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Chief Engineer (Planning & Development) – SP
TRANSFORMER FAILURE REPORT – SOUTHERN PROVINCE
 (For reporting failures of Distribution Substation Transformers)

1. Substation Location

Area		CSC	
Substation Name		SIN	

2. Substation Details**a. Transformer**

Serial No.			
HT Voltage (11/33kV)		Capacity (kVA)	
Make		Year of Manufacture	
Date of Installation		Date of Failure	

b. Surge Arresters

Total N. of Surge Arresters		No of broken Surge Arresters	
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c. MV Fuse

Ratings of 3MV Fuses	A	A	A
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d. LV Feeder Protection

	Protection Type (HRC Fuse/MCCB/Other)	Rating (A)	Condition (G/B)
LV Feeder 1			
LV Feeder 2			
LV Feeder 3			
LV Feeder 4			

**3. Test Results and Measurements****a. Insulation Resistances Test (put readings in 3rd column)**

1	HV winding to LV winding + Ground	
2	HV winding to Ground with LV winding to Guard	
3	HV winding to LV winding	
4	LV winding to Ground with HV winding to Guard	

b. Continuity Test (mark "✓" for continuity "x" for discontinuity)

HT Winding		LT Winding	

c. Earth Resistance

Neutral Earth (Ω)		Surge Arrester Earth (Ω)	
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d. Transformer Loading Data

Date of Previous Load Reading (indicate Phase/Neutral Currents below)			
Phase 1 (A) -	Phase 2 (A) -	Phase 3 (A) -	Neutral (A) -

4. Visual Damages/Observations

(To explain visual damages, e.g. oil leak from bushing, tank punctured and observations of testing officer)

5. Testing Officer

Name of testing officer	Designation	Signature	Date of test

.....
Area Engineer's Signature

.....
Date

Report No: SP/2012/....

Transformer Failure Inspection Report**1. General Data**

i	Area:	
ii	CSC:	
ii	Substation Name	
iv	SIN Number	
v	Type of Supply	

2. Details of Failure Transformer

i	Serial Number of T/F	
ii	Capacity	
iii	Voltage Ratio	
iv	Make	
v	Year of Manufacture	
vi	Date of Commissioning	
vii	Date & Time of Failure	

2.1 Investigation Data

	Items to checked	Observation & result				
i	Insulation Levels	<table border="1"> <tr> <td>HV-LV</td> <td>[MΩ]</td> </tr> <tr> <td>LV-E</td> <td>[MΩ]</td> </tr> </table>	HV-LV	[MΩ]	LV-E	[MΩ]
HV-LV	[MΩ]					
LV-E	[MΩ]					
ii	Transformer appearance & possible reason of the failure					

3. Details of Replaced Transformer

i	Serial Number of T/F	
ii	Capacity	
iii	Voltage Ratio	
iv	Make	
v	Year of Manufacture	

3.1 Details of Transformer Location

	Items to checked	Observation & result			
i	DDLO / Fuse Availability	R [A]			
		Y [A]			
		B [A]			
ii	LV Fuse Availability	Circuit 1	Circuit 2	Circuit 3	Circuit 4
		R			
		Y			
		B			
iii	Availability of Surge arrestor	R	Y	B	

Items to checked		Observation & result				
iv	Earth Resistance of Surge Arrestor	[Ω]				
v	Resistance between Neutral & Earth	[Ω]				
vi	Availability of Cable Lugs		Circuit 1	Circuit 2	Circuit 3	Circuit 4
		R				
		Y				
		B				
vii	Availability of arching horns with correct adjustment in HV side	R		Y	B	
viii	Night peak load current		Circuit 1	Circuit 2	Circuit 3	Circuit 4
		R				
		Y				
		B				
ix	Percentage of night peak loading	%				

4. Remedial action taken

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5. Recommendation

6. Any other comments



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Testing done by: EE (Development), ES (TMC)

Date:

Prepared By:
 EE (Development)

Certified by:
 CE (P&D)

TRANSFORMER TEST REPORT

Serial No:-

Job No:-

Date:-

Test No:-

Capacity:-

CSC:-

Sin:-

Area:-

Insulation Test

HT/Earth (5000V)	HT/LT(5000V)	LT/Earth(1000V)	Remarks

Polarization Index –

Ratio test

Tap	AB(V)	AC(V)	BC(V)	na	nb	nc	ab	ac	bc
1									
2									
3									
4									
5									

Short circuit Test

Tap	A (A)	B (A)	C (A)	na (A)	nb (A)	nc (A)	ab (A)	ac (A)	bc (A)
1									
2									
3									
4									
5									

Oil StrengthkV

Date :

.....

