

DAFTAR PUSTAKA

- [1] Cekdin, Cekmas. 2007. *“Sistem Tenaga Listrik (Contoh Soal dan penyelesaiannya menggunakan MATLAB)”*. Yogyakarta : Andi Offset.
- [2] Hakim Efendi Lukmanul. *“Pemanfaatan Teknik Modulasi Lebar Pulsa (PWM) untuk Kompensasi Seri Terkendali”*. Tesis. ITB. Bandung 2006
- [3] Hastanto Ari, Yuningtyastuti, Handoko Susatyo. *“Optimasi Penempatan SVC untuk Memperbaiki Profil Tegangan Pada Sistem 500 KV Jamali Menggunakan Metode Particle Swarm Optimization (PSO)”*. Jurusan Teknik Elektro Fakultas Teknik Universitas Diponegoro.2012
- [4] Imam Robandi. *“Allocation Design For Facts Device On Jaw A-Bali Interconnected Power System Using Genetic Algorithm With Mutation”*. Vol 17, No.2, Mei 2006 - Majalah IPTEK
- [5] Jaya Indra. *“Perbaikan Rugi – Rugi Daya pada Jaringan Transmisi Menggunakan UPPFC untuk Kebutuhan Penerangan Jalan”*. Pascasarjana Unhas. 2013
- [6] Leonardo Latupeirissa Hamles, Naba Agus, dan Yudaningtyas. *“Penentuan Kapasitas dan Lokasi Optimaal Penempatan Kapasitor Bank pada Penyulang Rijali Ambon Menggunakan Sistem Fuzzy. Jurnal EECCIS Vol.6, No. 2, Desember 2012*
- [7] Mohammad Hafidz. *“Kompensator Daya Reaktif”*. Sekolah Tinggi Teknik –PLN (STT-PLN)
- [8] Naim Kurniawati. *“Aplikasi Peralatan Flexible Alternating Current Transmission Systems (FACTS) pada Sistem Tenaga Listrik”*. Universitas Hasanuddin. 2008
- [9] Roseno Makmur Muhammad. *“Studi Penentuan Margin Daya Reaktif Berkenaan dengan Gagal Tegangan Menggunakan Metode Optimasi Newton”* Tesis. Institut Teknologi Bandung. 1996

- [10] Runaldy Sahputra, Syukriyadin. "*Analisis Penempatan Static VAR Compensator (SVC) pada Sistem Interkoneksi Sumut-Aceh 150 kv Menggunakan Metode Bus Participation Factor*". KITEKTRO: Jurnal Online Teknik Elektro. Maret 2012
- [11] Syukriyadin. "*Formulasi Optimal Power Flow dengan Konstrain Kestabilan Tegangan yang Melibatkan TCSC*". Volume 5. No1. Jurusan Teknik Elektro Universitas Syiah Kuala. 2006
- [12] T.Sutojo, Mulyanto Edy, Suhartono Vincent. 2010. "*Kecerdasan Buatan*". Semarang. Andi Yogyakarta
- [13] Umar, Adi Soeprijanto, Mauridhi Hery Purnomo, "*Optimasi Penempatan Multi FACTS devices pada Sistem Kelistrikan Sulawesi Selatan Menggunakan Algoritma Genetika*". Seminar Nasional Aplikasi Teknologi Informasi 2008 (SNATI 2008) Yogyakarta, 21 Juni 2008

LAMPIRAN 1

DATA ALIRAN DAYA, TEGANGAN, DAN RUGI – RUGI
DAYA SEBELUM PEMASANGAN FACTS DEVICES
JENIS TCSC PADA SISTEM KELISTRIKAN SULAWESI
SELATAN

PSAT 2.1.6

Author: Federico Milano, (c) 2002-2010

e-mail: Federico.Milano@uclm.es

website: <http://www.uclm.es/area/gsee/Web/Federico>

File: E:\Menuju MT\program fix\SISTEMnoTCSC.mdl

Date: 25-Jul-2013 01:25:23

NETWORK STATISTICS

Buses: 39
Lines: 38
Transformers: 5
Generators: 17
Loads: 34

SOLUTION STATISTICS

Number of Iterations: 5
Maximum P mismatch [p.u.] 1,385E-14
Maximum Q mismatch [p.u.] 1,90958E-14
Power rate [MVA] 100

POWER FLOW RESULTS

Bus	V [p.u.]	phase [p.u.]	P gen [p.u.]	Q gen [p.u.]	P load [p.u.]	Q load [p.u.]
24SGMSA	1,000	-0,12611	0,08240	0,35182	0,16000	0,02880
35 PNKEP70	0,951	-0,25453	0,00000	0,00000	0,00000	0,00205
10SPENG	1,022	0,09727	0,00000	0,00000	0,11760	0,02880
11SKANG	1,000	0,15579	1,77680	0,14037	0,17280	0,05100
12BONE	0,996	0,04999	0,00000	0,00000	0,11840	0,02290
13BARRU	0,973	-0,08555	0,11500	0,31548	0,06240	0,01080
14PNKEP	0,975	-0,14701	0,00000	0,00000	0,34880	0,04200
15TNASA	0,931	-0,27981	0,00000	0,00000	0,41600	0,08100
16MAROS	0,967	0,02519	0,00000	0,00000	0,12760	0,03000
17MNDAI	0,947	-0,27901	0,00000	0,00000	0,23760	0,01740
18DAYA	0,944	-0,28098	0,00000	0,00000	0,19440	0,01838
19BSOWA	0,977	-0,15165	0,00000	0,00000	0,18880	0,03240
1BKARU	1,000	0,00000	0,46994	-0,11375	0,03760	0,00120
20TELLO	0,947	-0,16306	0,00000	0,77643	0,34720	0,09480
21BWAJA	1,000	-0,16307	0,00000	0,00000	0,00000	0,00000
22BRLOE	1,000	-0,14588	0,05760	-0,00972	0,00560	0,00000
23PKANG	0,981	-0,18512	0,00000	0,00000	0,40800	0,06660
25TBUNGA	0,967	-0,13930	0,00000	0,00000	0,32320	0,09300
26TLAMA	0,947	-0,18078	0,00000	0,00000	0,35120	0,07620
27BNTLA	0,974	-0,28255	0,00000	0,00000	0,34800	0,00000
28TLASA	0,947	-0,03296	0,00000	0,99175	0,22080	0,85800

29JNPTO	0,985	-0,01356	0,00000	0,00000	0,10880	0,01500
2PLMAS	1,025	-0,02635	0,00000	0,00000	0,10960	0,02400
30BK MBA	0,993	0,00522	0,00000	0,00000	0,06400	0,00491
32LTUPA	0,994	0,27912	0,00000	0,00000	0,05120	0,91800
33SINJAI	0,993	0,02435	0,07600	0,11464	0,05680	0,03600
34MMUJU	1,013	-0,07623	0,00000	0,01425	0,11040	0,01800
36TELLO70	0,998	-0,15227	0,00000	0,00000	0,00000	0,00000
37TLAMA70	0,989	-0,25571	0,00000	0,00000	0,00000	0,00886
38TELLO30	1,000	-0,16306	0,00000	-0,00002	0,00000	0,00000
39LTUPA11	1,000	0,28026	1,84080	0,50093	0,00000	0,00000
3MJENE	1,016	-0,06291	0,00000	0,00000	0,06720	0,01140
31PGAYA	1,000	0,04004	1,55760	-0,17074	0,00000	0,00000
4PRANG	1,000	-0,02018	0,00480	0,04479	0,16240	0,03660
5PPARE	1,000	-0,02527	0,04000	0,51611	0,12800	0,02760
6SUPPA	1,000	-0,02527	0,00000	-0,00028	0,00000	0,00000
7SDRAP	0,979	0,07195	0,00000	0,00000	0,17600	0,05160
8MKALE	1,000	0,13890	0,00000	2,10404	0,06480	0,01140
9PLOPO	1,000	0,25630	0,00000	-2,11974	0,17280	0,03840

LINE FLOWS

From Bus	To Bus	Line	P Flow [p.u.]	Q Flow [p.u.]	P Loss [p.u.]	Q Loss [p.u.]
26TLAMA	20TELLO	1	-0,70449	-0,10329	0,00374	0,01252
14PNKEP	5PPARE	2	-0,33695	0,03821	0,01149	0,03005
25TBUNGA	24SGMSA	3	-0,32320	-0,09300	0,00081	0,00352
9PLOPO	32LTUPA	4	-1,28007	0,43553	0,00263	0,01416
18DAYA	17MNDAI	5	-0,19440	-0,01838	0,00043	0,00026
35 PNKEP70	17MNDAI	6	0,33288	0,04390	0,00045	0,00787
35 PNKEP70	15TNASA	7	0,42279	0,09343	0,00679	0,01243
13BARRU	5PPARE	8	-0,66845	0,20291	0,01135	0,02949
2PLMAS	1BKARU	9	-0,26015	0,06362	0,00190	-0,00060
4PRANG	1BKARU	10	-0,16934	0,04404	0,00096	-0,00669
5PPARE	4PRANG	11	-0,01157	0,02921	0,00017	-0,00664
5PPARE	2PLMAS	12	0,02934	-0,02797	0,00004	-0,01816
37TLAMA70	27BNTLA	13	0,35317	0,00943	0,00517	0,00943
6SUPPA	5PPARE	14	0,00000	-0,00028	0,00000	-0,00056
5PPARE	7SDRAP	15	-1,13401	0,66913	0,03475	0,12347
3MJENE	34MMUJU	16	0,11082	-0,04087	0,00042	-0,00862
7SDRAP	8MKALE	17	-0,67479	0,63229	0,05644	0,02218
3MJENE	2PLMAS	18	-0,17802	0,05227	0,00182	0,00284
8MKALE	9PLOPO	19	-0,79603	2,70275	0,31124	0,10908
10SPENG	11SKANG	20	-0,44573	0,09804	0,00438	0,02231
7SDRAP	11SKANG	21	-1,13950	-0,06978	0,01438	0,09532
7SDRAP	10SPENG	22	-0,04801	0,02444	0,00178	-0,00409
7SDRAP	16MAROS	23	0,51755	-0,09288	0,00356	0,02054
20TELLO	24SGMSA	24	-1,36914	0,22534	0,00741	0,04950
24SGMSA	16MAROS	25	-0,37766	0,12604	0,00874	0,04261

