Chapter 5

Conclusions

According to the survey results, the following conclusions could be made;

1. Rate of contamination of in-use transformers

The major conclusion that could be arrived from this research is that there are a larger number of mineral oil transformers contaminated with PCBs rather than pure PCB transformers in Sri Lanka.

On extrapolating results of the survey, for the in use transformers of the population, it could be stated with at 95% confidence level that plans should be formulated for the safe storage, labelling and disposal of 768 MT of contaminated oils at the upper level and 519MT at the lower level.

According to the survey, in case of In-use transformers, it could be stated with 95% confidence level that in the population owned by LECO 100-66% are contaminated while 74% to 55% of CEB owned transformers in the population are contaminated.

There are only 4 pure PCB transformers identified, but these are large generation transformers, and contain larger volumes of PCB oils.

2. Rate of contamination in decommissioned transformers

There is a high degree of contamination in decommissioned transformers held by LTL and LECO. According to the survey, in case of Decommissioned transformers, at 95% confidence level there could be 64% to 36% of contaminated transformers in the population of transformers owned by LECO. In the case of the population of transformers owned by LTL, at 95% confidence level it could be stated that 82% to 54% of transformers in the population are contaminated with PCBs.

3. Storage

Presently, storage of decommissioned transformers is not done in an environmentally sound manner. Due to present practices, there is a high possibility of soil and ground water contamination in the storage yards owned by the CEB, LECO and LTL.

There are stocks of pure PCBs, as well as stocks of contaminated oils stored together with flammable oils, in an environmentally unsound manner. There is no plan for their safe storage or disposal in the near future.

4. Importation Statistics

A considerably large amount of transformers and capacitors are being imported annually to the country. However, there is no indication whether PCB containing equipment have arrived in Sri Lanka, as there are no separate HS codes for PCB containing equipment.

It is evident from Customs statistics that there is a possibility for PCB containing oil to come to the country undetected. Presently, there is a HS Heading for waste oils, which might contain PCBs, but not for other oils. Since there are no regulations controlling entry of PCBs to the country, there is no barrier for the import of oils or equipment containing PCBs.

5. Recycling of decommissioned transformers

There is a demand for transformer scrap, capacitors and waste oil from the small scale local recyclers. Therefore, PCB contaminated parts and oils could get into the hands of recyclers, and through them to the environment. The recyclers are unaware about the hazards of PCBs.

Chapter 6

Recommendations

Study results could be used to recommend the following, for better control and management of PCBs, in Sri Lanka.

1. Establishment of a Full Inventory and Database on all contaminated transformers

The results of the survey could only be extrapolated to transformers that have been manufactured on or before 1986. Therefore, in order to identify the total amount of transformers/oils positive for PCBs, it is necessary to undertake a full inventory to cover all provinces of the country.

Sampling and analyse of transformers manufactured after 1986 to check for cross-contamination is important. All positive transformers should be labelled and entered in a database for effective phasing out. It is necessary to formulate a management plan for these transformers, so as to protect human health and the environment.

Highest positive results were seen in transformers manufactured in India, Korea and France, and hence, transformers manufactured in these countries should be prioritized for the implementation of management measures.

2. Identification of all Pure PCB transformers

It is necessary to identify all pure PCB transformers, label them and monitor them until they are phased out. Owners of these transformers should be provided with guidelines for their environmentally sound maintenance until phasing out.

Large Generation transformers contain large quantities of oil and other contaminated material. Special steps should be taken to decontaminate these, if it is not possible to phase out in near future.

3. Operation and maintenance for prevention of further cross contamination

Guidelines for operation and maintenance should be provided for owners of transformers to facilitate proper handling of PCB contaminated equipment. It is necessary to take steps to prevent cross contamination of transformers during filtering operations carried out regularly. CEB, LECO and LTL should undertake research and development in order to identify a mechanism for the prevention of cross contamination.

Retention tanks for leaking transformers should be established in order to prevent environmental contamination.

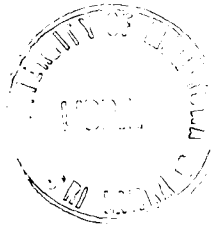
Recyclers and repair yards contaminate the environment with PCB due to lack of awareness on proper management measures as well as due to lack of safe disposal mechanisms.

4. Prevention on new entry of contaminated capacitors, transformers and oils to Sri Lanka

The capacities of relevant agencies should be strengthened to detect and identify PCB containing waste, transformers and other electrical equipment entering the country. Private sector institutions that might purchase used electrical equipment contaminated with PCBs at lower prices should be made aware on the risks.

One of the important steps to be taken is to prevent new entry of PCB to the country. A compulsory 'PCB free certificate' should be requested for imports of oils and equipment.

A considerably large amount of transformers and capacitors are being imported annually to the country. However, there is no indication whether these are new ones or used ones, and hence separate HS Codes should be created for these items. In addition to this, separate HS Codes should be created for transformers oils, in order to determine whether PCBs are imported.



5. Decommissioning of transformers

All transformers should be tested latest before disposal in order to prevent PCB contaminated oils getting in to the environment through small scale recyclers. Environmentally sound final disposal options should be determined for PCB transformers and for contaminated transformers. Options available in the country for final disposal should be carefully evaluated.

6. Establishment of proper storage and identification of contaminated sites for remediation

Special care should be taken when storing PCBs and contaminated material. Transformers should be drained and washed. All contaminated fluid should be stored in rust free stainless steel barrels, away from flammable liquids. Unauthorized persons should not be allowed to enter the storage yards. A crisis control plan should be in place, with a competent team with clear instruction to handle any emergency.

It is necessary to establish an inventory on contaminated sites, specially old storage yards. Once the contaminated sites are identified, containment and decontamination of these sites should be carried out.

7. Establishment of Regulations

Appropriate regulations should be established to facilitate the implementation of above recommendations.

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Annex 1

QUESTIONNAIRE

FOR THE PRELIMINARY INVENTORY ON PCB CONTAINING TRANSFORMERS

Information Related to Transformers*

	Location of the Transformer	
1	Owner of the transformer	
2	Division /Branch	
3	Name of site/location	
4	Owner's Identification Number**	
	Name Plate Infromation	
5	Type of the Transformer	
6	Serial number	
7	Name of Manufacturer	
8	Country of origin**	
9	Year of Manufacture	
10	Power (kVA)	
11	Total mass	
12	Mass of Insulating Liquid	
13	Insulating Liquid**	
	Maintenance	
14	Present Status of the transformer	Leaking/Not leaking
15	Service Status	In use/Repaired/Decommissioned

Inspector : .....

Date of Inspection : .....

Name of Manager : .....

Contact Numbers : .....

NOTES FOR FILLING OF THE QUESTIONNAIRE :

*Transformers manufactured on and before 1986 should be sampled

4.** Identification number given to the transformer by the Owner. To be used for tracking.

8. ** If Country of Origin is avialable in the Name Plate

Annex 2

Inventory of Inuse Transformers studied

	Owner category	Geographical zone	PCB Test	Tested	Type	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	Weight of the dielectric fluid	Status of the equipment	Age
1	CEB	WP	Not tested	Not tested	D	France	1967	500	2,200	540	In use	37
2	CEB	WP	Not tested	Not tested	D	Korea	1981	800	1,285	295	In use	23
3	CEB	WP	Not tested	Not tested	D	France	1967	500	2900	710	In use	37
4	CEB	WP	Not tested	Not tested	D	India	UK	500	2,200	540	In use	UK
5	CEB	WP	negative (<50 ppm	Tested	D	France	1962	500	2,200	540	In use	42
6	CEB	WP	Not tested	Not tested	D	Germany	1982	400	2,200	540	In use	22
7	CEB	WP	negative (<50 ppm	Tested	D	UK	1936	500	2,200	540	In use	68
8	CEB	WP	negative (<50 ppm	Tested	D	UK	1955	500	2,200	540	In use	49
9	CEB	WP	Not tested	Not tested	D	Germany	1984	800	1,285	290	In use	20
10	CEB	WP	Not tested	Not tested	D	India	1971	500	2,200	540	In use	33
11	CEB	WP	Not tested	Not tested	D	Korea	1984	630	2500	650	In use	20
12	CEB	WP	positive (>50 ppm)	Tested	D	France	1955	750	5,525	1,775	In use	49
13	CEB	WP	Not tested	Not tested	D	Japan	1979	500	2,200	540	In use	25
14	CEB	WP	Not tested	Not tested	D	France	1955	750	5,525	1,775	In use	49
15	CEB	WP	positive (>50 ppm)	Tested	D	UK	1955	750	5,525	1,775	In use	49
16	CEB	WP	Not tested	Not tested	D	Germany	1974	500	2,200	540	In use	30
17	CEB	WP	positive (>50 ppm)	Tested	D	Italy	1963	500	2,200	540	In use	41
18	CEB	WP	negative (<50 ppm	Tested	D	UK	1936	500	2,200	540	In use	68
19	CEB	WP	Not tested	Not tested	D	India	1968	500	2,200	540	In use	36
20	CEB	WP	Not tested	Not tested	D	France	1962	500	2,200	540	In use	42
21	CEB	WP	positive (>50 ppm)	Tested	D	India	1960	500	2900	710	In use	44
22	CEB	WP	Not tested	Not tested	D	India	1967	500	1566	435	In use	37
23	CEB	WP	positive (>50 ppm)	Tested	D	India	1979	400	1578	364	In use	25
24	CEB	WP	Not tested	Not tested	D	India	1969	150	1400	486	In use	35
25	CEB	WP	Not tested	Not tested	D	India	1979	400	1578	364	In use	25
26	CEB	WP	positive (>50 ppm)	Tested	D	UK	1960	750	5,525	1,775	In use	44
27	CEB	WP	Not tested	Not tested	D	India	1966	500	2,200	540	In use	38
28	CEB	WP	Not tested	Not tested	D	France	1978	500	1000	245	In use	26
29	CEB	WP	positive (>50 ppm)	Tested	D	France	1967	500	957	235	In use	37
30	CEB	WP	Not tested	Not tested	D	India	1982	100	835	238	In use	22
31	CEB	WP	Not tested	Not tested	D	France	1967	150	1030	302	In use	37
32	CEB	WP	positive (>50 ppm)	Tested	D	France	1967	300	1556	432	In use	37
33	CEB	WP	Not tested	Not tested	D	Korea	1979	100	950	311	In use	25
34	CEB	WP	Not tested	Not tested	D	France	1979	400	1578	364	In use	25
35	CEB	WP	Not tested	Not tested	D	France	1966	500	2200	540	In use	38
36	CEB	WP	Not tested	Not tested	D	Korea	1978	1000	4400	1200	In use	26
37	CEB	WP	Not tested	Not tested	D	France	1973	400	1499	330	In use	31
38	CEB	WP	negative (<50 ppm	Tested	D	Yugoslavia	1981	250	1,040	181	In use	23
39	CEB	WP	Not tested	Not tested	D	India	1981	100	835	192	In use	23
40	CEB	WP	Not tested	Not tested	D	India	1977	160	1200	400	In use	27
41	CEB	WP	Not tested	Not tested	D	Sri Lanka	1984	100	1010	275	In use	20
42	CEB	WP	Not tested	Not tested	D	Sri Lanka	1984	100	1010	275	In use	20
43	CEB	WP	Not tested	Not tested	D	France	1967	150	1030	302	In use	37
44	CEB	WP	Not tested	Not tested	D	India	1970	150	1340	486	In use	34
45	CEB	WP	Not tested	Not tested	D	France	1967	200	1206	347	In use	37
46	CEB	WP	Not tested	Not tested	D	Sri Lanka	1986	160	1165	357	In use	18

