WEBINAR IEM SOUTHERN BRANCH 2021: ELECTRICAL SAFETY MANUAL

ELECTRICAL INSTALLATION STANDARDS & REGULATIONS IN PENINSULAR MALAYSIA & SABAH

SEPTEMBER 19TH , 2021

Ir. SHARAL AIDA IBRAHIM ENERGY COMMISSION, MALAYSIA



SCOPE





5.0 DIRECTION ON LIGHTNING PROTECTION SYSTEM (LPS)



Liectrical/Gas Safety	0
Development Unit.	-
 Policy Development (Codes, Direction, Guideline etc) 	
2. Study related Electricity Supply Act 1990 (ESA) & Regulations 1994(ER)	
3. Study on Electrical/Gas Accident & Fire Cases.	
4. Mitigation related to Electrical/Gas Safety	
Suruhanjaya Tenaga Energy Commission	11



ELECTRICITY SUPPLY ACT 1990 [447 ACT]

12 PARTS, 56 Acts

- 1-2) Introduction/Preliminary (Sec 1-3)
- 3) Functions, duties & power of EC (Sec 4-8)
- 4) Licensed & Registered Installations (Sec 9-22B)
- 5) Competent Control (Sec 23)
 - 5A) Efficient use of Electricity (Sec 23A-D)
- 6) Supply by Licensee (Sec 24-32)
- 7) Notification of Accident/Fire (Sec 33)
 - 7A) Safety of Installation & Equipment (<u>Sec 33 A-F</u>)-new A1501(2015)
- 8) Enquiry & Arbitration (Sec 34-36)
- 9) Offences & Penalty (Sec 37-44A)
 - 9A) Electricity Industry Fund (Sec 44B-E)-new A1501(2015)
- 10) General (Sec 45-52)
- 11) Power to make Regulations (Sec 53)
- 12) Miscellaneous (Sec 54-56)





ELECTRICITY SUPPLY (AMENDMENT)[ACT 2015] Amendment:

Sec

2, 4, 7, 8, 9, 12, 17, 21, 24, 25, 26, 27, 29, 30, 32, 33, 36, 37, 38, 45, 46, 48, 53, 54

New:

Sec

5A-B,9A-E, 22A, 22B, 23D, 28B, 30A-B, 33A-F, 37A-B, 44A-E, 45A-C, 50A-F, 52A-B



LAWS	OF	MALAYSIA
	Act	A1501
ELECTRICITY SU	JPPLY	(AMENDMENT) ACT 2015



ELECTRICITY REGULATIONS (ER) 1994





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2.0 INSTALLATION

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1. LEGAL REQUIREMENTS

Electricity Supply Act 1990

- Section 9
- Section 21
- Section 23

Electricity Regulations 1994

- Regulation 15(1)
- Regulation 110(1)

2.0 INSTALLATION

- 2. Design
- 3. Selection of material & equipment
- 4. Earthing of installation
- 5. Means of isolation
- 6. Safety considerations
- 7. Determination of maximum demand
- 8. Determination of short-circuit currents
- 9. <u>Protection</u>

2.0 INSTALLATION

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- 10. Selection & erection of electrical equipment
- 11. Wiring systems
- 12. <u>Isolation, switching & control</u> <u>equipment</u>
- 13. Discrimination
- 14. Earthing arrangements & protective conductors
- 15. Minimum CSA of a protective conductor /earthing conductor

2.0 INSTALLATION

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- 16. Integrity of protective conductor & earthing conductor
- 17. Earthing conductor
- 18. Other equipment
- 19. Metering & monitoring equipment
- 20. Harmonics management
- 21. Size of neutral conductor due to 3rd harmonic contents

2.0 INSTALLATION

NON-DOMESTIC ELECTRICAL INSTALLATION SAFETY CODE

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- 22. Energy management
- 23. Competent control
- 24. Precautions for work on equipment made dead
- 25. Work on or within the safety clearance to live conductors
- 26. Working space, access and lighting
- 27. Permit to Work (PTW)

2.0 INSTALLATION

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- 28. Supervision & testing of installations
- 29. Initial inspection, testing & commissioning
- 30. Safety clearance

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3.0 OPERATIONS

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- Safety Management Programme
- 2. Competency requirements (Reg. 60, ER 1994)
- 3. Reporting of accidents and fires (Section 33, ESA 1990)
 - <u>Complaint Management</u>
 <u>for Consumers</u>

4.0 MAINTENANCE

- 1. Maintenance Schedules
- 2. Precautions when working on installation
- 3. Use of Personal Protective Equipment (PPE)
- 4. Maintenance of records

5.0 MISCELLANEOUS

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- ... standards stated in Annex 2 may be consulted to meet the requirements of this Code. The publication dates of the standards are correct at the time of publication of this Code. The most current & appropriate issue of the standards shall be used at all times.
- If there is any conflict between the provision of this Code and those in ESA 1990, ER 1994, Grid Code or Distribution Code, the provisions of the ESA 1990, ER 1994, Grid Code or Distribution Code shall take precedence.



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3.0 OPERATION: ELEMENTS OF SAFETY MANAGEMENT PLAN & PROGRAMME







ELEMENTS OF SAFETY MANAGEMENT PLAN & PROGRAMME

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GUIDELINE ON

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PLAN AND PROGRAMME



 Serve as a guide for licensees, owners, tenants, management, operators and contractors in the preparation of safety management plans or programmes as required under Subsection 33B(2) of Electricity Supply (Supplement) Act 2015.

2. Address all elements of an <u>effective electrical safety</u> <u>management system</u> namely policy, organizing, planning and implementation, risk control measures, performance evaluation and action for improvement.

3. Ensure that electrical safety management plans or programmes are **suitably and systematically** developed and structured for the control of electrical risks of electricity supply infrastructure or non-domestic electrical installations.

4. Assist in assessing the <u>level of performance and compliance</u> with respect to the electrical safety management plan or programme of licensee, owners, tenants, management, operators and contractors as prescribed under Act A1501.

AUDIT CHECKLIST

1. Can be used as a guide or benchmark

ELEMENTS OF SAFETY MANAGEMENT PLAN & PROGRAMME

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1. POLICY & DOCUMENTATION

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1.1 Electrical Safety Policy & Programme:

- The licensee/installation has a written policy, programme to ensure electrical safety.
- The policy, signed by the top management.
- The objectives, responsibilities and arrangements.

1.2 Documentation:

- □ Maintained and readily accessible.
- Contain information on electrical safety.

2. ORGANISING

2.1 Responsibility:

 Assigns duties responsibility for electrical safety management to line management.

2.2 Competence:

- Adequate training and information on electrical safety.
- The company complies with ESA 1990 & ER 1994.

2.3 Communication:

- Disseminate information on electrical risks and control measures.
- □ Warning signs are used.
- Arrangements suggestions and complaints.

3. PLANNING & IMPLEMENTATION

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3.1 Planning and Implementation: The installation's electrical safety management programme supports:

- Compliance with ESA 1990, ER 1994, codes and guidelines.
- □ Implementation of all elements of the electrical safety management system.
- □ Continual improvement.

ELEMENTS OF SAFETY MANAGEMENT PLAN & PROGRAMME

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4. RISK CONTROL MEASURES

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4.1 Identification, Evaluation and Control of Risks:

- Elimination
- Substitution
- **Engineering controls**
- Administrative controls
- PPE

4.2 Permit-To-Work System:

A written Permit-To-Work (PTW) system must be made available.

4.3 Emergency Preparedness:

A written emergency preparedness programme for the installation is available and made known to employees and regularly rehearsed.

