PCB Dechlorination Activity TANGEDCO

110/22kv Substation, Mettupalayam, Tamil Nadu.

Dielectric Materials Division
Central Power Research Institute
Bengaluru -560080, India

Ref. No: CPRI/BLR/DMD/PCB/TR/01 **28.01.2019**

PCB dechlorination work Pertaining to M/s.TANGEDCO (110/22kv substation, Mettupalayam, Tamil Nadu).

Dr.P.Thomas, Additional Director from CPRI visited TANGEDCO, Head Quarters, Chennai on 10.09.2018 and had detailed discussion with Chief Engineer, R&D. In the discussion it was decided during the meeting that the 110 drums of PCB contaminated transformer oils available at 110/22kv substation, Mettupalayam, Tamil Nadu would be dechlorinated using the PCB dechlorination facility available at CPRI, Bangalore. A letter of confirmation has been received from TNEB letter No: CE/IC,R&D/SE/R&D/EE2/F.PCB/D372/18 dated on 26.09.2018. The letter is enclosed in **Annexure I.**

Dr.P.Thomas interacting with TNEB officials

The officials from TNEB visited CPRI on 06.12.2018 to witness the PCB dechlorination activity of mobile dechlorination unit undertaken by CPRI, Bangalore.

TNEB, officials including Er. J. Nirmala Gnana Pushpam, Chief Engineer/IC, R&D and team interacting with AD/ HOD DMD

TNEB official visiting CPRI, PCB dechlorination facility.

The following officials were present.

1) Er. J. Nirmala Gnana Pushpam, Chief Engineer/IC, R&D.

2) Er. K. Mozhiarasi, Superintending Engineer/R&D.

3) Er. N. Kalaichelvi, Executive Engineer/R&D.

4) Er. R. Gopi, Asst. Executive Engineer/R&D.

5) Er. R.V.L. Rathnakumar, Asst. Executive Engineer/R&D.

6) Er. D. Asyea Begum,Junior Engineer/R&D.

TNEB officials appreciated CPRI and agreed to speed up the PCB dechlorination activity for 110 drums available at M/s.TNEB, Mettupalayam 110/22kv substation.

A letter has been received from M/s. TNEB, Mettupalayam and they had confirmed the total quantity of oil available at their premises. Subsequently TNEB made arrangements and sent all the 110 drums of PCB contaminated oil in batch wise for PCB dechlorination activity and the details are given in **Table No.1**.

Table No.1: Details of PCB contaminated Oil drums received at CPRI, in date wise.

Sl. No.	Date	QTY.of Barrels (No.)	Vehicle No.
1	17.12.2018	20	TN 43 1996
2	26.12.2018	30	TN 43 1996
3	04.01.2019	30	TN 43 1996
4	10.01.2019	30	TN 43 1996

Upon receipt of oil barrels, oil was transferred and stored in the 6kl MS tank available at CPRI. The PCB dechlorination process was operated in batches with maximum batch size about 4800 l/batch and can be treated up to 10000ppm of PCB content in oil. PCB dechlorination process was carried out by loading a known volume of oil into the reaction vessel from 6 KL MS tank.

TNEB vehicle, unloading PCB contaminated transformer oil drums.

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 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 degree Celsius 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 achieved.

CPRI-PCB team operating PCB dechlorination Unit

After 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 reaction mass in the reaction vessel is transferred to settling tank. The reaction mass 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 oil from the settling tank also drained to the barrels and sent back to TNEB. **Table.2.** gives the details of quantity of oil used for PCB dechlorination work. The details of PCB analysis was carried out for all batches before and after the reaction is given in the **Annexure II.**

Table No.2: Details of PCB contaminated oil treated batch wise.

M/s.TANGEDCO (110/22kv substation, Mettupalayam, Tamil Nadu)				
Batch No.	**Date**	**QTY. of oil Treated (In Litre)**	**Initial PPM**	**Final PPM**
1	20.12.2018	3664.00	34.60	1.27
2	(27.12.2018) to (28.12.2018)	3100.00	94.01	0.54
3	31.12.2018	2474.00	86.61	0.96
4	07.01.2018	4000.00	40.90	1.81
5	11.01.2018	4008.00	24.00	0.08
6	17.01.2018	4185.00	23.22	0.38

These oil drums were sent back to TNEB and the details are given in **Table.3**. The gate pass details are given in **Annexure III.**

PCB dechlorinated oil is loading into the TNEB vehicle

Table No.3: Details of PCB dechlorinated oil send to TNEB

Sl. No.	Date	QTY. of oil filled Barrels (No.)	QTY. of empty Barrels (No.)	Vehicle No
1	26.12.2018	14	5	TN 43 1996
2	04.01.2019	26	2	TN 43 1996
3	10.01.2019	24	4	TN 43 1996
4	22.01.2019	24	0	TN 66 C 2251

It is to be noted that after dechlorination of 110 drum of oil, around 2000kg of sludge has been generated. These sludge generated is hazardous in nature needs to be disposed off to the recyclers authorized by Karnataka Pollution Control Board. CPRI had identified M/s. Kar Recyclers center LLP, who is the authorized by KSPCB to undertake the disposal of sludge. Hence it is requested that TNEB may use the service of M/s. Kar Recyclers Center LLP, to dispose the sludge by paying the necessary charges. The copy of P.O issued to M/s. Kar Recyclers Center LLP by CPRI is enclosed (**Annexure IV**) for your kind information.

The 110 drums of PCB contaminated oil belongs to M/s.TNEB (110/22kv substation, Mettupalayam, Tamil Nadu) was successfully dechlorinated using PCB mobile dechlorination unit at CPRI, Bangalore during 17.12.2019 to 22.01.2019.

AD/HOD (DMD)

Annexure I

TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LTD

From
Er.J.Nirmala Gnanapuspam,B.E.,Hons,
The Chief Engineer/IC,R&D,
4th floor, Eastern Wing,
NPKRR Maaligai,
144 Anna Salai, Chennai-600 002

To
The Additional Director/HOD,
Central Power Research Institute,
Prof.Sir.C.V.Raman Road,
Sadashivanagar P.O.,P.B.No.8066,
Bangaluru – 560 080.