	Owner category	Geographical zone	PCB Test	Tested	Type	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	Weight of the dielectric fluid	Status of the equipment	Age
47	CEB	WP	positive (>50 ppm)	Tested	D	Romania	1978	250	1240	357	In use	26
48	CEB	WP	positive (>50 ppm)	Tested	D	Germany	1984	250	1,530	400	In use	20
49	CEB	WP	Not tested	Not tested	D	UK	1986	150	1030	302	In use	18
50	CEB	WP	Not tested	Not tested	D	Sri Lanka	1984	160	1250	357	In use	20
51	CEB	WP	negative (<50 ppm	Tested	D	Romania	1982	160	750	173	In use	22
52	CEB	WP	Not tested	Not tested	D	India	1978	250	1450	357	In use	26
53	CEB	WP	positive (>50 ppm)	Tested	D	Italy	1966	300	1,515	374	In use	38
54	CEB	WP	Not tested	Not tested	D	Sri Lanka	1987	400	1795	485	In use	17
55	CEB	WP	positive (>50 ppm)	Tested	D	India	1977	100	930	320	In use	27
56	CEB	WP	positive (>50 ppm)	Tested	D	Romania	1981	400	1795	485	In use	23
57	CEB	WP	Not tested	Not tested	D	Sri Lanka	1985	630	2500	650	In use	19
58	CEB	WP	Not tested	Not tested	D	Sri Lanka	1985	630	2,500	650	In use	19
59	CEB	WP	Not tested	Not tested	D	Sri Lanka	1985	250	1540	330	In use	19
60	CEB	WP	Not tested	Not tested	D	France	1980	500	1550	330	In use	24
61	CEB	WP	positive (>50 ppm)	Tested	D	India	1977	400	2400	665	In use	27
62	CEB	WP	Not tested	Not tested	D	Sri Lanka	1985	250	1,840	460	In use	19
63	CEB	WP	Not tested	Not tested	D	India	1973	250	1,840	635	In use	31
64	CEB	WP	Not tested	Not tested	D	France	1979	250	1,840	462	In use	25
65	CEB	WP	Not tested	Not tested	D	Sri Lanka	1985	630	2500	650	In use	19
66	CEB	SP	Not tested	Not tested	D	France	1970	100	336	70	In use	34
67	CEB	SP	positive (>50 ppm)	Tested	D	Romania	1982	250	1034	238	In use	22
68	CEB	SP	Not tested	Not tested	D	India	1972	30	780	300	In use	32
69	CEB	SP	positive (>50 ppm)	Tested	D	Bulgaria	1979	250	1030	238	In use	25
70	CEB	SP	Not tested	Not tested	D	France	1979	250	1738	520	In use	25
71	CEB	SP	Not tested	Not tested	D	India	1973	400	1,650	762	In use	31
72	CEB	SP	Not tested	Not tested	D	India	1981	100	835	238	In use	23
73	CEB	SP	positive (>50 ppm)	Tested	D	India	1978	250	1090	250	In use	26
74	CEB	SP	Not tested	Not tested	D	Korea	1983	1200	6500	1810	In use	21
75	CEB	SP	Not tested	Not tested	D	India	1982	5000	11300	3,700	In use	22
76	CEB	SP	Not tested	Not tested	D	India	1982	5000	11300	3,700	In use	22
77	CEB	SP	positive (>50 ppm)	Tested	D	Italy	1965	200	4550	1015	In use	39
78	CEB	SP	Not tested	Not tested	D	Korea	1983	1000	4400	1200	In use	21
79	CEB	SP	positive (>50 ppm)	Tested	D	France	1969	500	2034	403	In use	35
80	CEB	SP	Not tested	Not tested	D	Sri Lanka	1986	100	1987	344	In use	18
81	CEB	SP	Not tested	Not tested	D	Sri Lanka	1986	100	930	300	In use	18
82	CEB	SP	positive (>50 ppm)	Tested	D	Sri Lanka	1978	160	1064	355	In use	26
83	CEB	SP	Not tested	Not tested	D	India	1971	250	1775	600	In use	33
84	CEB	SP	Not tested	Not tested	D	France	1967	200	1206	347	In use	37
85	CEB	SP	Not tested	Not tested	D	Sri Lanka	1986	100	1017	409	In use	18
86	CEB	SP	positive (>50 ppm)	Tested	D	Sri Lanka	1978	160	1016	355	In use	26
87	CEB	SP	Not tested	Not tested	D	India	1973	2000	6610	1700	In use	31
88	CEB	SP	positive (>50 ppm)	Tested	D	India	1973	2000	6610	1700	In use	31
89	CEB	SP	Not tested	Not tested	D	Korea	1983	160	1100	270	In use	21
90	CEB	SP	Not tested	Not tested	D	Korea	1983	2000	7250	1650	In use	21
91	CEB	SP	positive (>50 ppm)	Tested	D	Korea	1983	2000	7250	1650	In use	21
92	CEB	SP	Not tested	Not tested	D	India	1969	100	1230	410	In use	35
93	CEB	SP	Not tested	Not tested	D	Korea	1984	2000	6610	1700	In use	20
94	CEB	SP	positive (>50 ppm)	Tested	D	India	1973	2000	6500	1600	In use	31
95	CEB	SP	Not tested	Not tested	D	Korea	1984	2000	6500	1600	In use	20
96	CEB	SP	Not tested	Not tested	D	Sri Lanka	1978	160	1250	355	In use	26
97	CEB	NWP	negative (<50 ppm	Tested	D	Bulgaria	1979	150	1045	222	In use	25
98	CEB	NWP	Not tested	Not tested	D	Sri Lanka	1986	160	916	245	In use	18
99	CEB	NWP	Not tested	Not tested	D	Romania	1980	400	1751	385	In use	24
100	CEB	NWP	Not tested	Not tested	D	Germany	1981	100	700	180	In use	23
101	CEB	NWP	Not tested	Not tested	D	Sri Lanka	1983	400	1575	360	In use	21

