

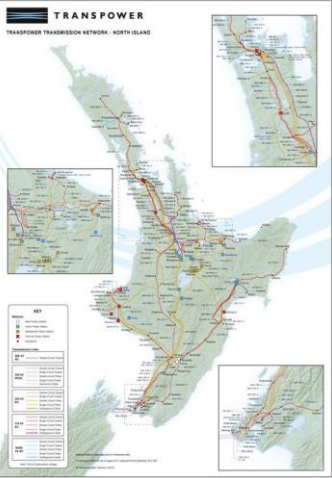
 TRANSPOWER Standard Maintenance Procedure	Issue No: 2	Page 1 of 13
	Fire Service Site Familiarisation (SI0045)	SMP No: 02.41.025	
	Default Maintenance Interval: 1 Year	Issue Date: 19 November 2013	
	Status: Final	Review Date: 19 November 2013	
		Authorised by: Technical Specialist	

1. Purpose:	Fire Service Site Familiarisation (SI0045)
2. Reference Documents	TP.SS 02.41 Station Inspections
	TP.SS 06.01 Requirements for personal protective equipment and PPE poster.
	EEA Publication: Guide to Electrical Safety for Emergency Services Personnel
	SM-EI (Part 1, 2 and 3)
	Transpower Keys to life
	Hazardous substance layout drawing
	Aerial photographs of site
	Contact Details for NGOC and Fault Response
	Photographs of insulators or a substation
Transmission network North Island or South Island network poster depending on location of station.	
3. Personnel requirements	
Job Duration	
Minimum Work Party Personnel	1
Minimum competencies (ref TP SS 06.21)	
• Work Party	SM.14
• Site Supervisor	SM.14
• Safety Observers	N/A

4. Plant, Tools & Consumables	
Quantity	Item
Safety Equipment	
N/A	N/A
Stationary or Mobile Plant	
N/A	N/A
Tools	
N/A	N/A
Consumables	
N/A	N/A
5. Safety Awareness	
Ensure the Fire Department crew clearly understand their role	

Key:	A = OK, complete, no defects	B = A defect was fixed (only where repairs made)	C = Need to follow up for investigation/repair
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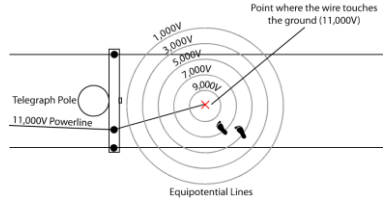
Task No.	6. Tasks	Reference	A (x)	B (x)	C (x)	Comments
	Note: This SMP covers much detail that may not necessarily be essential to the Fire Service as they will typically be under direct supervision; however it is provided for those personnel wishing to gain greater site knowledge and understanding. Service Providers to tailor their familiarisations accordingly.					
1.0	Introduction					
1.1	Introduce yourself and your company as the local contractor for Transpower and explain that Transpower own the national power Transmission grid					
1.2	Explain the key abbreviations that are unique to the electrical industry and Transpower	kV = kilovolts (220kV = 220,000 volts) MAD = Minimum Approach Distance. RAE = Restricted area entry. SM-EI = Safety manual Electricity Industry				
1.3	Supply a copy and go through Transpowers keys to life	 <p>TRANSPOWER KEYS TO LIFE</p> <p>TRANSPOWER "KEYS TO LIFE" ARE OUR KEY SAFETY EXPECTATIONS FOR TRANSPOWER STAFF AND CONTRACTORS. THEY ARE CRITICAL TO INDIVIDUAL SAFE WORK PRACTICES.</p> <p>TRANSPOWER "KEYS TO LIFE":</p> <ol style="list-style-type: none"> 1 Basic Rule – Live unless proven dead 2 Hazard Identification 3 Job Briefing 4 Minimum Approach Distance (MAD) 5 Personal Protective Equipment (PPE) 6 Safe Vehicle Operation 				
1.4	Give them a brief overview of how the electricity Generation-Transmission-distribution network works	Most Power Stations supply electricity at 11KV. To reduce the losses from Transmission of large amounts of electricity over long distances, this voltage is raised by transformers to 110kV or 220kV for transportation on the lines, some shorter lines transport electricity at 50kV or 66kV. These voltages are reduced in substations for distribution, then down again in the local distribution network to 400V for consumers. The High Voltage lines and the substations that link them are known as the National Grid				