Lr.No.CE/IC,R&D/SE/R&D/EE2/F.PCB/D 372/18, dt.26.09.2018

Sir,

Sub: PCB treatment using mobile dechlorination Unit – waiver of charges-requested- Reg.
Ref: Your letter CPRI/DMD/PCB/METUPLM/07/09/2018,DT.7.9.2018

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A kind attention is invited to letter cited in reference, wherein it has been stated that the commissioning of mobile PCB dechlorination unit is nearing completion and PCB contaminations upto 10000ppm can be treated using this plant and PCB concentrations more than 10000ppm can be treated only at the facility that is being installed at M/s.Bhilai Steel plant, Chhattisgarh. It has also been stated that CPRI will be charging Rs.20/ltr for treating the PCB contaminated oil.

TANGEDCO being a utility owned by Government of Tamilnadu and is involved in catering to the Electricity power needs of the weaker sections of the state and is in a severe financial constraint, in spite of which strive to abide by all the rules, regulations and requirements of the Government, State, Environment etc to the fullest and pioneers in adopting new technologies and endeavours, it may kindly be considered for waiver of charges fixed for treating of PCB contaminated oil.

A favourable response is solicited in the above matter.

Yours sincerely,

25/9/2018

Chief Engineer/IC,R&D

Copy submitted to Director/Generation
Copy to the Chief Engineer/D/Coimbatore Region.

→ PCB SF -

CPRI

TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LTD

FROM
Er.J.Nirmala Gnanapuspam,B.E.,Hons,
The Chief Engineer/IC,R&D,
4th Floor, Eastern Wing,
NPKRR Maaligai,
144 Anna Salai, Chennai-600 002.

To
The Chief Engineer/Distribution,
Coimbatore Region/TANGEDCO,
Coimbatore – 641 012.

Lr.No. CE/IC,R&D/SE/R&D/EE/R&D/AEE/R&D/F.PCB/D 407/18, dt. 16.10.18

Sir,

Sub: TANGEDCO – R&D – PCB contaminated transformer oil – PCB treatment using mobile dechlorination unt -Reg.

Ref: 1) Lr.No.CE/D/CBE/AEE/Plg/F.Condemnation/D. No.349/18, dt.2.7.2018.
2) Lr. No. CE/IC,R&D/SE/R&D/EE/R&D-P/AEE/R&DF.PCB/D 289 /18, dt. 21.07.2018.
3) CPRI Lr. No. CPRI/DMD/PCB /METUPLM /07/09/ 2018, dt.7.9.2018
4)Lr.No.CE/D/CBE/AEE/Plg/F.Condemnation/D. No.521/18, dt.18.9.2018.
5) Lr. No. CE/IC,R&D/SE/R&D/EE2/F.PCB/D 372 /18, dt. 26 .09.2018.
6) Lr. No. CE/IC,R&D/SE/R&D/EE2/F.PCB/D 371/18, dt. 26 .09.2018.
7) CPRI Lr.No. CPRI/BLR/DMD/PCB/METUPLM/01/10/2018, dt.01.10.2018
8)CPRI mail, dt.05.10.2018.

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With reference to the above, it is informed that necessary action for treatment of PCB contaminated oil released from Mettupalayam 110 kV SS may be arranged to be carried out in coordination with CPRI/Bangalore, who has agreed to waive the PCB dechlorination charges as a special case. The references (7)& (8) received from CPRI in this regard and the general site requirements for carrying out the work which is to be provided by TANGEDCO as received, are enclosed herewith.

The treatment of oil in the released transformers at Uppatty SS and Peelamedu SS may be taken up later, after completion of treatment at Mettupalayam 110kV SS, in consultation with CPRI.

Encl: CPRI mail,dt.05.10.2018
With enclosures.

16/10/2018

CHIEF ENGINEER/
INDUSTRIAL CO-ORDINATION,R&D

Copy submitted to Director/Generation

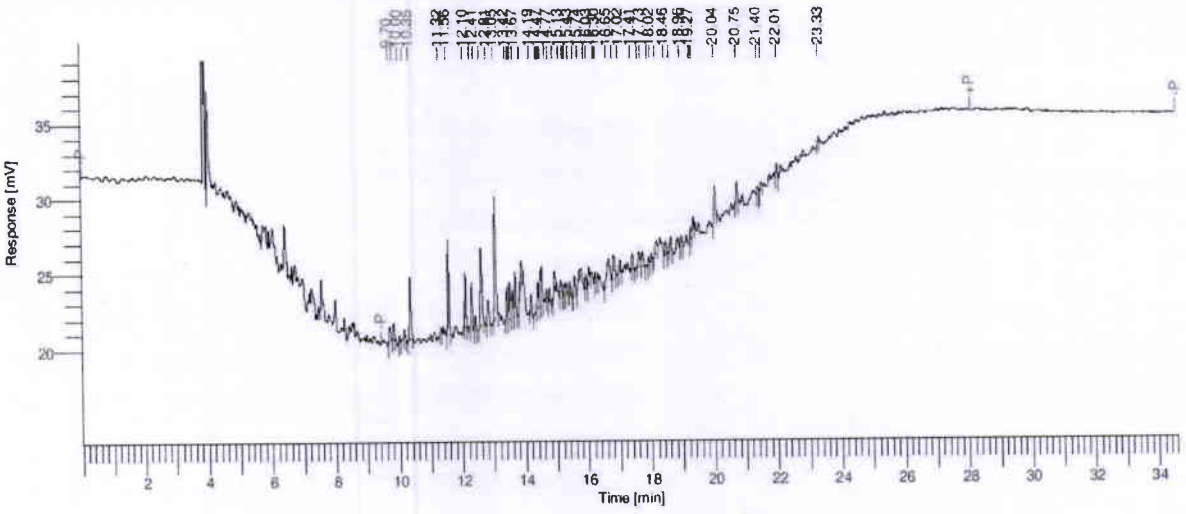
Copy to Addl. Director & Head,
Dielectric Materials Division,
CPRI, Bangalore.

