils in Transformers."

After that, the meeting started at12:45pm on 30.06.2022 to discuss about the Dechlorination process and the general requirements for dechlorination.

Discussion was made on the site requirements put forwarded by CPRI for the dechlorination process of PCB contaminated transformer oil. All the 16 points put forwarded by CPRI was discussed and KSEBL has agreed to provide all the requirements.

The site for placing the mobile plant for the dechlorination purpose was finalized which is to the west side of the conference hall. KSEBL agreed to take dechlorination steps as soon as possible on getting necessary approval from higher offices.

Meeting came to conclusion at 13:20 hours.

CPRI Representative:

1) Dr. Thomas.P, Additional Director/HOD
Dielectric Materials Division
Central Power Research Institute
Bangalore

2) Mr. Tom
Project Engineer
Central Power Research Institute
Bangalore

KSEBL representative :

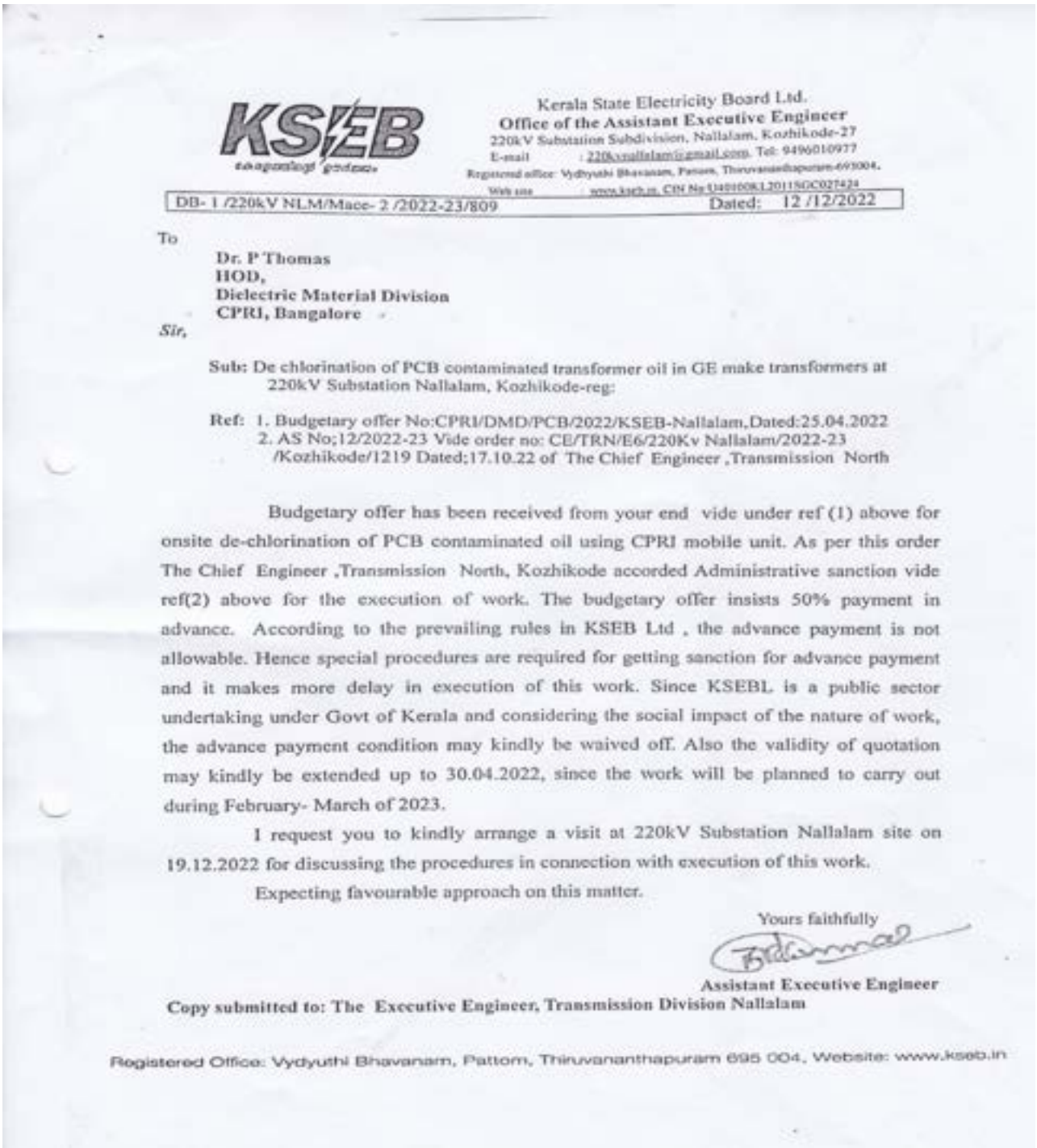
1) Mr. Vijaykumar.A
Executive Engineer
Transmission Division KSEBL ,
Kozhikode

2) Mr. Pradeep Kumar
Asst. Exe. Engineer
220kV Substation Subdivision,
Nallalam

3) Mr. Ramu. V.S
Assistant Engineer,
Maintenance Section- 1
220kV Substation, Nallalam

Minutes of Meeting Held Between CPRI and KSEB on 30.06.2022

Annexure 3 (CPRI had received an email request from KSEB)



KSEB

Kerala State Electricity Board Ltd.
Office of the Assistant Executive Engineer
220kV Substation Subdivision, Nallalam, Kozhikode-27
E-mail : 220kvnallalam@gmail.com, Tel: 9496010977
Registered office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram-695004.
Web site : www.kseb.in, CIN No:U40100KL2011SGC027424

DB- 1 /220kV NLM/Mace- 2 /2022-23/809 Dated: 12 /12/2022

To

Dr. P Thomas
HOD,
Dielectric Material Division
CPRI, Bangalore

Sir,

Sub: De chlorination of PCB contaminated transformer oil in GE make transformers at 220kV Substation Nallalam, Kozhikode-reg:

Ref: 1. Budgetary offer No:CPRI/DMD/PCB/2022/KSEB-Nallalam,Dated:25.04.2022
2. AS No;12/2022-23 Vide order no: CE/TRN/E6/220Kv Nallalam/2022-23 /Kozhikode/1219 Dated;17.10.22 of The Chief Engineer ,Transmission North

Budgetary offer has been received from your end vide under ref (1) above for onsite de-chlorination of PCB contaminated oil using CPRI mobile unit. As per this order The Chief Engineer ,Transmission North, Kozhikode accorded Administrative sanction vide ref(2) above for the execution of work. The budgetary offer insists 50% payment in advance. According to the prevailing rules in KSEB Ltd , the advance payment is not allowable. Hence special procedures are required for getting sanction for advance payment and it makes more delay in execution of this work. Since KSEBL is a public sector undertaking under Govt of Kerala and considering the social impact of the nature of work, the advance payment condition may kindly be waived off. Also the validity of quotation may kindly be extended up to 30.04.2022, since the work will be planned to carry out during February- March of 2023.

I request you to kindly arrange a visit at 220kV Substation Nallalam site on 19.12.2022 for discussing the procedures in connection with execution of this work.

Expecting favourable approach on this matter.

Yours faithfully

Assistant Executive Engineer

Copy submitted to: The Executive Engineer, Transmission Division Nallalam

Registered Office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram 695 004, Website: www.kseb.in

Communication between CPRI and M/s KSEB, reg. PCB dechlorination activity.