Testing done by ES(TMUSP)

TRANSFORMER TEST REPORT

Report No : TMU/2012/R4

DETAILS

Serial No :

 Voltage Level (kV):

 Capacity (kVA) :

 Manufacturing Year :

Area :

 CSC :

 SIN No :

 Substation Name :

 Way Bill No:

TESTS CONDUCTED

1. INSULATION RESISTANCE TEST in Giga Ohm

HV to LV	HV to Earth	LV to Earth

Polarization Index		Condition
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2. RATIO TEST

HV side 400V

TAP NO.	HV Side Voltages (V)			LV Side Voltages (V)					
	A-B	A-C	B-C	n-a	n-b	n-c	a-b	a-c	b-c
1									
2(Nor)									
3									
4									
5									

TAP NO.	Measured Ratio		
	A-B/a-b	A-C/a-c	B-C/b-c
1			
2(Nor)			
3			



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3. DC RESISTANCE TEST

HV - WINDING RESISTANCE (in Ohms)				
TAP NO.	A - B	B - C	C - A	Avg. Resistance
2(Nor)				

4. OIL DIELECTRIC STRENGTH TEST in kV

Across 2.5 mm gap

5. SHORT CIRCUIT TEST

	A	B	C	a	b	c
Measured Short Circuit Current (A)						

6. VOLTAGE WITHSTAND TEST

LV wdgs (0 to 400V)

7. Visual Observation

Oil leaks	
Corrosion Marks	

Testing Done By :		Date :	
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Distribution Transformer Failures in NWP, WPS1, WPS2, SG and SP - 2011

Month	NWP	WPS1	WPS2	SG	SP
January	2	2	3	3	4
February	1	-	5	2	8
March	1	6	4	4	7
April	4	6	7	7	8
May	9	2	1	4	6
June	2	4	1	4	3
July	2	2	3	1	2
August	3	2	2	1	7
September	2	-	-	-	4
October	3	1	1	-	6
November	13	-	3	2	19
December	2	4	2	3	5
Total transformer failures	44	29	32	31	79
Total installed transformers	2536	1203	1719	1631	2723



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Number Of Thunder Days – Galle & Hambantota – (2007 – 2011)

	Galle					Hambantota				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
January	01	09	03	09	09	02	01	01	00	06
February	04	10	02	06	07	02	01	00	00	02
March	07	13	13	09	15	01	14	10	02	14
April	19	24	12	21	13	15	02	04	06	10
May	07	09	16	14	04	00	00	05	11	01
June	07	11	04	03	01	03	02	00	01	03
July	03	01	05	05	02	02	02	00	00	02
August	09	04	01	01	01	03	03	03	01	01
September	03	02	03	03	00	04	00	00	02	01
October	06	09	09	00	07	05	05	06	01	05
November	13	11	14	11	15	11	08	05	10	07
December	10	14	17	05	08	03	04	06	06	03

Climate Division,
 Department of Meteorology,
 Colombo 7.
 05.07.2012.