	Owner category	Geograp hical zone	PCB Test	Tested	Type	Country of Manufac ture	Fabricati on date	Power Kva	Total weight (kgs)	Weight of the dielectri c fluid	Status of the equipme nt	Age
102	CEB	NWP	negative (<50 ppm	Tested	D	Belgium	1965	150	853	244	In use	39
103	CEB	NWP	positive (>50 ppm)	Tested	D	France	1973	100	865	244	In use	31
104	CEB	NWP	Not tested	Not tested	D	France	1967	100	810	244	In use	37
105	CEB	NWP	Not tested	Not tested	D	Sri Lanka	1983	250	1035	244	In use	21
106	CEB	NWP	Not tested	Not tested	D	India	1982	250	1330	244	In use	22
107	CEB	NWP	negative (<50 ppm	Tested	D	S.Africa	1960	100	1,218	244	In use	44
108	CEB	NWP	Not tested	Not tested	D	India	1971	250	1170	244	In use	33
109	CEB	NWP	Not tested	Not tested	D	Japan	1985	2000	7100	1,620	In use	19
110	CEB	NWP	Not tested	Not tested	D	France	1972	250	1010	244	In use	32
111	CEB	NWP	Not tested	Not tested	D	France	1981	2000	4800	1,930	In use	23
112	CEB	NWP	Not tested	Not tested	D	India	1973	2000	6610	1,510	In use	31
113	CEB	NWP	Not tested	Not tested	D	Sri Lanka	1984	160	1250	360	In use	20
114	CEB	WP	Not tested	Not tested	D	Sri Lanka	1983	160	1245	450	In use	21
115	CEB	NWP	Not tested	Not tested	D	Sri Lanka	1985	160	1250	355	In use	19
116	CEB	NWP	Not tested	Not tested	D	Sri Lanka	1984	250	1540	460	In use	20
117	CEB	NWP	negative (<50 ppm	Tested	D	Italy	1957	100	1100	253	In use	47
118	CEB	WP	Not tested	Not tested	D	Unknown	1977	150	1045	286	In use	27
119	CEB	WP	Not tested	Not tested	D	UK	1973	200	1050	286	In use	31
120	CEB	WP	Not tested	Not tested	D	Belgium	1985	50	521	130	In use	19
121	CEB	WP	positive (>50 ppm)	Tested	D	UK	1986	500	1,944	334	In use	18
122	CEB	NWP	negative (<50 ppm	Tested	D	Unknown	1987	500	2,290	400	In use	17
123	CEB	NCP	positive (>50 ppm)	Tested	D	India	UK	100	835	283	In use	UK
124	CEB	NCP	negative (<50 ppm	Tested	D	India	UK	250	835	270	In use	UK
125	CEB	NCP	Not tested	Not tested	D	Sri Lanka	1984	100	485	115	In use	20
126	CEB	NCP	Not tested	Not tested	D	India	1982	250	1330	350	In use	22
127	CEB	NCP	Not tested	Not tested	D	Sri Lanka	1984	100	485	115	In use	20
128	CEB	NCP	negative (<50 ppm	Tested	D	Sri Lanka	1984	200	1,250	355	In use	20
129	CEB	NCP	positive (>50 ppm)	Tested	D	Sri Lanka	1986	100	1,016	344	In use	18
130	CEB	NCP	negative (<50 ppm	Tested	D	Yugoslavia	UK	100	485	115	In use	UK
131	CEB	NCP	Not tested	Not tested	D	Yugoslavia	UK	100	485	115	In use	UK
132	CEB	NCP	positive (>50 ppm)	Tested	D	India	UK	160	1,250	288	In use	UK
133	CEB	NCP	negative (<50 ppm	Tested	D	Romania	UK	100	485	115	In use	UK
134	CEB	NCP	Not tested	Not tested	D	France	UK	300	1,075	298	In use	UK
135	LECO	WP	Not tested	Not tested	D	France	1953	250	1,640	380	In use	51
136	LECO	WP	Not tested	Not tested	D	Yugoslavia	1981	250	1044	313	In use	23
137	LECO	WP	Not tested	Not tested	D	Japan	1970	100	630	165	In use	34
138	LECO	WP	Not tested	Not tested	D	Sri Lanka	1983	230	1170	280	In use	21
139	LECO	WP	Not tested	Not tested	D	Belgium	1895	160	710	145	In use	109
140	LECO	WP	negative (<50 ppm	Tested	D	Portugal	1965	150	853	244	In use	39
141	LECO	WP	Not tested	Not tested	D	Korea	1978	250	1,240	275	In use	26
142	LECO	WP	positive (>50 ppm)	Tested	D	Bulgaria	1979	150	845	195	In use	25
143	LECO	WP	Not tested	Not tested	D	Korea	1981	250	2200	450	In use	23
144	LECO	WP	positive (>50 ppm)	Tested	D	India	1972	500	2360	510	In use	32
145	LECO	WP	positive (>50 ppm)	Tested	D	Germany	1967	500	1,820	430	In use	37
146	LECO	WP	positive (>50 ppm)	Tested	D	UK	1953	300	2,068	500	In use	51
147	LECO	WP	Not tested	Not tested	D	Sri Lanka	1985	160	880	245	In use	19
148	LECO	WP	Not tested	Not tested	D	Korea	1981	630	1900	390	In use	23
149	LECO	WP	Not tested	Not tested	D	Korea	1983	400	1900	390	In use	21
150	LECO	WP	Not tested	Not tested	D	Sri Lanka	1985	160	880	245	In use	19
151	LECO	WP	positive (>50 ppm)	Tested	D	Germany	UK	200	1,445	347	In use	UK
152	LECO	WP	Not tested	Not tested	D	France	1972	100	560	130	In use	32
153	LECO	WP	positive (>50 ppm)	Tested	D	Korea	1981	630	2200	506	In use	23
154	LECO	WP	Not tested	Not tested	D	Romania	1980	400	1772	385	In use	24
155	LECO	WP	positive (>50 ppm)	Tested	D	India	1982	63	240	55	In use	22
156	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,500	22,500	In use	21

	Owner category	Geograp hical zone	PCB Test	Tested	Type	Country of Manufac ture	Fabricati on date	Power Kva	Total weight (kgs)	Weight of the dielectri c fluid	Status of the equipme nt	Age
157	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,500	22,500	In use	21
158	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,500	22,500	In use	21
159	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,500	22,500	In use	21
160	CEB	WP	negative (<50 ppm	Tested	T	Sri Lanka	1983	27000	44,200	11,300	In use	21
161	CEB	WP	positive (>50 ppm)	Tested	T	Sri Lanka	1982	27000	44,200	11,300	In use	22
162	CEB	WP	Not tested	Not tested	T	Sri Lanka	1982	27000	44,200	11,300	In use	22
163	CEB	WP	Not tested	Not tested	T	Unknown	1971	31500	58,000	15,500	In use	33
164	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,000	15,500	In use	21
165	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,000	15,500	In use	21
166	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,000	15,500	In use	21
167	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,000	15,500	In use	21
168	CEB	WP	Not tested	Not tested	T	Unknown	1983	31500	58,000	15,500	In use	21
169	CEB	WP	Not tested	Not tested	T	Sri Lanka	1983	nknown	58,000	15,500	In use	21
170	CEB	WP	negative (<50 ppm	Tested	T	Sri Lanka	1979	30000	48,700	14,200	In use	25
171	CEB	WP	negative (<50 ppm	Tested	T	Sri Lanka	1981	30000	48,700	14,200	In use	23
172	CEB	WP	Not tested	Not tested	T	Austria	1981	31500	46,550	14,200	In use	23
173	CEB	CP	Not tested	Not tested	T	Austria	1986	31500	46,550	13,500	In use	18
174	CEB	CP	Not tested	Not tested	T	Belgium	1986	31500	46,550	15,300	In use	18
175	CEB	CP	Not tested	Not tested	T	Belgium	UK	31500	65,500	17,300	In use	UK
176	CEB	NWP	Not tested	Not tested	T	Belgium	UK	31500	65,500	17,300	In use	UK
177	CEB	NWP	Not tested	Not tested	T	Unknown	UK	31500	58,000	13,500	In use	UK
178	CEB	UP	Not tested	Not tested	T	France	1983	31500	32,000	9,800	In use	21
179	CEB	NCP	Not tested	Not tested	T	France	1968	10000	32,000	9,800	In use	36
180	CEB	NCP	negative (<50 ppm	Tested	T	Austria	1968	31500	46,550	9,350	In use	36
181	CEB	WP	negative (<50 ppm	Tested	T	Austria	UK	31500	46,550	9,350	In use	UK
182	CEB	WP	negative (<50 ppm	Tested	T	France	UK	31500	32,000	9,800	In use	UK
183	CEB	EP	Not tested	Not tested	T	France	1978	10000	32,000	9,800	In use	26
184	CEB	EP	Not tested	Not tested	T	France	1968	31500	32,000	9,800	In use	36
185	CEB	EP	Not tested	Not tested	T	France	1970	5000	4,000	920	In use	34
186	CEB	EP	Not tested	Not tested	T	France	1970	5000	4,000	1,100	In use	34
187	CEB	SP	Not tested	Not tested	T	France	1980	1200	56,600	15,600	In use	24
188	CEB	SP	Not tested	Not tested	T	Denmark	1980	23100	56,600	15,600	In use	24
189	CEB	SP	Not tested	Not tested	T	Germany	1986	23100	56,600	15,600	In use	18
190	CEB	EP	Not tested	Not tested	T	Germany	1983	1600	4,690	1,067	In use	21
191	CEB	EP	Not tested	Not tested	T	France	1983	1000	32,000	9,800	In use	21
192	CEB	NP	Not tested	Not tested	T	France	1972	10000	32,000	9,800	In use	32
193	CEB	NP	Not tested	Not tested	T	France	1969	10000	32,000	9,800	In use	35
194	CEB	SP	positive (>50 ppm)	Tested	T	France	1972	10000	32,000	9,800	In use	32
195	CEB	SP	positive (>50 ppm)	Tested	T	France	1969	10000	32,000	9,800	In use	35
196	CEB	SP	positive (>50 ppm)	Tested	T	France	1975	10000	32,000	9,800	In use	29
197	CEB	SabP	Not tested	Not tested	T	France	UK	71000	68,000	15,640	In use	UK
198	CEB	SabP	Not tested	Not tested	T	France	UK	71000	68,000	15,640	In use	UK
199	CEB	CP	Not tested	Not tested	T	France	1972	72000	41,100	10,000	In use	32
200	CEB	CP	Not tested	Not tested	T	Czechoslova	1972	72000	41,100	10,000	In use	32
201	CEB	SabP	Not tested	Not tested	G	Czechoslova	1966	350	1800	360	In use	38
202	CEB	SabP	Not tested	Not tested	G	Czechoslova	1966	5000	16200	4600	In use	38
203	CEB	SabP	negative (<50 ppm	Tested	G	Czechoslova	1966	5000	16200	4600	In use	38
204	CEB	SabP	Not tested	Not tested	G	Unknown	UK	5000	16,200	4600	In use	UK
205	CEB	CP	Not tested	Not tested	G	Unknown	1983	32000	44,400	8,900	In use	21
206	CEB	CP	negative (<50 ppm	Tested	G	Unknown	1983	32000	44,400	8,900	In use	21
207	CEB	CP	Not tested	Not tested	G	Denmark	1983	32000	48,700	8,900	In use	21
208	CEB	CP	Not tested	Not tested	G	Denmark	1982	30000	48,700	14,200	In use	22
209	CEB	CP	Not tested	Not tested	G	Germany	1982	30000	48,700	14,200	In use	22
210	CEB	CP	Not tested	Not tested	G	Germany	1983	31500	45,000	14,200	In use	21
211	CEB	CP	Not tested	Not tested	G	Germany	1985	27000	45,000	10,000	In use	19

