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Our Ref: OM-LA/004

20 March 2000

MEMORANDUM

To: Electrical Staff including Site Staff

From: Tan L S

HV EQUIPMENT FAULTS

I am pleased to attach PowerGrid Ltd's self-explanatory letter of 7 March 2000 for your information.

Your attention is drawn to common cable termination faults identified by PowerGrid and the requirement to engage PowerGrid registered cable jointers to carry out cable jointing work, as well as the need, with effect from 1 August 2000, to provide fuses on the primary side of PT of all switchgear panels, except gas-insulated switchgear (GIS), which are connected to PowerGrid network.

Tan L S

cc Notice Board
cc RT/LCT

enc

TLS/kt.na

BCA
ISO 9000
CERT. NO.: 99/077
SS ISO 9001 : 1994

POWER GRID
A subsidiary of Singapore Power

TAN LEH SEONG @ TAN LAI SIONG
ALPHA ENGRG CONSULTANT
2 #03-03
ALEXANDRA RD
DELTA HSE
Singapore 159919

7 Mar 2000

Tel: 831 8400
Fax: 738 2380

Dear Sir

CUSTOMERS' INSTALLATIONS FAULTS

Since 1998, there has been an increase in the number of high voltage equipment faults in our customers' installations. The major causes are mainly cable termination faults and potential transformer (PT) faults. Faults of this nature usually have serious impact on your clients as they will result in voltage dips affecting other customers.

2 Based on our experience, a cable termination may fail due to one or more of the following reasons:

- Insufficient clearance between cores in a cross core configuration;
- Incorrect usage of termination kit for paper insulated cables;
- Incorrect method of removing cable semi-conducting screen. The proper way is to use a round file instead of a knife;
- Failure to install angle boots to cover the bare high voltage conductors in the small transformer dividing box;
- Failure to install stress control tubes;
- Air voids created by inconsistent heat shrinking process (one-sided heating).

3 To minimise these failures, we will be implementing the following measures:

For new installations

- With effect from 1 Aug 2000, all switchgear panels, except gas-insulated switchgear (GIS), that are connected to our network shall have fuses installed on the primary side of PT. These fuses will act as protective devices to minimise damage on the switchgear and to isolate the faulty PT when it fails. At the same time, the electricity supply will remain unchanged. For projects that have been approved by the relevant authorities but where work has not commenced, we would strongly recommend the fusing of PTs.

PowerGrid Ltd
111 Somerset Road #06-01, Singapore 238164 Tel: 831 8400 www.spower.com.sg

- To avoid termination faults caused by poor workmanship, we will require all new cable jointing work at the customers' end to be carried out by jointers registered by PowerGrid. This requirement will be effective from 1 May 2000. Currently, there are about 100 registered jointers outside PowerGrid that can provide the jointing services. For identification purpose, these jointers are issued with passes. Any jointer without this pass is deemed under suspension. We have attached in this letter a copy of the jointer name list for your reference. You can obtain an updated list from our website at http://www.spower.com.sg/ejointer.htm or you may call Miss Eileen Ng at Tel: 290 9170 for a copy.

For existing installations

- We would require your confirmation that the cable terminations are checked at the next scheduled maintenance and that all potential causes of discharge are eliminated. Please complete the attached form and return it to us by 1 Mar 2001.

4 Should you require any clarification, please do not hesitate to call Mr Chong Hoi Fye at Tel: 831 8421.

Yours faithfully

SIM KWONG MIAN
MANAGING DIRECTOR

ENC

Cc Director
Regulation Department
Public Utilities Board
111 Somerset Road
#15-01
Singapore Power Building
Singapore 238164
Attn: Mr Ng Kong (Please see distribution list)

Managing Director
PowerSupply Ltd
Installation Section
Attn: Mr Pang Boon Kiat (Please see distribution list)

PowerGrid Ltd
Meter Section
Attn: Tan Hoe Kiang (Please see distribution list)