5. PERFORMANCE EVALUATION

5.1 Investigation of Electrical-related Accidents and Incidents:

 Carried out by competent persons, with the appropriate participation of management and workers.

5.2 Performance Monitoring and Review:

- A system for installation's management to regularly monitor electrical safety performance is established.
- Records and statistics of electrical accidents.

6. ACTION FOR IMPROVEMENT

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6.1 Preventive and Corrective Action:

 Arrangements for preventive and corrective actions are established and updated.

6.2 Continual Improvement:

Take into account the results of:

- Risk assessments
- Performance measurements investigations
- Audits
- Amendments in ESA 1990 & ER 1994
- Benchmarked with other similar organisations

DOMESTIC ELECTRICAL INSTALLATION GUIDELINE

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DOMESTIC ELECTRICAL INSTALLATION GUIDELINE





DOMESTIC ELECTRICAL INSTALLATION GUIDELINE

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OBJECTIVES

Serve as a guide for all Competent Person & Electrical Contractors in designing the electrical wiring for domestic installation as per:

ESA 1990 ER 1994 MS IEC 60364 'Electrical Installations of Building', MS 1979 'Electrical Installations of Building – Code of Practice', MS IEC 62305 'Protection Against Lightning' MS IEC 61643 'Low voltage surge protection' MS IEC 60335 regarding electric fence.

GARIS PANDUAN PENDAWAIAN ELEKTRIK BANGUNAN KEDIAMAN

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DIRECTION ON LIGHTNING PROTECTION SYSTEM FOR BUILDINGS

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Enforcement of The MS IEC 62305 – Protection Against Lightning Standard Use For Lightning Protection System In Buildings

According to Section 50c(1) of Electricity Supply Act 1990, Commission had issued out this Direction (Arahan/ST/No.4/2019) on January 1st, 2020 and it had taken effect from January 1st, 2020. This Direction is a mandatory, thus, stakeholders are required to comply to this Direction.

This Direction had replaced the previous EC Circular of 2011.



AKTA BEKALAN ELEKTRIK 1990 [AKTA 447]

ARAHAN SURUHANJAYA TENAGA BILANGAN 4 TAHUN 2019

Arahan/ST/No. 4/2019

PADA menjalankan kuasa yang diberikan oleh Seksyen 50C(1) Akta Bekalan Elektrik 1990 [Akta 447], Suruhanjaya mengeluarkan arahan berikut:

Nama dan tarikh mula berkuatkuasa

- Arahan ini bolehlah dinamakan Arahan Penguatkuasaan Pemakaian Standard Malaysia MS IEC 62305 – Protection Against Lightning Bagi Sistem Perlindungan Kilat Di Bangunan.
- 2. Arahan ini hendaklah mula berkuatkuasa pada tarikh ianya didaftarkan.
- Dengan berkuatkuasanya Arahan ini, maka Pekeliling Bilangan 3/2011 Mengenai Penetapan Kaedah Pemasangan Sistem Perlindungan Kilat Di Bangunan-Bangunan, bertarikh 1 September 2011 adalah ditarik balik dan terbatal.

Pemakaian

- Arahan ini hendaklah terpakai ke atas semua pepasangan Sistem Perlindungan Kilat di bangunan mulai tarikh Arahan ini dikuatkuasakan.
- 5. Arahan ini hendaklah digunapakai oleh semua Orang Kompeten, Kontraktor Perkhidmatan Elektrik, Kontraktor Elektrik, juruperunding, pemunya atau pengurusan bangunan di peringkat reka bentuk, pemasangan, penyeliaan, pengujian, pengoperasian dan penyenggaraan pepasangan Sistem Perlindungan Kilat.

Direction on Lightning Protection System for Buildings Implementation Plan

(Buildings Under Planning / Future Buildings and Under Construction Buildings)



Direction on Lightning Protection System for Buildings Implementation Plan

(Existing Buildings)

1 JANUARY 2020	1 JANUARY 2021	1 JANUARY 2022	1 JANUARY 2023
Date of Direction issued	Enforcement date of the following building type:	Enforcement date of the following building type:	Enforcement date of the following building type:
STAGE 01	STAGE 02	STAGE 03	STAGE 04
	 Hospitals IPT Business Complexes Industrial Building Condominium & Apartment Airport 	 Flat School Government Building 	1. Landed Residential

OFFENCES FOR NON-COMPLIANCE

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OFFENCES FOR NON-COMPLIANCE WITH CODES, ETC.

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SECTION 33_B(4), ESA 1990

Offence for Failure in preparing the Safety Management Programme

- fine < RM 100,000 (≈USD 23,842.32); or
- imprisonment < 2 years; or
- both.

SECTION 50E, ESA 1990

Offence for Non-compliance with Codes, Guidelines or Directions of Commission

- fine < RM 200,000 (≈USD 47,716.58); or
- imprisonment < 2 years; or
- Both.



ELECTRICITY SUPPLY ACT 1990 [Act 447]

NON-DOMESTIC ELECTRICAL INSTALLATION SAFETY CODE

KOD/ST/No.4/2016

IN exercise of the power conferred by Section 50A of the Electricity Supply Act 1990 [Act 447], the Energy Commission, with the approval of the Minister makes the following Code:

Citation and Commencement

1. This Code may be cited as the "Non-Domestic Electrical Installation Safety Code".

 The Non-Domestic Electrical Installation Safety Code will be issued by the Commission, based on the approval by the Commission on 20th October 2016 and the Minister on 24th December 2016 and shall be enforced and effect from the date of registration.

Application of the Code

Non-Domestic Electrical Installation Safety Code

3. This Code shall be applicable to all non-domestic installations of consumers and installation of licensees for retail and licensees of private installation where electricity is supplied to, except installations as stated in part 1.2.4 of the Code.

Interpretation

4. The term and expression used shall, unless defined in the Code or the context otherwise requires, have the same meaning as in the Act or Regulations made under it.

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Commission

Commission may issue written notices from time to time in relation to the Code.

nd Variation

Commission under Section 50b of Electricity Supply (Amendment) Act 2015, ime review, amend, modify, vary or revoke this Code or any part thereof, under the cumstances:

ffect changes in the electricity supply industry;

re it is expedient to address safety aspect of electrical installation in respect to gn, construction, inspection and testing, operation and maintenance;

recommended by the Non-Domestic Electrical Installation Safety Code mittee and approved by the Energy Commission; or



Non-Domestic Electrical Installation Safety Code

KOD/ST/No.4/2016



THANK YOU www.st.gov.my

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PROTECTION AGAINST EARTH LEAKAGE CURRENT









Regulation 60: COMPETENT CONTROL COMPETENT PERSON IDENTIFICATION CARD (CPIC)



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BACK

ISOLATION, SWITCHING & CONTROL EQUIPMENT





PERMIT TO WORK (PTW)