	Owner category	Geograp hical zone	PCB Test	Tested	Type	Country of Manufac ture	Fabricati on date	Power Kva	Total weight (kgs)	Weight of the dielectri c fluid	Status of the equipme nt	Age
212	CEB	CP	negative (<50 ppm	Tested	G	Germany	1985	27000	45,000	10,000	In use	19
213	CEB	CP	Not tested	Not tested	G	Germany	1985	27000	61,000	15,300	In use	19
214	CEB	CP	Not tested	Not tested	G	Germany	1984	34000	61,000	15,300	In use	20
215	CEB	CP	Not tested	Not tested	G	Germany	1984	34000	61,000	15,300	In use	20
216	CEB	CP	Not tested	Not tested	G	Canada	1984	34000	45,000	10,000	In use	20
217	CEB	CP	negative (<50 ppm	Tested	G	Canada	1965	17500	27,409	6,955	In use	39
218	CEB	CP	positive (>50 ppm)	Tested	G	Canada	1965	17500	27,409	6,955	In use	39
219	CEB	CP	Not tested	Not tested	G	Canada	1965	17500	27,409	6,955	In use	39
220	CEB	CP	Not tested	Not tested	G	France	1965	17500	27,409	6,955	In use	39
221	CEB	SP	Not tested	Not tested	T	France	1966	400	1,027	236	In use	38
222	CEB	SP	Not tested	Not tested	T	France	1980	30000	56,600	15,600	In use	UK
223	CEB	SP	Not tested	Not tested	T	France	1980	200	4,000	1,100	In use	UK
224	CEB	CP	Not tested	Not tested	G	France	1972	32000	41,100	10,000	In use	32
225	CEB	CP	negative (<50 ppm	Tested	G	Germany	1972	32000	44,000	10,000	In use	32
226	CEB	CP	positive (>50 ppm)	Tested	G	Germany	1985	32000	44,000	9,300	In use	19
227	CEB	CP	Not tested	Not tested	G	Japan	1985	32000	44,000	9,300	In use	19
228	CEB	CP	Not tested	Not tested	G	Japan	1980	38000	44,000	9,300	In use	24
229	CEB	CP	Not tested	Not tested	G	Japan	1976	50000	57,000	33,500	In use	28
230	CEB	CP	Not tested	Not tested	G	France	1975	32000	38,000	10,000	In use	29
231	CEB	EP	positive (>50 ppm)	Tested	G	Unknown	1963	15000	38,000	9,850	In use	41
232	CEB	EP	positive (>50 ppm)	Tested	G	Unknown	1963	15000	38,000	9,850	In use	41
233	CEB	CP	Not tested	Not tested	G	Unknown	1963	5333	20,860	5,910	In use	41
234	CEB	CP	negative (<50 ppm	Tested	G	Unknown	1963	5333	20,860	5,910	In use	41
235	CEB	CP	Not tested	Not tested	G	Unknown	1963	10700	20,860	5,910	In use	41
236	CEB	CP	negative (<50 ppm	Tested	G	France	1968	10700	20,860	5,910	In use	36
237	CEB	CP	Not tested	Not tested	G	France	1963	500	2,630	500	In use	41
238	CEB	CP	Not tested	Not tested	G	France	1963	32000	41,200	15,000	In use	41
239	CEB	WP	Not tested	Not tested	G	France	1961	32000	41,200	15,000	In use	43
240	CEB	WP	positive (>50 ppm)	Tested	G	France	1961	32000	41,200	15,000	In use	43
241	CEB	WP	Not tested	Not tested	G	France	1961	2000	6,390	1,390	In use	43
242	CEB	WP	Not tested	Not tested	GA	Belgium	1962	32000	65,000	15,000	In use	42
243	CEB	WP	Not tested	Not tested	GI	Belgium	1980	60000	65,000	17,000	In use	24
244	CEB	WP	Not tested	Not tested	GI	France	1980	60000	49,000	17,000	In use	24
245	CEB	WP	Not tested	Not tested	G	UK	1980	28700	38,070	6,600	In use	24
246	CEB	WP	Not tested	Not tested	G	UK	1980	28700	38,070	7,600	In use	24
247	CEB	WP	Not tested	Not tested	G	France	1980	28000	38,000	6,600	In use	24
248	CEB	WP	Not tested	Not tested	G	France	1980	31500	36,000	13,200	In use	24
249	CEB	WP	Not tested	Not tested	G	France	1980	28700	49,400	13,200	In use	24
250	CEB	WP	Not tested	Not tested	GA	France	1962	750	7,600	1,130	In use	42
251	CEB	WP	negative (<50 ppm	Tested	GA	France	1962	750	7,600	1,130	In use	42
252	CEB	WP	Not tested	Not tested	GA	France	1962	750	7,600	1,130	In use	42
253	CEB	WP	positive (>50 ppm)	Tested	GA	France	1962	2000	6,390	1,390	In use	42
254	CEB	WP	Not tested	Not tested	G	France	1983	50000	74,000	18,000	In use	21
255	CEB	WP	negative (<50 ppm	Tested	G	France	1983	50000	74,000	18,000	In use	21
256	CEB	CP	negative (<50 ppm	Tested	G	Sri Lanka	1972	24000	41100	10,000	In use	32
257	user	EP	Not tested	Not tested	D	Germany	1984	400	2,420	510	In use	20
258	user	EP	Not tested	Not tested	D	Germany	UK	500	2,420	550	In use	UK
259	CEB	EP	Not tested	Not tested	D	France	1977	150	1,045	286	In use	27
260	CEB	EP	Not tested	Not tested	D	Italy	1953	50	353	78	In use	51
261	user	WP	Not tested	Not tested	D	UK	1953	1000	4,350	851	In use	51
262	user	WP	Not tested	Not tested	D	UK	1953	400	1,218	600	In use	51
263	user	WP	Not tested	Not tested	D	Sweden	1976	800	2880	495	In use	28
264	user	WP	Not tested	Not tested	D	India	1980	500	2,220	440	In use	24
265	user	WP	Not tested	Not tested	D	UK	1953	750	4,890	1,410	In use	51
266	user	WP	Not tested	Not tested	D	UK	1953	750	4,890	1,410	in use	51