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1.5	Explain to them about the different areas around a substation and the requirement for all persons who enter a substation to have RAE competence or be accompanied by a person with RAE					
2.0 Site specific information						
2.1	Make them aware: <ul style="list-style-type: none"> • Of the location of the substation that is in their area • Contact details for the ROC • Contractor Fault response 	Street Address NGOC Contact Details Contractor contact details for fault response.				
2.2	Make them aware of the role of the substation that is in their area in the national grid using the Transmission network poster for the respective island.	Transpower Transmission network poster for respective Island. 				
2.3	Use an Aerial photograph to show the site layout and the access points from the road. Emergency Exits and assembly point onsite. Emergency procedures from that site. Also consider if the site is shared with a generator or large consumer anything that may affect them	Aerial Photographs for sites can be located in section 1B1 of the drawing folder.				
2.4	Show them the location of all the phones and lighting in the control room and switchyard. Explain the substation communications systems.	Point out the location of communications onsite and station outdoor lighting.				
2.5	Make them aware of all the hazardous substances onsite	A site map with hazardous substances is located in the drawing				

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		<p>folder section 1B12.</p> <p>A list of quantities of hazardous materials is onsite in the site information folder.</p> <p>You should identify SF6, Transformer Oil, Battery Acid and any other hazardous substances specific to site.</p>				
3.0	Awareness of Act, codes of practice, Standards, TP Service Specs and SE-MI's					
3.1	Explain the role of the Act, and Regulations and how they govern the electricity industry	<p>The Electricity Act</p> <p>Electricity (Safety) Regulations</p> <p>The Health and safety employment act</p> <p>The resource management act</p>				
3.2	Explain the role of Approved codes of practice	Under the regulations of the Acts there are statements of approved work practices, New Zealand Electrical Codes of practice (NZECP) and Approved Codes of Practice (ACoP).				
3.3	Explain the role of Standards and Service Specifications.	Standards set out the minimum requirements of the industry, such as (AS/NZS3000.2007) which are the wiring rules for the electrical industry. Transpower also have their own standards which set out the minimum requirements for everything done in substations such as TP.SS 06.01 which sets out what PPE is required on Transpower sites.				
3.4	Explain the role of the SM-EI's and that they apply to all persons working on or near the electricity industry. Use the book to show them some examples of the information and rules they can find.	<p>The SE-MI's Set out the minimum Safety requirements of the electricity industry in New Zealand, good work practices, and rules for work.</p> <p>SM-EI Part One Explains the Minimum safety Requirements</p> <p>SM-EI Part Two is a general safety guide</p> <p>SM-EI Part Three is the Rules for work on Equipment.</p>				

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4.0	Emergency Procedure/ Hazards					
4.1	Explain Transpowers procedure for evacuation in the event of a fire or emergency	Look after their own safety <ul style="list-style-type: none"> • Get out and stay out Look after other peoples' safety. <ul style="list-style-type: none"> • Only if it is safe to do so Look after the safety of the site <ul style="list-style-type: none"> • Reporting • Preventing entry to site by other people 				
4.2	Explain Substation Fires and the associated hazards	Fires in substations have lots of associated hazards. If the Fire is in a building it could contain high voltage equipment such as switchgear. This can cause Arcing, explosions, thick smoke, toxic fumes, oil spill, extreme Heat and SF6 Gas or battery acid release. An explosion from switchgear can produce temperatures in excess of 20,000 °C in a fraction of a second and send molten metal flying around the area. Insulators made of porcelain are very dangerous. If a transformer bushing explodes the porcelain would cause serious harm or damage. Transformer oil is also a hazard, it is very similar to diesel and is slow to burn however with enough heat and pressure it will combust and can be devastating. Some Transformers contain more than 50,000 litres of oil. It is also found in circuit breakers, indoor switchboards and instrument transformers. SF6 is used in outdoor circuit breakers and also in indoor switchgear. Some indoor SF6 insulated switchboards can contain thousands of litres. SF6 is heavier than air so will sit in low lying areas, it has no smell and can cause asphyxiation. On some sites hydrogen is used as a coolant for rotating plant where this is the case it				