Annexure II

Batch-I

Software Version	: 6.3.2.0646	Date	: 12/20/2018 5:11:09 PM
Sample Name	: TNEB BEFORE DECHLORINATION 1	Data Acquisition Time	: 12/18/2018 5:31:42 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/2	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\18.12.18 PCB.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	282927.89	85719.42	100.00	34.6991
			282927.89	85719.42	100.00	

Missing Component Report
Component Expected Retention (Calibration File)

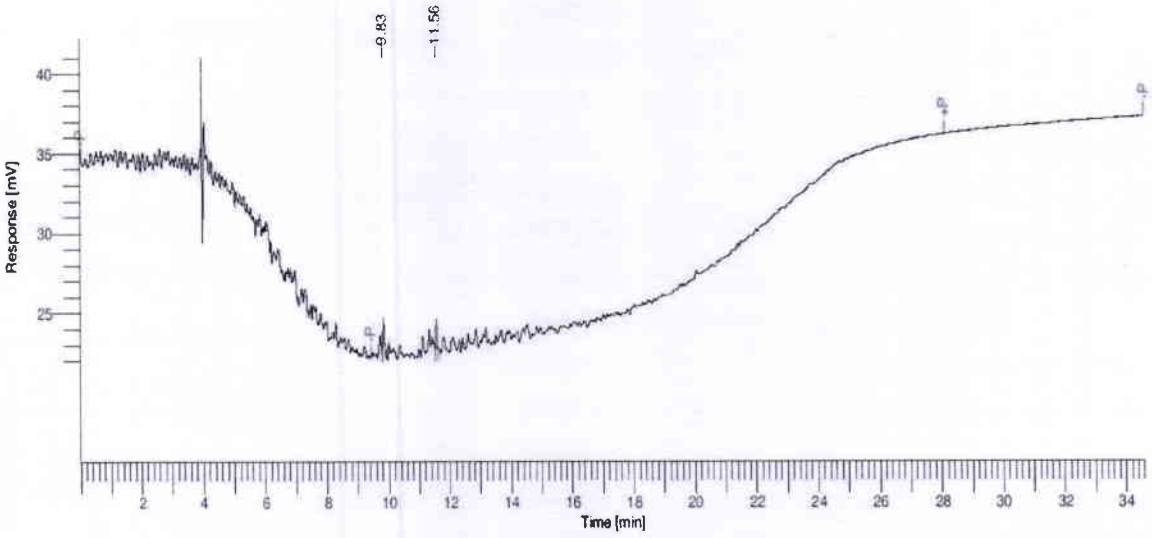
All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Software Version	: 6.3.2.0646	Date	: 12/20/2018 5:12:02 PM
Sample Name	: TNEB1 AFTER DECHLORINATION 1ST HR	Data Acquisition Time	: 12/20/2018 1:34:16 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\20.12.2018 PCB.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	10359.20	3663.06	100.00	1.2705
			10359.20	3663.06	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

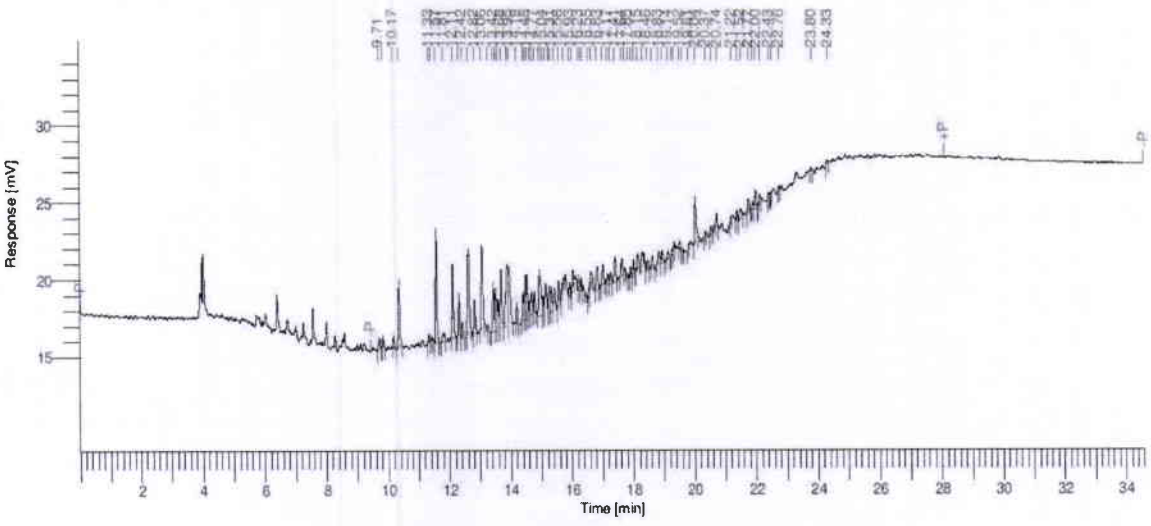
Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Batch-II

Software Version	: 6.3.2.0646	Date	: 12/28/2018 11:51:40 AM
Sample Name	: TNEB METTUPALYAM BD1 26.12.18	Data Acquisition Time	: 12/26/2018 7:25:26 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/3	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\26.12.18 PCB.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	403317.23	115188.82	100.00	94.0131
			403317.23	115188.82	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

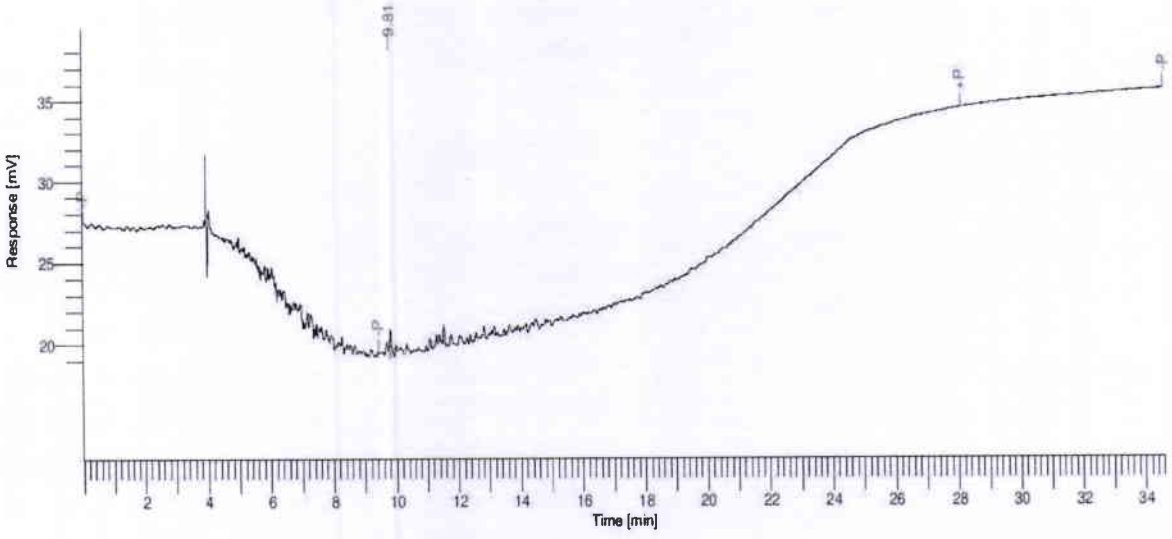
All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Software Version	: 6.3.2.0646	Date	: 12/28/2018 11:57:54 AM
Sample Name	: M/s mettupalyam Batch 2 28.12.2016	Data Acquisition Time	: 12/28/2018 11:18:04 AM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\28.12.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	2356.62	1065.20	100.00	0.5493
			2356.62	1065.20	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