	AN BENGA DAGI KENGA DEMISIKO TENGGI (FAIK)		PERAKUAN ORANG	S KOMPETEN YANG MENGE	ELUARKAN PMIK	K.
Aermit Menjalankan Kerja ini adalah untuk k kan selamat untuk dijalankan kerja ke ataunya	terja di pepatangan elektrik atau kerja berhampiran pepatangan elektrik yang telah 1	PENINGUMAN UTAMA LITAK PMK seperti tandatangan di bawah	unten polich dingram stati disibili f	NECOALI DEB ORANG KOMPET	TEN YANG MENGI	ALCARKAN
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Permit		No. Perakuan Orang Kompeten:		Kategori *:		
		Tarikh:		Masa (jam):		
(horisation/Sanction/Kujukan (jika ada): . Vendelien		*Kategori kekompetenan: A0, A1, A4, B0, B1, Nota: Permit ini setelah ditandatangani oleh C	B4, PE, JEK, JPE atau mana-n Drang Kompeten hendaklah dipe	nana yang berkaitan. egang oleh beliau dan Orang Kompet	ten yang menjalankan	n kerja. Permit
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imaan PMK oleh: Orang Kampaten Kantraktor Backhiden	en Flahrik - 🖂 II Orang Di Barah Karalan dis mit bibit Orang	BAHAGIAN "D" PERAK	UAN ORANG KOMPETH	EN YANG MENJALANKAN K	ERJA (MENERI	MA PMK)
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III.ANA RADAS DIDONIRAN (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DULANK (Terangkan dengan TEPAT) BAHA(GIAN "B" B ² ORANG KOMPETID (AND MONOLAN MONJALANKAN KED (AJAL DENGAN NYA MONJALANKAN KED (AJAL DENGAN NYA MONJALANKAN KED (AJAL DENGAN (V). DIMATIKAN DIASINGKAN (semua punca bekalan) DIBEKTIKAN MATI	AN LANGKAH KAWALAN KESELAMATAN RKAN PME HINDAKIAH MINDISABLAN BARAWA ORANO KOMPITEN YANG PIRAKUAN KHIKOMPITINAN YANG DICILIJARKAN OLEH SURUHANAYA TINAGA (ST) anim seperti berikut telah DISEMPURNAKAN dan RADAS adalah selamat untuk DIBUMIKAN DIBUMIKAN DILETAKKAN NOTIS "BAHAYA" dan/atau	*** Penggasti atau pekerja (*** penggasti *** Penggasti atau pekerja (*** srug juga) dengan jelas mengena (**** pekerja) *** PMC hara berakklah BAHACIAN **2=* Dengan ini saya mengaku, bahawa kerja-ke sementara dan Tandakan (*):- 1. Semua orang di bawah jagaan telah kebuar di	di bawah kawaka onang sa ang kompeten baru meng PEMBERHENTIAN SEM (Sekiranya n arja diberhentikan n te ari tempat kerjanya	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA KERJA BAGI TUJI malibatkan pembumian utama dib kengan ini saya mengasahikan pem senjalankan kerja dan langkah-b awah telah disempumakan. Tand	hh ngas setelah dibe UAN PENGUJIAN MAN DENGUJIAN Magkab koselamata Jakan (v):-	eri kefalaman N mpotan yang an separti di
III.ANA RADAS DIDONIDAN (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DUDONIK (Terangkan dengan TEPAT) BAHAGIAN "B" @= ORANG KOMPETED (AND MENDAL) MENDALANKAN KERIA SALAU (MAN MENDAL) MENDALANKAN SALAU (MAN MENDAL) DIMATIKAN DIASINGKAN (semua punca bekalan) DIBUKTIKAN MATI NGATAN-SEMIJA BAHAGIAN LADA MEN	AN LANGKAH KAWALAN KESELAMATAN RKAN PAK HINDAKLAH MINDISABRAN BABAWA GRANG KOMPLETEN YANG perinakuan kencompetensan yang ducielularkan older surulunana ya tensoa, est) azita seperti berikut telah DISEMPURNAKAN dan RADAS adalah selamat turuk DIBUMIKAN DIBUMIKAN DIKUNCIKAN DILETAKKAN NOTIS "BAHAYA" dankatan NOTIS "BAHAYA" dankatan NOTIS AWAS"	***Pengganti *** Pengganti atau pekrija - yang juga dengan jelas mengena julan shou kerja *** PMK bara hendaklah BAHACIAN **E* Dengan ini saya mengalai, bahawa kerja-ke samentara dan Tandalaan (*);- 1. Semua orang di bowah jagaan telah kebuar di 2. Tiada apa-apa alat tertinggal	di bewah kawalan orang ay ang kompeten baru menga PEMBERHENTIAN SEM (Sekiranya n arja diberhentikan m ari tempat kerjanya.	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA KERJA BAGI TUJ maibatkan pambumian utawa dib sengan ini saya mengasahkan pam senjalmian karja dan langkab-bawa tulah disempurakan Tand Semaa arang di bawah jagaan Osar keluar dari skep kerjanya	hh tugas setelah dibe UAN PENGUJIAN ruka) serakean Orang Kot ngkah keselamata lakan (v):- ng Kompeten telah	eri kefahamaa N mpotan yang an separti di
MANA KADAS dengan TEPAT) (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DULUANK (Terangkan dengan TEPAT) BAHACHAN "B" NDUALANKAN KOMPETER AND MENNUA K MUMALANKAN KERI AJAA DULUK KANA Sya mangaku baharu sala Sya mangaku baharu sala duluk ku ku DIMATIKAN DIASINGKAN (semua punca bekalan) DIBUKTIKAN MATI DIGATAN: SEMUA BAHAGIAN LAIN HEN	AN LANGKAH KAWALAN KESELAMATAN REAN PAR, HENDAKLAH MUNCHARAN IBAHAWA ORANO KOMPITEN YANG PHEMAKUAN KERKOMPITENAN YANG DUCILIARKAN GLEH SURURANGAYA TENAGA (ST) antin seperti berikut telah DISEMPURNAKAN dan RADAS adalah selamat untuk DIBUMIKAN DIBUMIKAN DIKENCIKAN DILETAKKAN NOTIS "BAHAYA" dankatan NDIKENCIKAN NDIKENANS"	***Pengganti *** Pengganti atau pekrija syang juga dengan jelas mengena julian skon kerja- *** PMC bara hendaklah. BAHACIAN **E** Dangan ini saya mangalan, baharan kerja-ke sameatara dan Tandalana (%):* 1. Semaa orang di bawah jagaan telah kebuar di 2. Tiada aga-aga akat tertinggal 3. Pembanian tambakan telah ditanggalian (di bawah kawalan onang o ang kompeten baru menge PEMBERHENTIAN SEM (Sekiranya n arja diberhantikan ari tempat kerjanya. 1 (v) jika berkaitan 2 3	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA KERJA BAGI TUJ malbatkan pambumian utama dib kengan ini saya mengasahkan pem senjalankan kerja dan langkah-b ravah telah disempurtakan Tand Semua orang di bawah jagaan Osar kehar dari skop kerjanya Tiada apa-apa alat tertinggal Pembunian tambahan telah diteng	hh tugas setelah dibe UAN PENGUJIAN Tula) serakuan Orang Kot mgkah kosolamatu akan (v):- ng Kompeten telah ggalkan. (v) jika berk	eri kefabansan N mpetan yang m separti di kaitan
HEAA RADAS DIBLOHICAS (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DULANK (Terangkan dengan TEPAT) EAHAGIAN "B" DAG KOMPATIQ AANO MONOLAN MONOLANKAN MONOLAN MONOLANKAN MONOLAN MONOLANKAN MONOLAN JUMATIKAN DIASINGKAN (semua punca bekalan) DIBLKTIKAN MATI Saya mangiku bahawa samua langkah keselamat selamat. Sila tandakan (⁵).	AN LANGKAH KAWALAN KESELAMATAN KKAN PMC HUDDAKLAH MUMUKAN BARAWA ORANO KOMPITEN YANO PIPAATUN KEKOMPTENAN YANO DICHLAREAN OLAH BURUHANAYA TINAGA (ST) atam seperti berikut telah DISEMPURNAKAN dan RADAS adalah selamat untuk DIBUMIKAN DIHADANGKAN DIHADANGKAN DIHATAKKAN NOTIS "BAHAYA" danlatan NOTIS "AWAS" NDAKLAH DIANGGAP BERBAHAYA atan seperti berikut telah dipatuhi untuk memastikan karja yang dijalankan adalah	***Frengganti *** Penggani atau pekrija unyan juga dengan jelas mengena utima skonkorfa *** PMC bara hendakkih BAHACIAN "IE" Dangan ini saya mangalan, bahara karjo-ka samentara dan Tandakan ('d) 1. Semaa orang di bawah jagaan telah kehuar di 2. Tiada aga-apa alat tertinggal 3. Pembansian tambahan telah dianggalkan. ('d) jiku	di bowah kawaka orang wayang kompeten baru mengo PEMBERHENTIAN SEM (Sakiranya n arja diberhentikan ari tempat kerjanya ()) jika berkaitan a berkaitan	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA KERJA BAGI TUJI malibatkan pembumian utama dib kengan ini saya mengasahikan pem senjalankan kerja dan langkah-la sunah telah disempumakan. Tand Semua orang di bawah jagaan Osa Keluar dari skop kerjanya Taska apa-apa alat tertinggal Pembumian tambahan telah diang Kanet NSL tambahan dilanggalka Pembumian Utama sahaja di baka	ih tugas setelah dibe UAN PENGUIIAN mka) seraktam Orang Kor mgkah kasulamatu lakan (v):- ng Kompeten telah ggalkan (v) jika berkaitan a (<i>Earti Og</i>)	eri kefabancen N empeten yang m seperti di kaitan