Annexure 4 (Minutes of Meeting)

thomas.cpri

From: 220kvnallalam@gmail.com
Sent: Friday, December 16, 2022 5:24 PM
To: Dr.P.Thomas
Subject: Re: 220kV NLM-Dechlorination of PCB in GE make Transformers:reg-

sir,
In connection with the work of onsite de chlorination of PCB contaminated oil at 220kV Substation Nallalam, you have requested for 50% of payment in advance. For processing the request for advance payment a detailed work schedule of the PCB removal process is essentially required.
Hence, I am hereby requesting you to visit Nallalam site directly in person or send a representative for this purpose. Which shall be early intimated to us and shall be in next week.
Sd/-
AEE
220kV SSD NLM

On Fri, 16 Dec 2022 at 10:47, thomas.cpri <thomas@cpri.in> wrote:

Dear Sir,

Thank you very much and appreciate the initiation taken from your side. Sir, we would like to inform you that the PCB dechlorination work at your site will take more than three months.

During that period, we need to take care of the expenditure towards the maintenance and salaries to the PCB team. Hence, we are insisting for the advance payment, not in full but only 50%.

It is requested that kindly release the 50% advance to take up the work, without which it would be very difficult for CPRI to meet the expenditures.

Please see the work orders received from other utilities for PCB dechlorination works is attached for your kind information.

Expecting your work order to plan our work accordingly.

Thanks and regards

Dr. P Thomas, M.Sc., Ph.D (Material Science)

Additional Director & Head

Dielectric Materials Division

Central Power Research Institute

PB No. 8066, Sir. C.V. Raman Road,Bangalore -560 080,Karnataka,India.

Mobile: +9194490 40168| Tel.:+918022072428| http://www.cpri.in

https://scholar.google.co.in/citations?user=5spZ1boAAAAJ&hl=en

1

Communication between CPRI and M/s KSEB, reg. PCB dechlorination activity.

MINUTES OF MEETING CONVENED ON 07.01.2023 AT CIRCLE CONFRENCE HALL NALLALAM REGARDING ONSITE DECHLORINATION OF PCB CONTAMINATED OIL IN 5 NUMBERS OF GE MAKE TRANSFORMERS AT 220kV SUBSTATION NALLALAM.

Meeting commenced at 11:00 AM with Executive Engineer, Transmission Division, Nallalam in the chair(online) . The Assistant Executive Engineer, 220kV SSSD Nallalam welcomed all the participants to the meeting with permission of the chair.

Dr. P Thomas, Additional Director from CPRI visited Nallalam on 07.01.2023 to prepare work schedule about online De-chlorination of PCB contaminated oil in 5 numbers of GE make 220/110kV transformer banks at 220Kv Substation Nallalam. Based on this agenda, , meeting is conducted.

The following points were discussed for planning the work schedule:

1. The PCB De-chlorination activities will be carried out by CPRI using mobile PCB De-chlorination unit.
2. PCB De-chlorination work is carried out in a batch process and in one batch around 4200 Litres of PCB oil will be de-chlorinated. This whole process will take two days.
3. To complete the whole quantity of PCB oil available at Nallalam(1,36,272 Litres, including 20% flushing), it would take approximately 65 days.
4. KSEBL agreed to support all the activities as per the terms and conditions given in the quotation. Accordingly the site preparation works will be carried out by KSEBL. 50% Advance payment condition mentioned in the quotation will be decided only after getting necessary approval from higher authorities.
5. For placing the mobile PCB unit, A suitable shed to cover PCB unit will be provided by KSEBL, so that the work will continue even if there is rain, site levelling is to be carried out closer to the Conference hall, so that PCB oil can be drained directly from the transformer to the plant.
6. A separate room should be provided to store the Sodium dispersion drums and a small room for setting of the testing of PCBs.
7. The treated oil and sludge generated(contains Sodium chloride, Sodium hydroxide, Water, Biphynyl), which is free from PCBs are required to be disposed as per the norms of Kerala state pollution control Board.
8. KSEBL will identify suitable agency, who is authorised by the Kerala state pollution control Board to dispose the sludge and treated oil.
9. CPRI team with mobile PCB unit will visit Nallalam site during 17Th February and start PCB De-chlorination work and complete the De-chlorination work of PCB oil available at Nallalam(1,36,272 Litres, including 20% flushing) by around 5th May 2023.
10. The De-chlorination work is planned to be take up in a phased manner as given in the below table:

Minutes of Meeting Held Between CPRI and KSEB on 07.01.2023

Sl No	Unit No	Quantity in Litres	Duration
1	GE make 220/110kV,20MVA unit no.1	22,713 +20% flushing(4543)= 27,256	February 17 to March 4(13 days excluding Sundays)
2	GE make 220/110kV,20MVA unit no.2	22,713 +20% flushing(4543)= 27,256	March 6 to March 20(13 days excluding Sundays)
3	GE make 220/110kV,20MVA unit no.3	22,713 +20% flushing(4543)= 27,256	March 21 to April 4(13 days excluding Sundays)
4	GE make 220/110kV,20MVA unit no.4	22,713 +20% flushing(4543)= 27,256	April 5 to April 19(13 days excluding Sundays)
5	GE make 220/110kV,20MVA unit no.5	22,713 +20% flushing(4543)= 27,256	April 20 to May 5(13 days excluding Sundays)

12. For each batch(4200 Liters) of PCB dichlorination oil, around 1 drum of sludge(contains Sodium chloride, Sodium hydroxide, Water, Biphynyl), one drum of water with little oil will be collected, which required to be disposed as per the norms of state pollution control Board.

13.Site visit was conducted by officials from CPRI, KSEBL and Kerala state pollution control Board and finalise the work schedule.

Meeting completed at 2pm

Participants

Sl No	Name & Designation	Signature
1	Sri.Vijayakumar A, Executive Engineer, Transmission Division, Nallalam.(Online)	
2	Dr. P Thomas, Additional Director, CPRI, Bangalore	
3	Sri. Pradeepkumar T, Assistant Executive Engineer, 220kV SSSD Nallalam	
4	Sri. Sureshkumar P, Assistant Executive Engineer, Civil subdivision Nallalam	
5	Smt. Alba N J, Assistant Engineer, KSPCB	
6	Sri. Prasoon Kumar K C, Assistant Engineer, PTRU Nallalam	
7	Sri. Sarath PT, Assistant Engineer, 220kV Substation Nallalam	
8	Sri. Rajesh P, Assistant Engineer, 220kV Substation Nallalam	
9	Sri. Mohandas C K, Sub Engineer, Civil subdivision Nallalam	

Minutes of Meeting Held Between CPRI and KSEB on 07.01.2023

Annexure 5 (*A budgetary offer*)

CENTRAL POWER RESEARCH INSTITUTE
DIELECTRIC MATERIALS DIVISION
SIR C. V. RAMAN ROAD, P. B. No. 8066, BENGALURU - 560 080
PHONE : 080 - 22072428 , 22072421
Email : dmd@cpri.in / thomas@cpri.in

Proforma Invoice

No. : CPRI/DMD/PCB/2022/KSEB-NLM(809) Date : 10.01.2023.

To,
Office of the Assistant Executive Engineer,
220 kV Substation Sudivision,
Kerala State Electricity Board Ltd.,
Nallam , Kozhicode – 673 027.