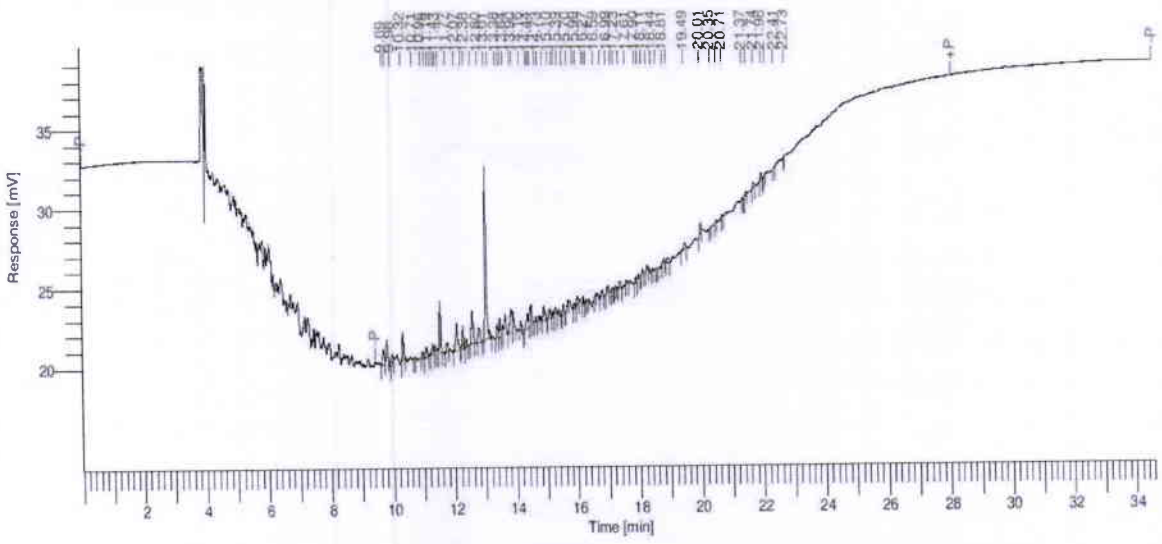
Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Batch-III

Software Version	: 6.3.2.0646	Date	: 12/31/2018 3:51:07 PM
Sample Name	: M/s mettupalyam Batch 3 BD1	Data Acquisition Time	: 12/31/2018 12:26:25 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\31.12.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	185797.70	53166.07	100.00	86.6188
			185797.70	53166.07	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

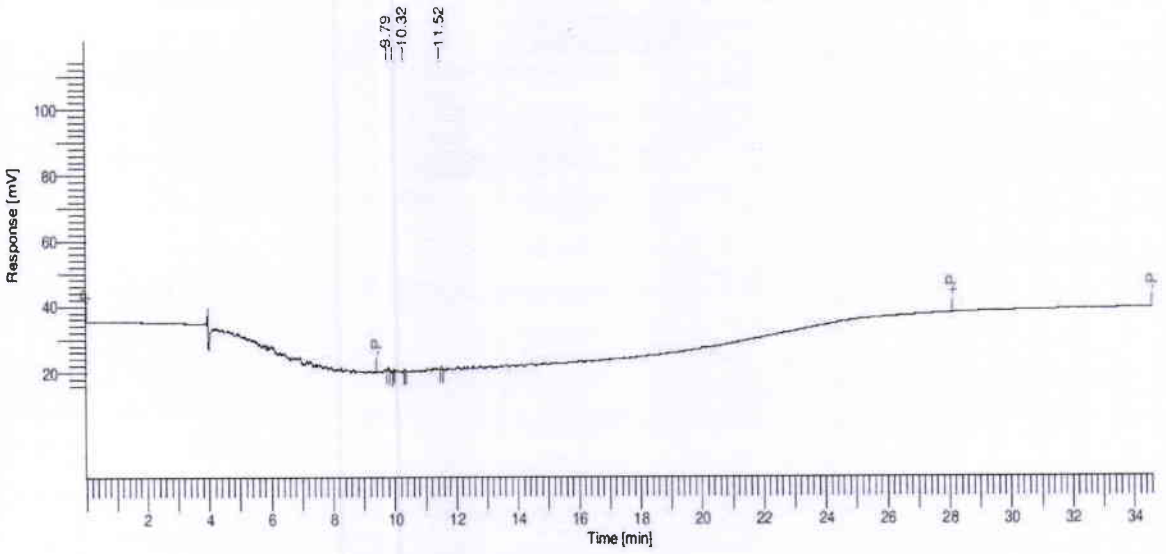
All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Software Version	: 6.3.2.0646	Date	: 12/31/2018 3:51:31 PM
Sample Name	: M/s mettupalyam, batch 3, 1hr AD	Data Acquisition Time	: 12/31/2018 3:15:38 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\31.12.2018 ad.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	8492.13	3139.60	100.00	0.9671
			8492.13	3139.60	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

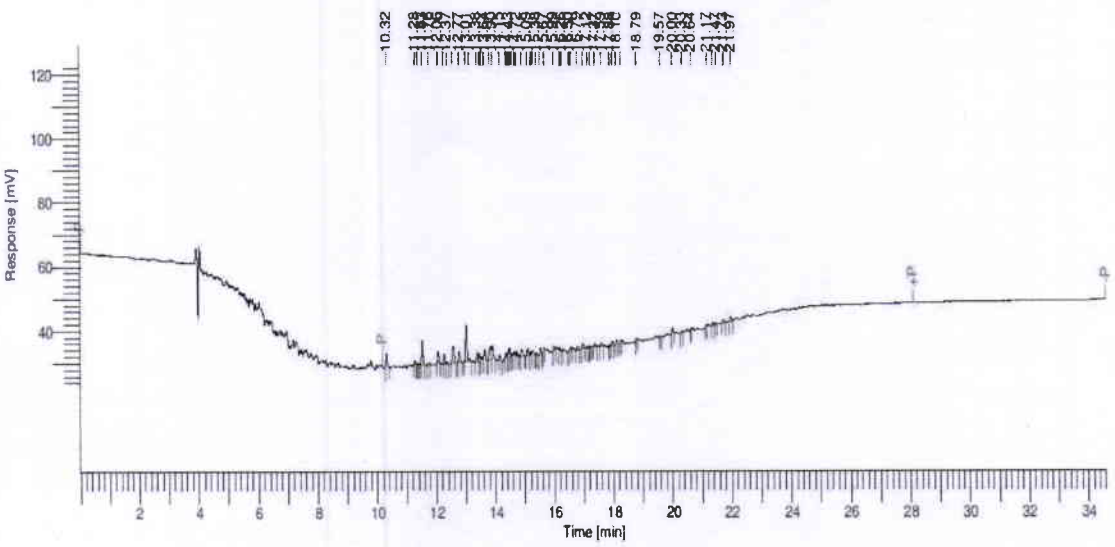
Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Batch-IV