MANA KADAS DIBONIKAN (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DUBONK (Terangkan dengan TEPAT) BAHACIAN "B" DE CIRANG KOMPETEN ANN MENUARA MUDALANGAN EN ANN MENUARA aya mengaku bahawa selu angkan keselama DIASINGKAN (semua punca bekalan) DIBUKTIKAN DIASINGKAN (semua punca bekalan) DIBUKTIKAN MATI NGATAN: SEMUA BAHAGIAN LAIN HEP aya mengaku bahawa seuna langkah keselama lamat. Sila tandakan (\). KENALPASTI BAHAYA DAN RISIKO. Nyatakan (Rajuk Lampiran 1	AN LANGKAH KAWALAN KESELAMATAN EKAN PARC HIDROKATAN MOMERAN BARAWA ORANO KOMPITINI YANO OPERAKUAN KERCOMPETINIAN YANO DIDELE HARKAN OLAH SURURANAYA TENAGA (ST) antin seperti berikut telah DISEMPURNAKAN dan RADAS adalah selamat untuk DIBUMIKAN DIBUMIKAN DIKUNCIKAN DILETAKKAN NOTIS "BAHAYA" danlatan NOTIS "AWAS" NDAKLAH DIANGGAP BERBAHAYA atan seperti berikut telah dipatuhi untuk memastikan karja yang dijalankan adalah	***Pengganti *** Pengganti atau pekrija (orang juga), dengan jelas mengena juga), dengan jelas mengena kultura (orang juga), *** PMSK bara herakaklah, BARACIAN #E* Dengan ini saya mengaku, bahawa kenja-ke sameatara dan Tandakan (%):- 1. Semua orang di bawah jagaan telah kehara di Semua orang di bawah jagaan telah kehara di semua orang di bawah jagaan telah kehara di semua orang di bawah jagaan telah kehara di semua di	di bawah kawalan orang ayang kompeten baru mengu yang kompeten baru mengu (Sakiranya n arja diberhantikan ari tempat kerjanya. (v) jika berkaitan a berkaitan	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA KERJA BAGI TUJ melibatkan gambimian utama dib langan ini taya mangotahkan pem senjalmkan karja dan langkah- yanah telah disempurnakan. Taad Semua orang di bawah jagan Osar keluar dari skop kerjanya Tiada apa-apa alat tertinggal Pembumian tambahan ditanggalkas Pembumian tumbahan ditanggalkas Pembumian Utama sahaja di baka Lokasi penggian disaking semula s imatikan ditasingkan di	UAN PENGUJIAY mila) seraknan Orang Kor mgkah kosolamatu akan (4) ag Kompeten telah ggalkan (4) jika berkaitan a (2arth Q9) eleanat, dikanet, diletak aoti dikanet,	eri kefabansas N mpotan yang m separti di kaitan
MANA KADAS DIBUMIAAN (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DULUNK (Terangkan dengan TEPAT) BAHAGIAN "B" ONE CHANG KOMPATIP AANO MENNON MENJALANKAN FED AANO MENNON MENJALANKAN FED AANO MENNON MENJALANKAN FED AANO MENNON DIMATIKAN DIASINGKAN (semua punca bekalan) DIBUKTIKAN MATI ENGATAN: SEMUA BAHAGIAN LAIN HEP Saya menggiku bahawa semua langkah keselama selamat. Sila tundakan (%).	AN LANGKAH KAWALAN KESELAMATAN EKAN PARC HIDADAKIAN MOMELAN BARAWA ORANO KOMPETEN YANO PERAKUAN KEKOMPETENAN YANO DOLEL HARKAN OLAP SURURANAYA TENAGA (ST) atata seperti berikut telah DISEMPURNAKAN dan RADAS adalah selamat untuk DIBUMIKAN DIKUNCIKAN DIKUNCIKAN DILETAKKAN NOTIS "BAHAYA" dan/stase NOTIS "AWAS" NDAKLAH DIANGGAP BERBAHAYA atan seperti berikut telah dipatuhi untuk memastikan karja yang dijalankan adalah	***Penggant *** Penggant atau pekrija urang juga dengan jelas mengena kulim skonkerja *** PMSK bara herakaklah BAHACIAN "E" Dengan ini saya mengaku, bahawa kerja-ke semeatara dan Tandakan (%):- 1. Semua orang di bawah jagaan telah kehar di 2. Tiada apa-apa alat tertinggal 3. Pembaunian tambahan telah ditanggalkan. (%) jika	di bawah kawalan orang na kang kompeten baru mengu yang kompeten baru mengu yang kompeten baru mengu (Sakiranya n arja diberhantikan ari tempat kerjanya (1) jika berkaitan a berkaitan	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA XERJA BAGI TUJ mabibatian pambumian utama dib bangan ini saya mangosahkan pem senjalankan karja dan langkah- bangan ini saya mangosahkan pem senjalankan karja dan langkah- senya tuah disempurnakan. Tand Semua orang di isawah jagian Osa keluar dari skop kerjanya Tiada apa-apa alat tertinggal Pembumias tumbahas dianggalka Pembumias tumbahas dianggalka Pembumias tumbahas dianggalka Pembumias tumbahas dianggalka Pembumias tumbahas dianggalka Lokasi pengujian disahkas semula s imatikan diasingkan a	LAN PENGUJIAN mila) seraknan Orang Koz angkah kosolamatu agakan (\)- ng Kompten telah ggalkan (\) jika berkaitan a (2arti 0g9) relamat, dikanat, diletak soti dikadang sjian solamat untuk	ri kefalansen N mpeten yang m seperti di sakan is &
HANA RADAS DIBLOHIKAN (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK DUNAKAN (Terangkan dengan TEPAT) EAHACEIAN "B" MOUALANKAN EE ANNI MENDUKA MOUALANKAN EE ANNI MENDUKAN DIMATIKAN DIMATIKAN DIMATIKAN DIMATIKAN MATI DIMATIKAN MATI SINGATAN: SEMUA BAPAGIAN LAIN HEP (Saya menguku bahawa samua langkah keselama sekiranya ada): LANGKAH (Rajuk Lampiran 1 sekiranya ada): LANGKAH KAWALAN BAGI BAHAYA DAN (Alagkah Kawalan Selain Dari B(i): ((Rajuk Lampiran 1 sekiranya ada):	AN LANGKAH KAWALAN KESELAMATAN KKAN PMC HUDDAKLAH MUMUKAN BARAWA OKANO KOMPITEN YANO OPHAATUN KEKOMPITENAN YANO DUCHLAHEAN OLAHO KOMPITEN YANO PHAATUN KEKOMPITENAN YANO MUCHLAHEAN OLAHO KOMPITEN YANO DIBUMIKAN DIBUMIKAN DIHADANGKAN DIHADANGKAN DIHADANGKAN NOTIS "BAHAYA" danlatan NOTIS "AWAS" NDAKLAH DIANGGAP BERBAHAYA atan seperti berikut telah dipatuhi untuk memastikan karja yang dijalankan adalah atan seperti berikut telah dipatuhi untuk memastikan karja yang dijalankan adalah	***Frenggani *** Penggani atau pekrija unyan juga dengan jelas mengena tulinn skon keris *** PMC bara hendakki BAHACIAN "PE" Dangan ini saya mengalan, bahara kerja-ke sementara dan Tandakan ('d):- 1. Sema orang di bawah jagaan telah keluar di 2. Tiada apa-apa alat tertinggal 3. Pembanian tambahan telah dianggalkan ('d) jika Tandatangan Orang Kompeten:	di bewah kawalan onang bayang kompeten baru menga PEMBERHENTIAN SEM (Sekiranya n arja diberhantilan m ba ari tempat kerjanya. 1 (V) jika berkaitan 4 5 6 6 6 6 6 6 6 6 6 1 7 1 1 2 2 3 3 berkaitan 4 5 5 6	kompeten dibenarkan mengambil al ambil alih kerja. IENTARA KERJA BAGI TUJ mabibatian pombumian utama dib sengan ini saya mengasahkan pom senjalamkan kerja dan langkah- iawah telah disompurnakan Tand Semus orang di hawah jagsan Oso keluar dari skop kerjanya Taska apa-apa alat terringgal Pembumian tambahas telah disong Kanci NSL tambahan ditanggalka Pembumian Utama sahaja di bakk. Lokasi pengujian disalikan semula si matikan di dissingkan di aya manguku bahawa kerja pangu 'andatangan Orang Kompeten: 'ang Mengeharang MaK	th tugas setelah dibe UAN PENGUJIAN onka) seraktaan Orang Kor ngkah kasulamatu lakan (vi) ng Kompeten telah ggalkan (vi) jika berkaitan a (<i>Earth Qy</i>) elamat, dikanet, diletak soti dikandang njian solamat untuk	n speri di kaitan is & dimulakan.
MANA RADAS HORAS (MEGAN MEGAN (Terangkan dengan TEPAT) (Terangkan dengan TEPAT) JENIS KERIA YANG HENDAK D ENGANK (Terangkan dengan TEPAT) BAHAGIAN ''B'' NE' ORANO KOMPETER (ANN MEDERICA NG ORANO KOMPETER (ANN MEDERICA Syn mangaku bahava salu (ANN MEDERICA MEDIALANKAN (Semua punca bekalan) DIMATIKAN DIASINGKAN (semua punca bekalan) DIBUKTIKAN MATI DIGATAN: SEMUA BAHAGIAN LAIN HEP Saya mangaku bahava samaa langkah kasalama samat. Sila tandakan (v). KENALPASTI BAHAYA DAN RISIKO. Nyatakan (Rajuk Langiran 1 sakiranya ada): LANGKAH KAWALAN BAGI BAHAYA DA a) Langkah Kawalan Sein Dari B(): (Rajuk Lampiran 1 sekiranya ada) b) Kelengkapan Perlindungan Diri (Lengkap)	AN LANGKAH KAWALAN KESELAMATAN EKAN PARC HIDROKATAN MOMELAN BARAWA ORANO KOMPETIN YANO PERAKUAN KERCOMPETINAN YANO DICEL HARAWA ORANO KOMPETIN YANO PERAKUAN KERCOMPETINAN YANO DICEL HARAWA ORANO KOMPETIN YANO DIBUMIKAN DIBUMIKAN DIHADANGKAN DIHADANGKAN DIHADANGKAN DIHADANGKAN NOTIS "AWAS" NDAKLAH DIANGGAP BERBAHAYA atan seperti berikut telah dipatuhi uutuk memastikan karja yang dijalankan adalah AN RISIKO: Dipakai Oleh Orang Bekerja)	***Penggani atau pekrija karang juga denggan jelas mengena juga dengan jelas mengena juga dengan juga mengena karang dengan BARACIAN #2# Dengan ini saya mengaku, bahawa kerja-ke samaarara dan Tandakan (%): 1. Semua orang di bawah jagaan telah kehar 4 2. Tiada apa-opa alat tertinggal 3. Pembantian tambahan delah ditanggalkan. (%) jika 5. Kunci NSL tambahan ditanggalkan. (%) jika Tandatangan Orang Kompeten:	di bawah kawalan orang a bang kompeten baru mengu ya sang kompeten baru mengu (Sakiranya n arja diberhantikan ari tempat kerjanya. (1) jika berkaitan a berkaitan a berkaitan	kompeten dibenarkan mengambil al ambil alih kerja. TENTARA KERJA BAGI TUJ melihatkan gambumian utama dib bangan ini taya mangotahkan pem senjalmkan karja dan langkah- yanya telah disempurtakan. Taad Semua orang di bawah jagan Osar keluar dari skop kerjaaya Tiada apa-apa alat tertinggal Pembumian tambahan ditanggalkas Pembumian tambahan ditanggalkas Pembumian tambahan ditanggalkas Pembumian Utama sahaja di baka Lokai penggian disakian semula s imatikan ditasingkan sama s imatikan ditasingkan sama s aya menggulan bahawa kecija pangu 'andatangan Orang Kompeten: 'ang Mengebaarkan PMK	Ih nugas setelah diber UAN PENGUJIAN mula) seraknan Orang Kos mughah kosolamatu akan (4)- ng Kompeten telah ggalkan (4) jika berka n (4) jika berkaitan a (<i>Earth Off</i>) dikanet, diletak soti dikadang njian solamat untuk	ri kefalanses N mpeten yang m seperti di sakan is &