Sub : Onsite Dechlorination of PCB contaminated oil using CPRI mobile De-chlorination unit at KSEB, Nallalam.
Ref. No. W.O. No DB-1/220 kV NLM/Mace-2/2022-23/809, Dt. 12.12.2022 and Letter No. DB-1/220 kV NLM/Mace-2/2022-23/866, Dt. 30.12.2022

Sl. No.	Descriprtion	Quantity, ltrs	Unit Rate /ltr (Rs.)	Amount (Rs.)
1	Onsite dechlorination of PCB contaminated oil using CPRI Mobile PCB dechlorination unit	113,560	20.00	2,271,200.00
2	Flushing of PCB contaminated Transformer with new oil (20% of 113,560L= 22712L)	22,712	20.00	454,240.00
			Total	2,725,440.00
			IGST (18%)	490,579.20
			Grand Total	3,216,019.20
			Grand Total (Round off)	32,16,019.00
			50% of total charges including IGST- as Advance	16,08,010.00

Terms & Conditions :
1. General Site requirments are given in Annexure .(To be provided by PCB stake holder)
2. Payment : 50% advance to be paid and balance 50% after completion of work.
3. TDS : Form - 16A (to be furnished for TDS deductions)
4. CPRI PAN NO. AAAAC0268P , GST Provisional ID 29AAAAC0268P1ZF & SAC code is 998346.
5. Please provide your GSTIN, HSN and SAC No.
6. IGST : 18% (presently) (as applicable at the time of billing).

(Dr.P.Thomas)
Additonal Director-HOD

A budgetary offer has been sent to office of the Assistant Executive Engineer, 220 kV Substation Subdivision, KSEB, Nallalam, Kozhikode.

(General site requirement)

Annexure

PCB Dechlorination unit : Batch Process.
Batch Capacity : 3.5 to 4.0 KL of oil per batch
Duration : 2 days per batch.

General Site Requirements for undertaking PCB de-chlorination activity.

1) **Placement of vehicle** (Size : 40 feet in length x 15 feet in height x 8 feet in width, weight : 30 MT) : Leveled concreted pad / Hard Surface platform with lightning protection
2) **Power supply**: 3-phase, 430V, 340 Amps, 260kW, frequency 50Hz, with solid earth facility.
3) **Water facility**: 200 - 300 liters per day.
4) **Safety** : Suitable firefighting system, such as Sodium bicarbonate for PCB dechlorination, additional firefighting system (Fire Hydrant) near the plant
5) **Storage Tanks** : 2 Nos. of each 5KL capacity (one for storage of PCB contaminated oil and another for PCB decontaminated oil)
6) **3 HP Motor**: 1 No. (For transferring PCB contaminated oil from drums to 5KL tank).
7) **New Mineral Insulating oil (PCB free)**: Sufficient quantity of oil for flushing of PCB transformer (at least two times flushing i.e. 20% of the total transformer capacity). **(if required)**
8) PCB contaminated oil is to be provided near to the PCB dechlorination unit is the responsible of PCB stake holder.
9) **Storage drums**: Sufficient quantity of empty drums to be provided to store treated oil and sludge generated during the process.
10) **Sludge disposal**: As per pollution control board norms by PCB stake holder.
11) **Site office/ Testing laboratory**: one room (app. 10 feet x 20 feet) with table, chair and water facility.
12) **Storage Room**: one room (App. 20 feet x 20 feet) to store sodium metal dispersed in oil drums, process chemicals and PCB unit accessories with suitable safety.
13) **Accommodation**: Free lodging facility to be provided for 7 Nos. (1 executives, 3 project engineers, 1 technicians and 2 drivers officers)
14) **Local conveyance** : Pickup and drop facility for PCB project team from Guest house to place of work
15) **Nitrogen cylinders** : 110 Nos. for whole operation (120kg/cm^2 capacity of commercial grade nitrogen)
16) **Contract Labors** : 2 Nos.

****

1

General site requirement for carrying out PCB de-chlorination activity.

Annexure 6 (CPRI had received letter from KSEB)

KSEB

Kerala State Electricity Board Ltd.
Office of the Assistant Executive Engineer
220kV Substation Subdivision, Nallalam, Kozhikode-27
E-mail : 220kvsnallalam@gmail.com, Tel: 9496010977
Registered office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram-695004,
Web site : www.kseb.in, CIN No:U40109KL2011SGC027424

DB- I /220kV NLM/Mace- 2 /2022-23/ 666 Dated: 30-12-2022

To

Dr. P Thomas
HOD,
Dielectric Material Division
CPRI, Bangalore

Sir,

Sub: 220kV Substation Nallalam- Dechlorination of PCB in GE make Transformers-Work schedule preparation :reg.

Ref: (1) Email dated:16-12-2022 of your end

In connection with the work of onsite de chlorination of PCB contaminated oil at 220kV Substation Nallalam, you had requested for 50% of payment in advance vide ref(1) above. For processing the request for advance payment , we need a detailed work schedule of the PCB removal process proposed to be planned on February- March period of 2023. This work schedule is essential to get sanction from our higher authorities for releasing the advance payment.

Hence, I am hereby requesting you to visit Nallalam site directly in person or send a representative for this purpose. Which shall be early intimated to us and shall be in next week.

Yours faithfully

Assistant Executive Engineer

Copy submitted to : The Executive Engineer , Transmission Division , Kozhikode

Registered Office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram 695 004, Website: www.kseb.in

Communication between CPRI and M/s KSEB, reg. PCB dechlorination activity.

Annexure 7 (Work order)

KSEB
energising progress

Kerala State Electricity Board Ltd.
Office of the Assistant Executive Engineer
220kV Substation Subdivision, Nallalam, Kozhikode-27
E-mail: 220kvnallalam@gmail.com, Tel: 9496010977
Registered office: Vydhyuthi Bhavanam, Pattom, Thiruvananthapuram 695004.
Website: www.kseb.in, CINNo U40100KL2011SGC027424

No.DB1 /O&M/PCB Removal/NLM/2022-23/963 Date: 27-01-2023

Work Order No: 121/2022-23

To,

M/s. Central Power Research Institute,
(A Govt. of India Society, Min. of Power),
Prof. Sir C.V. Raman Road, Sadashiv Nagar P.O.,
P.B. No. 8066, Bangalore-560 080.
e-mail: dmd@cpri.in / thomas@cpri.in

Sub: On-site De-chlorination and testing of Poly Chlorinated Biphenyl contaminated oil using CPRI mobile de - chlorination unit at 220kV substation Nallalam.

Ref: 1.AS No:12/2022-23 vide order No: CE/TRN/E6/220kV Nallalam/2022-23/Kozhikode/1219 dated 17-10-2022 of the Chief Engineer, Transmission North, Kozhikode.
2. your offer No: CPRI/DMD/PCB/2022/KSEB-NALLALAM/ dated 25-04-2022,
3. Minutes of meeting held at conference hall dated 07-1-2022

Dear Sir,

KSEB Limited is pleased to award you the contract for the work of On-site de chlorination and testing of Poly Chlorinated Biphenyl (hereafter called as PCB) contaminated oil in 5 numbers of single phase unts of GE make 220/110kV, 20 MVA dismantled transformers at 220kV substation Nallalam, Kozhikode, Kerala. This de chlorination process is to be carried out using CPRI mobile de- chlorination unit at Nallalam site. The total quantity of PCB contaminated oil to be de-chlorinated is 1, 36, 272 liters (including transformer oil used for flushing of transformer). Please take necessary action to complete the work and fulfil this contract within the time schedule provided and terms and conditions mentioned in this order.

