

SPECIFICATION FOR SERVICING AND MAINTENANCE OF DRAINAGE ELECTRICAL PUMPHOUSE IN JPS SPT DISTRICT, PENANG.

SECTION A : GENERAL

1. The scope of work shall include labour, transport and equipment for service and maintenance of electrical pump houses in JPS SPT, Penang.
2. The List of pump houses involved and technical information are as shown in Lampiran B1.
3. The servicing programmed is to ensure that the pump sets is always in good working condition, and to minimize the possibilities of breakdown maintenance.
4. Interested tenderer shall make a proper preparation that they have the capacity (manpower, competent electrical personnel and technical backup, logistics and pump maintenance experience) to carry out the job properly and according to maintenance schedule.
5. Any failure and subsequent delay in attending to the installation will have serious consequence on the department and the public. Thus a strict penalty will be imposed on the contractor who failed to perform the proper schedule maintenance. Deduction of amount or termination of the offer will also be readily enforced if necessary.
6. Tenderer **MUST** submit their proposal for carrying out of the maintenance works planned (Every three (3) month once) the servicing interval for each visit, giving all the necessary details and information required by the department in order for their quotation to be considered.
7. All interested tenderer are invited to attend a briefing to be held on **23 January 2014, @ 9.30 am at JPS SPT Office**, Jalan Bukit Minyak, 14000 Bukit Mertajam.
8. Tenderer are required to quote the **tender price in Lampiran C1, C2, C3 and Dokumen D (Ringkasan Sebutharga)** for detail cost of material, labour and transport charges. The tenderer shall also submit the complete technical and supporting staff for servicing work to be done, together with the quotation.
9. The tenderer are required to produce a copy of certified and still valid registration with CIDB during briefing session.
10. For any further clarification on the job, please contact JPS SPT Office at 04-5075525 or Hj. Nazari @ 0124309085 BPME Penang.

SECTION B - DETAILS OF WORKS.

1. Servicing and maintenance of pumps, Generator set and accessories shall include but not limited to the followings :-
 - a. The Electric submersible motors, electrical switchboards / switchgears, other electrical/electronic instrumentations, control devices, pumps, mechanical components and accessories at the pump houses. To carry out a quarterly preventive maintenance jobs (every three (3) month once) as required by the department to ensure their smooth and proper operation. Guidelines for the maintenance jobs required are as shown herein Lampiran A, which is by no means comprehensive.
 - b. The work carried out above shall be done under supervision by qualified competent electrical Chargeman (minimum A1 certification), skilled workers and assistants according to the current regulations of the relevant Electrical Authority and workers safety is of strictly priority. Work carried out shall be recorded in a checklist type of format (as sample Lampiran E) by the contractor personnel, and **MUST** be certified by the pump house supervisor or his representative for payment certification.
 - c. The contractor shall arrange for the mobile crane services and bared the cost incurred on the pump service and inspection work for the said servicing schedule trip.
 - d. The contractor shall also produce a report on list of defect and faulty components which require immediate attention to prevent failure or for preparation of technical specification (repair job).
 - e. The contractor shall also make extra trips to the pump house without charges to attend breakdown of the installation within 24 hours on call for a said period of the contract i.e (Twelve (12) months) effective from the date contract start. The contractor shall be required to make good of any minor fault (no parts replacement required) without any cost, where's for major breakdown; a detail breakdown report including the recommended works to be done.
 - f. The contractor may be asked to rectify the fault (on request or instructed by the District Engineer) at a quoted repair and parts schedule of prices (Lampiran C2) or negotiated price agreed by both parties. (This extra charges will not form part of this quotation.)

SECTION C : CONDITION OF OFFER

1. The contractor shall not be paid for work done on a particular pump house if the delayed work is more than 7 days due to the contractor fault.
2. The quotation may be terminated any time if the contractor repeated the delay in carrying out the jobs or not carried out according to the understanding offer work to the contractor.
3. The quotation shall be valid for a period of Twelve (12) month on call effective from the date contract start, and subject to further extension if mutually agreed by both parties.