PERMIT TO WORK (PTW)

 Longon ini sava menearci, canava serva serva penerinan tecas 	Descent initiates concerning worked by books has don't been been to
sizp dijalankan oleh penguji.	Dengan ini taya mengaku, setulai langkah-iangkah keselamatu seperti di bawah telah disempurnakan, dan kerja boleh dijalankan Tandalaan (ψ):
 Perkara di mangan Bahagian A isitu (a), (b), (c) dan (d) telah DIBUMIKAN dan DIKUNCI kembali kepada kedudukan seperti 	1 Perchantics Direct courses
yang dinyatakan serta kerja boleh ditenaskan.	2 Pembumian Tambahan dipasang semula. (\b) jika berkaitan
	3. Kanci NSL tambahan telah dipasang semula. (v) jika berkaitan
Tandatangan Orang Kompeten: Yang Mengeluarkan PMK	Tandatangan Orang Kompeten: Yang Menjalankan Kerja
Tarikh serah: Masa (jam) serah:	Tarildı terima: Masa (jam) terima:
BAHAGIAN "G"	PERAKUAN KERJA SELESAI
Dengan ini saya mengaku bahawa: Tandakan (V);	
bekarja pada pepatangan ' kawasan yang dinyatahan. Tiada apa-apa PERALATAN yang tertinggal di pepasangan. Semua PEMBUMIAN TAMBAHAN yang disambungkan ol Semua KUNCI NSL tambahan telah ditanggalkan (v) jika b	ah siya talu usunggolkan dituu stan. (v) jika berkaitan ert
(Tandatangan Orang Kompeten Yang Menjalankan kerja)	
No. Perskaat	
No. Peraknan	
No. Peraknas	YERAKUAN PEMBATALAN
No. Perakuan	YERAKUAN PEMBATALAN
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No. Perakana:	PÉRAKUAN PEMBATALAN aitan aya telah ditanggalkan dari sistem. (v) jika berkaitan n telah diberi ingatan bahawa tidak selamat lagi untuk bekerja
Na. Perakaan	PERAKUAN PEMBATALAN Han aya telah ditanggalkan dari sistem. (V) jika berkaitan n telah diberi ingatan bahawa tidak selamat lagi untuk bekerja
No. Perakaas Tarikå: Mass (jam): BAHACIAN SH" Dengen ini søya mengaku bahawa: Tandakan (V): Semua KUNCI NSL tambahan telah (Sansa (V): Semua PEMBUMIAN TAMBAHAN yon disanson och s Tiada apa-apa PERALATAN enga terting mengar keluar da pada pepasangan. Semua ORANG di bawa ugaan sambala urredar keluar da pada pepasangan / kawa ugaan ya kawa ug	PERAKUAN PEMBATALAN Han aya telah ditanggalkan dari sistem. (V) jika berkaitan n telah diberi ingatan bahawa tidak selamat lagi untuk bekerja
No. Perakman Tarikå: Mass (jam): BATFACEFAN #F!* Dengen ini søya mengaku bahawa: Tandakan (V): Semua KUNCI NSL tambahan telah (Status (V): Semua KUNCI NSL tambahan telah (Status (V): Semua PEMBUMIAN TAMBAHAN yon distance) oleh s Tiada apa-apa PERALATAN eng tertiin, non pepasangan. Semua ORANG di bawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan / kawa ingaan sambala urreder keluar da pada pepasangan (Tantatangan Orang Kompeten Melloutarkan PMK) No. Penakuan:	PERAKUAN PEMBATALAN Han aya telah ditanggalkan dari sistem. (V) jika berkaitan n telah diberi ingatan bahawa tidak selamat lagi untuk bekerja