1.0 Scope of work:

1.1 The schedule of quantities of work and rate as per Annexure - I enclosed

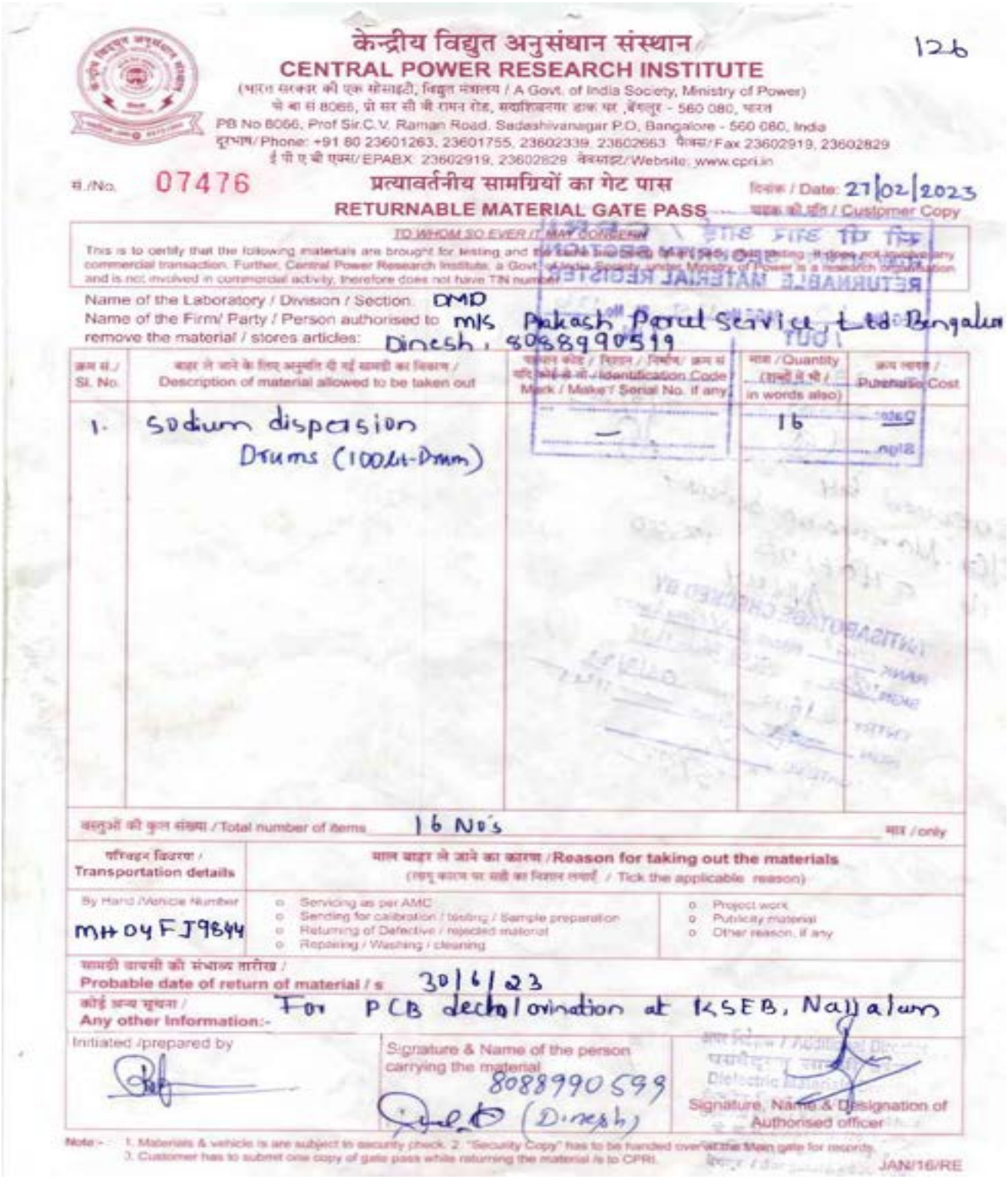
1.2 scope of work shall be as per Annexure - II enclosed.

1.3 "PCB De chlorination of PCB contaminated oil" is to be carried out as per the schedule mentioned in Annexure III.

1.4 Your project team has to be reported at 220kV substation Nallalam site before the commencement date as per schedule for preparation of the commencement of work, along with test instruments and De-chlorination equipment.

1

Annexure 8 (*Returnable &Non-Returnable gate pass)*



केन्द्रीय विद्युत अनुसंधान संस्थान
CENTRAL POWER RESEARCH INSTITUTE
(भारत सरकार की एक सोसाइटी, विद्युत मंत्रालय / A Govt. of India Society, Ministry of Power)
पो बा सं 8066, प्रो सर सी वी रामन रोड, सदाशिवनगर डाक घर ,बेंगलुरु - 560 080, भारत
PB No 8066, Prof Sir.C.V. Raman Road, Sadashivanagar P.O, Bangalore - 560 080, India
दूरभाष/Phone: +91 80 23601263, 23601755, 23602339, 23602663 फैक्स/Fax 23602919, 23602829
ई पी ए बी एक्स/EPABX: 23602919, 23602829 वेबसाइट/Website: www.cpri.in

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सं./No. 07476

प्रत्यावर्तनीय सामग्रियों का गेट पास
RETURNABLE MATERIAL GATE PASS

दिनांक / Date: 27/02/2023

ग्राहक की प्रति / Customer Copy

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the following materials are brought for testing and ... testing. It does not involve any commercial transaction. Further, Central Power Research Institute, a Govt. of India Society, under Ministry of Power is a research organisation and is not involved in commercial activity, therefore does not have TIN number.

Name of the Laboratory / Division / Section: DMD

Name of the Firm/ Party / Person authorised to remove the material / stores articles: M/s Prakash Parcel Service Ltd Bengaluru Dinesh, 8088990519

क्रम सं./ Sl. No.	बाहर ले जाने के लिए अनुमति दी गई वस्तुओं का विवरण / Description of material allowed to be taken out	पहचान कोड / चिह्न / निर्माण क्रम सं. यदि कोई हो तो / Identification Code Mark / Make / Serial No. if any	मात्रा / Quantity (शब्दों में भी / in words also)	क्रय लागत / Purchase Cost
1.	Sodium dispersion Drums (100Lt-Drum)	—	16	

वस्तुओं की कुल संख्या / Total number of items: 16 No's मात्र / only

परिवहन विवरण / Transportation details	माल बाहर ले जाने का कारण / Reason for taking out the materials (लागू कारण पर सही का निशान लगाएँ / Tick the applicable reason)	
By Hand /Vehicle Number: MH 04 FJ 9844	o Servicing as per AMC o Sending for calibration / testing / Sample preparation o Returning of Defective / rejected material o Repairing / Washing / cleaning	o Project work o Publicity material o Other reason, if any

सामग्री वापसी की संभाव्य तारीख / Probable date of return of material / s: 30/6/23