24SGMSA	28TLASA	26	-1,40050	0,27630	0,01977	0,12833
28TLASA	40PGAYA	27	-1,54108	0,28172	0,01652	0,11098
29JNPTO	30BKMBA	28	-0,10880	-0,01500	0,00060	-0,00120
30BKMBA	33SINJAI	29	-0,17340	-0,01871	0,00096	-0,00531
33SINJAI	12BONE	30	-0,15516	0,06525	0,00118	-0,00720
10SPENG	12BONE	31	0,27835	-0,04072	0,00360	0,00883
36TELLO70	22BRLOE	32	-0,05183	0,00969	0,00017	-0,00003
20TELLO	23PKANG	33	0,31247	0,07476	0,00447	0,00816
38TELLO30	21BWAJA	34	0,00000	-0,00002	0,00000	-0,00002
20TELLO	19BSOWA	35	0,10014	0,09844	0,00345	-0,00620
19BSOWA	14PNKEP	36	-0,09211	0,07223	0,00016	-0,00412
20TELLO	14PNKEP	37	-0,04708	0,15702	0,00132	-0,00087
14PNKEP	13BARRU	38	-0,70820	-0,06709	0,01286	0,03468
26TLAMA	37TLAMA70	39	0,35329	0,02709	0,00013	0,02652
20TELLO	38TELLO30	40	0,00000	0,00000	0,00000	0,00000
20TELLO	36TELLO70	41	-0,05183	0,01027	0,00000	0,00058
14PNKEP	35 PNKEP70	42	0,75567	0,22112	0,00000	0,08583
32LTUPA	39LTUPA11	43	-1,33391	-0,49663	0,00689	0,00430

LINE FLOWS

From Bus	To Bus	Line	P Flow [p.u.]	Q Flow [p.u.]	P Loss [p.u.]	Q Loss [p.u.]
20TELLO	26TLAMA	1	0,70823	0,11581	0,00374	0,01252
5PPARE	14PNKEP	2	0,34844	-0,00816	0,01149	0,03005
24SGMSA	25TBUNGA	3	0,32401	0,09652	0,00081	0,00352
32LTUPA	9PLOPO	4	1,28271	-0,42137	0,00263	0,01416
17MNDAI	18DAYA	5	0,19483	0,01864	0,00043	0,00026
17MNDAI	35 PNKEP70	6	-0,33243	-0,03604	0,00045	0,00787
15TNASA	35 PNKEP70	7	-0,41600	-0,08100	0,00679	0,01243
5PPARE	13BARRU	8	0,67980	-0,17343	0,01135	0,02949
1BKARU	2PLMAS	9	0,26205	-0,06422	0,00190	-0,00060
1BKARU	4PRANG	10	0,17030	-0,05073	0,00096	-0,00669
4PRANG	5PPARE	11	0,01174	-0,03585	0,00017	-0,00664
2PLMAS	5PPARE	12	-0,02930	0,00981	0,00004	-0,01816
27BNTLA	37TLAMA70	13	-0,34800	0,00000	0,00517	0,00943
5PPARE	6SUPPA	14	0,00000	-0,00028	0,00000	-0,00056
7SDRAP	5PPARE	15	1,16875	-0,54566	0,03475	0,12347
34MMUJU	3MJENE	16	-0,11040	0,03225	0,00042	-0,00862
8MKALE	7SDRAP	17	0,73123	-0,61011	0,05644	0,02218
2PLMAS	3MJENE	18	0,17984	-0,04943	0,00182	0,00284
9PLOPO	8MKALE	19	1,10727	-2,59367	0,31124	0,10908
11SKANG	10SPENG	20	0,45012	-0,07573	0,00438	0,02231
11SKANG	7SDRAP	21	1,15388	0,16510	0,01438	0,09532
10SPENG	7SDRAP	22	0,04979	-0,02852	0,00178	-0,00409
16MAROS	7SDRAP	23	-0,51399	0,11342	0,00356	0,02054

24SGMSA	20TELLO	24	1,37655	-0,17584	0,00741	0,04950
16MAROS	24SGMSA	25	0,38639	-0,08342	0,00874	0,04261
28TLASA	24SGMSA	26	1,42028	-0,14797	0,01977	0,12833
40PGAYA	28TLASA	27	1,55760	-0,17074	0,01652	0,11098
30BK MBA	29JNPTO	28	0,10940	0,01380	0,00060	-0,00120
33SINJAI	30BK MBA	29	0,17436	0,01339	0,00096	-0,00531
12BONE	33SINJAI	30	0,15634	-0,07244	0,00118	-0,00720
12BONE	10SPENG	31	-0,27474	0,04955	0,00360	0,00883
22BRLOE	36TELLO70	32	0,05200	-0,00972	0,00017	-0,00003
23PKANG	20TELLO	33	-0,30800	-0,06660	0,00447	0,00816
21BWAJA	38TELLO30	34	0,00000	0,00000	0,00000	-0,00002
19BSOWA	20TELLO	35	-0,09669	-0,10463	0,00345	-0,00620
14PNKEP	19BSOWA	36	0,09227	-0,07635	0,00016	-0,00412
14PNKEP	20TELLO	37	0,04840	-0,15789	0,00132	-0,00087
13BARRU	14PNKEP	38	0,72105	0,10177	0,01286	0,03468
37TLAMA70	26TLAMA	39	-0,35317	-0,00056	0,00013	0,02652
38TELLO30	20TELLO	40	0,00000	0,00000	0,00000	0,00000
36TELLO70	20TELLO	41	0,05183	-0,00969	0,00000	0,00058
35 PNKEP70	14PNKEP	42	-0,75567	-0,13528	0,00000	0,08583
39LTUPA11	32LTUPA	43	1,34080	0,50093	0,00689	0,00430

GLOBAL SUMMARY REPORT

TOTAL GENERATION

REAL POWER [p.u.] 6,02094
 REACTIVE POWER [p.u.] 3,456356088

TOTAL LOAD

REAL POWER [p.u.] 5,458
 REACTIVE POWER [p.u.] 2,510870579

TOTAL

LOSSES

REAL POWER [p.u.] 0,562941635
 REACTIVE POWER [p.u.] 0,945485509

LAMPIRAN 2

DATA ALIRAN DAYA, TEGANGAN, DAN RUGI – RUGI
DAYA SETELAH PEMASANGAN FACTS DEVICES
JENIS TCSC PADA SISTEM KELISTRIKAN SULAWESI
SELATAN

POWER FLOW REPORT

P S A T
2.1.6

Author: Federico Milano, (c) 2002-2010
e-mail: Federico.Milano@uclm.es
website: <http://www.uclm.es/area/gsee/Web/Federico>

File: E:\Menuju MT\PROGRAM\SISTEMstatcom1.mdl
Date: 25-Jul-2013 08:46:07

NETWORK STATISTICS

Buses: 39
Lines: 38
Transformers: 5
Generators: 17
Loads: 34

SOLUTION STATISTICS

Number of Iterations: 4
Maximum P mismatch [p.u.] 3,83867E-13
Maximum Q mismatch [p.u.] 4,74936E-13
Power rate [MVA] 100

POWER FLOW RESULTS

Bus	V [p.u.]	phase [p.u.]	P gen [p.u.]	Q gen [p.u.]	P load [p.u.]	Q load [p.u.]
24SGMSA	1,00000	-0,08489	0,08240	0,35182	0,16000	0,02880
35 PNKEP70	0,97542	-0,21844	0,00000	0,00000	0,00000	0,00205
10SPENG	1,00070	0,14587	0,00000	0,00000	0,11760	0,02880
11SKANG	1,00000	0,20552	1,77680	0,14037	0,17280	0,05100
12BONE	0,99584	0,09840	0,00000	0,00000	0,11840	0,02290
13BARRU	1,00000	-0,05396	0,11500	0,31548	0,06240	0,01080
14PNKEP	0,98035	-0,11443	0,00000	0,00000	0,34880	0,04200
15TNASA	0,96402	-0,24679	0,00000	0,00000	0,41600	0,08100
16MAROS	0,97305	0,07419	0,00000	0,00000	0,12760	0,03000
17MNDAL	0,97527	-0,21866	0,00000	0,00000	0,23760	0,01740
18DAYA	0,97519	-0,21878	0,00000	0,00000	0,19440	0,01838
19BSOWA	0,98049	-0,11866	0,00000	0,00000	0,18880	0,03240
1BKARU	1,00000	0,00000	0,46994	-0,11375	0,03760	0,00120
20TELLO	0,97600	-0,12262	0,00000	0,77643	0,34720	0,09480
21BWAJA	1,00000	-0,12262	0,00000	0,00000	0,00000	0,00000
22BRLOE	1,00000	-0,10543	0,05760	-0,00972	0,00560	0,00000
23PKANG	0,98074	-0,14467	0,00000	0,00000	0,40800	0,06660
25TBUNGA	0,99366	-0,09808	0,00000	0,00000	0,32320	0,09300
26TLAMA	0,99308	-0,14061	0,00000	0,00000	0,35120	0,07620
27BNTLA	0,98758	-0,24303	0,00000	0,00000	0,34800	0,00000

28TLASA	0,98100	0,00933	0,00000	0,99175	0,22080	0,85800
29JNPTO	0,98484	0,03472	0,00000	0,00000	0,10880	0,01500
2PLMAS	0,99359	-0,00450	0,00000	0,00000	0,10960	0,02400
30BK MBA	0,99275	0,05350	0,00000	0,00000	0,06400	0,00491
32LTUPA	0,99444	0,24637	0,00000	0,00000	0,05120	0,91800
33SINJAI	1,00000	0,07263	0,07600	0,11464	0,05680	0,03600
34MMUJU	1,00000	-0,05628	0,00000	0,01425	0,11040	0,01800
36TELLO70	0,99793	-0,11182	0,00000	0,00000	0,00000	0,00000
37TLAMA70	0,99847	-0,21476	0,00000	0,00000	0,00000	0,00886
38TELLO30	1,00000	-0,12262	0,00000	-0,00002	0,00000	0,00000
39LTUPA11	1,00000	0,24751	1,56080	0,50093	0,00000	0,00000
3MJENE	1,00700	-0,04234	0,00000	0,00000	0,06720	0,01140
40PGAYA	1,00000	0,04883	1,55760	-0,17074	0,00000	0,00000
4PRANG	1,00000	-0,01394	0,00480	0,04479	0,16240	0,03660
5PPARE	1,00000	0,00423	0,06000	0,51611	0,12800	0,02760
6SUPPA	1,00000	0,00423	0,00000	-0,00028	0,00000	0,00000
7SDRAP	0,99400	0,12287	0,00000	0,00000	0,17600	0,05160
8MKALE	1,00000	0,21887	0,00000	2,10404	0,06480	0,01140
9PLOPO	1,00000	0,22355	0,00000	-2,11974	0,17280	0,03840