Orang Di Bawah Kawalan merupakan orang yang mempunyai pengetahuan dan kemahiran berkenaan perkara berikut:-

· Mengenal pasti bahaya di tempat kerja

Keperluan PMK bagi kerja berisiko tinggi

Tindakan semasa kecemasan

Keperluan pertukaran sylf

Langkah kawalan keselamatan sebelum memulakan kerja

Butiran terperinci berkenaan dokumen yang terlibat (contoh: lukisan skematik)

· Komunikasi di antara pasukan (contoh: penggunaan bahasa yang boleh difahami)

PILIHAN HAZARD DAN LANGKAH KAWALAN (Sila pilih HAZARD dan LANGKAH KAWALAN untuk diisikan di ruangan yang berkaitan di dalam PMK)

Kod HAZARD	Jenis Hazard	Kod Langkah Kawalan	Langkah Kawalan
A1	Minyak Alatubah / Bahan Bakar / Bahan Kimia	Concerning of the	
AL1	1. Tumpah	B1.1	Memakai KPD termasuk memakai sarung tangan getah
A1.2	ii. Bocor	81.2	Memakai KPD termasuk memakai sarung tangan getah
A2	Gas Merbahaya (SF6 / Co2 / Pyrogen / FM200)	B2	Semak petunjuk gas. Hentikan kerja jika penunjuk merah.
A3	Elektrik (Renjatan / Kejutan / Percikan / Arca)		
A3.1	1. Elektrik	83.1	Permit Menjalankan Kerja (PMK)
A3.2	E. Kerja Tanpa Permit Menjalankan Kerja (PMK)	B3.2	Permit Khas
A3.3	ii. Pepasangan SAVR	B3.3	PMK / Per Khas / Rut Prosedur Kerja Talian Hidup
A4	Bunyi Bising	B4	Memal .PD termasuk alat pendengaran (ear plug)
A5	Gelap	85	Tamb. You' ian
A6	Cuaca Buruk (Hujan Lebat / Kilat / Ribut)		
A6.1	L SAVR / SAVT	B6.1	Maklum kop Trav Empeten Kontraktor jika terdapat petir, entikan kerja s. erta dan maklumkan Orang Kompeten.
A6.2	E. Pencawang / PPU / SSU / Kabel	B6.2	lum kepade Orang Kompeten Kontraktor jika terdapat petir, her ker ra-merta dan maklumkan Orang Kompeten.
A7	Tangga Tidak Plawai / Galah aluminium	7	Diler. erja
AB	Tapak Kerja Lembut / Tak Rata / Berair		
A8.1	L Tenem Tiang	1	Kerja menggunakan wagon
A8.2	E. Kabel		Pasak kayu menahan tanah
A9	Laluintas	BD	Pengurusan Traffik
A10	Binatang	100	
A10.1	Anjing / Monyet / Lain-lain	N 1	Bawa batu / kayu dan hubungi Jabatan Perkhidmatan Veterinar
A10.2	Harimau / Gajah / Lain-lain	Bh.	Jangan mula kerja. Hubungi Jabatan Perlindungan Hidupan Liar S Taman Negara (Perhilitan)
A11	Laluan ke Pepasangan Terhalang	811	Alihkan berhati-hati jika perlu.
A12	Permukaan Tidak Rata	812	Tandakan / Hadang Sementara (kon)
A13	Biological (Ular / Penyenga)	813	Jangan mula kerja dan hubungi BOMBA
A14	Tempat Tinggi (Tlang / Me	814	Gunakan tangga kayu. Ikat pada tiang & Safety Harnes / Tall pinggang keselamatan
A15	Loading / Unloading	B15	Semak Latch, tail lamp, PMA, SWL, Kedudukan Jentera / Kenderaan / Pekeria.
A16	Bocoran Miny (Lantai Licin	816	Asingkan / Bersihkan / Cuci
A17	Tiens Reput /	817	Cucuk dengan alat keras dan talam
A18	Benda Tajam / Sec. of / Det Habuk	818	Bersiltikan / Asingkan
A19	Ruang Terkurung'	819	Permit Ruang Terkurung , Pekerja Kompeten (Authorised Gas Tester)
A20	Ergonomik	820	Pastikan kedudukan badan yang betul (posture)
A21	Trench / Main Hole / Luang / Longkang / Parit	821	Tutup Sementara, Tandakan dengan Warning Tape.
A22	Tanah / Tebing Runtuh	B22	Pasak Kayu (Shoring)
A23	Orang Ganas / Gengster / Samsing	823	Hubungi polis / polis bantuan
A24	Barang Terjatuh	824	Guna Tali. Awasi pekerja di bawah. Pakai KPD.
A25	Penggunaan Perancah / Scaffholding	6	
A25.1	i. Pemasangan / Buka	B25.1	Pengawasan oleh kompeten Scaffholder.
A25.2	ii. Pelantar Perancah / Scaffholding Tidak Piawai	B25.2	Jangan mula kerja
A26	Loading / Unloading / Jentera Berat	826	Semak Latch, tali lamp, PMA, SWL, Kedudukan Jentera Kenderaan / Pekerja.
A27	Pepasangan Elektrik Terdedah	827	Tutup sementara. Hadang dengan danger tape / kon.
A28	Asap / Wasap / Jerebu	828	Pakai penutup hidung dan mulut.
A29	Laluan Tangga ke Bangunan		
A29.1	i. Pernegang (Hand Railing)	829.1	Gunakan Pemegang (hand railling) semasa menggunakan tangga
A29.2	E. Tanpa Pemegang (No Hand Railing)	829.2	Tandakan sementara dengan kon dan turun dengan perlahan.
A30	Menggunakan Peralatan Penukul / Tajam / Gergaji / Pisau	830	Serung tangan keselamatan dan pastikan kaedah pemotongan.
A31	Lebihan Kebel / Bahan / Wayar / Skru / Besl / Lain-lain	831	Tutup sementara dan hadang dengan Warning Tape / Kon

Lampiran 1



COMPLAINT MANAGEMENT FOR CONSUMERS





ELECTRICITY REGULATIONS (ER) 1994

REGULATION 36, ER 1994

- □ Protection against earth leakage current
 - ✓ 10mA: Wet area
 - ✓ 30mA: Hand-held equipment, apparatus or appliance
 - ✓ 100mA: any final circuit in an installation.
- Residual Current Device (RCD) focused on: -
 - ✓ Basic protection (protection against direct contact);
 - \checkmark Fault protection (protection against indirect contact); and
 - ✓ Protection against fire.