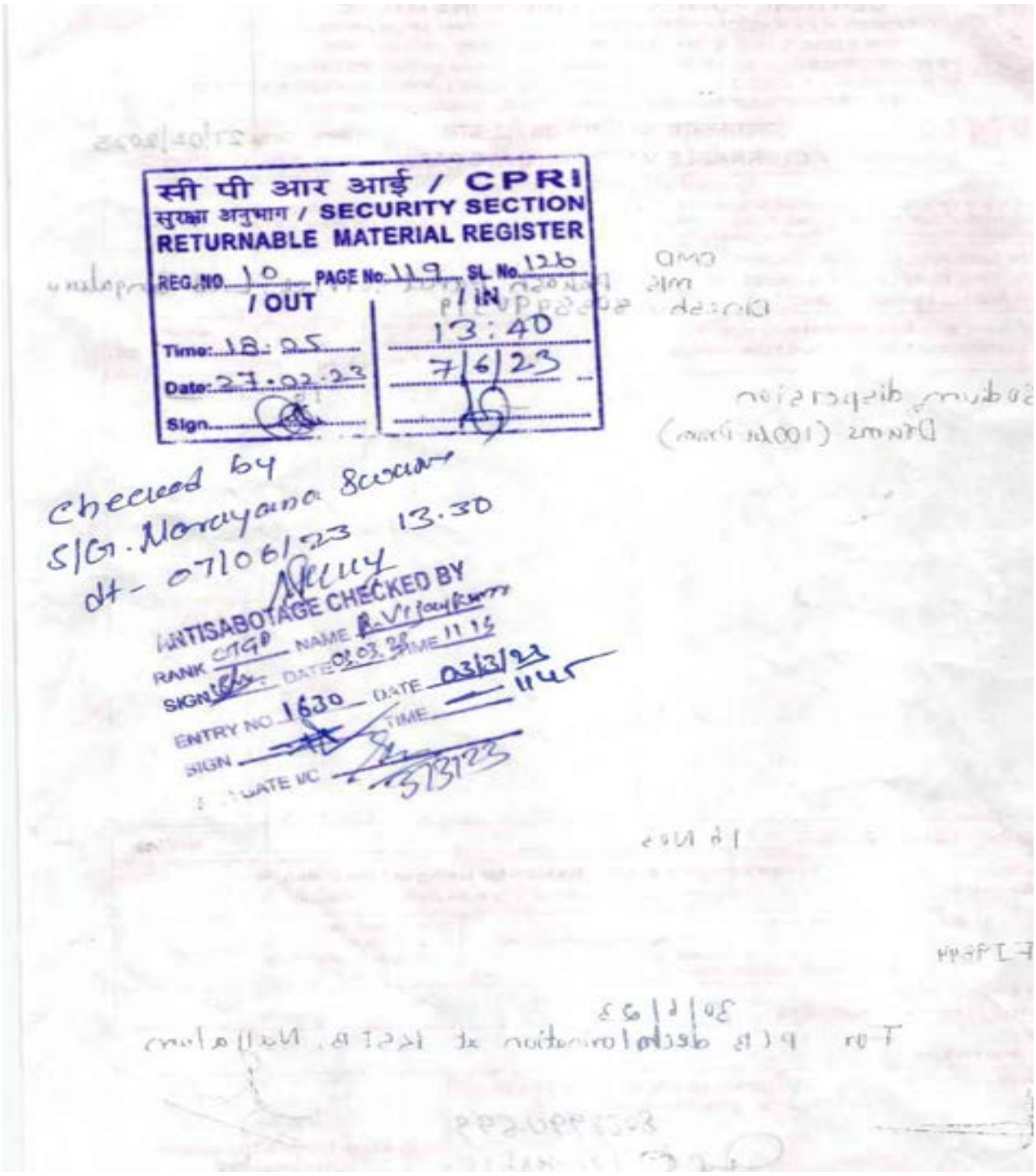
कोई अन्य सूचना / Any other Information:- For PCB dechlorination at KSEB, Nallalum

Initiated /prepared by	Signature & Name of the person carrying the material: 8088990599 (Dinesh)	Signature, Name & Designation of Authorised officer

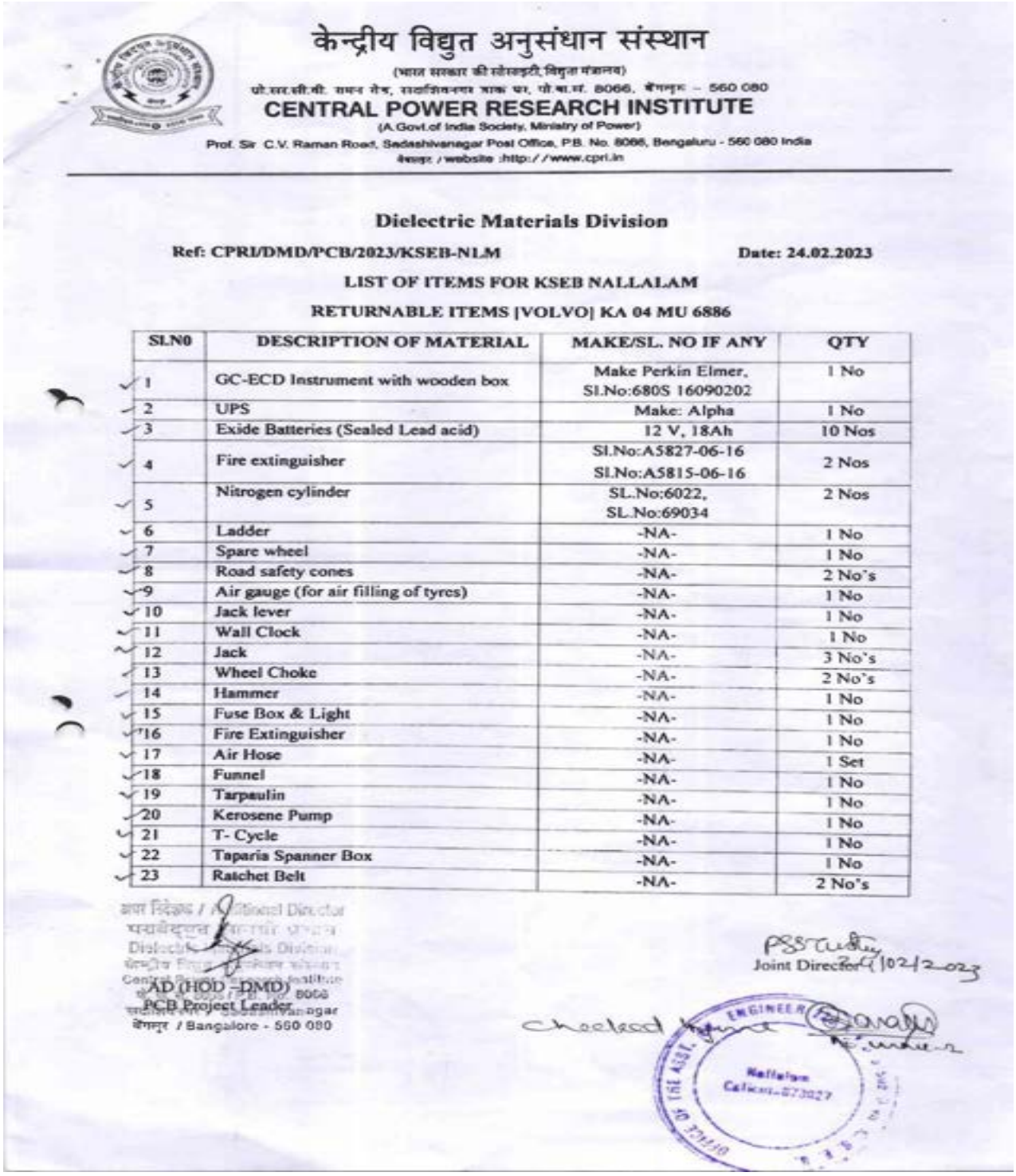
Note:- 1. Materials & vehicle is are subject to security check. 2. "Security Copy" has to be handed over at the Main gate for records. 3. Customer has to submit one copy of gate pass while returning the material is to CPRI.