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		will have notices attached to the site gate and the container.				
4.3	Explain the dangers of Earthquakes in a substation	If a large Earthquake happens when you are in a substation do not try to evacuate through a live switchyard or switch room until it is safe to do so. An outdoor switchyard is not a safe location during a severe earthquake large items can move or overhead equipment could fall make sure you always maintain your MAD from conductors that have fallen or moved.				
5.0	Hazards in Substations.					
5.1	Explain the Permanent and Temporary Hazard Boards	The Permanent hazard board contains all hazards which are always present. The Temporary hazard board will show all hazards created at site or anything that is not permanent to site. But which could cause harm.				
5.2	Explain about the main hazard on Transpower sites which is High voltage and about MAD. Explain about the substation design height Note: The EEA publication “Guide to Electrical Safety for Emergency Services Personnel” states a MAD of 8m for emergency personnel, however as the Fire Service will be under direct supervision by a ‘competent person’ when in restricted areas the normal 4m MAD is applicable or that distance approved by the supervisor.	Identify the voltages present on site. And explain how to identify these voltages if they are unsure they must maintain 4 metres. Also inform them of the MAD For vehicles of 4m and the MAR process. SE-MI 2.1201. Substation equipment is designed so that the minimum height from the bottom of the insulators to the ground is 2.44m this is to make it safe to walk under. Some equipment is not designed to be walked near while in service, this equipment will be fenced off.				
5.3	Explain the requirements of using vehicles in the switchyard	When using vehicles and mobile plant in the switchyard you must have a safety observer and any mobile plant shall be bonded to the earth grid. The MAD for vehicles and mobile plant is 4m, unless you have Minimum approach approval for a				

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		closer distance. Refer to SM-EI.				
5.4	Explain Step and Touch Potential	<p>Step and touch potentials can occur when a potential difference occurs between the surface that a human is touching. This is why we bond all steelwork and mobile plant in substations to reduce the chances of touch potential to occur.</p>  <p>The person's left foot is at 7kV relative to ground. Their right foot is at 5kV relative to ground. Therefore they have a 2kV difference between their feet.</p>				
5.5	All hazardous substances have MSDS Sheets onsite in the site information folder.	Site Information Folder				
5.6	Explain about equipment failure	If Equipment fails it may not give any warning signs. This is why we use PPE. Often equipment that fails gives some indication of the pending failure. These signs could include heat, smoke, flames, fumes, smell, noise, low oil or gas, oil or gas leaks, change of colour.				
5.7	Explain why lightning is dangerous in a substation and what to do	Lightning is hazardous in the substation as it can cause equipment damage and or malfunction or be a direct threat of striking people who are working at heights. In the event of lightning employees shall stop work and stay clear until the hazard has passed.				
5.8	Explain the importance of care around relay panels	In Substations relay rooms there are panels and equipment used for the control and protection of equipment in the substation this equipment is very sensitive, and if care is not taken around this equipment a bump may cause a loss of supply to connected				