Software Version	: 6.3.2.0646	Date	: 1/7/2019 12:56:10 PM
Sample Name	: M/s mettupalyam batch 4 BD1	Data Acquisition Time	: 1/7/2019 11:36:23 AM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\07.1.19 bd.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	354315.09	106411.53	100.00	40.9188
			354315.09	106411.53	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

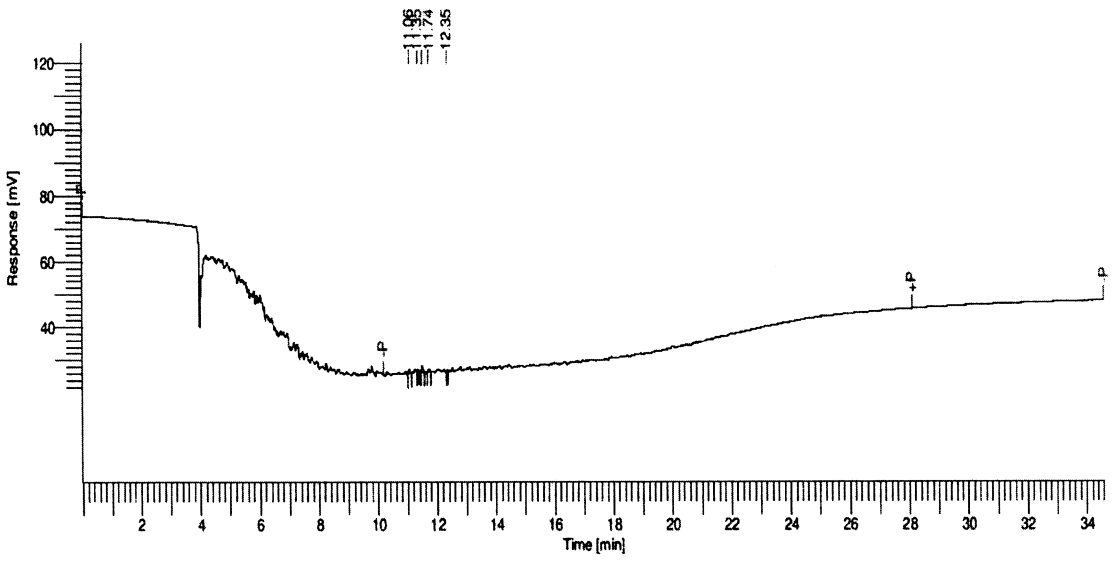
All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
10.175	Disable Peak Detection	
10.175	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Software Version	: 6.3.2.0646	Date	: 1/7/2019 5:15:57 PM
Sample Name	: M/s mettupalyam Batch 4 AD2	Data Acquisition Time	: 1/7/2019 4:06:49 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\07.01.19 ad1.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	15694.88	4691.67	100.00	1.8126
			15694.88	4691.67	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

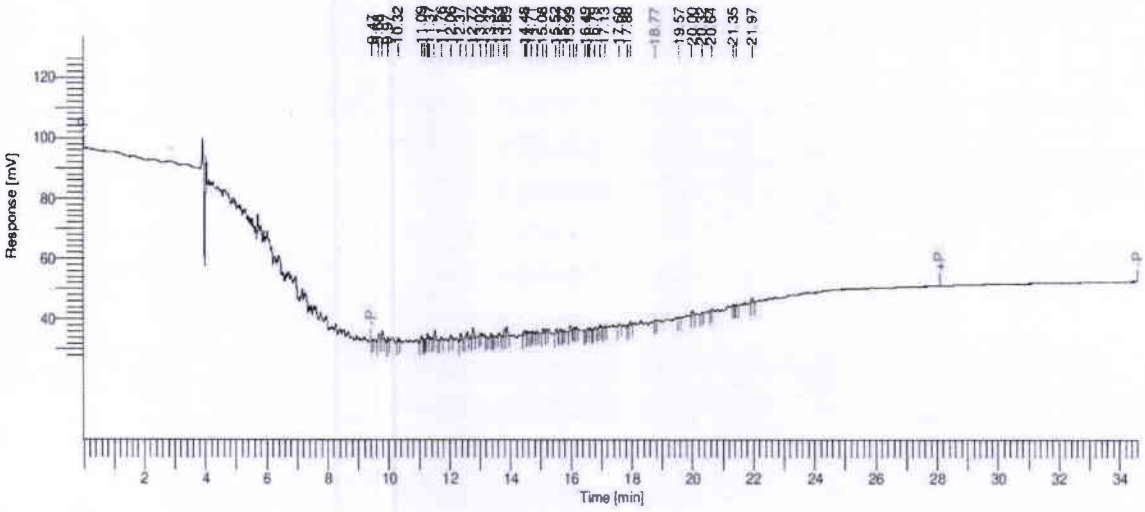
Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
10.175	Disable Peak Detection	
10.175	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Batch-V