REGULATION 35, ER 1994

- □ Method of earthing
 - A complete system of earthing conductors made of an acceptable material & having & adequate cross-sectional area with one or more earth plates, pipes or rods shall be provided.
 - ✓ Such system of earthing conductors shall be connected to the earth and effectively maintained





ELECTRICITY SUPPLY ACT (ESA) 1990 [447 ACT]

SECTION 9, ESA 1990

Licence required for use of installations: terms, conditions and contents of licences

□ No person, other than a supply authority, shall

- a) Use, work, or operate or permit to be used, worked or operated any installation; or
- b) Supply to or for the use of any other person electricity from any installation

SECTION 33, ESA 1990

Serious accidents to be reported and investigated by the Commission

- Any accident or fire causing or resulting in loss of life or hurt to any person or serious damage to property has occurred in connection with any installation or electrical plan or equipment
- □ Shall report the accident or fire to the Commission by the quickest means available

SECTION 33B(2), ESA 1990

Responsibilities of non-domestic electrical installation owner or operator, licensee for retail and licensee for a private installation for safety

- □ Shall comply with the non-domestic electrical installation safety code & safety management programme, or in the absence of such code or programme, with standards and prudent industry practices as may be determined by the Commission
- □ Shall prepare a safety management programme within such time as may be directed by the Commission
- □ The safety management programme shall provide for matters as may be prescribed in the non-domestic electrical installation safety code, or in the absence of such code, with standards and prudent industry practices as may be determined by the Commission



SAFETY AUDIT: ACTION FOR IMPROVEMENT (Regulation 38:Notice)

BEFORE

- No Policy
- Simple Permit to Work (PTW)
- No Standard Notice



AFTER

- A Proper Policy
- Ammendment on PTW
- Displaying Standard Notice





BACK

SAFETY AUDIT: CHECKLIST

	ST(IP/JKE/PE)/01/03/1 (amd.1-2017)				NO.	DESCRIPTION	Need to start	Need to improve	Effective
	Suruhanjaya Tenaga Energy Commission 3. PLANNING AND IMPLEMENTATION								
					3.1	Planning and Implementation:			
	Electrical Safety Management System Audit Checklist Name of Licensee/Installation: Address of Licensee/Installation:				The licensee's/installation's electrical safety management plan/programme supports: a. compliance with the Electricity Supply Act 1990, Regulations, Codes and Guidelines;				
	Competent Person/Manager In-Charge:					 b. implementation of all elements of the electrical safety management system; c. continual improvement in electrical safety performance. The plan/programme provides details on programmes and activities to be implemented and the responsible personnel/units, budgets and targets in efforts to eliminate, minimise and control electrical risks at the installation. 			
NO.	DESCRIPTION	Need to start	Need to improve	Effective	4.	RISK CONTROL MEASURES			
1.	POLICY, PLAN AND PROGRAMME				4.1	Identification, Evaluation and Control of risks:			
1.1	Electrical Safety Policy, Plan/Programme: The licensee/installation has a written policy, plan/programme to ensure electrical safety. The policy, signed by the top management, reflects management commitment to implement the plan/programme for the protection of employees and others who may be affected by the electrical installation. The objectives, responsibilities and arrangements for electrical safety management are spelled out.					Hazards and risks to workers and public are identified, evaluated and controlled on an ongoing basis. ('Hazard' is a potential source of harm or adverse health effect on a person or persons. 'Risk' is the likelihood that a person may be harmed or suffers adverse health effects if exposed to a hazard). Implementation of preventive and corrective control measures for hazards/risks are done according to the hierarchy of risk control as follows:			
2.	Documentation: Documents related to the electrical safety management system of the licensee/installation are maintained and readily accessible to employees and contractors. The documents contain information on electrical safety policy, plan, programme, risks identification and control measures, legal and regulatory requirements, and other relevant internal guidelines. ORGANISING					 a. elimination (completely eliminate the hazard/risk at source); b. substitution (substitute the hazardous activity, process or equipment with a less hazardous one); c. engineering controls (isolate the hazard from people who could be harmed); d. administrative controls (change the way people work or prevent people's exposure to hazards/risks such as by implementing a permit-to-work system) e. personal protective equipment (PPE) (provide PPE to cover and protect an individual pages from heave hea			
2.1	Responsibility:					until more effective control measures are provided. In most cases, a combination			
	The top management of the licensee/installation demonstrates leadership for electrical safety programmes and activities, and clearly assigns duties responsibility for electrical safety management to line management.				4.2	of other control measures and PPE can effectively control the risks) Permit-To-Work System:			
						A written Permit-To-Work (PTW) system with suitable lock-out/tag-out procedures			
2.2	Competence: Licensee/installation workers and contractors who are exposed to electrical risks are given adequate training and information on electrical safety. The company complies with the requirements under the Electricity Supply Act 1990 and Regulations pertaining to the need to engage registered electrical competent persons and contractors to perform electrical works according to their categories of competency.					is effectively implemented for high risk electrical works that involves working with live equipment and systems. (A 'permit-to-work' is a formal, written, safe system of work to control potentially hazardous activities. It aims to remove both unsafe conditions and human error by imposing a formal system which requires formal action. The permit details the work to be done and the precautions to be taken. It should state safety precautions to be taken before work can start and the authorising			
2.3	Communication:					person should only sign and date the permit when he is satisfied that all			
	There is a communication programme to disseminate information on electrical risks and control measures to employees and others who may be affected by the risks. Warning signs are used to identify, warn and advise on electrical risks. Suitable administrative arrangements are in place for management to receive and follow up on suggestions and complaints on electrical safety matters.	_				precautionary measures have been taken. It should only be in place for a limited duration, be clearly dated and with specific conditions attached. Permits should be issued, checked and signed off as being completed by someone competent to do so, and who is not involved in undertaking the work)			

ST(IP/JKE/PE)/01/03/1 (amd.1-2017)

BACK

SAFETY AUDIT: CHECKLIST

ST(IP/JKE/PE)/01/03/1 (amd.1-2017)

