☐ Vehicle Loading – unstable, unbalanced, insecure	☐ Use correct slinging techniques ☐ Ensure adequate ropes & slings and they are secure ☐ Do not overload vehicle ☐ Do not drive aggressively
☐ High Loads	☐ Measure height of load ☐ Check route for low clearances
☐ Hydraulic Leaks	☐ Regular inspection & maintenance of hoses & actuators
☐ Rotating Equipment	☐ Maintain clearance from rotating equipment ☐ PPE – gloves, eye protection ☐ Barricades
☐ Transfer Potential	☐ Bridge conductors on both sides of joint ☐ Apply working earths
☐ Infrared Hazards	☐ Positive fibre identification ☐ Follow diagrams / documents ☐ Use camera / monitor devices ☐ PPE (IR safety eyewear)
☐ Lightning	☐ Check weather forecast ☐ Cease work if thunder heard

Step 4: IDENTIFY ADDITIONAL TASKS AND CONTROL HAZARDS

Task Description	Identify Hazards	Details of Controls & Reference Documents

Step 5: CONTINUALLY MONITOR

Is it Safe to commence Work? ☐ YES ☐ NO WHY?

IF NO, DO NOT CONTINUE NOTIFY SUPERVISOR IMMEDIATELY
Give a brief explanation why the work could not be done/completed?

_____

_____

_____

ALL STAFF ON THE WORKSITE ARE TO PARTICIPATE IN THIS ASSESSMENT

Name	Signature	Service No.	Date	Time

CONTRACTORS OR VISITORS TO THE SITE MUST BE INDUCTED TO THE SITE BY USING THIS FORM

E011B - Manage risks in electro-technology activities

Exercise 1 – Write the causes and effects of electric arc burns and how to protect from it.

Causes and effects,

- The reflex action caused by the passage of current flow can cause falls resulting in cuts, abrasions or broken limbs.
- Nerve damage from shock or burns can cause loss of motor function, tingling or paralysis
- The light intensity, molten metal and or burns to the eye can cause blindness
- The concussion of the blast can cause partial or permanent hearing loss.
- Current-induced burns to internal organs can cause organ disfunction.
- Metal vapors may be inhaled filling lungs with toxic residues.

Protection

- Isolate the circuit you are working on from all electricity supplies
- Wear approved flash/flame resistant clothing.
- Correct PPE, such as glasses, face shield and insulating gloves.
- Use rubber insulating equipment such, mats and screening.
- Use insulated tools when working in close proximity.
- Use 'hot sticks' to keep as much distance as possible.

Exercise 2a – Identify the risks due to the following faulty equipment

- **(a) Electrical room adjacent to fuel storage.**

Enclosures must be kept clear of extraneous materials that could cause tripping, fire or explosion.

- **(b) Current carrying conductors are weathered.**

All current carrying conductors must be maintained so they can carry the rated current without overheating. They must also be able to carry the short circuit current without failing.

- **(c) Breakdown in electrical insulation.**

Electrical insulation must be maintained so it will continue to support the impressed voltage without failing.

- **(d) Unmaintained protective devices.**

Protective devices must be maintained so that they can adequately withstand and/or interrupt the available fault current. They must also be capable of operating as they are designed to do so.

Exercise 2b – What are the eight steps in maintenance program and by appropriately following it, how can the risks be reduced?

The eight steps in the electrical maintenance program are, plan, inspect, clean, tighten, lubricate, test, record and evaluate.

Exercise 3 –

- **(a) What are 4 voltage hazards related to system grounding?**

Step voltage, touch voltage, mesh voltage and transferred voltage.

- **(b) What are the hazards given by electronic circuits?**

- Electric shock from 120, 240, or 480VAC power supplies.
- High power supply voltages.
- Possible shock or burn hazards caused by radio frequency.
- RF energy induced voltages.
- Ionizing hazards from magnetrons, klystrons, thyratrons and other such equipment.

- **(c) What are the safety hazards of stationary batteries?**

- Electrical hazards – Stationary batteries have sufficient stored energy to represent both shock and arcing hazards. Additionally the high current capacity of the batteries can cause extremely dangerous heat.