JAN/16/RE

Gate Entry for taking Sodium dispersion inside M/s. KSEB, premises on 08.03.2023



Gate Entry for taking Sodium dispersion inside M/s. KSEB, premises on 08.03.2023



केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

प्रो.सर.सी.वी. रमन रोड, सदाशिवनगर डाक घर, पो.बा.सं. 8066, बेंगलूरु – 560 080

CENTRAL POWER RESEARCH INSTITUTE

(A Govt.of India Society, Ministry of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar Post Office, P.B. No. 8066, Bengaluru - 560 080 India

वेबसाइट / website :http://www.cpri.in

Dielectric Materials Division

Ref: CPRI/DMD/PCB/2023/KSEB-NLM **Date: 24.02.2023**

LIST OF ITEMS FOR KSEB NALLALAM

RETURNABLE ITEMS [VOLVO] KA 04 MU 6886

SLN0	DESCRIPTION OF MATERIAL	MAKE/SL. NO IF ANY	QTY
1	GC-ECD Instrument with wooden box	Make Perkin Elmer, Sl.No:680S 16090202	1 No
2	UPS	Make: Alpha	1 No
3	Exide Batteries (Sealed Lead acid)	12 V, 18Ah	10 Nos
4	Fire extinguisher	Sl.No:A5827-06-16 Sl.No:A5815-06-16	2 Nos
5	Nitrogen cylinder	SL.No:6022, SL.No:69034	2 Nos
6	Ladder	-NA-	1 No
7	Spare wheel	-NA-	1 No
8	Road safety cones	-NA-	2 No's
9	Air gauge (for air filling of tyres)	-NA-	1 No
10	Jack lever	-NA-	1 No
11	Wall Clock	-NA-	1 No
12	Jack	-NA-	3 No's
13	Wheel Choke	-NA-	2 No's
14	Hammer	-NA-	1 No
15	Fuse Box & Light	-NA-	1 No
16	Fire Extinguisher	-NA-	1 No
17	Air Hose	-NA-	1 Set
18	Funnel	-NA-	1 No
19	Tarpaulin	-NA-	1 No
20	Kerosene Pump	-NA-	1 No
21	T- Cycle	-NA-	1 No
22	Taparia Spanner Box	-NA-	1 No
23	Ratchet Belt	-NA-	2 No's

AD (HOD – DMD)
PCB Project Leader

Joint Director 24/02/2023

Checked

Gate Entry for taking Volvo truck with PCB de-chlorination unit inside M/s KSEB, premises on 09.03.2023

केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

CENTRAL POWER RESEARCH INSTITUTE

(A Govt of India Society under Min. of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar P.O., P.B. No. 8066, Bangalore - 560 080, India

http://www.cpri.in

Dielectric Material Division

Ref: CPRI/DMD/PCB/2023/KSEB-NLM

Date: 27.02.2023

Returnable Items (Annexure A) – Prakash Parcel Service [MH 04 FJ 9844]

Sl. No	DESCRIPTION OF ITEMS	QUANTITY IN No's	PURCHASE COST
1	100 Ltrs Sodium Dispersion	26 No's	Accessories of PCB de-chlorination unit
2	Ladders	4 No's	
3	Step down Transformer GCW make, S. No. 017D310091	1 No	
4	Drum Mixer	1 No	
5	Drum Mixer Motor	1 No	
6	Nitrogen cylinder stand	1 No	
7	Nitrogen Manifold	1 No	
8	Vent Pipe	1 No	
9	Chain Pulley	1 No	
10	Chain Pulley rod	1 No	
11	Electrical distribution box with cables	1 No + 5 Cable's	
12	Connecting cables	8 No's	
13	Carbon hose pipes	6 No's	
14	Flood Light	1 No	
15	Extension Box	1 No	
16	Extension Box 30 m (Length)	1 No	
17	Earth wire	5 Metre	
18	Sprit level	2 No's	
19	Oil Sprayer	2 No's	
20	Sampling Holder	1 No	
21	Plastic Buckets	3 No's	
22	Steel Buckets	2 No's	
23	Barrel Pump	1. No	
24	Plastic mug	3 No's	
25	Plastic funnel	1 No	
26	Kerosene Pump	2 No's	
27	Trolley	1 No	
28	Oil Heaters with Wooden Box	2 No's	

AD (HOD-DMD)
PCB Project Leader

Checked by me

OFFICE OF THE ASST. EX. ENGINEER 220 KV S/S Sub Divn. Nallalam Calicut-673027

Returnable Gate Entry for taking PCB de-chlorination unit accessories inside M/s. KSEB, premises on 08.03.2023

केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

प्रो सर सी. वी. रामन रोड, सदाशिवनगर डाक घर, पो. बा. सं. 8066, बेंगलूर - 560 080

CENTRAL POWER RESEARCH INSTITUTE

(A Govt of India Society under Min. of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar P.O., P.B. No. 8066, Bangalore - 560 080, India

वेबसाइट/website : http://www.cpri.in

Dielectric Material Division

Ref: CPRI/DMD/PCB/2023/KSEB-NLM **Date:27.02.2023**

Returnable Items (Annexure B) – Prakash Parcel Service [MH 04 FJ 9844]

01	Air Drier, Make : Orbit	1	Rs: 1000/-
02	Drilling Machine, (M0801B)	1	Rs: 1000/-
03	Cutting Machine (Bosch) GMS 600	1	Rs: 1500/-
04	Multimeter (M266 Mastech)	1 No	Rs: 200/-
05	Vernier Calliper scale	1 No	Rs: 200/-
06	Drill bits	2 Sets	Rs: 200/-
07	Allen Keys	2 Sets	Rs: 200/-
08	Tools Box [Taparia]	1	Rs:2500/-
09	Adjustable spanner	1 No	Rs: 500/-
10	Pipe Ringe	1 No	Rs: 50/-
11	Hammer	1 No	Rs: 50/-
12	Cutting plier	2 No's	Rs: 200/-
13	Spanners	43 No's	Rs: 500/-
14	Screw Driver	4 No's	Rs: 250/-
15	Chisel	1 No	Rs: 50/-
16	Measuring Tape	2 No's	Rs: 50/-
17	Nose Plier	1 No	Rs: 50/-
18	Brush	1 No	Rs: 50/-
19	Cylinder Key	2 No's	Rs: 50/-
20	Scissors	1 No	Rs: 20/-
21	Knife	1 No	Rs: 50/-
22	Wire Cutter	1 No	Rs: 50/-