STATE VARIABLES

x1_Tcsc_1	0,406766228
x2_Tcsc_1	0,406766228
x1_Tcsc_2	0,415725489
x2_Tcsc_2	0,415725489

OTHER ALGEBRAIC VARIABLES

x0_Tcsc_1	0,406766228
pref_Tcsc_1	-1,5576
x0_Tcsc_2	0,415725489
pref_Tcsc_2	-1,107274179

LINE FLOWS

From Bus	To Bus	Line	P Flow [p.u.]	Q Flow [p.u.]	P Loss [p.u.]	Q Loss [p.u.]
26TLAMA	20TELLO	1	-0,70445	-0,06185	0,00368	0,01231
14PNKEP	5PPARE	2	-0,32688	0,04926	0,01082	0,02758
25TBUNGA	24SGMSA	3	-0,32320	-0,09300	0,00081	0,00352
9PLOPO	32LTUPA	4	-1,28007	0,43553	0,00263	0,01416
18DAYA	17MND AI	5	-0,19440	-0,01975	0,00001	-0,00016
35 PNKEP70	17MND AI	6	0,33206	0,03660	0,00004	-0,00040
35 PNKEP70	15TNASA	7	0,42219	-0,03869	0,00619	0,01131
13BARRU	5PPARE	8	-0,64554	0,19503	0,01057	0,02672
2PLMAS	1BKARU	9	-0,06131	-0,05395	0,00017	-0,00678
4PRANG	1BKARU	10	-0,11709	0,02850	0,00046	-0,00848
5PPARE	4PRANG	11	0,04261	-0,11895	0,00211	-0,00594
5PPARE	2PLMAS	12	0,23114	-0,16265	0,00282	-0,01706
37TLAMA70	27BNTLA	13	0,35313	-0,04065	0,00513	0,00935

6SUPPA	5PPARE	14	0,00000	-0,00028	0,00000	-0,00056
5PPARE	7SDRAP	15	-1,35556	0,86850	0,05194	0,18527
3MJENE	34MMUJU	16	0,11087	-0,05959	0,00047	-0,00840
7SDRAP	8MKALE	17	-0,92823	0,91989	0,11424	0,05705
3MJENE	2PLMAS	18	-0,17807	0,07099	0,00196	0,00335
8MKALE	9PLOPO	19	-1,10727	0,00259	0,10282	0,00518
10SPENG	11SKANG	20	-0,45498	0,09314	0,00454	0,02329
7SDRAP	11SKANG	21	-1,12983	-0,17379	0,01464	0,09715
7SDRAP	10SPENG	22	-0,05685	0,01692	0,00215	-0,00391
7SDRAP	16MAROS	23	0,53141	-0,08495	0,00379	0,02217
20TELLO	24SGMSA	24	-1,39754	0,23058	0,00773	0,05163
24SGMSA	16MAROS	25	-0,39031	0,15355	0,00971	0,04942
24SGMSA	28TLASA	26	-1,41656	0,28028	0,02024	0,13139
28TLASA	40PGAYA	27	-1,55760	0,03076	0,00000	0,06152
29JNPTO	30BKMBA	28	-0,10880	-0,01500	0,00060	-0,00120
30BKMBA	33SINJAI	29	-0,17340	-0,01871	0,00096	-0,00531
33SINJAI	12BONE	30	-0,15516	0,06817	0,00120	-0,00713
10SPENG	12BONE	31	0,27838	-0,04350	0,00362	0,00889
36TELLO70	22BRLOE	32	-0,05183	0,00969	0,00017	-0,00003
20TELLO	23PKANG	33	0,31247	0,07476	0,00447	0,00816
38TELLO30	21BWAJA	34	0,00000	-0,00002	0,00000	-0,00002
20TELLO	19BSOWA	35	0,09537	0,05352	0,00208	-0,00671
19BSOWA	14PNKEP	36	-0,09552	0,02784	0,00011	-0,00433
20TELLO	14PNKEP	37	-0,01381	0,11626	0,00069	-0,00318
14PNKEP	13BARRU	38	-0,68628	-0,01563	0,01186	0,03104
26TLAMA	37TLAMA70	39	0,35325	-0,01435	0,00013	0,02635
20TELLO	38TELLO30	40	0,00000	0,00000	0,00000	0,00000
20TELLO	36TELLO70	41	-0,05183	0,01027	0,00000	0,00058
14PNKEP	35 PNKEP70	42	0,75424	0,07598	0,00000	0,07871
32LTUPA	39LTUPA11	43	-1,33391	-0,49663	0,00689	0,00430

LINE FLOWS

From Bus	To Bus	Line	P Flow [p.u.]	Q Flow [p.u.]	P Loss [p.u.]	Q Loss [p.u.]
20TELLO	26TLAMA	1	0,70814	0,07416	0,00368	0,01231
5PPARE	14PNKEP	2	0,33770	-0,02169	0,01082	0,02758
24SGMSA	25TBUNGA	3	0,32401	0,09652	0,00081	0,00352
32LTUPA	9PLOPO	4	1,28271	-0,42137	0,00263	0,01416
17MNDAI	18DAYA	5	0,19441	0,01960	0,00001	-0,00016
17MNDAI	35 PNKEP70	6	-0,33201	-0,03700	0,00004	-0,00040
15TNASA	35 PNKEP70	7	-0,41600	0,05000	0,00619	0,01131
5PPARE	13BARRU	8	0,65611	-0,16830	0,01057	0,02672
1BKARU	2PLMAS	9	0,06148	0,04716	0,00017	-0,00678
1BKARU	4PRANG	10	0,11755	-0,03698	0,00046	-0,00848
4PRANG	5PPARE	11	-0,04051	0,11300	0,00211	-0,00594
2PLMAS	5PPARE	12	-0,22832	0,14559	0,00282	-0,01706
27BNTLA	37TLAMA70	13	-0,34800	0,05000	0,00513	0,00935

5PPARE	6SUPPA	14	0,00000	-0,00028	0,00000	-0,00056
7SDRAP	5PPARE	15	1,40750	-0,68323	0,05194	0,18527
34MMUJU	3MJENE	16	-0,11040	0,05119	0,00047	-0,00840
8MKALE	7SDRAP	17	1,04247	-0,86283	0,11424	0,05705
2PLMAS	3MJENE	18	0,18003	-0,06764	0,00196	0,00335
9PLOPO	8MKALE	19	1,10727	0,00259	0,00000	0,00518
11SKANG	10SPENG	20	0,45953	-0,06985	0,00454	0,02329
11SKANG	7SDRAP	21	1,14447	0,27094	0,01464	0,09715
10SPENG	7SDRAP	22	0,05900	-0,02084	0,00215	-0,00391
16MAROS	7SDRAP	23	-0,52762	0,10712	0,00379	0,02217
24SGMSA	20TELLO	24	1,40527	-0,17894	0,00773	0,05163
16MAROS	24SGMSA	25	0,40002	-0,10412	0,00971	0,04942
28TLASA	24SGMSA	26	1,43680	-0,14889	0,02024	0,13139
40PGAYA	28TLASA	27	1,55760	0,03076	0,00000	0,06152
30BKMBA	29JNPTO	28	0,10940	0,01380	0,00060	-0,00120
33SINJAI	30BKMBA	29	0,17436	0,01339	0,00096	-0,00531
12BONE	33SINJAI	30	0,15636	-0,07530	0,00120	-0,00713
12BONE	10SPENG	31	-0,27476	0,05240	0,00362	0,00889
22BRLOE	36TELLO70	32	0,05200	-0,00972	0,00017	-0,00003
23PKANG	20TELLO	33	-0,30800	-0,06660	0,00447	0,00816
21BWAJA	38TELLO30	34	0,00000	0,00000	0,00000	-0,00002
19BSOWA	20TELLO	35	-0,09328	-0,06024	0,00208	-0,00671
14PNKEP	19BSOWA	36	0,09563	-0,03217	0,00011	-0,00433
14PNKEP	20TELLO	37	0,01449	-0,11944	0,00069	-0,00318
13BARRU	14PNKEP	38	0,69814	0,04667	0,01186	0,03104
37TLAMA70	26TLAMA	39	-0,35313	0,04070	0,00013	0,02635
38TELLO30	20TELLO	40	0,00000	0,00000	0,00000	0,00000
36TELLO70	20TELLO	41	0,05183	-0,00969	0,00000	0,00058
35 PNKEP70	14PNKEP	42	-0,75424	0,00273	0,00000	0,07871
39LTUPA11	32LTUPA	43	1,34080	0,50093	0,00689	0,00430