	Owner category	Geographical zone	PCB Test	Tested	Type	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	Weight of the dielectric fluid	Status of the equipment	Age
267	user	WP	Not tested	Not tested	D	Norway	UK	600	4,630	1,065	In use	UK
268	user	EP	Not tested	Not tested	D	Germany	1965	1600	4,690	1,067	In use	39
269	user	EP	Not tested	Not tested	D	Norway	1955	2000	9700	2400	In use	49
270	CEB	NCP	Not tested	Not tested	D	France	1977	250	970	210	In use	27
271	CEB	WP	Not tested	Not tested	D	India	UK	500	1,710	343	In use	UK
272	user	WP	Not tested	Not tested	D	UK	UK	400	3700	600	In use	UK
273	CEB	SP	Not tested	Not tested	D	Unknown	UK	35	144	36	In use	UK
274	user	SP	Not tested	Not tested	D	Unknown	UK	35	148	37	In use	UK
275	user	SP	Not tested	Not tested	D	France	1967	400	1400	312	In use	37
276	user	NWP	Not tested	Not tested	D	Germany	1969	45	1,400	610	In use	35
277	user	NWP	Not tested	Not tested	D	Germany	1969	400	1400	322	In use	35
278	user	WP	Not tested	Not tested	D	Italy	2000	560	1600	330	In use	4
279	user	NWP	Not tested	Tested	D	Pakistan	1999	2000	6,930	1320	In use	5
280	user	NWP	Not tested	Not tested	D	Germany	1970	4000	10,150	2,660	In use	34
281	user	WP	Not tested	Not tested	D	Germany	1966	2000	6,930	1,660	In use	38
282	user	NWP	Not tested	Tested	D	Germany	1970	2000	6,930	1,470	In use	34
283	user	NWP	Not tested	Not tested	D	Germany	1970	2000	7,180	1,470	In use	34
284	user	WP	Not tested	Not tested	D	Germany	1966	2000	7,180	1,660	In use	38
285	user	NWP	Not tested	Not tested	D	Germany	1966	2000	7,180	1,680	In use	38
286	user	WP	Not tested	Not tested	D	Germany	1965	1000	2,910	575	In use	39
287	user	WP	Not tested	Not tested	D	Germany	1970	4000	10,510	2,420	In use	34
288	user	WP	Not tested	Not tested	D	Germany	1970	4000	11,700	2,420	In use	34
289	user	WP	Not tested	Not tested	D	Germany	1966	4000	11,700	3,468	In use	38
290	user	WP	Not tested	Tested	D	Germany	1966	4000	11700	3,468	In use	38
291	user	SP	Not tested	Not tested	D	Romania	1982	250	1,770	470	In use	22
292	CEB	SabP	negative (<50 ppm	Tested	D	Italy	UK	75	353	78	In use	UK
293	CEB	SabP	Not tested	Not tested	D	India	1982	100	1,125	270	In use	22
294	CEB	SabP	Not tested	Not tested	D	India	1976	100	1,200	423	In use	28
295	CEB	SabP	positive (>50 ppm)	Tested	D	Korea	1978	150	2,085	567	In use	26
296	CEB	SabP	Not tested	Not tested	D	France	1973	500	2,865	570	In use	31
297	CEB	SabP	positive (>50 ppm)	Tested	D	Italy	1965	200	1,302	352	In use	39
298	CEB	SabP	negative (<50 ppm	Tested	D	Unknown	UK	200	1,010	180	In use	UK
299	CEB	SabP	positive (>50 ppm)	Tested	D	France	1978	250	1,125	185	In use	26
300	CEB	SabP	positive (>50 ppm)	Tested	D	India	1976	100	1,540	425	In use	28
301	CEB	UP	Not tested	Not tested	D	Sri Lanka	1985	250	930	460	In use	19
302	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	100	930	300	In use	15
303	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	100	1,384	300	In use	15
304	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	250	930	214	In use	15
305	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	100	1,016	300	In use	15
306	CEB	UP	Not tested	Not tested	D	Sri Lanka	1987	100	1,125	344	In use	17
307	CEB	UP	Not tested	Not tested	D	India	1970	100	1,125	480	In use	34
308	CEB	UP	Not tested	Not tested	D	France	1967	75	1,095	231	In use	37
309	CEB	UP	Not tested	Not tested	D	Sri Lanka	1987	160	1,095	345	In use	17
310	CEB	UP	positive (>50 ppm)	Tested	D	France	1973	500	2,085	570	In use	31
311	CEB	UP	Not tested	Not tested	D	Sri Lanka	1978	100	1,500	300	In use	26
312	CEB	UP	positive (>50 ppm)	Tested	D	Germany	1936	400	1,785	440	In use	68
313	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	400	880	485	In use	15
314	CEB	UP	Not tested	Not tested	D	Romania	1982	250	1,250	470	In use	22
315	CEB	UP	Not tested	Not tested	D	India	1969	100	1,445	332	In use	35
316	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	250	1,445	460	In use	15
317	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	250	1,445	460	In use	15
318	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	250	835	460	In use	15
319	CEB	UP	positive (>50 ppm)	Tested	D	India	1983	100	1,095	238	In use	21
320	CEB	UP	Not tested	Not tested	D	Sri Lanka	1989	160	970	345	In use	15
321	CEB	UP	positive (>50 ppm)	Tested	D	Sri Lanka	1985	100	1,016	334	In use	19

	Owner category	Geograp hical zone	PCB Test	Tested	Type	Country of Manufac ture	Fabricati on date	Power Kva	Total weight (kgs)	of the dielectri c fluid	Status of the equipme nt	Age
322	CEB	UP	positive (>50 ppm)	Tested	D	Sri Lanka	1982	100	1,045	344	In use	22
323	CEB	UP	positive (>50 ppm)	Tested	D	France	1977	150	1,016	286	In use	27
324	CEB	UP	positive (>50 ppm)	Tested	D	Sri Lanka	1987	100	1,446	344	In use	17
325	CEB	UP	Not tested	Not tested	D	Sri Lanka	1988	250	1,445	460	In use	16
326	CEB	UP	Not tested	Not tested	D	Sri Lanka	1988	250	1,206	445	In use	16
327	CEB	UP	Not tested	Not tested	D	France	1967	200	1,445	347	In use	37
328	CEB	UP	Not tested	Not tested	D	Sri Lanka	1988	250	2,906	460	In use	16
329	CEB	UP	Not tested	Not tested	D	India	1969	500	2,200	540	In use	35
330	CEB	CP	negative (<50 ppm	Tested	D	Yugoslavia	1983	100	2,200	550	In use	21
331	CEB	CP	positive (>50 ppm)	Tested	D	Yugoslavia	1982	400	1,540	540	In use	22
332	CEB	CP	Not tested	Not tested	D	Sri Lanka	1984	250	1,540	460	In use	20
333	CEB	CP	positive (>50 ppm)	Tested	D	Korea	1983	750	7,500	3,100	In use	21
334	CEB	CP	positive (>50 ppm)	Tested	D	France	1978	250	1,560	342	In use	26
335	CEB	CP	positive (>50 ppm)	Tested	D	Yugoslavia	1979	250	1,010	342	In use	25
336	CEB	CP	positive (>50 ppm)	Tested	D	France	1978	250	1,010	185	In use	26
337	CEB	CP	positive (>50 ppm)	Tested	D	France	1978	250	1,010	185	In use	26
338	CEB	CP	positive (>50 ppm)	Tested	D	India	1978	250	2,470	590	In use	26
339	CEB	CP	positive (>50 ppm)	Tested	D	Yugoslavia	1979	50	200	46	In use	25
340	CEB	CP	negative (<50 ppm	Tested	D	Belgium	1975	100	2,200	550	In use	29
341	CEB	CP	negative (<50 ppm	Tested	D	Yugoslavia	1981	160	620	195	In use	23
342	CEB	CP	positive (>50 ppm)	Tested	D	Yugoslavia	1979	60	200	54	In use	25
343	CEB	WP	negative (<50 ppm	Tested	T	France	1990	31500	36,000	13,200	In use	14
344	CEB	WP	negative (<50 ppm	Tested	T	France	1990	31500	36,000	13,200	In use	14
345	CEB	CP	positive (>50 ppm)	Tested	D	Unknown	UK	160	620	195	In use	UK
346	CEB	WP	positive (>50 ppm)	Tested	D	Yugoslavia	1979	150	680	156	In use	25
347	CEB	CP	positive (>50 ppm)	Tested	GA	Canada	1966	300	9263	3520	In use	38
348	CEB	CP	positive (>50 ppm)	Tested	GA	Canada	1966	300	9263	3520	In use	38
349	CEB	CP	positive (>50 ppm)	Tested	GA	France	1972	Unknown	Unknown	Unknown	In use	32
350	CEB	CP	positive (>50 ppm)	Tested	GA	France	1972	Unknown	Unknown	Unknown	In use	32
351	CEB	CP	positive (>50 ppm)	Tested	GA	France	1963	Unknown	Unknown	Unknown	In use	41
352	CEB	CP	positive (>50 ppm)	Tested	GA	France	1963	Unknown	Unknown	Unknown	In use	41
353	CEB	CP	positive (>50 ppm)	Tested	GA	Unknown	UK	Unknown	Unknown	Unknown	In use	UK
354	CEB	CP	positive (>50 ppm)	Tested	GA	Unknown	UK	Unknown	Unknown	Unknown	In use	UK

Annex 3

Inventory of Decommissioned transformers studied

	Owner category	Geographical zone	PCB Test	Type	Manufacturer name	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	Weight of the dielectric fluid	Status of the equipment	Age
1	LTL	WP	Not tested	D	Electrical Company Ltd.	India	1983	250	835	270	Decom.	21
2	LTL	WP	Not tested	D	Electric Construction Equipment	India	1977	400	1,260	440	Decom.	27
3	LTL	WP	Not tested	D	Woden Bilston	UK	1977	630	2,700	730	Decom.	27
4	LTL	WP	Not tested	D	Crompton	UK	1971	250	675	270	Decom.	33
5	LTL	WP	Not tested	D	Unknown	Sri Lanka	1983	350	1,575	355	Decom.	21
6	LTL	WP	Not tested	D	Alsthom	France	1964	400	1,395	410	Decom.	40
7	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,610	339	Decom.	18
8	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	600	2,705	715	Decom.	19
9	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	500	2,170	444	Decom.	19
10	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1984	500	2,400	480	Decom.	20
11	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1981	700	3,000	700	Decom.	23
12	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1983	630	2,520	480	Decom.	21
13	LTL	WP	Not tested	D	Crompton	UK	1970	630	2,600	835	Decom.	34
14	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	500	2,500	650	Decom.	19
15	LTL	WP	Not tested	D	Unelec	France	1967	350	1,556	432	Decom.	37
16	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1979	315	950	311	Decom.	25
17	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1984	310	1,400	322	Decom.	20
18	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1978	450	2,000	390	Decom.	26
19	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	500	2,095	455	Decom.	21
20	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	500	2,110	456	Decom.	21
21	LTL	WP	Not tested	D	Bonar Long & Co	UK	1982	500	2,320	449	Decom.	22
22	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1983	250	835	238	Decom.	21
23	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1983	250	835	238	Decom.	21
24	LTL	WP	Not tested	D	G.C.Egener Elec	UK	1936	400	1,395	410	Decom.	68
25	LTL	WP	Not tested	D	South Walse Switches	UK	1959	1200	4,932	1,233	Decom.	45
26	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	485	115	Decom.	22
27	LTL	WP	Not tested	D	France Transfo	France	1980	100	745	215	Decom.	24
28	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,032	352	Decom.	18
29	LTL	WP	Not tested	D	MINEL Trafo.	Yugoslavia	1981	315	1,275	314	Decom.	23
30	LTL	WP	Not tested	D	E.C.E	India	1976	400	1,125	423	Decom.	28
31	LTL	WP	Not tested	D	Unelec	France	1973	300	1,075	298	Decom.	31
32	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	300	1,075	290	Decom.	22
33	LTL	WP	Not tested	D	MINEL Trafo.	Yugoslavia	1981	315	1,275	314	Decom.	23
34	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1983	500	1,800	480	Decom.	21
35	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1983	250	835	238	Decom.	21
36	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	500	1,540	460	Decom.	20
37	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	500	1,540	460	Decom.	20
38	LTL	WP	Not tested	D	Unelec	France	1967	350	1,206	347	Decom.	37
39	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	125	580	182	Decom.	19
40	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	250	1,110	275	Decom.	20
41	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	600	2,500	650	Decom.	20
42	LTL	WP	Not tested	D	Mitsuibishi	Japan	1979	160	630	163	Decom.	25
43	LTL	WP	Not tested	D	Johnson Electric Company	India	1979	75	353	78	Decom.	25
44	LTL	WP	Not tested	D	Johnson Electric Company	India	1979	75	353	78	Decom.	25
45	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	400	1,910	610	Decom.	21
46	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	400	1,032	409	Decom.	18
47	LTL	WP	Not tested	D	Unelec	France	1973	300	1,075	298	Decom.	31
48	LTL	WP	Not tested	D	Unelec	France	1967	350	1,206	347	Decom.	37
49	LTL	WP	Not tested	D	Electro Export EM	Romania	1982	400	1,110	390	Decom.	22
50	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	125	580	182	Decom.	19
51	LTL	WP	Not tested	D	Distribution Trano Ltd	Muebroxbur	1968	100	3,400	782	Decom.	36