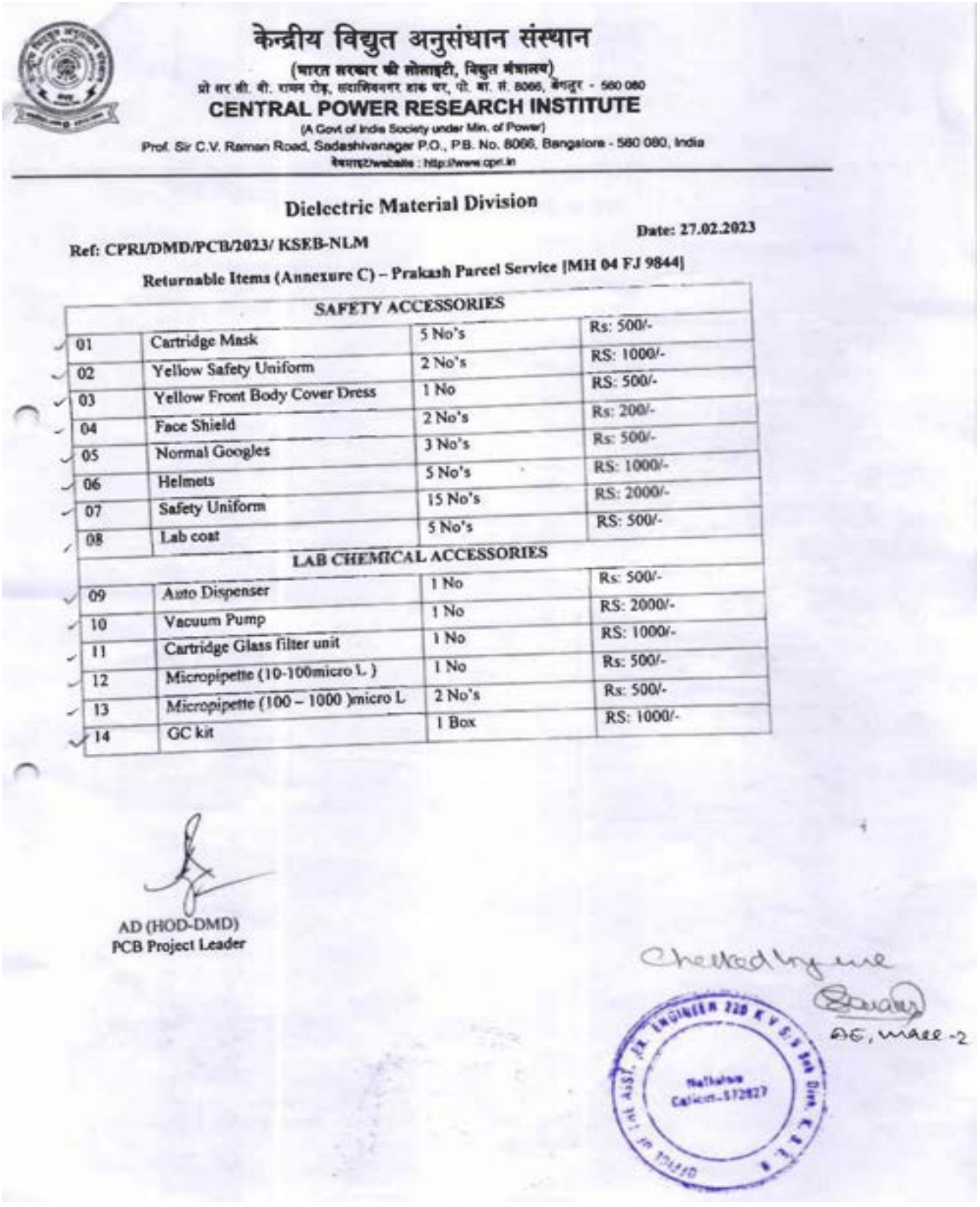
AD (HOD-DMD)
PCB Project Leader

Checked by me

AE, Malie-2

Office of the Asst. Ex. Engineer 220 KV S/S Sub Divn. K.S.E.B.
Nallalam
Calicut-673027

Returnable Gate Entry for taking PCB de-chlorination unit accessories inside M/s. KSEB, premises on 08.03.2023



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Dielectric Material Division

Ref: CPRI/DMD/PCB/2023/ KSEB-NLM **Date: 27.02.2023**

Returnable Items (Annexure C) – Prakash Parcel Service [MH 04 FJ 9844]

	SAFETY ACCESSORIES		
01	Cartridge Mask	5 No's	Rs: 500/-
02	Yellow Safety Uniform	2 No's	RS: 1000/-
03	Yellow Front Body Cover Dress	1 No	RS: 500/-
04	Face Shield	2 No's	Rs: 200/-
05	Normal Googles	3 No's	Rs: 500/-
06	Helmets	5 No's	RS: 1000/-
07	Safety Uniform	15 No's	RS: 2000/-
08	Lab coat	5 No's	RS: 500/-
	LAB CHEMICAL ACCESSORIES		
09	Auto Dispenser	1 No	Rs: 500/-
10	Vacuum Pump	1 No	RS: 2000/-
11	Cartridge Glass filter unit	1 No	RS: 1000/-
12	Micropipette (10-100micro L)	1 No	Rs: 500/-
13	Micropipette (100 – 1000)micro L	2 No's	Rs: 500/-
14	GC kit	1 Box	RS: 1000/-

AD (HOD-DMD)
PCB Project Leader

Checked by me

AE, MAEE-2

Returnable Gate Entry for taking PCB de-chlorination unit accessories inside M/s. KSEB, premises on 08.03.2023

केन्द्रीय विद्युत अनुसंधान संस्थान

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Dielectric Material Division

Ref: CPRI/DMD/PCB/2023/ KSEB-NLM **Date: 27.02.2023**

Non-Returnable Items [Consumables] (Annexure D) – Prakash Parcel Service [MH 04 FJ 9844]

S.No	DESCRIPTION OF ITEMS	QUANTITY IN No's
1	Strainers	1 Box (12 No's)
2	Insulation Tapes	4 No's
3	Cutting Wheel	3 No's
4	M Seal	1 No
5	Teflon Tapes	11No's
6	Air Hose Connectors	3 No's
7	Solid State Relay 100 A	2 No's
8	Solid State Relay 120 A	1 No
9	3 Phase Solid State Relay 120	1 No
10	MCB 63A	3No's
11	RCCB 100A	1 No
12	Cable Plastic Ties	2 Packets
13	Clamps & Gaskets	1 Box
14	WD - 40	1 No
15	Butterfly Valve	2 No's
16	Nut & Bold	1 Box
17	Nitrogen line hose	10 Metre
18	Man hole Gaskets	8 No's
19	Hand fit Gloves	06 Box
20	Electrical Safety Gloves	1 Pair
21	Gloves Black	1 Pair
22	Vacuum Oil	5 Litres
23	Transformers Oil	60 Litres

AD (HOD-DMD)
PCB Project Leader

Non-Returnable Gate Entry for taking PCB de-chlorination unit accessories inside M/s. KSEB, premises on 08.03.2023

केन्द्रीय विद्युत अनुसंधान संस्थान
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Dielectric Material Division

Ref: CPRI/DMD/PCB/2023/KSEB-NLM **Date: 27.02.2023**

Non-Returnable Items [Consumables] (Annexure E) – Prakash Parcel Service [MH 04 FJ 9844]

SL.No	CHEMICAL LAB CONSUMABLES	QUANTITY IN No's
01	Iso octane 2.5 Ltrs	3 No's
02	Sulphuric acid 2.5 Ltrs	1 No
03	Tissue rolls	34 No's
04	Aluminium Foil	1 No
05	Micropipettes tips 1ml	3 Packets
06	Silica Cartridge (100 Units)	1 Box
07	Filter Paper (100 Units)	3 Box
08	Vials Box	2 Box
09	Laboline (5 Ltrs)	3 No's
10	Sample Bottles (HDPE60 ml)	1 Box
11	Measuring cylinder (5ml)	20 No's
12	Measuring cylinder (10ml)	40 No's
13	Volumetric Flask (20ml)	50 No's
14	50 ml Reagent Bottle	30 No's
15	Volumetric Flask (250ml)	4 No's
16	Glass Beaker (100 ml)	4 No's
17	Glass Beaker (500 ml)	2 No's
18	Glass Funnel	3 No's
19	100 ml Vacuum Conical Flask	5 No's
20	Cotton Waste	20 Kg

AD (HOD-DMD)
PCB Project Leader

Non-Returnable Gate Entry for taking PCB de-chlorination unit accessories inside M/s. KSEB, premises on 08.03.2023

Annexure 9 (PCB freeness Certificate)

केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

CENTRAL POWER RESEARCH INSTITUTE

(A Government of India Society, Ministry of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar Post Office, P.B. No. 8066, Bengaluru - 560 080, India

वेब साइट / website : http://www.cpri.in

60 CPRI 1960-2020 Diamond Jubilee

PCB Freeness Certificate

Ref : CPRI/PCB/2023/KSEB-NLM/PFC(B 01-30) Dt. 31.05.23

This is to certify that the following PCB de-chlorination activity has been carried out by CPRI from 13.03.23 to 27.05.23 against W.O. No. 121/2022-23,Dt:27.01.23

Client	Kerala State Electricity Board Ltd,Nallalam
PCB contaminated Transformers	D577153,D577154, D577155, D577156, D577157

Trans. Serial no	Batch No	Date		Qty. ofoil (In Litre)	Initial PCB conc. (in ppm)	Final PCB conc. (in ppm)
		FROM	TO			
D577157	1.	13.03.23	15.03.23	4302	25.14	0.17
	2.	16.03.23	17.03.23	4250		0.22
	3.	20.03.23	21.03.23	4278		0.07
	4.	22.03.23	23.03.23	4269		0.05
	5	24.03.23	28.03.23	4250		0.07
Oil after flushing from D577157	6	29.03.23	30.03.23	3897	2.23	0.06
D577155	7.	31.03.23	01.04.23	4250	21.85	0.06
	8.	03.04.23	04.04.23	4250		0.15
	9.	05.04.23	06.04.23	4278		0.09
	10.	07.04.23	08.04.23	4250		0.10
	11.	10.04.23	12.04.23	3940		0.09
Oil after flushing from D577155	12.	13.04.23	14.04.23	4250	2.53	0.10

Cont...