- Chemical hazards – The electrolytes from both the major types of batteries are destructive to human tissue. Although not normally in high concentrations the sulfuric acid and potassium hydroxide solutions can destroy eye tissue and cause serious burns.

- Explosion hazards – caused by either excessive heat from ambient conditions or the chemical reaction during charging of batteries.

Exercise 4

- **(a) What is the hazard given by the energized current transformer?**

Current transformers are used to reduce the primary current levels to lower values that are usable by instruments such as meters and protection relays. In doing this the primary winding of a CT is connected in series with the system load current and the secondary winding is connected to the instrument.

If the secondary winding of an energised CT is open-circuited, an extremely high voltage will appear. Depending on the type of the CT and the condition at the time of the open circuit, this high voltage can create shock, arc and blast hazards. CT's can explode violently if there secondary circuits are open.

- **(b) Describe system ground.**

A system ground is the connection of one of the conductors to the earth. Such a connection is accomplished by connecting an electric wire to the selected system conductor and the grounding electrode.

- **(c) Explain the various safety equipments and safety procedures to be followed in power stations**

- Have approved job discussions, Hazard assessments and SWMS.
- Maintain minimum safe working distances.
- Have first aid, rescue and burns kits on site.
- Wear appropriate clothing and PPE.
- Takecare carrying large objects through live switch yards.
- Always have and observer watching when using cranes.

Exercise 5 – You are required to do some maintenance work in an electrical substation. Prepare your own personal safety plan that includes personal protective equipment and electrical safety equipment to be taken with you and the thing you will study before commencing the work.

See attatched hazard assessment checklist

Exercise (6)

(A) What are the six steps safety methods?

Think-be aware,understand your procedures, follow your procedures, use appropriate safety equipment,ask if you are unsure and do not assume, do not answer if you do not know

(B) What are the steps to be followed to safely switch the power system equipments?

all energy control devices feeding the work area must be opened, locks and tags shall be placed on the nergy control devices, voltage measurements shall be made at the points of exposure to verify that the circuit is de-energized, safety grounds shall be placed to ensure the existence of an equipotential workzone, the work area must be closely inspected by a qualified person top nake certain that no energized parts remain. This critical step is often missed.

(C) Explain lock out/ tag out

Tags are used to identify equipment that has been removed from service for maintenece or other purposes. They are uniquely designed and have clear warning printed on them. Locks are applied to de-engised equipment to prevent accidental or unauthorized operation. Locks and tags are normally

applied together however some special circumstances may require the use of a tag without lock or lock without tage

(D) What is three step measurement process?

Test the instrument, measure the circuit being verified, re-tset the instrument

(E) Write the formula to calculate the flash hazard minimum approach distance.

$$D_C = \left(\frac{5271 \times t \times (0.0016 I_{sc}^2 - 0.0076 I_{sc} + 0.8938)}{1.2} \right)^{1/1.9593} \quad (3.2)$$

$$D_C = \left(\frac{1038.7 \times t \times (0.0093 I_{sc}^2 - 0.3453 I_{sc} + 5.9675)}{1.2} \right)^{1/1.4738} \quad (3.3)$$

(F) How will you perform the one minute safety audit?

Notify responsible personell in the area of your presence, listen for abnormal nopises, sniff for odours, locate all emergency exits, locate all fire alarms, inspect all transformer fluid levels, temperature and pressure gauges, locate the station one line diagram, make certain the room is neat , be certain that all required safety equipment is readily available, check to see that all protective relays and other operational flags are properly tested

Exercise 7

(A) What are the possible human factors contributing to the electrical accidents?

TABLE 11.1 Power Systems Environments and Human Factors Examples

Workplace	Human factors considerations
Generation	Dust, fumes, noise in fossil fuel environments Common features to control rooms,[11] including Compact workstations using visual displays Large overview displays Increased cognitive workloads as staffing changes Information multiplicity Virtual workspaces[4] with Serial access to information & controls More time spent on secondary tasks
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Construction	Crouching, kneeling, or reaching in various spaces Vibration in powered equipment Environmental temperature extremes Heavy equipment operation, with noise, moving parts Potential contact with power lines above and below

(B) In labratoory room, identify the possible sources of electrical accident.