GUIDELINES ON EXTEND OF WORKS REQUIRED TO BE CARRIED OUT

1. GENERAL

- 1.1 The work shall generally comprise of inspection, servicing, scheduled and corrective maintenance of the mechanical and electrical equipment at various pump houses and Gensets location as listed in Lampiran C1 and C3.
- 1.2 At every site attended, service and maintenance has been carried out; 2 copies of pump house service and inspection report shall be filled and a copy of the report shall be taken at the end of the day by JPS Personnel for comment and certification.
- 1.3 A joint meeting will be held between the contractor, JPS District Officer and JPS Mechanical at the end of every quarterly service and maintenance session to sort out details inspections and the follow up actions.

2. SERVICING AND MAINTENANCE

- 2.1 The contractor shall inspect and service all equipment at the listed premises once every three month, except where otherwise stated in the contract or instructed by Superintending Officer.
- 2.2 All Electrical Submersible Pump set **MUST** be lifted up once every three (3) months to service, maintained and inspect for any leakage or defect.
- 2.3 Servicing shall generally be properly schedule and carried out in accordance to the manufacturer's service manuals and shall at least comprise the following:

2.3.1 For Pumps

- a. Check for leakage and replacement of pump lubricant every 6 month
- b. Check for Vibration
- c. Check for correct alignment pump and piping.
- d. Check all Submersible pump power and control cable for damage.
- e. All Mechanical gears and operating mechanisms.
- f. Piping, flanges, valves and outlet.
- g. Pump Trash Screen (condition, realign if necessary or not under scope of work).
- h. All pump operation test (Operational, need repair work or suggestion for major overhaul to ensure in good condition).

2.3.2 For Electrical Equipment

To check, lubricate, clean and do adjustment on the following :-
(Every trip to Pump house)

2.3.2.1 Switch / Equipment Rooms.

- (a) Cleaning of switch room and doors.
- (b) Cleaning of cable trench (ensure clean, water free and slab cover).
- (c) Check and maintain locks. Replace if necessary.
- (d) Check to ensure that "No Smoking", "No Admittance" and "Danger" Signs. Treatment Shock Card" Supply Reticulation Drawing and Schematic Drawing are in good condition and are visible/ readable and replace if necessary.
- (e) Check to ensure fire-extinguisher and CO2/ halon system are in good working condition, expiry date not due and take the necessary action.
- (f) Check rubber mat in front of the switch board-replace if damaged.
- (g) Ensure all electrical spares are stored in order and maintain in good condition.
- (h) Check anti vermin wire mesh-replace/ repair if necessary.
- (i) Check the roof/ floor to ensure no leakage/ damage or water flowing into room.
- (j) Check electrical fittings, power points, light fittings, exhaust fan and duct seals.
- (k) Check and test the final circuit wiring.

2.3.2.2 Main Switch Board/ Sub-Switch Board.

- (a) Check all indicator light, selector switches, voltmeter, ammeter, power factor meter etc- replace if faulty.
- (b) Check and retighten all screws, contactors, and termination etc.
- (c) Check condition of cables for burn marks, insulation leakage and other abnormal conditions.
- (d) Check copper busbars and ensure that is in good condition.
- (e) Check contactors, capacitors and capacitor bank conditions.
- (f) Check P.F meter and ensure p.f is better than 0.85 lagging.

- (g) Retighten all cables, cable box cable terminations and other related connections.
- (h) Check earthing system and all terminations, connections etc.
- (i) Check for calibration and setting of all metering, earth fault and MD meter etc.
- (j) Record readings for maximum current, voltage, power factor etc into the log book and take necessary action.
- (k) Testing all earth fault and overcurrent relays inclusive of current transformers, voltage transformers etc.

2.3.2.3 Air Circuit Breakers (ACB)

- (a) Check and retighten all wiring and connections.
- (b) Test tripping mechanism to ensure that it is in good working condition.
- (c) Clean arc chute and arc contacts and replace as necessary.
- (d) Clean all insulating parts.
- (e) Grease all moving contacts and related components.
- (f) Adjust and calibrate circuit breaker.