GLOBAL SUMMARY REPORT

TOTAL GENERATION

REAL POWER [p.u.] 6,26763

REACTIVE POWER [p.u.] 3,19283

TOTAL

LOAD

REAL POWER [p.u.] 5,95800

REACTIVE POWER [p.u.] 2,32202

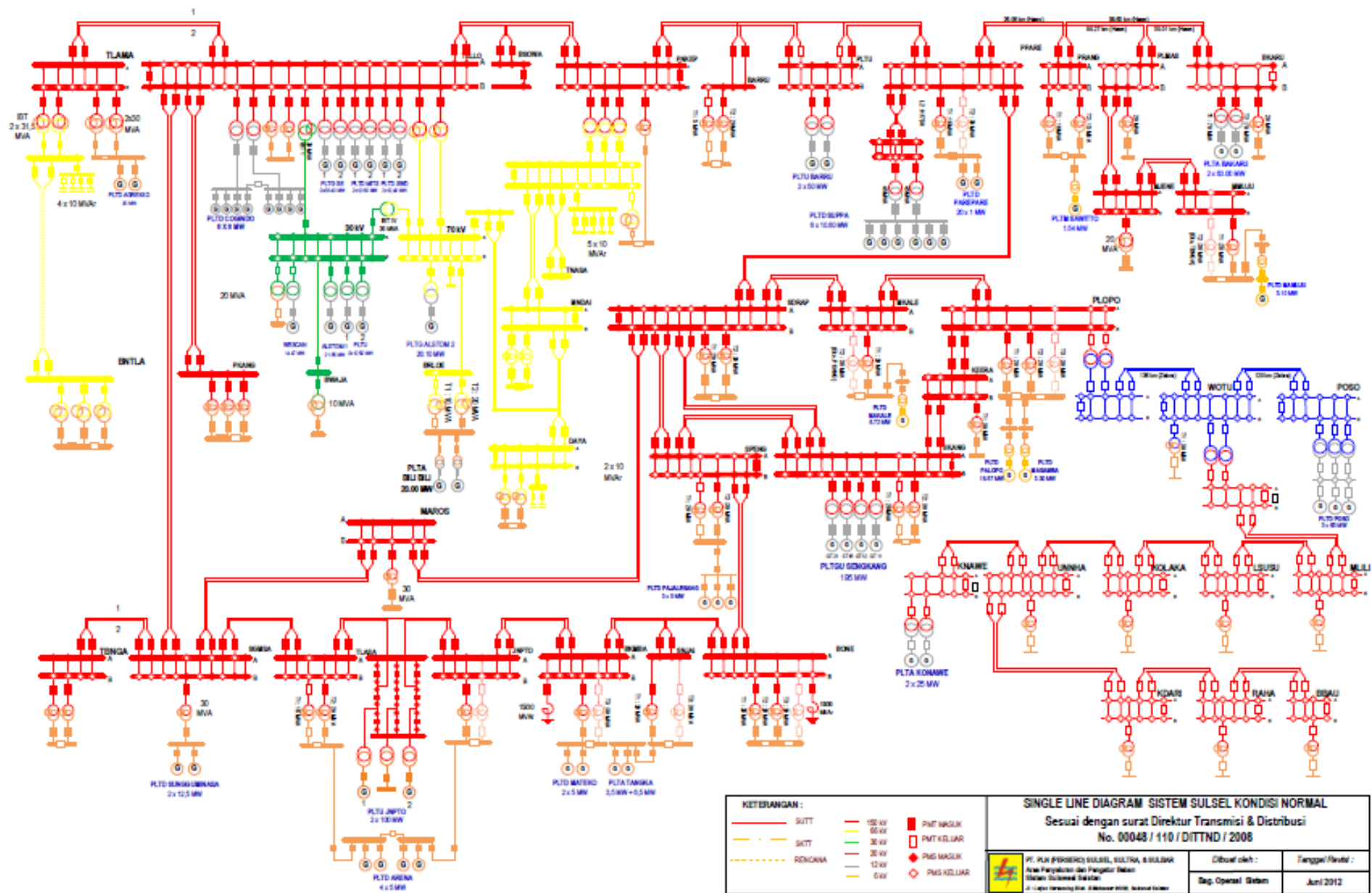
TOTAL LOSSES

REAL POWER [p.u.] 0,30963

REACTIVE POWER [p.u.] 0,87081

LAMPIRAN 3

DATA PEMBANGKIT, ALIRAN DAYA, BEBAN,
IMPEDANSI PENGHANTAR, DATA IMPEDANSI
GENERATOR, DAN TIPE KONSTRUKSI SALURAN
DARI PT PLN PERSERO WILAYAH
SULSELTRABAR



SINGLE LINE DIAGRAM SISTEM SULSEL KONDISI NORMAL
 Sesuai dengan surat Direktur Transmisi & Distribusi
 No. 00048 / 110 / DITTND / 2008

KETERANGAN :

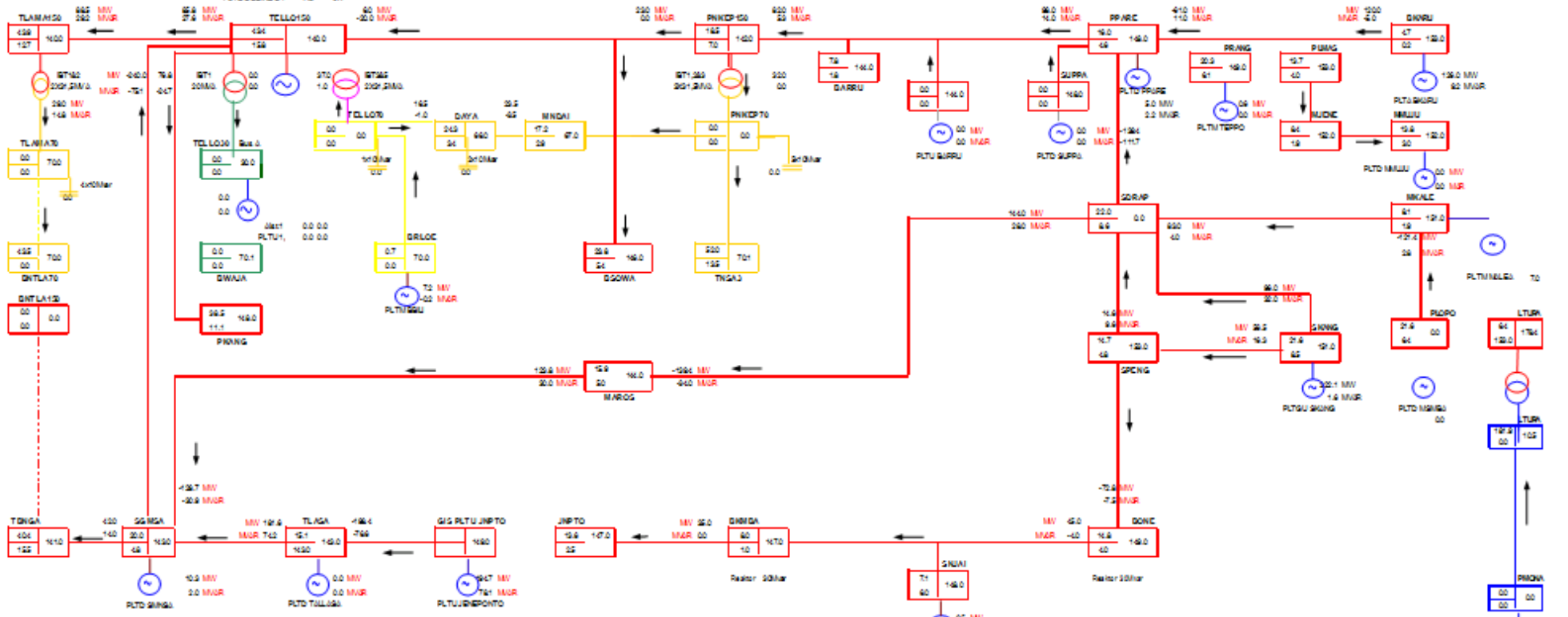
— (Red)	150 kV	▣ (Red)	PMT MASUK
— (Orange)	60 kV	▣ (Orange)	PMT KELUAR
— (Green)	30 kV	▣ (Green)	PMS MASUK
— (Yellow)	20 kV	▣ (Yellow)	PMS KELUAR
— (Blue)	12 kV		
— (Black)	0 kV		

PT. PLN (PERSERO) SULSEL, SULTRA, & SULBAR Area Pelayanan dan Pengoperasian Sistem Tenaga Listrik	Dibuat oleh : Dep. Operasi Sistem	Terakhir Revisi : Juni 2012
---	--------------------------------------	--------------------------------

Gambar 2
ALIRAN DAYA SISTEM SULSELBAR

keadaan Puncak Maksimum : 187,25 MW
Hari / Tanggal : Senin / 16 April 2013
Jam : 19.20 Wita