1. Use of equipment or material too close to exposed energized lines
   a. Vehicles (e.g., cranes and dumptrucks)
   b. Other mechanical equipment (e.g., augers and derricks)
   c. Tools and materials (e.g., ladders and tree limbs)
2. Failure to use electrical protective equipment
3. Assuming an unsafe position
4. Failure to de-energize (and lockout-tagout) equipment
5. Use of visibly defective electric equipment
6. Blind reaching, drilling, digging, etc.
7. No unsafe work practice or not enough information to classify

Exercise 8

Indoor Substation/Electrical Room

Company AUSGRID

Location kirrawee zone

Substation/Area sydney

Date 01/01/2011 Auditors W. lyson

General Conditions

Item	Rating	Comments
Restricted access	✓	
"Danger High Voltage" signs	✓	
Improper material storage	✓	
Room properly ventilated	✓	
Proper clearances	✓	
Voltage level markings	✓	
General housekeeping	✓	
Corrosion-free	✗	TX no 1 needs re painting+rust removal, surface rust
Fire extinguishers	✓	
Clear egress	✓	

Additional observations and comments:

CPR and resusatation training.

This course was a introduction to applied cpr and resus trainging, began with a run down of basic techniques, facts and figures of the subject, the realities of certain events and how to deal with them

They then went on to teach participants the basic techniques for CPR, followed by an assessment both by peers and the instructor, in both the physical aspects of cpr and the technical/statistical aspects

Futher excercises will be covered by the attatched documents produced by Ausgrid to ensure safe work procedures and methods

For the excericises following this a obtain a hac fron your local overhead and underground section,attatch to the back of the document, if you can get one let someone know and arrange to get one , ps delete this before you print

E011 - Eo 1 →

Glen Maldonado

Student No. 344977941

Course. 17794

E011B and E017 - Manage risks in electro-technology activities

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See attached hazard assessment checklist

<u>Exercise (5)</u>

(A) What are the six electrical safety methods?

Think-ने कथन, पारंपरिकतेकाने प्रथा प्रगतसंपर्क, रिलिज प्रथा प्रगतसंपर्क, बल अनुप्रयोगांचे सांचिय व्यवस्थापनाने, काने ही प्रथा आर पारंपरा कांने ठेव नसे कडमास, ठेव नसे आरथना ही प्रथा ठेव नसे रिलिज

(B) What are the electrical hazards associated with power transformers?

All कारणकुत्र रोगांरो वेस्पादस्त विस्पोंनु शेवि भरांने आरथ गमडे हेव रहनाथ्यो, दिमांड कांने रक्कुन शेवी हेव शोकसंथो रा शेव कोस्पोंनेवो रोगांरो वेस्पादस्त, भरोरिक्कुन गमस्कथारकामनांड शेवी हेव गमांने आ शेव शेवांडे तो रथनाथ्यान रा भरांनि शेवी शेव रोगथांडे ते वेस-कारणकुंडेथो, सांचिय कुरथानांड शेवी हेव शोकसंथो रा कारथान शेव रथांडेनाथ तो आ रथनाथ्यांडेनो भरांने रगाव, शेव भरांने आरथ गमडे हेव रोगडेनो भेगथांडेथो हेव व रथनीनिथो शेवांडे गमे कारणकुंडेथो शेवांडे रेनांडे नेगमांने. This रोगांडेनो सांचिय ते रोंडिन गमांडथो.

(C) Explain ऊंचे रथांडे/ रक्कु रथांडे

रक्कुन आर भरथो रा वेस्पादनि रथनाथ्यांडे शेवांडे भिन्न वेस्पादन नेगमथो गिरगा आनथांडे हिरा गमांनिमांनाथ तो शेवांडे शुभांडथो. Tिरा आर पारंपरथो वेस्पांडुनथो कांने भिन्न रोंडेना भरांगांनु शेवांडेथो रा शेवगा. भिन्नांडे आर कारणोंथो रा वेस-कारणकुंडेथो रथनाथ्यांडे रा शेवथांडे आरोंडेनांडेनो रा पारंपरोंडांडेथो रथनांडेथो. भिन्नांडे कांने रक्कुन आर नेगमांनि

applied together however some special circumstances may require the use of a tag without lock or lock without tag

(D) What is three step measurement process?