2.3.2.4 Fuse Switches/ Switch fuses.

- (a) Check cover for any damage-replace or repair as necessary.
- (b) Check switch handle for any damage-repair/ replace as necessary.
- (c) Retighten fuse carriers.
- (d) Clean contacts with clean cloth to ensure good contact.
- (e) Retighten all connections/ termination to prevent from any sparking when loaded.

2.3.2.5 Residual Current Device (RCD), (Including Rccb's).

- (a) Tripping test on RCD- replace if faulty.
- (b) Test for earth continuity.

- (c) Retighten all connections, terminations etc.
- (d) Check and test switch handle.
- (e) Test RCD tripping time and sensitivity.

2.3.2.6 Moulded Case Circuit Breaker (MCCB).

- (a) Check switch handle and ensure that it operates "ON" and "OFF".
- (b) Retighten all connections, terminations etc.
- (c) Check ELR functions/ tripping.

2.3.2.7 Distribution Board (DB).

- (a) Check condition and clean/ vacuum internal part of the DB.
- (b) Check MCBs for tripping test.
- (c) Retighten all connections, terminations etc.
- (d) Ensure every cable/ wire in DB to be tag/ mark with circuit no./ identification.
- (e) Ensure that DB no./ Name plate, "Danger" sign and schematic diagram are available and readable/ visible.
- (f) Check and ensure spares ways available in the DB.
- (g) Retighten fuse handle.
- (h) Test on continuity of fuses.

2.3.3 For Mechanical / Generator Set Equipment

To check, lubricate, clean and do adjustment on the following :-
(Every trip to Generator set)

2.3.3.1 Engine and Generator Equipment

- (a) Servicing of the Generator set as per specification requirement for electrical equipment in clause 2.3.2 above.
- (b) Cleaning and replacing of all required filters (Air filter, Fuel Filter and Engine Oil Filter) for preventive maintenance as per schedule in Lampiran E1.
- (c) To replace Engine Oil every six (6) months once for every genset unit.

- (d) Check to ensure that "No loose or damage/torn belting", retightened or change if necessary and obtain the required belting from JPS Store.
- (e) Check to ensure fire-extinguisher are available, in good working condition and expiry date not due.
- (f) Check rubber mat in front of the switch board-replace if damaged.
- (g) Ensure all electrical spares stored in order and maintenance in good condition.
- (h) Check anti vermin wire mesh-replace/ repair if necessary.
- (i.) Check the roof/ floor to ensure no leakage/ damage or water flowing into room.
- (j) Check electrical fittings, power points, light fittings, and exhaust system.
- (k) Check earthing system and all terminations, connections etc.

2.4. The contractor shall advise and instruct the operators responsible for the operation of all the equipment for operation and maintenance point to be watched.

2.5. The maintenance service furnished hereunder shall not include the normal function of starting and stopping the equipment described above which function includes float level sensor, other protection relay and sensor installed to protect the equipment against damages.

3. BREAKDOWN MAINTENANCE

3.1 In addition to the servicing and preventive maintenance, the contractor shall attend to all on call breakdown repairs to all the plants included in the contract as and when required to ensure smooth, efficient and uninterrupted operations of the plants in within the said period effective from the date contract start.

3.2 The contractor is required to attend emergency calls occasioned, by the improper operation of the equipment or due to the damage cause by the flood, lightning, fire elements, labour troubles or for any causes beyond the contractor's control, the contractor shall be reimbursed for the expenses incurred in attending the emergency call in question and in accordance with rate agreed by the S.O for such services.

3.3 In the event, the contractor fail to rectify any breakdown as reported by the S.O or his representatives within the specified period, the S.O reserves the right to engage other contractor to carry out the work. If the contractor failed to comply the second call for emergency breakdown, the contract is considered cancelled and S.O reserves the right to recall the quotation.