MV MUR
PLTG GE1.2: 0.0 0.0
PLTG GE1.3: 0.0 0.0
PLTG MTA1.2: 0.0 0.0
PLTG MTA1.3: 0.0 0.0
PLTG MTA1.4: 0.0 0.0
PLTG MTA1.5: 0.0 0.0
PLTG MTA1.6: 0.0 0.0
PLTG MTA1.7: 0.0 0.0
PLTG MTA1.8: 0.0 0.0
PLTG MTA1.9: 0.0 0.0
PLTG MTA1.10: 0.0 0.0
PLTG MTA1.11: 0.0 0.0
PLTG MTA1.12: 0.0 0.0
PLTG MTA1.13: 0.0 0.0
PLTG MTA1.14: 0.0 0.0
PLTG MTA1.15: 0.0 0.0
PLTG MTA1.16: 0.0 0.0
PLTG MTA1.17: 0.0 0.0
PLTG MTA1.18: 0.0 0.0
PLTG MTA1.19: 0.0 0.0
PLTG MTA1.20: 0.0 0.0
PLTG MTA1.21: 0.0 0.0
PLTG MTA1.22: 0.0 0.0
PLTG MTA1.23: 0.0 0.0
PLTG MTA1.24: 0.0 0.0
PLTG MTA1.25: 0.0 0.0
PLTG MTA1.26: 0.0 0.0
PLTG MTA1.27: 0.0 0.0
PLTG MTA1.28: 0.0 0.0
PLTG MTA1.29: 0.0 0.0
PLTG MTA1.30: 0.0 0.0
PLTG MTA1.31: 0.0 0.0
PLTG MTA1.32: 0.0 0.0
PLTG MTA1.33: 0.0 0.0
PLTG MTA1.34: 0.0 0.0
PLTG MTA1.35: 0.0 0.0
PLTG MTA1.36: 0.0 0.0
PLTG MTA1.37: 0.0 0.0
PLTG MTA1.38: 0.0 0.0
PLTG MTA1.39: 0.0 0.0
PLTG MTA1.40: 0.0 0.0
PLTG MTA1.41: 0.0 0.0
PLTG MTA1.42: 0.0 0.0
PLTG MTA1.43: 0.0 0.0
PLTG MTA1.44: 0.0 0.0
PLTG MTA1.45: 0.0 0.0
PLTG MTA1.46: 0.0 0.0
PLTG MTA1.47: 0.0 0.0
PLTG MTA1.48: 0.0 0.0
PLTG MTA1.49: 0.0 0.0
PLTG MTA1.50: 0.0 0.0
PLTG MTA1.51: 0.0 0.0
PLTG MTA1.52: 0.0 0.0
PLTG MTA1.53: 0.0 0.0
PLTG MTA1.54: 0.0 0.0
PLTG MTA1.55: 0.0 0.0
PLTG MTA1.56: 0.0 0.0
PLTG MTA1.57: 0.0 0.0
PLTG MTA1.58: 0.0 0.0
PLTG MTA1.59: 0.0 0.0
PLTG MTA1.60: 0.0 0.0
PLTG MTA1.61: 0.0 0.0
PLTG MTA1.62: 0.0 0.0
PLTG MTA1.63: 0.0 0.0
PLTG MTA1.64: 0.0 0.0
PLTG MTA1.65: 0.0 0.0
PLTG MTA1.66: 0.0 0.0
PLTG MTA1.67: 0.0 0.0
PLTG MTA1.68: 0.0 0.0
PLTG MTA1.69: 0.0 0.0
PLTG MTA1.70: 0.0 0.0
PLTG MTA1.71: 0.0 0.0
PLTG MTA1.72: 0.0 0.0
PLTG MTA1.73: 0.0 0.0
PLTG MTA1.74: 0.0 0.0
PLTG MTA1.75: 0.0 0.0
PLTG MTA1.76: 0.0 0.0
PLTG MTA1.77: 0.0 0.0
PLTG MTA1.78: 0.0 0.0
PLTG MTA1.79: 0.0 0.0
PLTG MTA1.80: 0.0 0.0
PLTG MTA1.81: 0.0 0.0
PLTG MTA1.82: 0.0 0.0
PLTG MTA1.83: 0.0 0.0
PLTG MTA1.84: 0.0 0.0
PLTG MTA1.85: 0.0 0.0
PLTG MTA1.86: 0.0 0.0
PLTG MTA1.87: 0.0 0.0
PLTG MTA1.88: 0.0 0.0
PLTG MTA1.89: 0.0 0.0
PLTG MTA1.90: 0.0 0.0
PLTG MTA1.91: 0.0 0.0
PLTG MTA1.92: 0.0 0.0
PLTG MTA1.93: 0.0 0.0
PLTG MTA1.94: 0.0 0.0
PLTG MTA1.95: 0.0 0.0
PLTG MTA1.96: 0.0 0.0
PLTG MTA1.97: 0.0 0.0
PLTG MTA1.98: 0.0 0.0
PLTG MTA1.99: 0.0 0.0
PLTG MTA1.100: 0.0 0.0



Legenda:
 P - MW
 V - MVAr
 Q - MVAr
 V - kV
 P + jQ
 150 kV
 135 kV
 110 kV
 75 kV
 33 kV

Load Flow dilakukan ke seluruh:
 Jalur Bara 80.0 MW
 Jalur Timor 28.8 MW
 Jalur Tengah 164.0 MW

TOTAL :
 CHECK DP MALAM : VALUE
 SELISA : VALUE
 LOAD CURTAILMENT : 0.0

UNITS	DAYA	P U N C U L 7 B E S I A N (MW)																								KEBUNGAHAN							
		01.00	02.00	03.00	04.00	05.00	06.00	07.00	08.00	09.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00								
I L L I	PEMBANGKIAN	Bekasari1	83.0	83.0	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00				
		Bekasari2	83.0	83.0	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00			
		Bekasari	8.0	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	HIDRO	Bekasari2	14.1	13.0	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20			
		Sawitto	1.7	1.0	0.80	0.39	0.39	0.40	0.39	0.40	0.40	0.40	0.39	0.40	0.39	0.40	0.39	0.40	0.39	0.40	0.39	0.40	0.39	0.40	0.39	0.40	0.39	0.40	0.39	0.40			
	PLTU	Religi1	12.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		Religi2	12.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	PLIG	Bekasari1	50.0	44.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		Bekasari2	50.0	44.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		Cib41	33.4	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	PLID	Cib42	33.4	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		Ala thorn1	21.4	12.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
		Ala thorn2	20.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Wastana	14.5	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Mitobana1	12.5	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Mitobana2	12.5	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		SWUA1	12.4	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SWUA2		12.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
I L L I	Palapa	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	Makale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	Mawamba	6.3	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	Mamuju	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	Iloa1	85.0	-	86.40	41.30	40.70	41.10	41.10	41.50	40.10	39.50	38.80	30.10	38.70	41.10	39.70	43.40	44.70	40.40	38.50	37.80	41.50	54.50	54.80	58.40	59.80	59.50	54.20	53.80	49.30			
	Iloa2	85.0	-	86.90	-	-	-	-	-	-	-	-	-	39.80	42.30	44.80	40.80	38.80	37.10	41.40	53.50	55.00	55.20	56.90	59.50	59.80	54.70	54.80	48.40	48.90			
I L L I	Iloa3	85.0	-	97.40	-	-	-	-	-	-	-	-	37.20	39.20	40.70	42.50	44.20	39.20	37.90	37.80	43.80	54.20	55.00	58.00	57.40	59.20	59.20	44.20	48.90				
	Mawamb	3.5	3.4	3.98	2.98	2.88	2.94	3.11	3.28	3.28	3.48	3.80	3.92	3.40	3.55	3.42	3.54	3.58	3.48	3.21	3.48	3.58	3.69	3.47	3.52	3.41	3.44	3.48	3.52	3.47			
	Mawamb2	3.5	3.4	3.98	2.98	2.88	2.94	3.11	3.28	3.27	3.42	3.80	3.48	3.91	3.91	3.48	3.52	3.48	3.58	3.58	3.55	3.69	3.51	3.51	3.50	3.48	3.51	3.48	3.51	3.50			
	Langka Mamuju	10.0	9.5	9.50	7.50	8.50	8.50	8.50	8.50	8.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50			
	Kontribusi	2.4	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	Sikang C 1# 11	42.5	42.0	41.90	37.30	34.50	28.80	27.10	33.80	37.50	39.20	39.40	38.40	38.80	38.80	3.50	2.10	1.00	22.00	33.00	38.00	39.40	39.40	38.00	39.70	40.00	41.90	40.70	40.80	40.50	40.50		
	Sikang C 1# 12	42.5	42.0	40.70	37.30	34.00	28.80	27.10	33.80	38.80	39.80	39.70	38.50	37.40	39.10	35.70	35.80	37.20	37.10	33.00	35.80	39.50	39.50	38.30	40.10	40.50	40.70	40.40	40.10	39.90	40.10		
	Sikang C 1# 19	50.0	50.0	43.70	41.80	40.20	35.00	34.70	38.10	40.90	40.80	41.80	41.50	41.30	40.70	31.20	30.80	30.00	37.10	39.90	39.40	42.30	43.30	42.10	43.40	43.50	43.70	43.70	43.50	42.90	43.40		
	Sikang C 1# 21	80.0	80.0	54.10	49.50	31.50	29.70	29.70	29.70	43.20	42.00	43.00	54.00	53.00	54.10	50.70	50.10	53.00	42.30	38.70	37.20	44.70	50.80	52.00	51.90	50.00	43.80	41.90	42.50	37.50	34.40		
	Sikang C 1# 22	80.0	80.0	37.00	30.80	21.00	20.50	20.80	21.10	32.40	31.80	29.40	59.20	48.70	50.80	48.70	57.00	42.80	35.00	29.80	53.00	54.00	51.90	47.00	48.00	43.80	41.90	40.40	14.80	14.80	14.80		
I L L I	Sikang C 1# 29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	Jemponto#1	125.0	118.0	107.00	72.38	72.98	72.88	71.24	70.11	87.44	72.89	78.34	77.33	82.43	87.23	90.42	91.49	90.12	91.84	89.38	85.17	99.28	109.94	107.00	104.80	108.18	105.97	105.97	92.48	81.59	72.38	72.23	
	Jemponto#2	125.0	118.0	91.79	70.79	70.33	70.83	70.18	89.23	70.33	75.43	77.18	78.70	81.97	89.24	90.42	89.83	90.89	91.83	88.80	86.39	87.99	86.69	89.38	88.10	88.29	88.29	91.79	90.27	91.18	78.97	72.23	
	Punggawa#1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
I L L I	Punggawa#2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Suppa	62.5	62.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
S E W A	PLID	Sunggummasa	30.0	25.0	10.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.008	10.22	10.30	10.17	10.17	-	-	-	-	-		
		Falilana	115.0	90.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		Falilo Lema	22.0	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Copindo	70.0	50.0	7.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.74	7.20	7.57	3.55	-	-	-	-	-	-
S E W A	SWI MA NAWATI	-	5.0	5.0	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	4.00	5.00	5.00	4.00	3.00	2.00	2.00	1.00	-	-	
		PLN	481.7	318.0	132.9	132.80	132.50	132.80	132.80	132.80	132.80	133.80	133.80	133.76	133.80	133.81	133.44	133.82	133.82	133.82	133.82	133.82	133.82	133.84	133.80	133.59	133.56	133.84	133.56	133.84	133.54	133.54	
		PLN	781.0	868.5	823.8	388.23	393.03	337.38	336.88	392.47	387.40	397.89	401.08	480.21	471.71	461.83	488.71	480.20	500.40	503.28	485.01	477.37	548.77	600.91	592.84	680.03	699.98	591.39	583.24	587.88	624.59	474.34	493.08
		Sewa	242.0	100.0	23.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	14.00	22.99	22.50	21.74	16.72	2.00	2.00	1.00	-	-
		TOTAL	1,477.6	1,099.5	780.5	920.83	401.83	409.98	489.48	488.07	520.09	530.89	535.98	594.10	605.47	624.13	622.22	623.89	642.91	633.87	618.82	610.93	685.39	748.61	736.83	797.23	799.27	741.88	720.78	703.40	692.13	607.88	564.52
S E W A	SESI B e M	104-AD (MW)	520.82	401.83	409.98	489.48	488.07	520.09	530.89	535.98	594.10	605.47	624.13	622.22	623.89	642.91	633.87	618.82	610.93	685.39	748.61	736.83	797.23	799.27	741.88	720.78	703.40	692.13	607.88	564.52	617.5		
		SESI B e M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SESI B e M	-	-	-	-</																											