"Happiness is when what you think, what you say and what you do are in harmony" - Mahatma Gandhi

PCB freeness Certificate

D577154	13	17.04.23	18.04.23	4250	29.48	0.16
	14.	19.04.23	20.04.23	4250		0.12
	15.	21.04.23	22.04.23	4250		0.15
	16.	24.04.23	25.04.23	4250		0.08
	17.	26.04.23	27.04.23	4120		0.08
Oil after flushing from D577154	18.	28.04.23	29.04.23	4250	3.64	0.09
D577156	19.	01.05.23	02.05.23	4250	30.10	0.11
	20.	03.05.23	04.05.23	4250		0.24
	21.	05.05.23	06.05.23	4250		0.26
	22.	08.05.23	09.05.23	4250		0.07
	23.	10.05.23	11.05.23	4250		0.29
Oil after flushing from D577156	24.	12.05.23	13.05.23	4250	3.52	0.13
D577153	25.	15.05.23	16.05.23	4250	26.66	0.29
	26.	17.05.23	18.05.23	4250		0.12
	27.	19.05.23	20.05.23	4250		0.29
	28.	22.05.23	23.05.23	4250		0.17
	29.	24.05.23	25.05.23	4250		0.17
Oil after flushing from D577153	30.	26.05.23	27.05.23	4250	2.84	0.32
	Total quantity dechlorinated			126,834		

The dechlorinated oil of 126.834 KL,generated sludge 8 drums and 45 drums of water (after treatment) are free from PCB contamination. Hence these can be disposed off as per the norms of state pollution control board.

(Dr.P.Thomas)
Additional Director
Dielectric Materials Division
CPRI,Bengaluru

अपर निदेशक / Additional Director
परावैद्युत सामग्री प्रभाग
Dielectric Materials Division
केन्द्रीय विद्युत अनुसंधान संस्थान
Central Power Research Institute
बेंगलूरु / Bangalore - 560 080

PCB freeness Certificate

After the successful completion of PCB de-chlorination of 126.834 KL of PCB contaminated oil, a meeting was held between CPRI officials and M/s KSEB officials. The minutes of meeting was signed by CPRI & M/s KSEB officials on 31.05.2023. The same is enclosed in the **Annexure 10.P(Page 78-80)**

Annexure 10 (Minutes of Meeting)

MINUTES OF MEETING CONVENED ON 31.05.2023 IN CONNECTION WITH ONSITE DE CHLORINATION OF PCB IN TRANSFORMERS AT 220KV SUBSTATION NALLALAM ACTIVITY.

Ref: WO No. 121/2022-23,Dt. 27.01.2023 of Assistant Executive Engineer,220kV Substation Nallalam

M/s. Central Power Research Institute (CPRI), Bengaluru visited M/s. KSEB Limited against above mentioned work order : **"On-site dechlorination and testing of PCB contaminated oil using CPRI mobile de-chlorination unit at 220kV Substation Nallalam "** from 13.03.2023 to 29.05.2023. The work order was given for total five number of transformers i.e. D577157, D577155, D577154, D577156 & D577153. During this visit KSEBL provided site readiness for all transformers. The details of activities are as follows:

CPRI PCB staff reached the site 03.03.2023. PCB dechlorination unit reached the site on 09.03.2023. After setting up of the plant, the dechlorination activity of PCB contaminated oil 126834 liters of 5Nos of GE make transformers has been done as follows:

a. 113560 litres of PCB contaminated oil

b. 13274 litres of flushed PCB contaminated transformer with de chlorinated oil

Entire PCB contaminated oil along with flushed oil (total 126834 Ltr) were de chlorinated in 30 batches. The details are given below:-

Batch No.	Quantity (Litres)	Date of De-chlorination		PCB concentration (ppm)	
		From	To	Before Treatment	After Treatment
1	4302	13.03.2023	15.03.2023	25.14	0.17
2	4250	16.03.2023	17.03.2023	25.14	0.22
3	4278	20.03.2023	21.03.2023	25.14	0.01
4	4269	22.03.2023	23.03.2023	25.14	0.05
5	4250	24.03.2023	28.03.2023	25.14	0.07
6	3897	29.03.2023	30.03.2023	2.23	0.06

Minutes of Meeting Held Between CPRI and KSEB on 31.05.2023

7	4250	31.03.2023	01.04.2023	21.85	0.06
8	4250	03.04.2023	04.04.2023	21.85	0.15
9	4278	05.04.2023	06.04.2023	21.85	0.09
10	4250	07.04.2023	08.04.2023	21.85	0.10
11	3940	10.04.2023	12.04.2023	21.85	0.09
12	4250	13.04.2023	14.04.2023	21.85	0.10
13	4250	17.04.2023	18.04.2023	2.53	0.16
14	4250	19.04.2023	20.04.2023	29.48	0.12
15	4250	21.04.2023	22.04.2023	29.48	0.15
16	4250	24.04.2023	25.04.2023	29.48	0.088
17	4120	26.04.2023	27.04.2023	29.48	0.083
18	4250	28.04.2023	29.04.2023	3.64	0.09
19	4250	01.05.2023	02.05.2023	30.10	0.11
20	4250	03.05.2023	04.05.2023	30.10	0.24
21	4250	05.05.2023	06.05.2023	30.10	0.26
22	4250	08.05.2023	09.05.2023	30.10	0.07
23	4250	10.05.2023	11.05.2023	30.10	0.29
24	4250	12.05.2023	13.05.2023	30.10	0.13
25	4250	15.05.2023	16.05.2023	3.52	0.29
26	4250	17.05.2023	18.05.2023	26.66	0.12
27	4250	19.05.2023	20.05.2023	26.66	0.29
28	4250	22.05.2023	23.05.2023	26.66	0.17
29	4250	24.05.2023	25.05.2023	26.66	0.17
30	4250	26.05.2023	27.05.2023	2.84	0.32

*Maximum allowable PCB concentration is <2 ppm

Minutes of Meeting Held Between CPRI and KSEB on 31.05.2023

Before and after de chlorination, samples are tested for PCB concentration. The oil after de chlorination is less than 2ppm of PCB.

Around 8 drums of sludge and 45 drums of water has been collected. It is the responsibility of M/s. KSEBL to dispose the items as per the state pollution control board norms.

After completion of the PCB dechlorination activity, the vehicles along with accessories will leave the site on 03.06.2023 (Tentatively). Till that time CPRI engineers will be present at site.

CPRI will submit detailed report within one month. The PCB freeness certificate is issued by CPRI has been submitted to KSEBL for making payment.

M/s. KSEBL Representatives	M/s. CPRI Representatives
31/05/2023	31/05/23
(Pradeep Kumar T) Assistant Executive Engineer	(Dr. Thomas) Additional director
(Sarath P T) Assistant Engineer	31/05/23 (Tom Jose) Project Engineer

Minutes of Meeting Held Between CPRI and KSEB on 31.05.2023