ST(IP/JKE/PE)/0	01/03/1 (an	nd.1-2017)		7.1	Licence (Ele
DESCRIPTION	Need to start	Need to improve	Effective	7.2	valid licence Registration Certificate of
Emergency Preparedness: A written emergency preparedness plan for the licensee/installation is available and made known to employees and regularly rehearsed. The Plan details how the licensee/installation and its employees deal with or manage electrical emergencies. It spells out preparedness, response and recovery activities and clarifies emergency management roles and responsibilities, strategies and procedures to manage electrical emergencies at the installation.				7.3 7.4 7.5	Competent competency for the electr Safety Mana Safety Mana Supply Act 1 Safety Mana satisfactory S
PERFORMANCE EVALUATION					the Electric
Investigation of Electrical-related Accidents and Incidents Investigations of the direct causes and indirect causes of electrical-related accidents and near-miss incidents are carried out by competent persons, with the appropriate participation of management and workers. Contributing factors arising out of any shortcomings or failures in the electrical safety management system are identified and documented. Recommendations for improvement are communicated to the top management for follow-up corrective actions.				7.6	OVERALL E
				0.	UVERALL E
A system for licensee's/installation's management to regularly monitor electrical safety performance are established. Records and statistics of electrical accidents and near-miss incidents are kept and analysed, and root causes of accidents and incidents are addressed via short-term and long-term measures. Periodic internal audits of each of the elements of the electrical safety management system are carried out to identify the strengths and weaknesses of the system and to put in place improvement measures. Management reviews are conducted periodically to evaluate the overall strategy of the electrical safety management system				9.	REMARKS (Areas for in
ACTION FOR IMPROVEMENT					
Preventive and Corrective Action: Arrangements for preventive and corrective actions are established and updated based on the outcome of the ongoing electrical safety performance monitoring and review programme. When the evaluation of the electrical safety management system shows that preventive and protective measures are ineffective, corrective measures are addressed according to the hierarchy of risk control (refer 4.1) in a timely manner. Directives and notices issued by the Energy Commission are acted upon promptly and effectively.				Signa Namo Orga Date	nture of Respon e of Responsible nisation: of Audit
Continual Improvement:				NOT	
Programmes and procedures are established for the continual improvement of the electrical safety management system. These take into account the results of risk assessments, performance measurements, investigations, audits, and changes in Electricity Supply Act 1990, Regulations, Codes and Guidelines. technical or administrative changes in the electrical installation, and the results of electrical safety protection and promotion programmes. The electrical safety procedures and performance of the electrical installation are benchmarked with other similar organisations to improve electrical safety performance.				NOT The a infras pract <u>GR</u> Nee Nee Effe	E: audit process sh structure or insta ice: <u>ADING</u> d to start : d to improve : ctive :
	DESCRIPTION Emergency Preparedness: A written emergency preparedness plan for the licensee/installation is available and made known to employees and regularly rehearsed. The Plan details how the licensee/installation and its employees deal with or manage electrical emergencies. It spells out preparedness, response and recovery activities and clarifies emergency management roles and responsibilities, strategies and procedures to manage electrical emergencies at the installation. PERFORMANCE EVALUATION Investigation of Electrical-related Accidents and Incidents Investigations of the direct causes and indirect causes of electrical-related accidents and near-miss incidents are carried out by competent persons, with the appropriate participation of management and workers. Contributing factors arising out of any shortcomings or failures in the electrical safety management system are identified and documented. Recommendations for improvement are communicated to the top management for follow-up corrective actions. Performance Monitoring and review: A system for licensee's/installation's management to regularly monitor electrical safety performance are established. Records and statistics of electrical accidents and near-miss incidents are kept and analysed, and root causes of accidents and incidents are addressed via short-term and long-term measures. Periodic internal audits of each of the elements of the electrical safety management system ACTION FOR IMPROVEMENT Preventive and corrective actions are established and updated based on the outcome of the ongoing electrical safety performance monitoring and review programme. When the evaluation of the electrical safety performance monitoring and review and notices issued by the Energy Commission are acted upon promptly and effectively. Continual Improvement: Programmes and procedures are established for the continual improvement of the electrical safety management system, and to put the results of risk assessments, performance measurements, investigations, audits	DESCRIPTION Need to start Emergency Preparedness:	STUP/IR/PE/U0/03/1 (amol-2007) DESCRIPTION Need to start Need to improve Emergency Preparedness: Improve Improve A written emergency preparedness plan for the licensee/installation is available and made known to employces and regularly rehearsed. The Plan details how the licensee/installation and its employces deal with or manage electrical emergencies. It spells out preparedness, response and recovery activities and clarifies emergency management roles and responsibilities, strategies and procedures to manage electrical emergencies at the installation. Improve PERFORMANCE EVALUATION Improve Improve Improve Investigation of Electrical-related Accidents and Incidents Improve Improve Investigations of the direct causes and indirect causes of electrical-related accidents and near-miss incidents are carried out by competent persons, with the appropriate participation of management and workers. Contributing factors arising out of any shortcomings or failures in the electrical safety management system are identified and documented. Recommendations for improvement are communicated to the top management for follow-up corrective actions. Improve Performance Monitoring and review: A system for licensee'/installation's management system are carried out to identify the strengths and weakness of the system and to put in place improvement measures. Management eviews are conducted periodically to evaluate the overall strategy of the electrical safety management system Improvement measures dacessed according to the incracivy of risk control	DESCRIPTION Need to start Need to improve Effective Emergency Preparedness:	DESCRIPTION Need to start Need to improve Effective 7.2 7.3 A written emergency preparedness plan for the licensec/installation is available and made known to employees and regularly rehearsed. The Plan details how the licensec/installation and its employees deal with or manage electrical emergences. It spells out preparedness, response and recovery activities and clarifies emergency management roles. and responsibilities, strategies and procedures to manage electrical emergencies at the installation. 7.4 PERFORMANCE EVALUATION Imagement roles and responsibilities, strategies and procedures to manage electrical-related Accidents and Incidents Imagement roles Investigations of the direct causes and indirect causes of electrical-related accidents and near-miss incidents are carried out by competent persons, with the appropriate participation of management and workers. Contributing factors arising out of any shortcomings or fultures in the electrical asfety management system are identified and documented. Records and statistics of electrical afety performance are established. Records and statistics of electrical afety performance are established. Records and statistics of electrical afety performance are established. Records and statistics of electrical afety of the electrical safety management system are carried out to identify the strengths and waknesses of the system and to put in place improvement measures. Management reviews are conducted periodically to evaluate the overall strategy of the electrical safety management system are addressed according to the hierarchy of risk control (refer 4.1) in a timely manner. Directives and notices issued by the Energy Commission are acted upon promphy and shows that preventive and protective measures are

7.	STATUS OF COMPLIANCE	1000	210	REMARKS
	STATUS OF COMPLIANCE	YES	NO	
7.1	Licence (Electricity supply activity at the installation has a			
	valid licence)			
7.2	Registration (If required, the installation has a valid			
	Certificate of Registration)			
7.3	Competent Persons (The company complies with the			
	competency requirements as stipulated in the Regulations			
	for the electrical works carried out at the installation)			
7.4	Safety Management Plan (The licensee has a satisfactory			
	Safety Management Plan as required by the Electricity			
	Supply Act 1990 and Electrical Infrastructure Safety Code)			
7.5	Safety Management Programme (The installation has a			
	satisfactory Safety Management Programme as required by			
	the Electricity Supply Act 1990 and Non-Domestic			
	Electrical Installation Safety Code)			
7.6	Other related requirements under the Electricity			
	Supply Act 1990 and Regulations, Codes, Guidelines			
	and Directives			

		Need to start	Need to improve	Effective
8.	OVERALL EVALUATION			

9.	REMARKS (Areas for improvement, status of compliance with legal requirements, and follow-up actions to be taken):

sible Officer :

Officer

hould include the review of relevant documents, random interviewing of personnel and inspection of allation. Below are the standards for grading the performance of the organization for each of the good

DESCRIPTION

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eed to start	:	The good practice described is not yet in place or if it is in place, it is not implemented.
eed to improve	:	The good practice is partially in place or partially implemented. There is room for improvement.
ffective	:	The good practice is in place and effectively implemented.