PowerGrid Registered Jointer Name List

PERMIT NO	JOINTER NAME	PERMIT CLASS	EXPIRY DATE	TELEPHONE NO	PAGER/MOBILEPHONE NO	DEMERIT POINT ISSUED (DATE ISSUED)
1	LIM KIM SENG	22KV	31/12/2000	96776672	97048190	
2	KOH POH SEOW	22KV	31/12/2000	97209123	97017128	
3	BASIR BIN RAZAN	22KV	31/12/2000	7578449	96616483	
8	ONG LENG GUAN	22KV	31/12/2000	7756126		
9	LIM AH CHAI	22KV	31/12/2000	7785468	92721403	
10	YEO AH CHWEE	22KV	31/12/2000	2785809	94071192	6 (Feb 1998)
11	MOHAMED KUTI	22KV	31/12/2000	7556271	96396012	
12	MOHD NAHAR MOHD SALLEH	22KV	31/12/2000	96338114	92110022	
13	HO THIAN TECK	22KV	31/12/2000	4550114		
14	YEO THIAN GEOK	22KV	31/12/2000	2701962	92058417	
15	ONG BOCK CHENG	22KV	31/12/2000	2737695	95123842	5 (Jan 2000)
21	ONG KENG SIONG MICHAEL	22KV	31/12/2000	5603139	95105694	
22	RADHA KRISHNAN	22KV	31/12/2000	3646481	97010077	
24	ABDUL RAHIM ABD. HAMID	22KV	31/12/2000	2572130	97501513	
25	KONG KIM SWEE	22KV	31/12/2000	2737695	95166639	5 (Jan 2000)
26	RODRIGUES GERARD H.NOEL	22KV	31/12/2000	7557334	98342883	
27	TAN BOON KEY	22KV	31/12/2000	4813909		
28	YEO ENG HENG	22KV	31/12/2000	4754048	95052776	7 (Nov 1997)
31	LIM KIM HUAT	22KV	31/12/2000	2890119	94128491	
32	LIM KIM CHYE	22KV	31/12/2000	2867105	93092637	
33	LIM KIM CHOON	22KV	31/12/2000	2890119		
35	TAN CHOON KIANG	22KV	31/12/2000	2862114	92305919	6 (Jan 1999)
37	LIM KIM CHUANG	22KV	31/12/2000	2890119	92150758	
46	TAN JOO HOCK	22KV	31/12/2000	4558481	93113697	
47	TAN POH SOON	22KV	31/12/2000	7770036	96694789	
49	GOH KOON MENG	22KV	31/12/2000	7545685	95585857	
51	ONG BOCK WAH	22KV	31/12/2000	5815371	95098011	
52	LIM KIM SWEE	22KV	31/12/2000	4534357	95900209	

PowerGrid Registered Jointer Name List

PERMIT NO	JOINTER NAME	PERMIT CLASS	EXPIRY DATE	TELEPHONE NO	PAGER/MOBILEPHONE NO	DEMERIT POINT ISSUED (DATE ISSUED)
54	ABDUL MALEK BIN HASSAN	22KV	31/12/2000	97325641	92028247	5 (Feb 1998)
56	ROHANI B.SUKARI	22KV	31/12/2000	7819889	97846476	7 (Apr 1999)
58	AMAN B.KODERI	22KV	31/12/2000	4529773	95698606	
60	KRISHNAMOORTHY S/O PALANISAMY	22KV	31/12/2000	7775106	97571706	
62	WONG KUM SENG	22KV	31/12/2000	2833871	92129130	
63	ELANGOVAN S/O GOVINDARAJOO	22KV	31/12/2000	8946427	97061313	5 (Jan 2000)
64	TAN CHIN NAM	22KV	31/12/2000	4813909	97054441	
65	JAMIL BIN SAMAT	22KV	31/12/2000	5827057	94165056	5 (Aug 1998)
66	CHAN NGEE SAY	22KV	31/12/2000	5811218	92048820	
67	LIM BUAT LIAN · JIMMY	22KV	31/12/2000	7776726	96347696	
68	RAMU PAKIRISAMY	22KV	31/12/2000	2737695	93045699	5 (Jan 2000)
69	YEO ENG KWANG	22KV	31/12/2000	96206290	96055534	6 (Jan 1998)
70	ABDUL HAKIM BIN RAZAN	22KV	31/12/2000	8841464	94062465	
71	TIM YOKE YONG	22KV	31/12/2000	97362075	94195676	7 (Dec 1999)
72	NG CHOON SENG	22KV	31/12/2000	2737695	93153252	
74	TEO PHILLIP	22KV	31/12/2000	4413917	92096104	
76	SIMON LIM LENG JOO	22KV	31/12/2000	2885025	97669540	
77	SUA KENG HOON	22KV	31/12/2000	3842293	92048683	
79	LEE CHYE HUAT	22KV	31/12/2000	4577155	97008805	
80	MANOKARAN S/O MOOKKAYYAH	22KV	31/12/2000	5676914	93063094	
81	SUDIMAN B.SUHAIMI	22KV	31/12/2000	7862594	95694265	
82	TEO WAH BOON	22KV	31/12/2000	97808007	92079934	
84	VEERAPPAN SUPARAMANIAM	22KV	31/12/2000	2609002	93002008	
85	PANIRSELVAM S/O K SINGARAM	22KV	31/12/2000	2737695	92050226	
86	LIM BOCK KOON	22KV	31/12/2000	97898035	92085030	
87	LIM AH SHEE	22KV	31/12/2000	97611429	93126575	
88	LEE WEE YEAW	22KV	31/12/2000	98178963	98088770	
89	TEO ANG HA	22KV	31/12/2000	2848342	94078749	