NO	SIN No	Substation Name	Capacity kVA	Voltage kV	Serial No	Date of failure	Manuf. Year	Age	Loading %	Insulation Readings				Ratio Test				Failure Reason
										HV-E	LV-E	HV-LV	Condition	A	B	C	Condition	
1	GG360	Priyani Rice Mill	100	11	T921011468	20.01.2011	1992	19	66	22MΩ	12MΩ	20MΩ	Bad	Out	45.94	45.94	Out	Loose Connection
2	MM057	Kingswatta	250	11	T.06.U025010092	26.01.2011	2006	5	51	800MΩ	1700MΩ	25MΩ	Bad	8.7	8.6	8.6	Good	Unidentified
3	WDM264	Edandukitha	100	33	T.05.U010030203	26.01.2011	2005	6	25	27.8GΩ	23GΩ	70.5GΩ	Good	137.81	138.42	137.93	Good	Lightning
4	WA420	Maliduwa	160	33	T.99.U01603077	13.02.2011	1999	12	98	45.8MΩ	21.4MΩ	46.1MΩ	Bad	137.92	137.02	Out	Out	Overload
5	MM120	Piladuwa	160	33	T.9213634	02.02.2011	1992	19	21	28MΩ	0MΩ	28MΩ	Bad	-	-	-	Out	Aging
6	WA445	Kodagoda Tea Factory	100	33	T/97/1003014	26.02.2011	1997	14	17	0.01MΩ	0.01MΩ	0.03MΩ	Bad	-	-	-	Out	Lightning
7	WW349	Mirissa New	100	11	T08U010010076	15.02.2011	2008	3	127	800MΩ	525MΩ	875MΩ	Bad	45.89	Out	45.96	Out	Overload
8	HT210	Kachcheriyagama	100	33	T/93/1003359	02.02.2011	1993	18	87	0Ω	0Ω	0Ω	Bad	3.35	3.6	2.97	Out	Oil Leaked
9	WA485	Indigashena	100	33	T.03.U01003271	17.03.2011	2003	8	44	2.5GΩ	5.25GΩ	5.489GΩ	Good	Out	138.23	137.99	Out	Lightning
10	MD200	Dickwella Village	250	33	T.07.U.025030181	03.03.2011	2007	4	65	120MΩ	109MΩ	1553MΩ	Bad	137.79	137.83	-	Out	Loose Connection
11	TA385	Kattakaduwa water pump	400	33	T.05.U040030053	24.03.2011	2005	6	32	5.25GΩ	10.6GΩ	10.5GΩ	Good	137.65	-	137.43	Out	Loose Connection
12	GH300	Air Force	160	11	T/99/U01601056	26.03.2011	1999	12	40	6.20GΩ	5.90GΩ	9.60GΩ	Good	45.8	45.83	45.8	Good	Corrosion
13	HT085	Kottamalliyaya	100	33	T.00.U01003301	14.03.2011	2000	11	2	1.9GΩ	0.16GΩ	6.05GΩ	Good	137.78	137.88	137.83	Good	Lightning
14	HH037	Ambalantota Sampath bank	100	33	T.08.U010030434	15.03.2011	2008	3	54	1000MΩ	1000MΩ	490MΩ	Bad	0.55	2.79	2.8	Out	Unidentified
15	GH470	Uni Plast	400	11	T99U04001018	20.04.2011	1999	12	1	0.01MΩ	0.07MΩ	0.03MΩ	Bad	44.39	-	-	Out	Corrosion
16	HT010	Air Force Camp 01	100	33	T887685	28.04.2011	1988	23	-	57MΩ	29.8MΩ	58.5MΩ	Bad	-	-	-	Out	Aging
17	TT370	Navy Camp	160	33	T/88/13173	20.04.2011	1988	23	20	0.89MΩ	0.93MΩ	0Ω	Bad	141.53	-	141.23	Out	Aging
18	HS245	Weniwel Ara Water Project	100	33	T08U010030578	08.04.2011	2009	2	40	1.03MΩ	0.94MΩ	0.65MΩ	Bad	137.93	-	137.86	Out	Short Circuit
19	TB170	Siyabalagoda	100	33	T/93/1003429	11.05.2011	1993	18	105	1.51GΩ	815MΩ	1.28GΩ	Good	138.34	-	137.93	Out	Overload
20	WDM315	Dialog-Morawaka	100	33	T98U01003353	01.05.2011	1998	13	20	0Ω	0Ω	0Ω	Bad	-	-	-	Out	Lightning
21	WD705	Keeriwalagama	100	33	T03U01003032	03.05.2011	2002	9	48	1.67GΩ	1.27GΩ	2.28GΩ	Good	138.2	138.00	138.45	Good	Lightning
22	TT270	Henakaduwa	100	33	T911003034	16.05.2011	1997	14	113	1.27GΩ	420MΩ	3.326GΩ	Bad	-	137.89	137.82	Out	Overload
23	TT270	Henakaduwa	100	33	T/91/U010030031	17.05.2011	2011	0	113	>2000MΩ	2000MΩ	2000MΩ	Good	137.65	-	-	Out	Overload