DATA IMPEDANSI PENGHANTAR

REVISI : 23 AGUSTUS 2004

G I	LINE	KV	1L/2L	TYPES	Km	IMPEDANSI PER-LINE (pu)					TOTAL IMPEDANSI (Ohm / Mho)				
						URUTAN POSITIF		URUTAN NOL		Y/2	URUTAN POSITIF		URUTAN NOL		Y/2
						R	X	R	X		R	X	R	X	
BARRU	PNKEP	150	1L	240e	46.00	0.02419	0.08667	0.05479	0.26005	0.01167	5.44203	19.50147	12.32800	58.51200	0.00005
BKARU	PRANG	150	1L	240d	58.50	0.03076	0.11023	0.06968	0.33072	0.01012	6.92084	24.80210	15.67800	74.41200	0.00004
BKARU	PWALI	150	1L	240a	50.10	0.02627	0.09440	0.05967	0.28323	0.00743	5.91130	21.23964	13.42680	63.72720	0.00003
BKRU PH	BKARU	150	2L	240a	1.00	0.00105	0.00377	0.00238	0.01131	0.00007	0.111799	0.42395	0.26800	1.27200	0.00000
BSOWA	TELLO	150	1L	240c	32.10	0.01683	0.06049	0.03823	0.18147	0.00761	3.78603	13.60936	8.60280	40.83120	0.00003
PNKEP	BSOWA	150	1L	240c	20.80	0.01090	0.03919	0.02478	0.11759	0.00493	2.45326	8.81852	5.57440	26.45760	0.00002
PNKEP	TELLO	150	2L	240e	45.30	0.04764	0.17071	0.10791	0.51219	0.00575	5.35922	19.20471	12.14040	57.62160	0.00005
PPARE	BARRU	150	1L	240e	44.00	0.02314	0.08290	0.05241	0.24875	0.01116	5.20542	18.65358	11.79200	55.96800	0.00005
PPARE	PNKEP	150	2L	240e	90.00	0.09464	0.33916	0.21440	1.01760	0.01141	10.64745	38.15505	24.12000	114.48000	0.00010
PPARE	SUPPA	150	2L	240a	7.50	0.00787	0.02826	0.01787	0.08480	0.00056	0.88493	3.17959	2.01000	9.54000	0.00000
PRANG	PPARE	150	1L	240e	26.40	0.01388	0.04974	0.03145	0.14925	0.00670	3.12325	11.19215	7.07520	33.58080	0.00003
PWALI	MJENE	150	2L	240a	50.16	0.05261	0.18902	0.11949	0.56714	0.00372	5.91838	21.26508	13.44288	63.80352	0.00003
PWALI	PPARE	150	1L	240g	91.90	0.03663	0.13159	0.10946	0.51954	0.01819	8.24205	29.60811	24.62920	116.89680	0.00008
SDRAP	PPARE	150	2L	240a	19.10	0.02003	0.07198	0.04550	0.21596	0.00142	2.25361	8.09735	5.11880	24.29520	0.00001
SGMSA	TLLSA	150	2L	430b	27.50	0.00970	0.06649	0.06551	0.31093	0.00314	1.09148	7.48007	7.37000	34.98000	0.00003
SKANG	SPENG	150	2L	430a	35.40	0.02106	0.12670	0.08433	0.40026	0.00404	2.36879	14.25337	9.48720	45.02880	0.00004
SPENG	BONE	150	2L	240f	43.27	0.04578	0.16306	0.10308	0.48924	0.00402	5.15021	18.34410	11.59636	55.03944	0.00004
SPENG	SDARP	150	2L	240b	53.80	0.05643	0.20275	0.12816	0.60830	0.00482	6.34786	22.80945	14.41840	68.43360	0.00004
TELLO	SGMSA	150	2L	430b	10.90	0.00385	0.02635	0.02597	0.12324	0.00124	0.43262	2.96483	2.92120	13.86480	0.00001
TELLO	TLAMA	150	2L	240e	6.90	0.00726	0.02600	0.01644	0.07802	0.00088	0.81630	2.92522	1.84920	8.77680	0.00001
BLKMB	JNPTO	150	2L	240a	46.35	0.04861	0.17466	0.11041	0.52405	0.00344	5.46873	19.64947	12.42156	58.95606	0.00003
BONE	BLKMB	150	2L	240a	137.20	0.14390	0.51703	0.32684	1.55129	0.01017	16.18835	58.16568	36.76987	174.51967	0.00009
BONE	SNJAI	150	1L	240a	77.50	0.04064	0.14603	0.09231	0.43813	0.01149	9.14423	32.85574	20.77000	98.58000	0.00005
DYBAR	SGMSA	150	2L	430b	154.00	0.05433	0.37234	0.36686	1.74123	0.01756	6.11226	41.88839	41.27200	195.88800	0.00016
JNPTO	TIP 57/58	150	2L	240a	24.49	0.02568	0.09228	0.05833	0.27687	0.00182	2.88924	10.38123	6.56257	31.14772	0.00002
MALEA	MKALE	150	2L	430b	30.00	0.01058	0.07253	0.07147	0.33920	0.00342	1.19070	8.16008	8.04000	38.16000	0.00003
MKALE	PLOPO	150	2L	240a	37.35	0.03917	0.14076	0.08998	0.42232	0.00277	4.40709	15.83494	10.01018	47.51098	0.00002
SDRAP	DYBAR	150	2L	430b	35.00	0.01235	0.08462	0.08338	0.39573	0.00399	1.38915	9.52009	9.38000	44.52000	0.00004
SDRAP	MKALE	150	2L	430a	105.48	0.06274	0.37753	0.25129	1.19267	0.01203	7.05845	42.47173	28.26966	134.17539	0.00011
SGMSA	TBNGA	150	2L	430a	11.89	0.00707	0.04256	0.02833	0.13446	0.00136	0.79577	4.78829	3.18714	15.12701	0.00001
SNJAI	BLKMB	150	1L	240a	59.50	0.03120	0.11211	0.07087	0.33637	0.00882	7.02041	25.22473	15.94600	75.68400	0.00004
TLLSA	TIP 57/58	150	2L	430b	19.06	0.00673	0.04609	0.04542	0.21555	0.00217	0.75667	5.18556	5.10926	24.24992	0.00002
DAYA	TELLO	70	1L	120a	5.00	0.02408	0.04421	0.06896	0.19166	0.00013	1.18009	2.16636	1.34000	6.36000	0.00000
MNDAI	DAYA	70	1L	120a	7.10	0.03420	0.06278	0.09792	0.27216	0.00019	1.67573	3.07624	1.90280	9.03120	0.00000
MNDAI	TELLO	70	1L	120a	12.10	0.05828	0.10699	0.16687	0.46383	0.00032	2.85582	5.24260	3.24280	15.39120	0.00001
PNKEP	MNDAI	70	2L	120a	37.70	0.36318	0.66571	1.03984	2.89030	0.00050	8.89789	16.33438	10.10360	47.95440	0.00002
PNKEP	TNSA3	70	2L	120a	3.40	0.03275	0.06013	0.09378	0.26066	0.00005	0.80246	1.47313	0.91120	4.32480	0.00000
TELLO	BRLOE	70	1L	120a	12.60	0.06069	0.11141	0.17377	0.48299	0.00034	2.97383	5.45924	3.37680	16.02720	0.00001
TELLO	BWAJA	30	1L	120b	3.70	0.12292	0.17508	0.31076	0.77212	0.00002	1.10628	1.57572	0.99160	4.70640	0.00000
TELLO	PKANG	70	2L	240h	4.50	0.04334	0.07958	0.12412	0.34500	0.00006	1.06184	1.94971	1.20600	5.72400	0.00000
TLAMA	BNTLA	70	2L	XLPE	4.20	0.04046	0.07428	-	-	0.00006	0.99128	1.81987	1.12560	5.34240	0.00000