Software Version	: 6.3.2.0646	Date	: 1/17/2019 10:35:19 AM
Sample Name	: M/s mettuplayam batch 4 bd1	Data Acquisition Time	: 1/16/2019 12:42:22 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\16.1.19 bd1.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	208528.69	63664.01	100.00	24.0823
			208528.69	63664.01	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Software Version	: 6.3.2.0646	Date	: 1/11/2019 4:23:05 PM
Sample Name	: M/s Mettuplayam batch 5 1hr ad	Data Acquisition Time	: 1/11/2019 3:35:04 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
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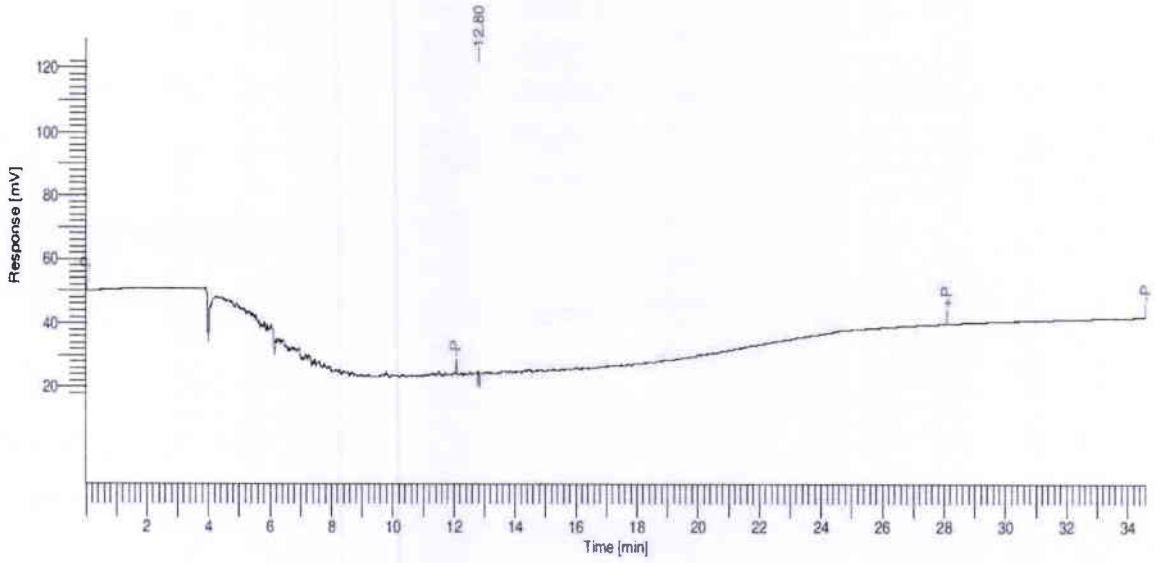


DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	20.100	1074.15	464.08	100.00	0.0891
			1074.15	464.08	100.00	0.0891

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

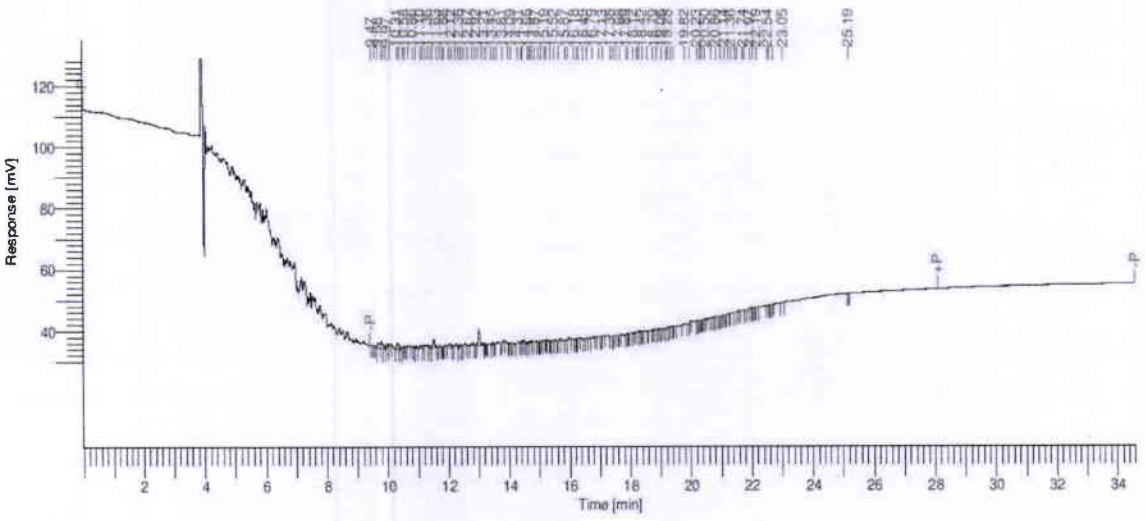
Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
12.072	Disable Peak Detection	
12.097	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Batch-VI

Software Version	: 6.3.2.0646	Date	: 1/17/2019 10:34:42 AM
Sample Name	: mettupalyam Batch 5 BD1	Data Acquisition Time	: 1/16/2019 2:54:33 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\16.01 bd1.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	201122.15	53126.58	100.00	23.2270
			201122.15	53126.58	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

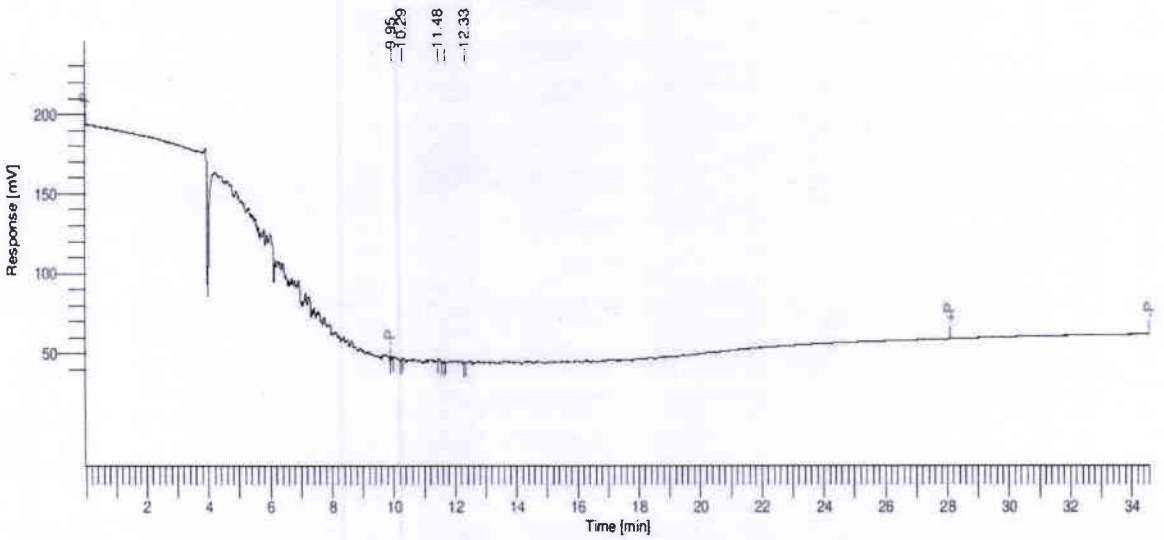
All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.409	Disable Peak Detection	
9.411	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Software Version	: 6.3.2.0646	Date	: 1/24/2019 2:16:00 PM
Sample Name	: METTUPALYAM BATCH 6 AD-2	Data Acquisition Time	: 1/17/2019 3:51:45 PM
Instrument Name	: Clarus 680	Channel	: A
Rack/Vial	: 0/1	Operator	: manager
Sample Amount	: 1.000000	Dilution Factor	: 1.000000
Cycle	: 1		