4. CONSUMABLE MATERIALS AND REPLACEMENT PARTS.

- 4.1 The contractor shall supply the following consumable materials recommended by the equipment manufacturer as when required without extra charges.
 - a. All grades of pump lubricating oil required for submersible pump moving parts (as per pump Brand and Model maintenance technical data).
 - b. All insertion O-rings required for preventing leaks.
 - c. All cotton waste, detergent and other cleaning material required for cleaning purposes after every trip to the pump house to maintained cleanliness.
 - d. All defect electrical indicating light, Voltmeter, Ammeter , Hour meter, Power factor meter, relays etc. shall be at all the time in working condition.
- 4.2 The contractor shall ensure that adequate spares for the equipment are available. All spare parts for the equipment except those mentioned in clause 4.1 above when required will be paid separately or provided by the department.
- 4.3 All workmanship and transport required to carry out the complete repair works except those mentioned in 2.1 to 2.3, para 3.3 above and the contractor shall work only after receiving instruction from the S.O when required and be paid separately.
- 4.4 The contractor shall take all necessary action to ensure the fast procurement of spare parts and other supplies in order to minimize the down time of under repairs.
- 4.5 The contractor shall not be held liable for any loss, damage, delay in furnishing labour, material caused by reason of strike or by unusual delays in procuring supplies and other cause beyond his control.

5. RECORD OF MAINTENANCE.

- 5.1 The contractor shall provide a service and maintenance record systematically compiled as required by the S.O for the plants being serviced and maintained. The address and telephone number of the contractor or representative shall be recorded at every pump house to facilitate emergency calls.
- 5.2 The contractor must keep an accurate detailed record of all service, maintenance, repair works or emergency repair works carried out in minimum three (3) copies. One copy of this record shall be countersigned by the Superintending Officer or his representative and shall be forwarded to the S.O together with the bill, and another copy to be retained at the plant.

6. SKILLED WORKMEN.

- 6.1 The contractor shall employ in the execution of this contract only workmen whom are experienced and skilled in the field or maintenance of mechanical and electrical equipment or to engaged any certified pump maintenance agent. The workmen whom are employed to carry out the jobs shall be approved by the Chief Electrical Inspector (C.E.I.) as mentioned in Lampiran A, Section B – Details of Works, clause 1(b) and if so required, shall inform the S.O or C.E.I of the name of such person.
- 6.2 The workmen or certified agent doing the maintenance and repair of all the equipment under this contract must be familiar with the different types and makes of motor & pump covered under this contract and have experience in performing such works. The contractor shall ensure adequate safety of workmen, plant and shall comply to the Machinery and Factory Act and Occupational Safety and Health Act. 1994.
- 6.3 The Contractor shall ensure that all the workmen, mechanical and electrical equipment and work done during the maintenance and repair of all the equipment under this contract must aware and follow the Occupational health and safety management systems **OHSAS 18001 – 2007 JPS Penang.**

7. PAYMENT.

Servicing and maintenance as herein provided shall be furnished by the contractor and shall be paid after inspection and service have been performed and bill with report thereon submitted to the Superintending Officer.

The payment shall include the contractor's expenses for taking out of insurance policies complying with the provisions of Employees Provident Fund Ordinance and everything else necessary for the proper execution of the works required in this contract.

Lampiran E

Sample report format for Servicing and maintenance.

(The successful tenderer is required to prepare a proper service and maintenance report acceptable to the department for maintenance record purposes, certification and for payment verification of work done.)

Company.....
.....
.....

Servicing & Maintenance Report for :

Pump house :..... District :.....

Date :

Pump set No:

Running hour to date :.....