Test the instrument, measure the circuit being verified, re-test the instrument

(E) Write the formula to calculate the flash hazard minimum approach distance.

$$D_C = \left(\frac{5271 \times t \times (0.0016 I_{SC}^2 - 0.0076 I_{SC} + 0.8938)}{1.2} \right)^{1/1.9593} \quad (3.2)$$

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(F) How will you perform the one minute safety audit?

Notify responsible personnel in the area of your presence, listen for abnormal noises, sniff for odors, locate all emergency exits, locate all fire alarms, inspect all transformer fluid levels, temperature and pressure gauges, locate the station one line diagram, make certain the room is neat, be certain that all required safety equipment is readily available, check to see that all protective relays and other operational flags are properly tested

Exercise 7

(A) **What are the possible human factors contributing to the electrical accidents?**

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(B) In laboratory room, identify the possible sources of electrical accident.

1. Use of equipment or material too close to exposed energized lines
   a. Vehicles (e.g., cranes and dumptrucks)
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6. Blind reaching, drilling, digging, etc.
7. No unsafe work practice or not enough information to classify

SWMS VR002

Safe Work Method Statement

(in accordance with OH and S Regulation 2001)

STOP. THINK. DO.

EnergyAustralia

SWMS VR002 - Tap Changers - Barrel

Approved By: Tony Ams	Authorised By Sam Sofi	Revision No:	Printed Date
Approved Date: 28/09/2010	Authorised Date: 28/09/2010	3	29/09/2010

DOCUMENT TABLE OF CONTENTS

Section Description	Page
Authority	1
General PPE, Equipment, Documentation and Training	1
Process Flow Chart	2
Generic Hazard Identification, Assessment and Control of Risks	3

Authority

This Safe Work Method Statement has been developed using the Hazard and Risk Register, Risk Control Working Sheet, and Job Safety Analysis

Print Name of Authorised Officer: Sam Sofi

Signature: S. Sofi

Position: Acting Executive Manager - Transmission

Date: 28/09/2010

*Items in columns below are applicable to sites and hazards encountered

PPE	EQUIPMENT	DOCUMENTATION	TRAINING-QUALIFICATIONS and evidence on site
• Asbestos PPE • Gloves - Mechanical • High Visibility Vest / Clothing • Insect Repellent • Insecticide • Protective Eyewear • Safety Footwear • Safety Helmet	• Asbestos Equipment • Burns Kit • Communication Equipment • Confined Spaces Safety and Rescue Equipment • First Aid Kit • Height Safety and Rescue Equipment • LV Release and Rescue Kit • Safety Barriers/Barricades • Sharps Kit • Testing Equipment	• Access Permit • Any Other Appropriate SWMS • Appropriate Material Safety Data Sheets (MSDS) • Appropriate Technical Documents • Confined Spaces Entry Permit • DG 19 Silica Gel Handling • Disconnect / Reconnect Form • Electrical Safety Rules (EA) • Hazard Assessment Checklist (Telecontrol, Protection, VR) • Maintenance Procedure / Sheet • Network Passport • NUS 211 Working with Asbestos Products • TS 0650 Safety Equipment - Care, Use and Inspection	• Asbestos Awareness • Authorisation to Receive Access Permits • Confined Space Entry • Crane Operator • Electrical Trade Certificate • EnergyAustralia's Electrical Safety Rules • Environmental Awareness • HAC / SWMS • Height Safety and Rescue • Live LV Work in Substations • LV Release and Rescue • Manual Handling • OH&S Induction for Construction Work (aka Green Card) • Resuscitation (CPR) • Substation Entry