Result File :
Sequence File : D:\GC Clarus 680\2016\sequence\17.1.19 ad-2.seq



DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	PCB PPM
	PCB	18.550	12019.46	4303.00	100.00	0.3862
			12019.46	4303.00	100.00	

Missing Component Report

Component	Expected Retention (Calibration File)

All components were found

Timed Event Table

Time	Event	Value
0.001	Disable Peak Detection	
9.886	Disable Peak Detection	
9.904	Enable Peak Detection	
28.089	Enable Peak Detection	
28.090	Disable Peak Detection	
34.599	Disable Peak Detection	

Annexure III

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 ,बेंगलूर - 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

सं./No. 15993

सामग्रियों का गेट पास
MATERIAL GATE PASS

दिनांक / Date: 6.12.17
कार्यालय की प्रति / Office Copy

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the following materials are brought for testing and the same are being taken back after 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: TNEB Tamilnadu

क्रम सं./ Sl. No.	बाहर ले जाने के लिए अनुमति दी गई सामग्री का विवरण / Description of material allowed to be taken out	पहचान कोड / निशान / निर्माण / क्रम सं यदि कोई हो तो / Identification Code / Mark / Make / Serial No. if any	मात्रा / Quantity (शब्दों में भी / in words also)
1	Oil Sample Oil filled → 14 Nos Empty → 5 Nos	—	19 Nos Nineteen

वस्तुओं की कुल संख्या / Total number of items 19 मात्र / only

सामग्री आवक विवरण / Material inward details

पंजी सं Register No	पृष्ठ सं Page No	क्रम सं Serial No	दिनांक Date	समय Time
44	176	5707	17.12.17	09:50 बजे hrs

परिवहन विवरण / Transportation details	माल बाहर ले जाने का कारण / Reason for taking out the materials (लागू कारण पर सही का निशान लगाएं / Tick the applicable reason)	
By Hand /Vehicle Number TN 23 Z 1996	✓ o Material taken back by the owner after testing o Material returned after completion of project / contract work o Returning of Defective / rejected material	o AMC service & non-returnable material o Publicity material o Other reason, if any _____

कोई अन्य सूचना / Any other Information:- Oil testing purpose only

Initiated /prepared by	Signature & Name of the person carrying the material	अपर निदेशक / Additional Director परावैद्युत सामग्री प्रभाग Dielectric Materials Division Signature, Name & Designation of Central Authorised officer
Sweetlet.S	A.SHEIK BABU.	

Note :- 1. Materials & vehicle /s are subject to security check. 2. "Security Copy" has to be handed over at the Main gate for record.

केन्द्रीय विद्युत अनुसंधान संस्थान
पी बा सं 8066 / P.B.No. 8066
सदाशिवनगर / Sadashivanagar
बेंगलूर / Bangalore - 560 080

NOV/15/NR

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, बेंगलूर - 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

सं /No. 15998

सामग्रियों का गेट पास

MATERIAL GATE PASS

दिनांक / Date 4 . 1 . 2019

कार्यालय की प्रति / Office Copy

TO WHOM SO EVER IT MAY CONCERN

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Name of the Laboratory / Division / Section: DMD

Name of the Firm/ Party / Person authorised to remove the material / stores articles: TNEB, Mettupalayam.

क्रम सं / Sl. No.	बाहर ले जाने के लिए अनुमति दी गई सामग्री का विवरण / Description of material allowed to be taken out	पहचान कोड / निशान / निर्माण / क्रम सं यदि कोई हो तो / Identification Code / Mark / Make / Serial No. if any	मात्रा / Quantity (शब्दों में भी / in words also)
1	Transformer oil filled Barrels	—	24 No [4800 L]
2	Empty Barrels		4 No

वस्तुओं की कुल संख्या / Total number of items 28 No मात्र / only

सामग्री आवक विवरण / Material inward details

पंजी सं Register No	पृष्ठ सं Page No	क्रम सं Serial No	दिनांक Date	समय Time
44	199	5245	06.12.18	10.40 बजे hrs

परिवहन विवरण / Transportation details

By Hand /Vehicle Number: TN 43 Z 1996

माल बाहर ले जाने का कारण / Reason for taking out the materials
(लागू कारण पर सही का निशान लगाएं / Tick the applicable reason)

- ✓ Material taken back by the owner after testing
- Material returned after completion of project / contract work
- Returning of Defective / rejected material
- AMC service & non-returnable material
- Publicity material
- Other reason, if any ______

कोई अन्य सूचना / **Any other Information:-** Test completed and oil returning after process to owner.

Initiated /prepared by	Signature & Name of the person carrying the material	Signature, Name & Designation of Authorised officer
Sreelal S	(signature)	अपर निदेशक / Additional Director, परावैद्युत सामग्री प्रभाग Dielectric Materials Division, केन्द्रीय विद्युत अनुसंधान संस्थान Central Power Research Institute, पो. बा. सं. 8066 / PB 8066, सदाशिवनगर / Sadashivanagar, बेंगलूर / Bangalore - 560 080

Note:- 1. Materials & vehicle /s are subject to security check. 2. "Security Copy" has to be handed over at the main gate for security.

MGP/P5/NR

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 ,बेंगलूर - 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

सं./No. 15807

सामग्रियों का गेट पास
MATERIAL GATE PASS

दिनांक / Date 01-2019
कार्यालय की प्रति / Office Copy

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the following materials are brought for testing and the same are being taken back after 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: Safeek, TNEB

क्रम सं./ Sl. No.	बाहर ले जाने के लिए अनुमति दी गई सामग्री का विवरण / Description of material allowed to be taken out	पहचान कोड / निशान / निर्माण/ क्रम स यदि कोई हो तो /Identification Code / Mark / Make / Serial No. if any	मात्रा /Quantity (शब्दों में भी / in words also)
1	Oil filled drums	—	26 Nos
2	Empty drums	—	4 Nos

वस्तुओं की कुल संख्या / Total number of items Twenty Eight numbers मात्र / only

सामग्री आवक विवरण / Material inward details

पंजी सं Register No	पृष्ठ सं Page No	क्रम सं Serial No	दिनांक Date	समय Time
45	017	56	04/01/19	10:35 बजे hrs

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 TN 43 Z 1996	✓ Material taken back by the owner after testing o Material returned after completion of project / contract work o Returning of Defective / rejected material	o AMC service & non-returnable material o Publicity material o Other reason, if any _____

कोई अन्य सूचना / Any other Information:- PCB Dechlorinated oil is by the owner

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

Initiated /prepared by	Signature & Name of the person carrying the material	Signature, Name & Designation of the Authorised officer
Sreelal S	A Safeek	

Note:- 1. Materials & vehicle /s are subject to security check. 2. "Security Copy" has to be handed over at the Main gate for records.