Item	Description	Condition	Action taken	Recommended action
1	<u>General</u> a. Upstream - Screen - sump b. Downstream - Valve - Disc.Slab c. Facilities - Overhead crane			
2	<u>Electrical</u> a. Main Panel - ACB - ELCB - MCCB b. Starter Panel - Contactor - MCB - Metering - MCU/MSU c. Facilities - Capacitor bank			

Item	Description	Condition	Action taken	Recommended action
3	<p><u>Submersible Pump</u></p> <p>a. Casing/body</p> <ul style="list-style-type: none"> - Crack - Impeller - Lubricant - Bearing - Seal <p>b. Pump Column/piping</p> <ul style="list-style-type: none"> - Flanges/fittings - Disc. piping - Pump seating <p>c. Operation testing</p> <ul style="list-style-type: none"> - Unusual noise - Vibration - Vortex 			
4.	<p><u>Submersible Motor</u></p> <p>a. Motor</p> <ul style="list-style-type: none"> - Insulation test - Winding <p>b. Cables</p> <ul style="list-style-type: none"> - Power - Control - Float level test - Seal. <p>c. Monitoring unit</p> <ul style="list-style-type: none"> - Thermal sensor - Leakage sensor 			

Certification by department.

The above works and observation has been carried out satisfactorily in the present JPS supervisor or his representatives :-

Name:

Post :

Signature :

Declaration by Contractor.

1. That the above work has been properly carried out as reported.
2. That we encounter the following problems in the course of work which we recommended for action to be taken and shall not be the responsibility of the contractor.

Signature :

Name of contractors :

Lampiran E1

Servicing & Maintenance Report for Generator Set at :

Pump house / Gate : District :

Date :

Genset No: Running hour to date :

QUARTERLY PROGRAMMED PREVENTIVE MAINTENANCE REPORT ON EACH GENSET.

NO	ITEM	CLEAN	CHECK	ADD	ADJUST	CONDITION & REMARK
1	Diesel Engine (pre-run inspection)					
2	Overall Engine Assembly					
3	Diesel Fuel Filter (Last filter changed date)					
4	Engine Oil (Last Oil changed date)					
5	Engine Oil Filter (Last changed date)					
6	Radiator / water / Radiator Leakage					
7	Battery / Electrolyte / Terminal					
8	Fan / Water Pump Belt					
9	Suis Board (pre-run inspection)					
10	Control Circuit drawing.					
11	Battery / Charger					
12	All Cables Connectors and Termination					
13	Alternator inspection					
14	Winding insulation					
15	Earthing Test					
16	Suis Board running test					
17	Auto starting / auto stop					
18	Emergency stop					
19	All indicator light					
20	Volt / amp / Freq gauges					
21	Diesel Engine 5-15min running test until genset working temp. 77'-82'.					
22	Manual start / stop					
23	Fuel pump					
24	Engine RPM					
25	Engine Oil & Fuel Line Leakage					
26	Water Pump / Hose					
27	Exhaust Mufler / Joint / Gasket					
28	Exhaust smoke condition					
29	Knocking / vibration					
30	Overall Running performance.					

Pengesahan oleh;

Wakil Syarikat

Penjaga Jentera

Pengawas Jabatan

KADAR HARGA SELENGGARAAN SETIAP RUMAH PAM DAN SISTEM ELEKTRIK

Bil .	Nama RumahPam & Lokasi	Bil.lawatan servis dan selenggaraan dlm setahun. (Sekali setiap 3 bulan)	Kos buka keluar dan pasang semula setiap seunit pam (* termasuk perkhidmatan kren) (RM)	Kos servis, ganti O-ring Oil Cap, * (ganti pelincir setiap pam) dan test run setiap pam (RM)	Bil.Pam	Kos (b + c) x d (RM)	Kos servis MSB dan starter panel (RM)	Kos lawatan dan penyelenggaraan untuk setiap Rumahpam (e + f) (RM)
		a	b	c	d	e	f	g
1	Seberang Jaya (FD) dan (DS)	4 kali			8			
2	Pam Parit Lima, Juru	4 kali			3			
3	Pam Parit Empat, Bkt Tengah	4 kali			3			
4	Pam Kampung Dock, Perai	4 kali			1			
5	Pam TCG Tok Keramat	4 kali			3			
6	Pam Saliran Taman Siakap 2	4 kali			3			
7	Pam Sementara Tmn Senangin	4 kali			5			
8	Pam Sementara Tmn Kim Sar	4 kali			2			
9	Pam Sementara Tmn Siakap 1	4 kali			2			
					30		Jumlah	