**DATA TRANSFORMATOR
SISTEM SULAWESI SELATAN**

NO.	LOKASI	TRAFIK	TETAPAN (KV)	DATA (MVA)	NOMINAL (%)	X POSITIF (µs)	NOM BAKU (%)	VEKTOR GROUPE	PENTANAHAN Vp / Va	FABRIK
1	DL BARRU	DKRT 1	150 / 20	5.00	10.63	3.12600	10.63	YWay0 (05)	Solid / 40	Hyundai
2	DL BARRU	DKRT 2	150 / 20	5.00	10.63	3.12600	10.63	YWay0 (05)	Solid / 40	Hyundai
3	DL BARRU	DKRT	150 / 20	20.00	12.33	0.80450	12.33		Solid / D	PASATI
4	DL BANTUA 1	DKRT 1	69 / 20 / 7	20.00	12.00	0.80000	12.00	Ypsi (05)	Float / Solid	Teknica
5	DL BANTUA 2	DKRT 2	69 / 20 / 7	20.00	12.00	0.80000	12.00	Ypsi (05)	Float / 40	Teknica
6	DL BANTUA 3	DKRT 3	70 / 20	20.00	12.44	0.40467	12.44	YWay0 (05)	Solid / 40	SIAM
7	DL BONE	DKRT 1	150 / 20	20.00	12.33	0.80450	12.33	YWay0 (05)	Solid / 40	PASATI
8	DL BONE	DKRT 2	150 / 20	20.00	12.34	0.80200	12.34			Schneider
9	DL BULOGE	DKRT	70 / 20	10.00	9.13	0.90300	9.13	YWay0 (05)	Solid / 40	Utrinda
10	DL BURA	DKRT	30 / 20	10.00	10.00	1.00000	10.00	YWay0 (05)	Float / Solid	Teknica
11	DL BURA	DKRT	150 / 20	45.00	12.36	0.27467	12.36	Ypsi	Solid / D	ABB
12	DL BURA	DKRT	150 / 20	45.00	12.36	0.27467	12.36	Ypsi	Solid / D	ABB
13	DL CENGA	DKRT	69 / 20	20.00	11.62	0.58100	11.62	YWay0 (05)	Float / 40	Hyundai
14	DL CUPPA	DKRT	150 / 20	20.00	12.33	0.80450	12.33			PASATI
15	DL ENDAU	DKRT	69 / 20	20.00	11.62	0.58100	11.62	YWay0 (05)	Float / 40	Utrinda
16	DL PUNANG 1	DKRT 1	69 / 20	20.00	11.90	0.58500	11.90	Ypsi (0)	Float / 40	Teknica
17	DL PUNANG 2	DKRT 2	69 / 20	20.00	11.90	0.58500	11.90	Ypsi (0)	Float / Solid	Teknica
18	DL PUNANG 3	DKRT 3	69 / 20	20.00	11.74	0.58700	11.74	YWay0 (05)	Solid / 40	PASATI
19	DL PUPUP	DKRT 1	69 / 20	20.00	11.33	0.58000	11.33	YWay0 (05)	Float / 40	Hyundai
20	DL PUPUP	DKRT 2	150 / 20	20.00	12.30	0.40467	12.30			Gen. Alstom (France)
21	DL PUPUP	BRT 1	150 / 69	20.00	12.44	0.39400	12.44	YWay0 (05)	Solid / 200	Hyundai
22	DL PUPUP	BRT 2	150 / 69	20.00	12.44	0.39400	12.44	YWay0 (05)	Solid / Float	Hyundai
23	DL PUPUP	BRT 3	150 / 69	20.00	12.44	0.39400	12.44	YWay0 (05)	Solid / 200	Hyundai
24	DL PUPUP	DKRT	150 / 20	18.00	10.64	0.80500	10.64	YWay0 (011)	Solid / 40	Hyundai
25	DL PUNANG	DKRT	150 / 20	5.00	10.63	3.12600	10.63	YWay0 (05)	Solid / 40	Hyundai
26	DL PUNANG	DKRT	150 / 20	5.00	10.63	3.12600	10.63	YWay0 (05)	Solid / 40	Hyundai
27	DL PUNANG	DKRT	150 / 20	20.00	12.33	0.80450	12.33	YWay0 (05)	Solid / 40	Hyundai
28	DL PUNANG	DKRT	150 / 20	20.00	12.33	0.80450	12.33	YWay0 (05)	Solid / 40	PASATI
29	DL PUNANG	DKRT	150 / 20	20.00	12.33	0.80450	12.33	YWay0 (05)	Solid / 40	PASATI
30	DL PUNANG	DKRT	150 / 20	18.00	10.64	0.80500	10.64	YWay0 (05)	Solid / 40	Hyundai
31	DL SPINDE	DKRT 1	150 / 20	20.00	12.30	0.80500	12.30	YWay0 (05)	Solid / 40	PASATI
32	DL SPINDE	DKRT 2	150 / 20	20.00	12.30	0.80500	12.30			Schneider
33	DL TELLO	DKRT 1	34.5 / 20	20.00	12.30	0.80500	12.30	Ypsi (0)	Float / 40	Teknica
34	DL TELLO	DKRT 2	150 / 20	20.00	12.30	0.40467	12.30			Gen. Alstom (France)
35	DL TELLO	BRT 1	150 / 30	20.00	11.07	0.50300	11.07	Ypsi	Solid / Float	Meridiana
36	DL TELLO	BRT 2	150 / 69	20.00	13.10	0.40567	13.10	YWay0 (05)	Solid / 200	ABB
37	DL TELLO	BRT 4	69 / 34.5	20.00	11.07	0.50300	11.07	Ypsi	200 / 7	Meridiana
38	DL TELLO	BRT 5	150 / 69	20.00	13.10	0.40567	13.10	YWay0 (05)	Solid / 200	Teknica
39	DL TLAMA	DKRT 1	150 / 20	20.00	12.73	0.40433	12.73	YWay0 (05)	Solid / 40	PASATI
40	DL TLAMA	DKRT 2	150 / 20	20.00	12.73	0.40433	12.73	YWay0 (05)	Solid / 40	PASATI
41	DL TLAMA	BRT 1	150 / 20	20.00	13.10	0.40567	13.10	YWay0 (05)	Solid / 200	ABB
42	DL TLAMA	BRT 2	150 / 20	20.00	13.10	0.40567	13.10	YWay0 (05)	Solid / Float	ABB
43	DL TLAMA	DKRT 1	150 / 20	18.00						
44	DL TLAMA	DKRT 2	150 / 20	20.00	12.30	0.80500	12.30			Utrinda
45	PLTA BARRU	PLTA 1	150 / 11	60.00	10.10	0.18833	10.77			Hyundai
46	PLTA BARRU	PLTA 2	150 / 11	70.00	10.77	0.15086	10.77	IN01	Solid / D	Hyundai
47	PLTD MATH 1	MATH 1	6.3 / 150	15.00	10.44	0.68600	10.44	IN01	Solid / D	
48	PLTD MATH 2	MATH 2	6.3 / 150	15.00	10.44	0.68600	10.44	IN01	Solid / D	
49	PLTD SUPPA	KST 1	180 / 11	45.00	12.36	0.27467	12.36	IN05	Solid / D	ABB
50	PLTD SUPPA	KST 2	180 / 11	45.00	12.36	0.27467	12.36	IN05	Solid / D	ABB
51	PLTD SWD 1	SWD 1	6.3 / 150	15.00	10.93	0.70867	10.93	IN01	Solid / D	
52	PLTD SWD 2	SWD 2	6.3 / 150	15.00	10.93	0.70867	10.93	IN01	Solid / D	
53	PLTA ALKATH 1	ALKAT 1	11 / 30.85	27.00	8.30	0.30483	8.30	IN01	Solid / D	Alstom Alstom (France)
54	PLTA ALKATH 2	ALKAT 2	11 / 30.85	27.00	11.30	0.40483	11.30	IN01	Solid / D	
55	PLTA GR 1	GR 1	11.5 / 150	45.00	12.36	0.27467	12.36	IN05	Solid / D	
56	PLTA GR 2	GR 2	11.5 / 150	45.00	12.36	0.27467	12.36	IN05	Solid / D	
57	PLTA WESTC	WESTC	11.5 / 30	18.00	7.00	0.37628	7.00	IN01	Solid / D	Avic Charleroi (Canada)
58	PLTA SWANG	ST 11	150 / 11.5	70.00	11.85	0.18429	11.85	IN01	Solid / D	ABB
59	PLTA SWANG	ST 12	150 / 11.5	70.00	11.85	0.18429	11.85	IN01	Solid / D	ABB
60	PLTA SWANG	ST 18	150 / 11.5	70.00	11.85	0.18429	11.85	IN01	Solid / D	ABB
61	PLTM TRONO	PLTM	20 / 6.3	3.00	10.99	4.38600	10.99	IN01	Solid / D	
62	PLTU TELLO	PLTU 1	6.3 / 31.5	18.00	8.40	0.52500	8.40	IN01	Solid / D	ABB PRVAH (Uganda)
63	PLTU TELLO	PLTU 2	6.3 / 31.5	18.00	8.40	0.52500	8.40	IN01	Solid / D	ABB PRVAH (Uganda)
64	TRANA II	RTG 1	70 / 6.3	5.00	11.20	3.24000	11.20			
65	TRANA II	RTG 2	70 / 6.3	5.00	11.20	3.24000	11.20			
66	TRANA II	DKRT	70 / 20	18.00	10.00	0.50556	10.00			

Perhitungan Dasar :

Resistansi MVA Nominal = Vsc (tegangan hubung singkat)

Vsc (%) = I nom * Zt / I base * 100 % = 20 (%) = 33 (%)

Resistansi Base 100 MVA (pu) = 33/100 * MVA-Base/MVA Nominal

Nilai Base 100 = 225 (150*2/300)

Nilai Base 70 = 49 (70*2/100)

Catatan Perhitungan :

MVA Base (15/150 MVA) Daya = 70 MVA

Resistansi = 33,77 % (data Nameplate/pengujian short circuit)

Resistansi (Base 100 MVA dalam pu) =

(33,77/100) * 100/70 = 0,15 pu

Thank you for trying PDF Suite

LINE CONSTRUCTION TYPES

(Sesuai pola SCADA)

Base MVA 3 Fasa : 100.0

TYPES	CONDUCTOR		NOMINAL		PU per-Km					OHM per-Km				
					URUTAN POSITIF		Y/2	URUTAN NOL		URUTAN POSITIF		Y/2	URUTAN NOL	
					KV	A		R	JX	R	JX		R	JX
1	2	3	4	5	6	7	8	9	10	11	12	13.00000	14.00000	15
240a	ACSR Hawk 240/40		150	600	0.00052	0.00188	0.00015	0.00119	0.00565	0.11799	0.42395	0.00000	0.26800	1.27200
240b	ACSR Hawk 240/40		150	600	0.00052	0.00188	0.00018	0.00119	0.00565	0.11799	0.42397	0.00000	0.26800	1.27200
240c	ACSR Hawk 240/40		150	600	0.00052	0.00188	0.00024	0.00119	0.00565	0.11795	0.42397	0.00000	0.26800	1.27200
240d	ACSR Hawk 240/40		150	600	0.00053	0.00188	0.00017	0.00119	0.00565	0.11831	0.42397	0.00000	0.26800	1.27200
240e	ACSR Hawk 240/40		150	600	0.00053	0.00188	0.00025	0.00119	0.00565	0.11831	0.42395	0.00000	0.26800	1.27200
240f	ACSR Hawk 240/40		150	600	0.00053	0.00188	0.00019	0.00119	0.00565	0.11903	0.42395	0.00000	0.26800	1.27200
240g	ACSR Hawk 240/40		150	600	0.00040	0.00143	0.00020	0.00119	0.00565	0.08969	0.32218	0.00000	0.26800	1.27200
430a	ACSR Zebra 400		150	800	0.00030	0.00179	0.00023	0.00119	0.00565	0.06692	0.40264	0.00000	0.26800	1.27200
430b	ACSR Zebra 2 x 435/55		150	1,600	0.00018	0.00121	0.00023	0.00119	0.00565	0.03969	0.27200	0.00000	0.26800	1.27200
120a	ACSR Hawk 120		70	400	0.00482	0.00884	0.00003	0.01379	0.03833	0.23602	0.43327	0.00000	0.26800	1.27200
240h	ACSR Hawk 240/40		70	600	0.00482	0.00884	0.00003	0.01379	0.03833	0.23596	0.43327	0.00000	0.26800	1.27200
120b	ACSR Hawk 120		30	400	0.03322	0.04732	0.00001	0.08399	0.20868	0.29899	0.42587	0.00000	0.26800	1.27200
XLPE	XLPE / Cu 325		70	400	0.00482	0.00884	0.00003	-	-	0.23602	0.43330	0.00000	0.26800	1.27200