NOV/15/NR

केन्द्राय विद्युत अनुसधान 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 ,बेंगलूर - 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

सं /No. 15811

सामग्रियों का गेट पास
MATERIAL GATE PASS

दिनांक / Date 22-01-19
कार्यालय की प्रति / Office Copy

TO WHOM SO EVER IT MAY CONCERN

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Name of the Laboratory / Division / Section: DMD
Name of the Firm/ Party / Person authorised to remove the material / stores articles: Hari Haran , TNEB.

क्रम सं / Sl. No.	बाहर ले जाने के लिए अनुमति दी गई सामग्री का विवरण / Description of material allowed to be taken out	पहचान कोड / निशान / निर्माण/ क्रम सं यदि कोई हो तो /Identification Code / Mark / Make / Serial No. if any	मात्रा /Quantity (शब्दों में भी / in words also)
1	PCB Dechlorinated oil filled Barrels	—	24 Nos [Twenty four]

वस्तुओं की कुल संख्या / Total number of items 24 मात्र / only

सामग्री आवक विवरण /Material inward details

पंजी सं Register No	पृष्ठ सं Page No	क्रम सं Serial No	दिनांक Date	समय Time
45	037	182	10/01/19	12:00 बजे hrs

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 TN66 C2251	✓ Material taken back by the owner after testing o Material returned after completion of project / contract work o Returning of Defective / rejected material	o AMC service & non-returnable material o Publicity material o Other reason, if any

कोई अन्य सूचना / Any other Information:- PCB Dechlorinated oil Sending back to the owner

Initiated /prepared by	Signature & Name of the person carrying the material	Signature, Name & Designation of Authorised officer
Sreelal.S	P.Harihran (Courier)	11.01.19 अपर निदेशक / Additional Director Dielectric Materials Division Central Power Research Institute पो. बा. सं. 8066 / P.B. No. 8066 सदाशिवनगर / Sadashivanagar बेंगलूर / Bangalore - 560 080

Note - 1. Materials & vehicle /s are subject to security check. 2. "Security Copy" has to be handed over at the [illegible]

NOV/15/NR

Annexure IV

PROCUREMENT PROCEDURE OF CPRI (NON - WORKS)					
Revision No.	: 01		Issue No:	: 2	
Dt of Revision	: 26.09.2008		Issue Dt.	: 30.06.2003	
			Page No.	: 1 OF6	
			Issued by	: QA	
Section	: 0	Document	: DQM -01		
Topic	: FORMAT 10 OF PROCUREMENT PROCEDURE OF CPRI (NON-WORKS)				

प्रारूप सं.क्रय/क्र.आ./पृ.1/10
FORMAT NO:PUR/PO/P1/10

डाक प्रमाणित
UNDER CERTIFICATE OF POSTING

फोन /Phone : 080-22072416/22072429

केन्द्रीयविद्युत अनुसंधान संस्थान
Central Power Research Institute
(भारत सरकारकी सोसाइटी)
(A Government of India Society)
प्रो सर.सी.वी रामन रोड़, सदाशिवनगर, डाकघर,
PROF.SIR C.V.RAMAN ROAD, SADASHIVNAGAR SUB P.O.
पो.बा. सं 8066, बेंगलूर-560 080 भारत.
P.B.No. 8066, BANGALORE - 560 080(INDIA).

क्रय आदेश सं./Purchase Order No.: CPRIBLR18DMDCDSSPONS02 दिनांक /Date : 07/01/19
(भविष्य के सभी पत्राचार में उल्लेखकरें)(To be quoted in all future correspondence)

मेसर्स / M/s KarRecycle center LLP.
No. 114, 1st Cross, 5 th Main,
Yeshwanthpur Industrial Area,
Tumkur Road, Bangalore 560022

पूर्व लेखा परीक्षित / PRE-AUDITED
04/01
~~स.ले.अ./A.A.O.~~ ले.अ./A.O.

महोदय / Dear Sirs,

विषय / Sub: Collection and Disposal of sludge and PCB contaminated Lab Consumables.
संदर्भ / Ref: आपकीकोटेशन सं.तथादिनांक:Your Quotation No. 550 dtd: 03.12.2018
हमारी पूछताछ सं. तथादिनांक/Our Enquiry No. CPRIBLR18DMDCDSPCB, Dtate:28.11.2018

नीचेदिए ब्यौरेनुसार उपबंधो एवं शर्तों पर. .. .. के लिए माँग आदेश/ पुनरादेशदेते हुए हम प्रसन्न है।
We are pleased to place an **ORDER** for Collection and Disposal of sludge and PCB contaminated Lab Consumables

क्र. सं./ Sl. No.	भण्डारकाविवरण/ Description of stores	यूनिट दर/ Unit Rate. कुल रु./ Rs	आवश्यक मात्र/यूनिट Quantity	कुल रकम / Total Amount रु/Rs.
1.	Collection and Disposal of sludge and PCB contaminated Lab Consumables as per KSPCB Norms. (Terms and conditions as per Annexure -1)	Rs.19/-	2000 Kg	Rs.38,000/-
	Sub total			38,000/-
	GST @ 18%			6840/-
	Total			**Rs.44,840/-**
	Rupees Forty four thousand and eight hundred and forty only.			

07/01/19
प्राधिकृत हस्ताक्षरकर्ता

PN: 1. The order acceptance shall be sent by Email/Fax/Post/Courier within 7 days from the date of PO. In case the same is not received, it will be treated that, the order has been accepted.

2. All payment above Rs. 25,000/- will be made only by Real Time Gross Settlement System (RTGS) of RBI from Jan 2011. Suppliers are requested to furnish the details in annexure enclosed in their letter head duly attested by their bankers with signature and stamp along with the Bill/Invoice.

Contd. 2