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		parties.				
5.9	Low Voltage Supplies	In a substation there is low voltage AC 230/400V supplies throughout the substation and low voltage DC, the DC is supplied from battery banks from 12V to 250V.				
5.10	Explain about worksite safety plans and risk assessments	Worksite safety plans are used to record important information, rescue procedures, emergency information and identifying and controlling hazards. Use a safety plan to show them and fill out and identify/control some hazards as an example.				
5.11	Explain about the normal PPE Requirements	To work on Transpower sites you require PPE This includes full body cover that is high visibility and flame retardant, Safety footwear non-conductive with covered steel toe caps that provides protection from electric shock, Hard Hats compliant with AS/NZS 1800 and 1801, Eye Protection complaint with AS/NZS 1337 with non conductive frames and gloves that are appropriate to the work being undertaken. Jewellery and other conductive articles shall not be worn. Transpower also strongly recommend that all undergarments you wear should be natural fibre.				
6.0	Access Procedures					
6.1	Explain Access and key system for ODS	Access to Transpower sites is only allowed to Competent holders of RAE or persons under their supervision. The outdoor switchyard keys can be obtained by the RAE Holder to open any switchyard gates all points of entry must be kept secured or under the direct supervision of a competent person.				

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6.2	Explain what is allowed on site.	Children under 15 years and pets are not allowed on site at any time. This applies even if they are under direct supervision from an RAE holder. Smoking is not allowed in any buildings and in any restricted areas, Transpower expects that anyone who enters their site is not under the influence of drugs or alcohol and Transpower reserves the right to carry out random drug and alcohol tests on anyone working on their sites.				
6.3	Explain the Process for access to primary equipment	If Access is required to work within the minimum approach distance of conductors the Equipment must be isolated and then earthed to the station earth grid. Then an access permit can be issued for work. When the work is complete and everyone has signed off the permit can be cancelled				
6.4	Answer any questions the Fire Service may have					
6.5	Fill out and get them to sign the Fire Service Site Familiarisation Checklist.	Check sheet is TP.SS 02.41 Appendix J on page 41. Copy attached. Pg 11				

FIRE SERVICE SITE FAMILIARISATION CHECKLIST

CONTRACT GROUP:		SUBSTATION LOCATION:	
The original shall be retained in substation history folders e.g. NS3 HAM.			
SITE FAMILIARISATION DETAILS		DATE COMPLETE	INDUCTOR SIGNATURE
1	Site evacuation procedures, site access, fire management		
2	Discuss entry procedures		
3	Specific site hazards		
4	Station lighting		
5	Station Keys		
6	Station procedures, operation procedures		
7	Minimum approach distance requirements		
8	Station communications		
9	Awareness of the SM-EI		
10	Awareness of normal PPE requirements		
11	Station security		
12	Equipment layout (switchyard, control room, relay room)		
Enter N/A if not applicable			
<p>All items on this checklist have been read, discussed and understood.</p> <p>Signed by: _____</p> <p>(Fire Service Employee/subcontractor)</p> <p style="text-align: right;">Signed by: _____</p> <p style="text-align: right;">(Service Provider Inductor)</p> <p>Date: _____</p>			

7. Completion of works

Return equipment to the handover state.

All relevant drawings updated.

Record:

- In Defect Sheet,
 - All Unsatisfactory entries from above
 - All works completed this service
 - All works deferred
 - Fitness for Return To Service (RTS)
 - Names and roles of all personnel in work party
 - Any changes in overall equipment condition & component types
 - Any works still to be carried out
 - Any defective components or items requiring further inspection
- Test results in Document Record Card (DRC)
- Update CA Condition

DOCUMENT RECORD CARD

Work Order No.

Asset/Equipment #.....

Location/Device Position #.....

DEFECT SHEET

Task No	Defect Item / Part	Nature of Defect	Rectification / Action to repair	Repair Complete (Sign)	Repair deferred (Reason)	Expected Completion Date

Note: If require more space use additional blank sheets

PERSONNEL REQUIREMENTS

Work Party		
Name	Role	Minimum Competencies(TP SS 06.21)
	Site Supervisor	
	Substations Maintainer	
	Safety Observers (if required)	WSS

Return to Service: YES / NO IF "NO" COMMENT

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Changes recommended for this procedure: YES / NO. If "Yes" please submit a form online - just look for the Controlled Document Feedback Form on the Contractors/Consultants section on our website at www.transpower.co.nz .

Service Completed by:

CA Condition Updated

Name.....

Signature.....

Date.....