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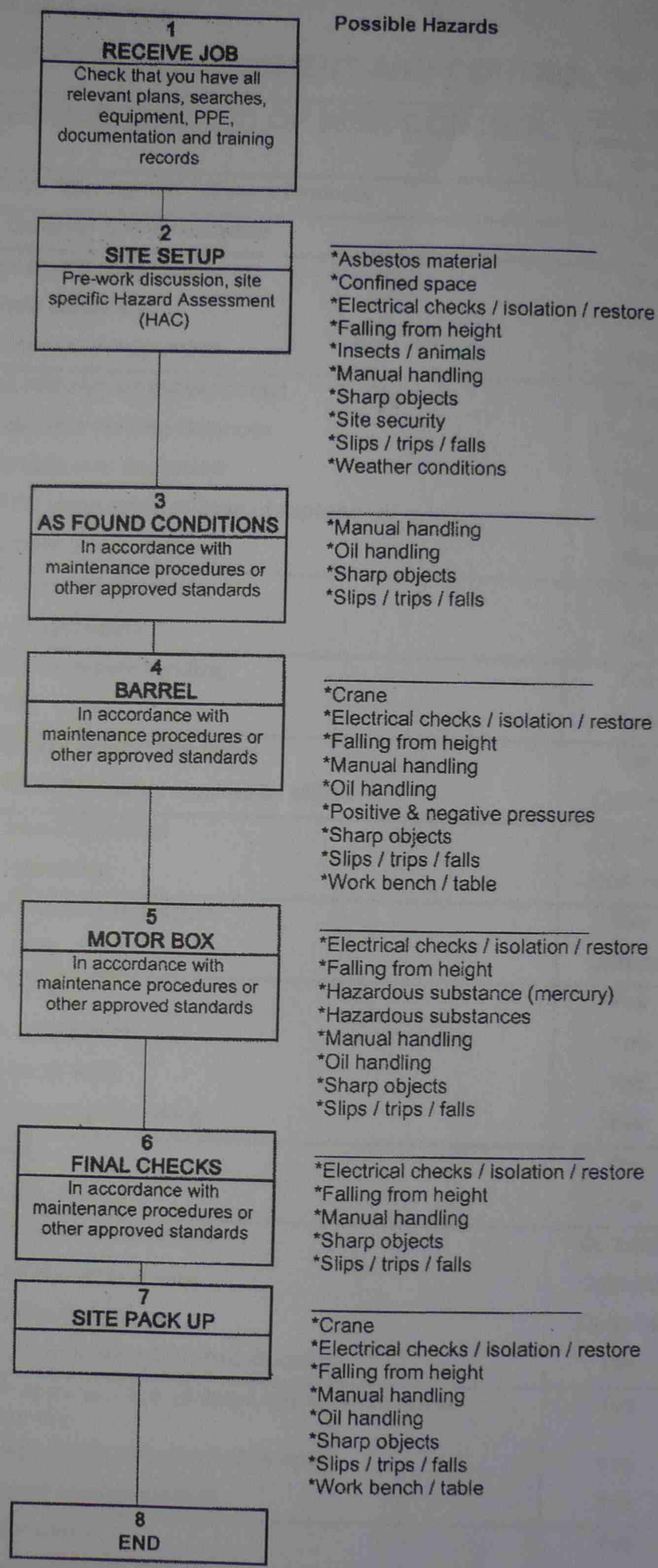
WMS-VR002-R3-Tap Changers - Barrel