PERMIT NO	JOINTER NAME	PERMIT CLASS	EXPIRY DATE	TELEPHONE NO	PAGER/MOBILEPHONE NO	DEMERIT POINT ISSUED (DATE ISSUED)
90	LEE CHYE BOON	22KV	31/12/2000	7557804	92122895	
92	RAZALI BIN MAHADI	22KV	31/12/2000	3654738	95718234	
94	JALAL BIN SENIN	22KV	31/12/2000	7942759		7 (Dec 1999)
95	MOHD ZAINOL MINHAT	22KV	31/12/2000	3648508	96589579	7 (Jan 2000)
96	AHMAD BIN SUPRAT	22KV	31/12/2000	2701004	96160219	
97	HARAN S/O NARAYANAN	22KV	31/12/2000	4556974	94077840	
98	RAJENTHRAN S/O NARAYANASAMY	22KV	31/12/2000	5615633	96346427	
99	AKHRAN BIN TAHIR	22KV	31/12/2000	97350816	93077305	
103	LEE LENG MONG MATTHEW (ONG MATTHEW)	22KV	31/12/2000	4813008	92042751	
112	SULAIMAN MOHD KUTI	22KV	31/12/2000	3655812	92119918	
117	ALI BIN MOHD KUTI	22KV	31/12/2000	8936474	97988373	
120	NG YEW MING	22KV	31/12/2000	7589671	96724352	
123	THAM CHEE PENG	22KV	31/12/2000	2596144	95245932	
138	TAN KANG SENG	22KV	31/12/2000	3886558	95050864	
102	LIM HOCK SENG	6.6KV	30/04/2000	2592421	98629619	
104	GOH KOON HUAT	6.6KV	30/04/2000	96626593	93043402	
105	LEE CHYE BOO	6.6KV	30/04/2000	5522785	92134369	
106	LIM AH HO	6.6KV	31/12/2000	96643774	96064711	
108	TAN CHENG HUA	6.6KV	30/04/2000	7790781	97075190	
109	K SUBRAMANIAM	6.6KV	30/04/2000	2737695	96080914	
110	BOEY NGAI HENG	6.6KV	30/04/2000	96698026	95566560	
111	TAN KHOON CHYE	6.6KV	30/04/2000	97830204	93075380	
114	KHNG JHO SIAN	6.6KV	30/04/2000	4552468	95965165	
115	NG CHENG MUANG	6.6KV	30/04/2000	97399064	92150847	
116	LIM CHOON HOE	6.6KV	30/04/2000	2845144	92000182	
118	PECK QUEE BOCK	6.6KV	30/04/2000	8760352	94067845	
119	LEE HUNG WENG	6.6KV	30/04/2000	4568635	95250037	
121	ISMAIL BIN SUPRAT	6.6KV	30/04/2000	2890119	96850374	

PERMIT NO	JOINTER NAME	PERMIT CLASS	EXPIRY DATE	TELEPHONE NO	PAGER/MOBILEPHONE NO	DEMERIT POINT ISSUED (DATE ISSUED)
122	MOHAMMED ZANI BIN SALIM	6.6KV	30/04/2000	96369144	92056196	
124	TEO CHOON HIANG	6.6KV	30/04/2000	96499344	95223995	
125	MOHD AZLAN BIN MOHD SALLEH	6.6KV	31/12/2000	97414455	92110055	
126	MOHAMED ZAHRI BIN MOHD SALLEH	6.6KV	31/12/2000	2696830	97336169	
127	LEE CHIN BENG	6.6KV	31/12/2000	2961786	96084023	
128	POH CHEE KENG	6.6KV	31/12/2000	3857562	92028006	
129	IBRAHIM BIN SULAIMAN	6.6KV	31/12/2000	96702494	95126968	
131	KOH AH KEE	6.6KV	30/04/2000	97764768	93041030	
133	TOK KWEE SONG	6.6KV	30/04/2000	3567529	95007751	7 (May 1998)
101	ABDUL WAHAB B ZAINAL ABIDIN	LV	31/12/2000	4255942	95040241	
113	CHANDRAN S/O RAMASAMY	LV	30/04/2000	7590809	94121646	
141	GOH MENG CHAI	LV	31/12/2000	7635942	95067630	
145	DICKSON YONG WAI SAAN	LV	31/12/2000	96691597	93123440	
146	CHUA KAR LENG	LV	31/12/2000	3627132	98304713	
148	JOFFRI BIN HAJI ROSLAN TAN	LV	31/12/2000	97619235	95894294	
149	ANG KIM HUA	LV	31/12/2000	98487464	95836225	