24	TB280	Nugewela	100	33	T.99.U01003267	09.05.2011	1999	12	54	1753MΩ	2000MΩ	2000MΩ	Good	138.2	138.00	138.45	Good	Oil Leaked
25	WW245	Jamburugoda New	100	33	T951003807	30.06.2011	1996	15	58	0	0.14MΩ	0	Bad	-	-	-	Out	Short Circuit
26	WA320	Dammarathanagama	160	33	T98U01603162	11.06.2011	1998	13	109	7.90GΩ	3.28GΩ	0	Bad	137.86	-	138.00	Out	Overload
27	GW660	Karagoda	100	33	T99U01003339	26.06.2011	1999	24	125	3.2MΩ	3.72MΩ	5.12MΩ	Bad	-	-	-	Out	Overload
28	MH136	Karathota New	100	33	T99U01003339	16.07.2011	1999	12	32	2.12GΩ	3.12GΩ	5.284GΩ	Good	137.83	137.86	137.74	Good	Oil Leaked
29	AE570	Metiviliya	100	33	T/94/1003093	18.07.2011	1994	17	57	118MΩ	4.08MΩ	92.5MΩ	Bad	137.97	-	-	Out	Lightning
30	GB511	Bataduwa School	160	33	74673	02.08.2011	2006	5	97	2.92GΩ	4.30GΩ	8.50GΩ	Good	137.85	137.85	137.85	Good	Overload
31	AS001	Metiyagoda Weaving Mill	250	33	T.06.U025030095	11.08.2011	2006	5	80	1.34GΩ	21.0GΩ	16.5GΩ	Good	137.79	137.83	137.75	Good	Overload
32	TI500	Koswatta	100	33	T.03.U01003522	25.08.2011	2003	8	8	0	0	0	Bad	138.1	-	137.8	Out	Short Circuit
33	TA120	Jandura	100	33	T.02.U01003385	25.08.2011	2002	9	57	740MΩ	580MΩ	1.39GΩ	Bad	137.64	-	137.76	Out	Unidentified
34	MT190	Harischandra Mill	630	11	T/99/U06301001	27.08.2011	1999	12	17	1.17GΩ	2.77GΩ	15.7GΩ	Good	45.95	45.9	45.9	Good	Oil Leaked
35	HK300	Sandagirigala	100	33	T.93.1003439	19.08.2011	1993	18	54	630MΩ	565MΩ	975MΩ	Bad	137.89	137.9	137.87	Good	Aging
36	GB110	Hiyare	100	33	T/93/1003396	12.09.2011	1993	18	138	2.02MΩ	3.71MΩ	4.31MΩ	Bad	-	137.54	137.68	Out	Overload
37	HT135	Pustholamulla	100	33	T05U010010052	24.09.2011	2005	6	62	318MΩ	318MΩ	99.5MΩ	Bad	45.93	45.94	45.93	Good	Unidentified
38	GH210	Ginigala	160	11	T.00.U01601011	04.09.2011	2000	11	117	5.1MΩ	2.72MΩ	2.2MΩ	Bad	137.92	-	137.87	Out	Overload
39	MH210	Dewalamulla	100	33	93/1003532	11.09.2011	1993	18	36	197MΩ	201MΩ	175MΩ	Bad	-	137.95	137.95	Out	Unidentified
40	WW130	Bay Beach	250	11	T.94.2501095	10.10.2011	1994	17	54	0.54MΩ	3.02MΩ	0Ω	Bad	-	46.06	46.15	Out	Short Circuit
41	WA515	Wellana Doliyadda	100	33	T.07.U010030237	27.10.2011	2007	4	21	23.8GΩ	5.85GΩ	36.8GΩ	Good	137.85	-	134.3	Out	Lightning
42	GG035	Pilana New	100	33	T.06.U010030340	22.10.2011	2006	5	98	0	0.42MΩ	1.71MΩ	Bad	137.82	-	137.77	Out	Overload
43	TI340	Children park	160	33	T/90/13349	20.10.2011	1990	21	72	7.75GΩ	4.09GΩ	24.2GΩ	Good	-	137.89	137.96	Out	Aging
44	AE156	Dialog tower-Pathiraja kanda	100	33	T.08.U010030337	30.10.2011	2008	3	15	>2000MΩ	2000MΩ	2000MΩ	Good	2.97	2.99	2.96	Good	Lightning
45	GH050	Moragala Watta	250	33	T.03.U02503050	15.11.2011	2003	8	2	12.24MΩ	9.05GΩ	6.15GΩ	Good	0.057	2.9	1.66	Out	Lightning
46	AG010	Delkada	160	33	T.07.U016030377	16.11.2011	2007	4	93	68MΩ	14.6GΩ	10.9GΩ	Bad	137.79	-	137.75	Out	Overload
47	MK275	Ransirimawatha	100	33	T.99.U010033162	22.11.2011	1999	12	23	3.32GΩ	2.36GΩ	4.66GΩ	Good	138.03	138.09	138.07	Good	Oil Leaked

Transformer failure in SP - 2011

NO	SIN No	Substation Name	Capacity kVA	Voltage kV	Serial No	Date of failure	Manuf. Year	Age	Loading %	Insulation Readings				Ratio Test				Failure Reason
										HV-E	LV-E	HV-LV	Condition	A	B	C	Condition	
48	GB490	SOS	160	33	T/99/U01603130	08.11.2011	1999	12	90	250MΩ	13.2MΩ	235MΩ	Bad	138.47	138.99	-	Out	Overload
49	AS158	Aganakattiya	100	33	T/02/U01003636	10.11.2011	2002	9	32	2.22GΩ	1.21GΩ	3.34GΩ	Good	137.56	137.89	-	Out	Oil Leaked
50	MT250	Pegiriwatta I	160	33	T/00/U01603147	16.11.2011	2000	11	53	17.7MΩ	26.8MΩ	26.6MΩ	Bad	-	-	136.67	Out	Lightning
51	MM345	Kokawala Junction	100	33	T/95/1003221	18.11.2011	1995	16	48	885MΩ	342MΩ	2.06GΩ	Bad	-	-	-	Out	Short Circuit
52	MK160	Ransegoda	160	33	T.03.U01603345	25.11.2011	2003	8	58	765MΩ	580MΩ	535MΩ	Bad	-	137.62	137.74	Out	Lightning
53	MK380	Malimbada Pumping Station	160	33	T00U1603399	25.11.2011	2000	11	51	244MΩ	0	280MΩ	Bad	-	-	-	Out	Other
54	AS260	Ilukpitiya	160	33	T.05.U016030374	26.11.2011	2005	6	156	>2000MΩ	2000MΩ	2000MΩ	Good	2.93	2.95	2.92	Good	Overload
55	GW510	Pethiyagodawatta	160	33	T03U01603306	25.11.2011	2003	8	35	9.50GΩ	12.5GΩ	31.4GΩ	Good	-	137.86	137.52	Out	Loose Connection
56	GT415	Singhewally	250	33	T/07/U025030178	28.11.2011	2007	4	15	1.14GΩ	18.1MΩ	1.17GΩ	Bad	137.83	138.19	138.87	Good	Oil Leaked
57	GH045	Halgasmulla	100	33	T.03.U01003524	03.12.2011	2003	8	14	0	0	0	Bad	-	-	-	Out	Lightning
58	GH055	Singer Kade	100	33	T.03.U01003512	12.12.2011	2003	8	19	0	0	0	Bad	-	-	-	Out	Lightning
59	GH200	Heenatigala (not failed)	100	11	T.09.U010010040	14.12.2011	2009	2	102	4.20GΩ	3.94GΩ	4.38GΩ	Good	45.94	45.94	45.94	Good	Overload
60	WDM328	Paradupalla	100	33	T.04.U010030029	16.11.2011	2004	7	30	23.8GΩ	4.9GΩ	43.8GΩ	Good	-	138.01	138.55	Out	Lightning
61	WDM328	Paradupalla	100	33	T.11.U010030425	19.11.2011	2011	0	30	4.8GΩ	8.05GΩ	9.5GΩ	Good	137.89	137.97	137.81	Good	Lightning



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