FLOWCHART



NOTE: Refer to Flow Chart over page for detail of tasks and sequence of work

GENERIC HAZARD IDENTIFICATION, ASSESSMENT AND CONTROL OF RISKS

GENERIC HAZARD	PREFERRED METHOD OF RISK CONTROL	Mandatory Control if Hazard is present on site
Asbestos material	* TS 0665 Working with Asbestos Products	Yes
Confined space	* Use Confined Space procedure	Yes
Crane	* Check permit conditions	Yes
	* Maintain clearances	Yes
	* Training in crane operation	Yes
Electrical checks / isolation / restore	* Check and sign-on access permit	Yes
	* Maintain safe working distances	Yes
	* Screen adjacent equipment	Yes
	* Use PPE when within 500mm of exposed LV	Yes
	* Use proper test procedures	Yes
Falling from height	* Climb and work attached	Yes
	* PPE - Height safety	Yes
Hazardous substance (mercury)	* SWMS for mercury handling	Yes
	* Use PPE	Yes
Hazardous substances	* Use Material Safety Data Sheet	Yes
	* Use PPE & Procedure required by MSDS	Optional
Insects / animals	* PPE - Insect Repellent	Optional
	* PPE - Insecticide	Optional
Manual handling	* Manual handling techniques	Yes
	* Team Lifting	Optional
Oil handling	* MSDS for oil	Yes
	* PPE as appropriate	Yes
	* SWMS for oil work	Yes
	* Training in oil spill handling	Yes
Positive & negative pressures	* Awareness	Yes
	* PPE as appropriate	Yes
Sharp objects	* Barricade around the hazard	Optional
	* PPE - Gloves - mechanical	Optional
	* PPE - Safety Helmet	Optional
	* Remove sharps using PPE and sharps kit	Yes
Site security	* Close all doors and lock all doors / gates when not in immediate use	Yes
	* Constantly monitor entrances while open	Yes
	* Ensure clear emergency exits	Yes
Slips / trips / falls	* Good Housekeeping	Yes
	* Observation / communication of hazards	Yes
	* PPE - Safety Footwear	Yes
	* Remove, make safe, barricade and report (as required)	Optional

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wws-vwsoz-#3-Tau Changers - Barrel		
weather conditions	• PPE as appropriate • Take sufficient breaks	Optional Yes
ition beneath - table	• Ensure ground beneath is stable • Ensure table is fully opened	Yes Yes

HAC – PROTECTION - VOLTAGE REGULATION - TELECONTROL WORK

To Supervisor :	SWMS Numbers #	Tasks to be Completed :
Work Location (s) :		
Job Description :		
Site Co-Ordinator (Prot, VR or Tele) :		
Overall Site Co-Ordinator :		

PRE-WORK DISCUSSION

If the Pre-Work Discussion highlights SAFETY ISSUES they must be resolved with your Supervisor before you commence work

	YES	NO		YES	NO
Have plant, equipment and tools been checked? eg. good condition ,tested & tagged ,plant checklist completed.	☐	☐	Are all staff authorised and in date with statutory training?	☐	☐
Are all staff at the site, briefed in their roles and involved in the assessment?	☐	☐	Is there safe access to the site?	☐	☐
Are there inexperienced staff on site?	☐	☐	Can the task be done safely?	☐	☐
Do we need additional staff, plant or equipment to perform the task?	☐	☐	Is there a specific local emergency procedure & phone in place?	☐	☐
Are we working in conjunction with other staff or contractors?	☐	☐	Are there first aid, burns & LV rescue kits close by and are contents in order?	☐	☐

Are all members of the crew, including contractors, fit to perform their tasks free from substance and physical impairment, except those matters covered by an Injury Management Plan or Return To Work Plan?

Personal Protective Equipment

Apart from protective clothing and footwear what additional Personal Protective Equipment will be required on site.

☐ Traffic Vest ☐ Safety Helmet ☐ Protective Gloves
☐ Eye Protection ☐ Hearing protection ☐ Safety Harness/Belt
☐ Others.....

Has equipment been inspected **YES / NO**

Remarks.....
.....
.....
.....
.....

Step 2 Identify The Hazards → **Step 3 Control the Risks**

IDENTIFY HAZARDS (Refer to the Safe Work Method Statement)	DETAILS OF CONTROLS & REFERENCE DOCUMENTS (Refer to the Safe Work Method Statement)	
☐ **Slips** ☐ **Trips** Identify	☐ Remove/barricade hazard	☐ **Wear Safety Footwear**
	☐ **Advise other staff**	☐ **Good Housekeeping**