Catatan:

* - **Ganti Pelincir pam setiap pam sekali setiap enam bulan.**

Signature :

Name & Stamp of contractors :

Date :

JADUAL KADAR HARGA ALATGANTI TIAP SEUNIT PAM SELAM ELEKTRIK (Optional)

Bil .	Nama RumahPam & Lokasi	Model pam	Motor Elektrik pam	Kos bekal & pasang "Power Cable" Pam	Kos bekal & pasang "Control Cable" Pam	Kos gantian set (Upper & Lower Mechanical Seal)	Kos gantian O-ring bagi Overhaul set, pelincir pam dan test run seunit pam	Kos Rewinding setiap unit motor	Kos Revarnish setiap unit motor
			(KW)	(RM/Meter)	(RM/Meter)	(RM)	(RM)	(RM)	(RM)
		a	b	c	d	e	f	g	h
1	Seberang Jaya (Pam FD)	VUP1001M2500	250						
2	Seberang Jaya (Pam DS)	VUP0601M750	75						
3	Pam Parit Lima, Juru	600KPL55 8T4	42.4						
4	Pam Parit Empat, Bkt Tengah	VUP0501 ME370	37						
5	Pam Kampung Dock, Perai	350 QH – 72D	18.5						
6	Pam TCG Tok Keramat	300WQ – 900-6-30	30						
7	Pam Saliran Taman Siakap 2	CS3400/705	40						
8	Pam Sementara Tmn Senangin	CS3400/705	40						
9	Pam Sementara Tmn Kim Sar	NS3202.180LT616	22						
10	Pam Sementara Tmn Siakap 1	NS3202.180LT616	22						

Signature :

Name & Stamp of contractors :

Date :

KADAR HARGA SELENGGARAAN TIAP SEUNIT GENSETPAM DAN SISTEM LETRIK

Bil.	Nama R/Pam @ Pintuair & Lokasi Genset.	Bilangan lawatan servis dan selenggaraan dalam setahun. (sekali setiap 3 bulan)	Kos servis, *(ganti Pelincir, Penapis pelincir & Disel) dan operation test genset bersama pam (RM)	Kos servis MSB dan starter panel (RM)	Bilangan Unit Genset	Kos Setiap Rumahpam (b + c) x d (RM)
		a	b	c	d	e
1	Genset Tok Keramat.	4 kali			1	
2	Genset Taman Kim Sar	4 kali			1	
3	Genset Taman Siakap 1	4 kali			1	
4	Genset Taman Senangin.	4 kali			3	
					Jumlah C3	

Catatan:

* - **Ganti Pelincir Injin, Penapis pelincir injin dan Penapis disel sekali setiap enam bulan.**

Signature :

Name & Stamp of contractors :

Date :

KADAR HARGA SELENGGARAAN SETAHUN UNTUK RUMAH PAM DAN GENSET

Bil.	Nama R/Pam @ Pintuair & Lokasi Genset.	Kadar Harga Pemasangan Rumahpam dari Column g (Lampiran C1)	Kadar Harga Pemasangan Genset dari Column e (Lampiran C3)	Kos Keseluruhan
		(RM)	(RM)	(RM)
		a	b	c
1	Seberang Jaya		-	
2	Pam Parit Lima, Juru		-	
3	Pam Parit Empat, Bukit Tengah		-	
4	Pam Kampung Dock, Perai		-	
5	Pam Saliran TCG Tok Keramat		-	
6	Pam Saliran Taman Siakap 2		-	
7	Pam Sementara Tmn Senangin		-	
8	Pam Sementara Tmn Kim Sar		-	
9	Pam Sementara Tmn Siakap 1		-	
	-	-	-	-
10	Genset Tok Keramat.	-		
11	Genset Taman Kim Sar	-		
12	Genset Taman Siakap 1	-		
13	Genset Taman Senangin	-		
			Jumlah Keseluruhan	

Signature :

Name & Stamp of contractors :

Date :