	Owner category	Geographical zone	PCB Test	Type	Manufacturer name	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	weight of the dielectric fluid	Status of the equipment	Age
52	LTL	WP	Not tested	D	English Elec.	UK	1936	100	585	134	Decom.	68
53	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	250	835	238	Decom.	22
54	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1977	315	930	320	Decom.	27
55	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	250	978	275	Decom.	19
56	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1984	500	2,400	480	Decom.	20
57	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	400	1,870	510	Decom.	18
58	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,032	352	Decom.	18
59	LTL	WP	Not tested	D	Electro Export EM	Romania	1982	400	1,110	390	Decom.	22
60	LTL	WP	Not tested	D	Electro Export EM	Romania	1979	300	1,240	279	Decom.	25
61	LTL	WP	Not tested	D	Unelec	France	1977	250	1,045	286	Decom.	27
62	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,523	355	Decom.	18
63	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1988	250	880	248	Decom.	16
64	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1978	1500	6,460	2,000	Decom.	26
65	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	200	700	190	Decom.	19
66	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	400	1,910	510	Decom.	20
67	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	350	1,250	355	Decom.	20
68	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,225	355	Decom.	18
69	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	350	1,250	355	Decom.	19
70	LTL	WP	Not tested	D	MINEL Trafo.	Yugoslavia	1981	315	1,275	314	Decom.	23
71	LTL	WP	Not tested	D	Electro Export EM	Romania	1982	400	1,110	390	Decom.	22
72	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,032	352	Decom.	18
73	LTL	WP	Not tested	D	Schorch Werke Co.Ltd	Germany	1978	500	2,420	550	Decom.	26
74	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	350	1,575	355	Decom.	20
75	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	250	919	245	Decom.	18
76	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	300	1,075	290	Decom.	22
77	LTL	WP	Not tested	D	Crompton	UK	1971	500	2,420	625	Decom.	33
78	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1979	350	1,650	297	Decom.	25
79	LTL	WP	Not tested	D	Johnson Electric Company	India	1975	630	3,025	800	Decom.	29
80	LTL	WP	Not tested	D	Unelec	France	1967	350	1,556	432	Decom.	37
81	LTL	WP	Not tested	D	Unelec	France	1967	500	2,130	370	Decom.	37
82	LTL	WP	Not tested	D	Unelec	France	1967	500	2,130	370	Decom.	37
83	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	500	2,500	650	Decom.	20
84	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1984	500	2,500	651	Decom.	20
85	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	300	1,410	300	Decom.	19
86	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	250	1,110	275	Decom.	19
87	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	300	1,170	280	Decom.	19
88	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1981	700	3,000	700	Decom.	23
89	LTL	WP	Not tested	D	Ferrante	UK	1951	500	2,150	560	Decom.	53
90	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1979	500	1,950	380	Decom.	25
91	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1978	160	640	200	Decom.	26
92	LTL	WP	Not tested	D	Mitsuibishi	Japan	1979	350	630	340	Decom.	25
93	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,225	355	Decom.	18
94	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	250	880	265	Decom.	21
95	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	300	1,170	280	Decom.	19
96	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1982	350	1,450	410	Decom.	22
97	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	350	1,032	352	Decom.	18
98	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1979	350	950	348	Decom.	25
99	LTL	WP	Not tested	D	Denis Ferrant Ltd	UK	1967	1000	4,030	1,340	Decom.	37
100	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	350	1,540	460	Decom.	19
101	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	250	880	245	Decom.	19
102	LTL	WP	Not tested	D	Ejprom	Bulgaria	1979	250	1,046	246	Decom.	25
103	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1978	160	680	155	Decom.	26
104	LTL	WP	Not tested	D	Bonar Long & Co	UK	1971	300	1,285	290	Decom.	33
105	LTL	WP	Not tested	D	Unelec	France	1973	160	615	194	Decom.	31
106	LTL	WP	Not tested	D	Electo Co.	India	1976	400	1,125	423	Decom.	28
107	LTL	WP	Not tested	D	Tyree Industries	Australia	1965	2000	5,500	1,912	Decom.	39
108	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	835	238	Decom.	22
109	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	835	238	Decom.	22
110	LTL	WP	Not tested	D	Siemens	Germany	1959	500	2,340	520	Decom.	45
111	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	250	1,170	280	Decom.	21
112	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	100	1,032	352	Decom.	18
113	LTL	WP	Not tested	D	Crompton	UK	1971	300	2,420	625	Decom.	33
114	LTL	WP	Not tested	D	ETC	India	1977	100	970	355	Decom.	27
115	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	100	978	275	Decom.	18

	Owner category	Geographical zone	PCB Test	Type	Manufacturer name	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	weight of the dielectric fluid	Status of the equipment	Age
116	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	250	1,540	460	Decom.	21
117	LTL	WP	Not tested	D	Ejprom	Bulgaria	1979	250	1,830	570	Decom.	25
118	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1983	160	620	195	Decom.	21
119	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1983	100	835	238	Decom.	21
120	LTL	WP	Not tested	D	Crompton	UK	1971	500	2,470	570	Decom.	33
121	LTL	WP	Not tested	D	Crompton	UK	1971	500	2,420	530	Decom.	33
122	LTL	WP	Not tested	D	Electrical Company Ltd.	UK	1953	75	1,950	540	Decom.	51
123	LTL	WP	Not tested	D	South Walse Switches	UK	1982	500	1,840	485	Decom.	22
124	LTL	WP	Not tested	D	E.E.I	Romania	1963	100	945	200	Decom.	41
125	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	100	919	245	Decom.	19
126	LTL	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1986	400	1,523	355	Decom.	18
127	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1973	380	3,520	690	Decom.	31
128	LTL	WP	Not tested	D	Unelec	France	1966	100	610	124	Decom.	38
129	LTL	WP	Not tested	D	Schorch Werke Co.Ltd	Germany	1966	100	700	160	Decom.	38
130	LTL	WP	Not tested	D	E.E.I	Romania	1981	250	1,240	275	Decom.	23
131	LTL	WP	Not tested	D	NGEI	India	1970	200	760	210	Decom.	34
132	LTL	WP	Not tested	D	MINEL Trafo.	Yugoslavia	1981	250	1,044	181	Decom.	23
133	LECO	WP	Not tested	D	Pauwels Trafo	Belgium	1986	50	345	85	Decom.	18
134	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	50	400	130	Decom.	14
135	LECO	WP	Not tested	D	Pauwels Trafo	Belgium	1986	50	345	85	Decom.	18
136	LECO	WP	Not tested	D	Pauwels Trafo	Belgium	1986	50	345	85	Decom.	18
137	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	50	400	130	Decom.	14
138	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	50	400	130	Decom.	14
139	LECO	WP	negative (<50	D	Trand	India	1969	75	750	160	Decom.	35
140	LECO	WP	negative (<50	D	Johnson Electric Company	India	1979	50	353	78	Decom.	25
141	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	50	353	78	Decom.	14
142	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	100	555	185	Decom.	14
143	LECO	WP	negative (<50	D	Lepper	Germany	Unknown	150	845	195	Decom.	UK
144	LECO	WP	negative (<50	D	Electric construction Co.	UK	1936	300	867	248	Decom.	68
145	LECO	WP	negative (<50	D	Ferrante	UK	1964	500	6,300	1850	Decom.	40
146	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	100	555	185	Decom.	14
147	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	100	555	185	Decom.	14
148	LECO	WP	positive (>50	D	Pauwels Trafo	Belgium	1986	100	510	115	Decom.	18
149	LECO	WP	Not tested	D	Pauwels Trafo	Belgium	1986	100	510	115	Decom.	18
150	LECO	WP	Not tested	D	Pauwels Trafo	Belgium	1986	100	510	115	Decom.	18
151	LECO	WP	Not tested	D	Mitsuibishi	Japan	1970	100	530	185	Decom.	34
152	LECO	WP	negative (<50	D	Schorch Werke Co.Ltd	Germany	1936	100	700	160	Decom.	68
153	LECO	WP	positive (>50	D	Dominit	Germany	1973	315	1370	480	Decom.	31
154	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	Unknown	100	510	110	Decom.	UK
155	LECO	WP	Not tested	D	Bonar Long & Co	UK	1996	50	353	78	Decom.	8
156	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1959	100	555	185	Decom.	45
157	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	100	555	185	Decom.	14
158	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1990	100	555	185	Decom.	14
159	LECO	WP	Not tested	D	Lanka Transformers Limited	Sri Lanka	1985	100	555	185	Decom.	19
160	LECO	WP	Not tested	D	Siemens	Germany	1993	250	1035	300	Decom.	11
161	LECO	WP	Not tested	D	Takota auto	Unknown	1990	250	58,500	22,500	Decom.	14
162	user	WP	Not tested	D	Yorkshire Electric	UK	1952	500	4,545	1,455	Decom.	UK
163	user	EP	Not tested	D	Bonar Long & Co	UK	1959	500	2,550	1,100	Decom.	45
164	user	EP	Not tested	D	Bonar Long & Co	UK	1959	500	2,550	1,100	Decom.	45
165	user	EP	Not tested	D	Bonar Long & Co	UK	1959	500	6500	1,495	Decom.	45
166	LTL	WP	Not tested	D	Electrical Company Ltd.	India	1983	250	835	270	Decom.	21
167	LTL	WP	Not tested	D	Electric Construction Equipment	India	1977	400	1260	440	Decom.	27
168	LTL	WP	negative (<50	D	Woden Bilston	UK	1977	630	2700	730	Decom.	27
169	LTL	WP	Not tested	D	Crompton	UK	1971	250	675	270	Decom.	33
170	LTL	WP	Not tested	D	Unknown	Sri Lanka	1983	300	1575	355	Decom.	21
171	LTL	WP	positive (>50	D	Alsthom	France	1964	400	1395	410	Decom.	40
172	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	300	1610	339	Decom.	18
173	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	630	2705	715	Decom.	19
174	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	400	2170	444	Decom.	19
175	LTL	WP	positive (>50	D	New Korea Electric Co	Korea	1984	400	2400	480	Decom.	20
176	LTL	WP	positive (>50	D	New Korea Electric Co	Korea	1981	630	3000	700	Decom.	23
177	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1983	630	2520	480	Decom.	21

	Owner category	Geographical zone	PCB Test	Type	Manufacturer name	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	weight of the dielectric fluid	Status of the equipment	Age
178	LTL	WP	negative (<50	D	Crompton	UK	1970	700	2600	835	Decom.	34
179	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	600	2500	650	Decom.	19
180	LTL	WP	positive (>50	D	Unelec	France	1967	400	1556	432	Decom.	37
181	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1979	300	950	311	Decom.	25
182	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1984	630	2400	480	Decom.	20
183	LTL	WP	positive (>50	D	New Korea Electric Co	Korea	1978	350	2000	390	Decom.	26
184	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1983	400	2095	455	Decom.	21
185	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1983	400	2100	456	Decom.	21
186	LTL	WP	Not tested	D	Bonar Long	UK	1982	400	2320	449	Decom.	22
187	LTL	WP	positive (>50	D	Apex Elec. Ltd	India	1983	100	835	238	Decom.	21
188	LTL	WP	positive (>50	D	Apex Elec. Ltd	India	1983	100	835	238	Decom.	21
189	LTL	WP	Not tested	D	G.C.Egener Elec	UK	1936	200	745	215	Decom.	68
190	LTL	WP	negative (<50	D	South Walse Switches	UK	1959	unknown	4932	1134	Decom.	45
191	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	485	115	Decom.	22
192	LTL	WP	Not tested	D	France Transfo	France	1980	200	745	215	Decom.	24
193	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	315	1032	352	Decom.	18
194	LTL	WP	positive (>50	D	MINEL Trafo.	Yugoslavia	1981	300	1275	314	Decom.	23
195	LTL	WP	Not tested	D	E.C.E	India	1976	400	1125	423	Decom.	28
196	LTL	WP	positive (>50	D	Unelec	France	1973	250	1075	298	Decom.	31
197	LTL	WP	positive (>50	D	Apex Elec. Ltd	India	1982	160	1075	290	Decom.	22
198	LTL	WP	Not tested	D	MINEL Trafo.	Yugoslavia	1981	300	1275	314	Decom.	23
199	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1983	400	1800	480	Decom.	21
200	LTL	WP	positive (>50	D	Apex Elec. Ltd	India	1983	100	835	238	Decom.	21
201	LTL	WP	positive (>50	D	LTL Lanka	Sri Lanka	1984	400	1540	460	Decom.	20
202	LTL	WP	negative (<50	D	LTL Lanka	Sri Lanka	1984	400	1540	460	Decom.	20
203	LTL	WP	positive (>50	D	Unelec	France	1967	315	1206	347	Decom.	37
204	LTL	WP	negative (<50	D	LTL Lanka	Sri Lanka	1985	160	580	182	Decom.	19
205	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	250	1110	275	Decom.	20
206	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	600	2500	650	Decom.	20
207	LTL	WP	Not tested	D	Mitsuibishi	Japan	1979	150	630	163	Decom.	25
208	LTL	WP	positive (>50	D	Jonsan Elec.Co	India	1979	70	353	78	Decom.	25
209	LTL	WP	positive (>50	D	Jonsan Elec.Co	India	1979	70	353	78	Decom.	25
210	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1983	500	1910	610	Decom.	21
211	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	350	1032	409	Decom.	18
212	LTL	WP	positive (>50	D	Unelec	France	1973	300	1075	298	Decom.	31
213	LTL	WP	positive (>50	D	Unelec	France	1967	315	1206	347	Decom.	37
214	LTL	WP	negative (<50	D	Electro Export EM	Romania	1982	350	1110	390	Decom.	22
215	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	160	580	182	Decom.	19
216	LTL	WP	positive (>50	D	Distribution Trano Ltd	Muebroxbur	1968	100	3400	782	Decom.	36
217	LTL	WP	Not tested	D	English Elec.	UK	1936	100	585	134	Decom.	68
218	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	835	238	Decom.	22
219	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1977	300	930	320	Decom.	27
220	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	250	978	275	Decom.	19
221	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1984	400	2400	480	Decom.	20
222	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	450	1870	510	Decom.	18
223	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	315	1032	352	Decom.	18
224	LTL	WP	positive (>50	D	Electro Export EM	Romania	1982	350	1110	390	Decom.	22
225	LTL	WP	positive (>50	D	Electro Export EM	Romania	1979	250	1240	279	Decom.	25
226	LTL	WP	positive (>50	D	Unelec	France	1977	250	1045	286	Decom.	27
227	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	315	1523	355	Decom.	18
228	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1988	200	880	248	Decom.	16
229	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1978	160	6460	2000	Decom.	26
230	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	160	700	190	Decom.	19
231	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	500	1910	510	Decom.	20
232	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	315	1250	355	Decom.	20
233	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	315	1225	355	Decom.	18
234	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	315	1250	355	Decom.	19
235	LTL	WP	negative (<50	D	MINEL Trafo.	Yugoslavia	1981	300	1275	314	Decom.	23
236	LTL	WP	Not tested	D	Electro Export EM	Romania	1982	350	1110	390	Decom.	22
237	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	315	1032	352	Decom.	18
238	LTL	WP	Not tested	D	Schorch Werke Co.Ltd	Germany	1978	500	2420	550	Decom.	26
239	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	315	1575	355	Decom.	20
240	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	200	919	245	Decom.	18
241	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	250	1075	290	Decom.	22