☐ Sharp Objects	☐ Remove hazard using sharps kit ☐ Barricade the hazard ☐ **PPE** – eg Helmet, Gloves
☐ Manual Handling	☐ **Trained in manual handling techniques** ☐ Divide load ☐ Use rated lifting devices ☐ Use Teamwork
☐ Tight Situations	☐ **PPE** – eg Gloves, Helmet ☐ Use tools rather than hands ☐ Keep clear of sharp objects or tight situations
☐ Asbestos	☐ **Use approved asbestos procedures**
☐ Exposed Live Electrical Conductors	☐ **Maintain clearances** ☐ **Use PPE when within 500mm of exposed LV**
☐ Equipment Failure	☐ **Keep alert for unusual noises** ☐ Use PPE – Helmet
☐ Protection non- auto	☐ **Check battery volts on substation entry**
☐ Weather Conditions	☐ **PPE** – sunscreen, hat, wet weather gear ☐ Take sufficient breaks
☐ Insects/Vermin	☐ **Keep clear of hives or nests** ☐ Use insecticide/repellent/bait
☐ Working at Height / Objects falling	☐ **Climb attached or use scaffolding as per SWMS PT602** ☐ **Use proper ladder climbing techniques** ☐ Lower equipment ☐ **Check footing while aloft** ☐ **Warn people below to use PPE** ☐ Tie down all objects ☐ Keep area below clear
☐ Scaffolding	☐ **Training in scaffold erection** ☐ **Maintain clearances**
☐ Enclosed Spaces	☐ **Approved procedure for entry into confined spaces**
☐ Gas Leaks	☐ **Check pressure for indication of gas loss** ☐ Use gas detector
☐ Gas Discharge (Nitrogen - Minimum oil CBs)	☐ Bleed of nitrogen using hose as per manufacturers instruction
☐ Oil Spillage	☐ **Use spill kits** ☐ **Use PPE** – safety glasses, gloves ☐ Training in oil spill clean up ☐ Check integrity of any bunding ☐ **Contact Environmental Unit (9394-6659 / 9394-6666 / 0412-070574)**
☐ Poor Lighting	☐ **Ensure lighting is working** ☐ Use supplementary lighting ☐ Repair /install new light ☐ Have sufficient breaks
☐ Ladders against porcelain	☐ **Use devices that do not lean on porcelain bushings such as A- frame ladders**
☐ Compressed Air	☐ **Bleed off compressed air prior to internal inspection**
☐ Pressure Vessels	☐ **Ensure pressure vessel is within inspection date**
☐ Site Security	☐ **Ensure clear emergency exits** ☐ **External gates locked if able** ☐ **Constantly monitor entrances if gates unable to be locked**
☐ Personal Security	☐ Work in pairs ☐ Use security guards
☐ Electrocution, explosion by going to live equipment	☐ Follow any schematics showing isolation points and use link sheets to record any mandatory isolations ☐ **Check permit conditions** ☐ **Follow pilot allocation sheet (pilots only)** ☐ Isolate ☐ **Follow Safety Rules** ☐ **Keep clear of live equipment**
☐ Restricted Operating	☐ **Follow Safety Rules** ☐ **Operating Authority is current**
☐ Stored Energy Sources	☐ **Discharge all stored energy sources such as mechanical, electrical and hydraulic devices** ☐ **Access Permits & Isolation (FIU Cells)**
☐ Trip hazards from leads & hoses	☐ **Tidy lead placement** ☐ Place covers or boards over cables ☐ Barricades
☐ Electrical – applying voltage, working near live equipment	☐ **Use appropriate test procedure** ☐ Warn other staff ☐ Screen adjacent equipment and exposed terminals ☐ Isolate equipment ☐ **Maintain clearances** ☐ **Follow Safety Rules** ☐ Barricade/tape ☐ **Use PPE when within 500mm of exposed LV** ☐ Follow Schematics ☐ **Use insulating mats and battery (or battery + inverter) operated tools or powered via isolating transformer [Pilots & OPGW only]**
☐ Burns from heaters & hot surfaces	☐ **De-energise heaters** ☐ **Keep clear of hot objects or surfaces**