DATA IMPEDANSI GENERATOR SISTEM SULAWESI SELATAN

Jenis Pembangkit & Pembuat Mesin	Daya [MVA]	Tegangan Kerja [kV]	Nilai Reaktansi Berdasarkan MVA / Teg. Nominal Mesin					Nilai Reaktansi Berdasarkan base 100 MVA					NGR [Ohm]
			Xd [%]	Xd' [%]	Xd'' [%]	X1 [%]	X0 [%]	Xd [pu]	Xd' [pu]	Xd'' [pu]	X1 [pu]	X0 [pu]	
PLTA BAKARU													
Melden	70.00	11.00	92.40	26.80	16.80	17.70	10.90	1.3200	0.3829	0.2400	0.2529	0.1557	63.50
Melden	70.00	11.00	92.40	26.80	16.80	17.70	10.90	1.3200	0.3829	0.2400	0.2529	0.1557	63.50
PLTU TELLO													
Rade Koncar	16.00	6.30		30.80 *)	15.00 *)	22.60 *)	6.10 *)		1.9250	0.9375	1.4125	0.3813	
Rade Koncar	16.00	6.30		30.80 *)	15.00 *)	22.60 *)	6.10 *)		1.9250	0.9375	1.4125	0.3813	
PLTG TELLO													
Westcan	17.02	6.30		30.00 *)	15.00 *)	22.00 *)	10.00 *)		1.7627	0.8814	1.2927	0.5876	
Aisthom I	25.35	11.00		27.50	14.00 *)	20.50	9.00		1.0848	0.5523	0.8087	0.3550	630.00
Aisthom II	25.35	11.00		27.50	14.00 *)	20.50	9.00		1.0848	0.5523	0.8087	0.3550	630.00
GE I	39.20	11.50	204.00	17.20	12.30	11.80	7.40	5.2041	0.4388	0.3138	0.3010	0.1888	
GE II	39.20	11.50	204.00	17.20	12.30	11.80	7.40	5.2041	0.4388	0.3138	0.3010	0.1888	
PLTD TELLO													
Melden (Mitsubishi)	15.75	6.30	104.70	30.80	21.50	22.60	6.10	6.6476	1.9556	1.3651	1.4349	0.3873	(6.3/√3 x 220)2 x
Melden (Mitsubishi)	15.75	6.30	104.70	30.80	21.50	22.60	6.10	6.6476	1.9556	1.3651	1.4349	0.3873	(6.3/√3 x 220)2 x
BBC (SWD)	15.50	6.30		30.80 *)	19.00 *)	22.60 *)	6.10 *)		1.9877	1.2262	1.4585	0.3937	
Hollec (SWD)	15.50	6.30		30.80 *)	19.00 *)	22.60 *)	6.10 *)		1.9877	1.2262	1.4585	0.3937	
PLTGU SENGKANG													
ABB unit 1 (cis. B)	68.90	11.50	231.00	20.00	12.00	17.00	7.00	3.3527	0.2903	0.1742	0.2467	0.1016	1150.00
ABB unit 2 (GT12)	68.90	11.50	231.00	20.00	12.00	17.00	7.00	3.3527	0.2903	0.1742	0.2467	0.1016	1150.00
ABB unit 3 (ST18)	68.90	11.50	231.00	20.00	12.00	17.00	7.00	3.3527	0.2903	0.1742	0.2467	0.1016	1150.00
PLTD SUPPA													
ABB unit 1	14.33	11.00	208.00	38.50	26.10	28.20	12.50	14.5150	2.6867	1.8214	1.9679	0.8723	
ABB unit 2	14.33	11.00	208.00	38.50	26.10	28.20	12.50	14.5150	2.6867	1.8214	1.9679	0.8723	
ABB unit 3	14.33	11.00	208.00	38.50	26.10	28.20	12.50	14.5150	2.6867	1.8214	1.9679	0.8723	
ABB unit 4	14.33	11.00	208.00	38.50	26.10	28.20	12.50	14.5150	2.6867	1.8214	1.9679	0.8723	
ABB unit 5	14.33	11.00	208.00	38.50	26.10	28.20	12.50	14.5150	2.6867	1.8214	1.9679	0.8723	
ABB unit 6	14.33	11.00	208.00	38.50	26.10	28.20	12.50	14.5150	2.6867	1.8214	1.9679	0.8723	

LAMPIRAN 4

VALIDASI ALIRAN DAYA DAN
TEGANGAN PADA SETIAP BUS

Tabel 1 Validasi Data Aliran Daya

From Bus	To Bus	Line	Hasil MATLAB		Data PLN	
			P Flow [p.u.]	Q Flow [p.u.]	P Flow [p.u.]	Q Flow [p.u.]
26TLAMA	20TELLO	1	-0.704	-0.103	-0.708	-0.175
14PNKEP	5PPARE	2	-0.337	0.038	-0.657	0.032
25TBUNGA	24SGMSA	3	-0.323	-0.093	-	-
9PLOPO	32LTUPA	4	-1.280	0.436	-	-
18DAYA	17MNDAI	5	-0.194	-0.018	-0.188	-0.021
35 PNKEP70	17MNDAI	6	0.333	0.044	-	-
35 PNKEP70	15TNASA	7	0.423	0.093	-	-
13BARRU	5PPARE	8	-0.668	0.203	-	-
2PLMAS	1BKARU	9	-0.260	0.064	-	-
4PRANG	1BKARU	10	-0.169	0.044	-	-
5PPARE	4PRANG	11	-0.012	0.029	-	-
5PPARE	2PLMAS	12	0.029	-0.028	-	-
37TLAMA70	27BNTLA	13	0.353	0.009	-	-
6SUPPA	5PPARE	14	0.000	0.000	-	-
5PPARE	7SDRAP	15	-1.134	0.669	-1.115	0.670
3MJENE	34MMUJU	16	0.111	-0.041	-	-
7SDRAP	8MKALE	17	-0.675	0.632	-0.664	0.628
3MJENE	2PLMAS	18	-0.178	0.052	-	-
8MKALE	9PLOPO	19	-0.796	2.703	-0.771	2.520
10SPENG	11SKANG	20	-0.446	0.098	-0.452	0.098
7SDRAP	11SKANG	21	-1.140	-0.070	-1.137	-0.058
7SDRAP	10SPENG	22	-0.048	0.024	-0.052	0.035
7SDRAP	16MAROS	23	0.518	-0.093	0.567	-0.960
20TELLO	24SGMSA	24	-1.369	0.225	-1.400	0.217
24SGMSA	16MAROS	25	-0.378	0.126	-0.389	0.116
24SGMSA	28TLASA	26	-1.401	0.276	-1.453	0.283
28TLASA	40PGAYA	27	-1.541	0.282	-1.587	0.522
29JNPTO	30BKMBA	28	-0.109	-0.015	-1.080	-0.006
30BKMBA	33SINJAI	29	-0.173	-0.019	-	-
33SINJAI	12BONE	30	-0.155	0.065	-	-
10SPENG	12BONE	31	0.278	-0.041	0.578	-0.045
36TELLO70	22BRLOE	32	-0.052	0.010	-	-
20TELLO	23PKANG	33	0.312	0.075	0.612	0.173
38TELLO30	21BWAJA	34	0.000	0.000	-	-
20TELLO	19BSOWA	35	0.100	0.098	-	-
19BSOWA	14PNKEP	36	-0.092	0.072	-	-
20TELLO	14PNKEP	37	-0.047	0.157	-0.048	0.121
14PNKEP	13BARRU	38	-0.708	-0.067	-	-
26TLAMA	37TLAMA70	39	0.353	0.027	-	-

20TELLO	38TELLO30	40	0.000	0.000	-	-
20TELLO	36TELLO70	41	-0.052	0.010	-	-
14PNKEP	35 PNKEP70	42	0.756	0.221	-	-
32LTUPA	39LTUPA11	43	-1.334	-0.497	-	-

Tabel 2 Validasi Tegangan pada setiap bus

Bus	Hasil MATLAB		Data PLN
	V [p.u.]	phase [p.u.]	V [p.u.]
24SGMSA	1.000	-0.126	143.000
35 PNKEP70	0.951	-0.255	0.000
10SPENG	1.022	0.097	153.000
11SKANG	1.000	0.156	151.000
12BONE	0.996	0.050	149.000
13BARRU	0.973	-0.086	144.000
14PNKEP	0.975	-0.147	142.000
15TNASA	0.931	-0.280	65.800
16MAROS	0.967	0.025	144.600
17MNDAI	0.947	-0.279	67.000
18DAYA	0.944	-0.281	66.000
19BSOWA	0.977	-0.152	146.000
1BKARU	1.000	0.000	153.000
20TELLO	0.947	-0.163	140.000
21BWAJA	1.000	-0.163	70.100
22BRLOE	1.000	-0.146	70.000
23PKANG	0.981	-0.185	148.000
25TBUNGA	0.967	-0.139	141.000
26TLAMA	0.947	-0.181	140.000
27BNTLA	0.974	-0.283	70.000
28TLASA	0.947	-0.033	143.000
29JNPTO	0.985	-0.014	147.000
2PLMAS	1.025	-0.026	153.000
30BK MBA	0.993	0.005	147.000
32LTUPA	0.994	0.279	178.400
33SINJAI	0.993	0.024	148.000
34MMUJU	1.013	-0.076	152.000
36TELLO70	0.998	-0.152	0.000
37TLAMA70	0.989	-0.256	70.000
38TELLO30	1.000	-0.163	30.000
39LTUPA11	1.000	0.280	10.500
3MJENE	1.016	-0.063	152.000
31PGAYA	1.000	0.040	149.000

4PRANG	1.000	-0.020	149.000
5PPARE	1.000	-0.025	148.000
6SUPPA	1.000	-0.025	148.000
7SDRAP	0.979	0.072	0.000
8MKALE	1.000	0.139	151.000
9PLOPO	1.000	0.256	0.000