	Owner category	Geographical zone	PCB Test	Type	Manufacturer name	Country of Manufacture	Fabrication date	Power Kva	Total weight (kgs)	weight of the dielectric fluid	Status of the equipment	Age
242	LTL	WP	Not tested	D	Crompton	UK	1971	600	2420	625	Decom.	33
243	LTL	WP	negative (<50	D	New Korea Electric Co	Korea	1979	250	1650	297	Decom.	25
244	LTL	WP	Not tested	D	Jonsan Elec.Co	India	1975	700	3025	800	Decom.	29
245	LTL	WP	positive (>50	D	Unelec	France	1967	400	1556	432	Decom.	37
246	LTL	WP	negative (<50	D	Unelec	France	1967	315	2130	370	Decom.	37
247	LTL	WP	positive (>50	D	Unelec	France	1967	315	2130	370	Decom.	37
248	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	600	2500	650	Decom.	20
249	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1984	600	2500	651	Decom.	20
250	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	250	1410	300	Decom.	19
251	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	250	1110	275	Decom.	19
252	LECO	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	250	1170	280	Decom.	19
253	LTL	WP	positive (>50	D	New Korea Electric Co	Korea	1981	630	3000	700	Decom.	23
254	LECO	WP	Not tested	D	Ferrante	UK	1951	500	2150	560	Decom.	53
255	LTL	WP	negative (<50	D	New Korea Electric Co	Korea	1979	350	1950	380	Decom.	25
256	LTL	WP	negative (<50	D	Apex Elec. Ltd	India	1978	160	640	200	Decom.	26
257	LTL	WP	negative (<50	D	Mitsuibishi	Japan	1979	100	630	145	Decom.	25
258	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	315	1225	355	Decom.	18
259	LTL	WP	negative (<50	D	LTL Lanka	Sri Lanka	1983	250	880	265	Decom.	21
260	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	250	1170	280	Decom.	19
261	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1982	350	1450	410	Decom.	22
262	LTL	WP	positive (>50	D	LTL Lanka	Sri Lanka	1986	315	1032	352	Decom.	18
263	LTL	WP	Not tested	D	New Korea Electric Co	Korea	1979	315	950	348	Decom.	25
264	LTL	WP	Not tested	D	Denis Ferrant Ltd	UK	1967	250	4030	1340	Decom.	37
265	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	400	1540	460	Decom.	19
266	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1985	200	880	245	Decom.	19
267	LTL	WP	negative (<50	D	Ejprom	Bulgaria	1979	200	1046	246	Decom.	25
268	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1978	150	680	155	Decom.	26
269	LTL	WP	Not tested	D	Bonar Long & Co	UK	1971	100	1285	290	Decom.	33
270	LTL	WP	Not tested	D	Unelec	France	1973	160	615	194	Decom.	31
271	LTL	WP	Not tested	D	Electo Co.	India	1976	400	1125	423	Decom.	28
272	LTL	WP	negative (<50	D	Tyree Industries	Australia	1965	1,800	5500	1912	Decom.	39
273	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	835	238	Decom.	22
274	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1982	100	835	238	Decom.	22
275	LTL	WP	positive (>50	D	Siemens	Germany	1959	500	2340	538	Decom.	45
276	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1983	250	1170	280	Decom.	21
277	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	100	1032	352	Decom.	18
278	LTL	WP	positive (>50	D	Crompton	UK	1971	300	2420	625	Decom.	33
279	LTL	WP	Not tested	D	ETC	India	1977	100	970	355	Decom.	27
280	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1986	100	978	275	Decom.	18
281	LTL	WP	negative (<50	D	LTL Lanka	Sri Lanka	1983	250	1540	460	Decom.	21
282	LTL	WP	Not tested	D	Ejprom	Bulgaria	1979	250	1830	570	Decom.	25
283	LTL	WP	Not tested	D	LTL Lanka	Sri Lanka	1983	160	620	195	Decom.	21
284	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1983	100	835	238	Decom.	21
285	LTL	WP	positive (>50	D	Crompton	UK	1971	500	2470	570	Decom.	33
286	LTL	WP	positive (>50	D	Crompton	UK	1971	500	2420	530	Decom.	33
287	LTL	WP	Not tested	D	Electrical Company Ltd.	UK	1953	75	1950	540	Decom.	51
288	LTL	WP	Not tested	D	Alsthom	France	1953	250	1640	380	Decom.	51
289	user	WP	Not tested	D	South Walse Switches	UK	1982	500	1840	485	Decom.	22
290	LECO	WP	Not tested	D	E.E.I	Romania	1963	100	945	200	Decom.	41
291	LTL	WP	Not tested	D	Apex Elec. Ltd	India	1973	380	3520	690	Decom.	31
292	LECO	WP	Not tested	D	Unelec	France	1966	100	610	124	Decom.	38
293	LECO	WP	Not tested	D	Schorch Werke Co.Ltd	Germany	1966	100	700	160	Decom.	38
294	LECO	WP	Not tested	D	E.E.I	Romania	1981	250	1240	275	Decom.	23
295	LTL	WP	Not tested	D	NGEI	India	1970	100	760	210	Decom.	34
296	LECO	WP	Not tested	D	MINEL Trafo.	Yugoslavia	1981	250	1044	181	Decom.	23

Annex 4

List of Pure PCB transformers identified during the survey

	Ownership	Company site	Sub area 1	Geographical zone	Serial number	PCB Test	Type of Transformer	Country of Manufacture	Fabrication date	Power Kva	Trade name of the dielectric	Total weight (kgs)	Weight of the dielectric fluid (kgs)	Status of the equipment	Status of Dielectric leaking
1	CEB	Samanala, Polpitiya, PS	Polpitiya	CP	560729	positive (>50 ppm	Gen Aux 1	Canada	1966	300	PYRANOL 151	9263	3520	In use	Leaking
2	CEB	Samanala, Polpitiya, PS	Polpitiya	CP	560730	positive (>50 ppm	Gen Aux 2	Canada	1966	300	PYRANOL 151	9263	3520	In use	Not Leaking
3	CEB	New Laxapana, PS	Luxapana	CP	Unknown	positive (>50 ppm	Gen Aux 1	France	1972	71 mVA	PyralenE	UK	UK	In use	Not Leaking
4	CEB	New Laxapana, PS	Luxapana	CP	Unknown	positive (>50 ppm	Gen Aux 2	France	1972	72 mVA	PyralenE	UK	UK	In use	UK

Annex 5

Some of the common trade names of PCB transformer oils

Trade Name	Country/Manufacturer	Trade Name	Country/Manufacturer
Abuntol	American Corp, USA	Elemex	USA
Aceclor	France	Eucarel	USA
Adine	France	Fenchlor	Italy
Apirolio	Italy	Firemaster	USA
Apirorolio	Italy	Flammex	UK
Aroclor	UK, USA	HFO 101	UK
Asbestol	Monsanto, USA	Hywol	Italy, USA
Askaral	UK, USA	Inclor	Italy
Auxol	Monsanto, USA	Inerteen	USA
Bakola	USA	Kanechlor	Japan
Cholophen	Bayer, Germany	Leromoll	Germany
Chlorextol	Allis Chalmers, USA	Noflamol	USA
Chlorinol	USA	Phenclor	France
Chlorphen	Jard Corp, USA	Plastivar	UK
Diachlor	USA	Pydraul	USA
DK	Italy	Pyranol	USA
Ducanol	UK	Pyralene	France
EEC-IS	Transforme, USA	Saft-Kuhl	USA
Elaol	France	Santothern	France, UK
Electrophenyl	France	Salvol	Russian Federation

Tradenames of some of the commonly seen PCB mixtures and countries of manufacture

Annex 6

Information regarding the Clor-n-oil 50 PCB Screening Test Kit

1. The Clor-N-Oil Test Kit works on the principle of chloride determination, since PCBs are chlorine based materials. The quantitative conversion of the chlorine atoms in PCB in oil to chloride ions, which in turn are extracted into an aqueous solution and measured calorimetrically.

2. An oil sample containing more than 50 ppm of PCBs will respond to the test.

3. However the test cannot distinguish between any other chlorine containing compounds such as trichlorobenze, which may also be found in transformer oil. Presence of such compounds may cause a result known as the 'false positive'. That is the oil will indicate the presence of over 50 ppm PCBs, but when analyzed by gas chromatography will show a different result.

4. Other contaminations with salt, sea water, perspiration etc will give a false positive results.

Affirmative test

Negative test

5. In order to confirm the Field test kit, it is necessary to subject positive samples to Gas Chromatography test.

Methodology of Testing:

1. Each test kit contains 2 tubes – a plastic test tube with a black dispensing cap containing 2 ampules and a white capped plastic test tube containing 7 ml of buffer solution and 2 ampules within.
2. Unscrew the black dispenser cap from the first tube. Transfer 5ml of transformer oil into it using the pipette. Close the cap.
3. Press the ampule at the bottom of the tube with fingers. Mix thoroughly by shaking the tube for 10 seconds. Break the ampule at the top of the tube in the same manner. Mix thoroughly for 10 seconds. Allow the reaction to occur for 50 seconds, while shaking.
4. Pour the buffer solution in the latter tube in to the mixture. Replace cap and shake for 10 seconds. Vent by partially unscrewing the cap. Shake again and vent.
5. Tighten the cap and stand the tube upside down and leave to separate for 2 minutes. If the oil layer is below the buffer, the sample is pure PCB.
6. If the oil layer is above the buffer, open the black cap and dispense 5ml of the clear solution into the tube 2. Replace the white cap on tube 2. Break the ampule

at the bottom of the tube 2. Shake for 10 seconds. Break the ampuble at the top of the tube and shake for 10 seconds.

7. Observe the resultant color and compare with the color chart given. If the solution appear purple, the oil contain less than 50 ppm. If the solution appear yellow, it may contain more than 50 ppm PCB.

Annex 7

Gas Chromatography (GC) Test

In the study, GC was used for a limited number of samples. Objective of using GC was to confirm the presence of PCBs in the samples that indicated positive by the field test kit. The GC tests were carried out by the ITI.

ASTM D4059 Protocol was used for the test, which was modified as follows;

Method

Standards used – Archlor 1260 and NIST standard

Amount injected – 1 micro liter

Solvent – Iso octane (5ml) and Florosin (2.5ml)

Acid wash – with Conc. H_2SO_4 acid (2ml)

Injection mode – Speedless

Detector – Micro Electron Detector with Ni^{63} source

Description of the Column – HP5 6% Phenyl Methyl Silozan

Flow rate - 2ml per mint.

Pressure – 12.8 psi

Temperature program – adjusted to 36.5 mints.

Ramp 1 – Initially 20^0C and hold time zero. Ramp 2 – An increase of temperature 8^0C per minute. Increased to 200^0C and hold time 4 minutes. Ramp 3- Increasing temperature of 10^0C per mint, a brought up to 250^0C and hold time 10 minutes.

0.1g of the transformer oil sample was diluted with solvent. Shake well and acid wash with 2ml of Conc. H_2SO_4. 1 micro liter of the supernatant was injected to the column through the inlet port.

The high sensitive micro electron capture detectors at the end of the column generate a signal that is proportional to the amount of PCBs present in the sample.

The detector used for the detection of PCBs is the electron capture detector. They do not respond to the non-chlorinated chemicals that may also be present. This detector is sensitive to a minimum of 2 ppm PCBs.