Hot Work	☐ PPE gloves / goggles,- for pitch use welders gloves & full face mask ☐ Training ☐ Appropriate ventilation ☐ Fire extinguishers nearby ☐ Advise other staff of your work ☐ If total fire ban – contact supervisor
☐ Lifting Devices	☐ Use rated devices ☐ Use teamwork
☐ Slow Closing Handle	☐ Use appropriate tools ☐ Keep hands free of mechanism ☐ On 11kV remove handle ☐ On 33kv tie handle with pin or remove pin
☐ Workplace substances	☐ Use Material Safety Data Sheet ☐ Use PPE required by MSDS
☐ Hazards associated with equipment worked on	☐ Use individual equipment SWMS for maintenance ☐ Write specific SWMS for task
☐ Traffic Hazards	☐ Use Traffic Management Procedure ☐ PPE – e.g vest
☐ Construction Sites	☐ Ensure site induction ☐ Use HAC to identify other hazards
☐ Work Done by Others	☐ Ensure pre-job discussion ☐ Inform others of hazard changes
☐ Noise	☐ PPE – e.g Ear plugs
☐ Testing of cell voltages	☐ Use appropriate test procedure ☐ Screen adjacent equipment and exposed terminals ☐ Maintain clearances ☐ Use two person work team ☐ Use PPE when within 500mm of exposed LV
☐ Gas	☐ Ensure proper air circulation ☐ Do not use naked flames ☐ Do not use mobile telephone in battery room / area
☐ Paralleling Batteries	☐ Training ☐ Use PPE – e.g Apron, gloves, face shield
☐ Acids & Alkalies	☐ PPE – Apron, gloves, face shield ☐ Ensure distilled water nearby
☐ Connection of leads	☐ Training in lead connection ☐ Use designated connection points ☐ Keep clear of adjacent live terminals ☐ Use correct tools ☐ Use PPE when within 500mm of exposed LV
☐ High Battery Currents	☐ Ensure Control Room notified and warn not to switch & inhibit reclosing
☐ Rise in Earth Potential	☐ Ensure substation battery /mains isolated from load ☐ Stand on rubber mat ☐ Barriers ☐ Use isolation Transformer ☐ Use battery powered tools
☐ Inadvertent Tripping/Closing	☐ Switch off mobile phones/GRN near relays ☐ Isolation (Telecontrol) ☐ Do not lean on panels
☐ Electrical - Connect LV to pump	☐ While connecting leads isolate LV ☐ Use PPE when within 500mm of exposed LV
☐ Hose Failure - Gas / Oil Leak	☐ Check hose condition before use ☐ Do not leave unattended (When pumping oil)
☐ Overpressure – Gas Leak	☐ Keep pressure within limits ☐ Do not leave unit unattended
☐ Overfilling – Oil Leak	☐ Keep levels within limits ☐ Do not leave unit unattended
☐ Filling equipment too fast	☐ Monitor filling rates ☐ Do not leave unit unattended
☐ Staff Overhead	☐ Use PPE – Helmets ☐ Keep clear & advise of your presence
☐ Staff Below	☐ Secure tools & equip. if possible ☐ Advise staff below ☐ PPE - helmet
☐ Induced Voltages	☐ Apply earth lead from scaffolding or equipment to earth grid
☐ Mobile crane – suspended loads	☐ Operator qualified to operate plant ☐ Warn staff to stay clear ☐ Crane suitable for load ☐ PPE – Helmet ☐ Check hooks & slings ☐ Divide the load ☐ Clear communication between operator and chaser
☐ Dehydration - Fatigue	☐ Take regular breaks
☐ RF Radiation (Radio sites mob phones etc)	☐ Observe any clearances ☐ Radio source de-energised ☐ Limit usage where possible ☐ Use land phone

Exercise 8

Indoor Substation/Electrical Room

Company AUSGRID

Location kirrawee zone

Substation/Area sydney

Date 01/01/2011 Auditors W. lyson

General Conditions

Item	Rating	Comments
Restricted access	✓	
"Danger High Voltage" signs	✓	
Improper material storage	✓	
Room properly ventilated	✓	
Proper clearances	✓	
Voltage level markings	✓	
General housekeeping	✓	
Corrosion-free	✗	TX no 1 needs re painting+rust removal, surface rust
Fire extinguishers	✓	
Clear egress	✓	

Additional observations and comments: