Maintain Substation Equipment

Issue date: 04/10/07
Review date: 04/10/10

SWMS number:
SMS-06-SW-0513

SWMS Name:
Maintain Substation Equipment

SWMS Team:
Ron Walsh
Gary Bugden
Danny Bercli

Custodian (Position):
Business Systems Officer
Metro North Region
Michael Swadling

Assumptions:
Physically maintain the equipment. Includes traction substations, sectioning huts, distribution substations including fencing.
Fine weather, daylight, power isolated.

Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)
Electrical Maintenance Engineer, Illawarra
SEQ Systems Administrator

Approving Authority (Position):
General Manager
Infrastructure Division

Plant/Equipment/Tools:
- EWP or Ladder
- Portable power tools as required
- Pole top rescue kit
- fall arrest
- Lifting device where practical
- Electrical test equipment

Records/Reporting:
- Substation log book
- EOC
- TEAMS 3

Permits/licences required:
Electrical Permit if required

Applicable Standards, Codes of Practice and guidance:
- ESAA Guide to Electrical Safety Systems
- WorkCover Guide: Safe Working at Heights
- WorkCover CoP: Noise Management and Protection of Hearing at Work

Inspection requirements
- Electrical test equipment calibration
- Electrical appliance testing

Service schedule:
See Appendix A

MIMS or METRE Ref:
N/A

Training/Qualifications required:
Authorised Operator
Manual Handling techniques

PPE required:
- Standard PPE
- 185gsm 100% cotton clothing in accordance with SMS-06-SW-0538
- Hard hat
- Gloves
- Hearing Protection

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Control (to be Implemented to eliminate or reduce the risk to the lowest practicable level)	Risk ranking after controls	Responsibility	Job step to be completed In accordance with (name associated documentation)
1	Carry out maintenance work	Contact with Electricity	A	Maintain electrical clearances Work in accordance with electrical permit Appropriate use of electrical test equipment according to ESNR	C+	Team Member Team Member Team Member	ESNR
		Contact with chemicals (eg battery acid, electrical solvents, weedicide)	B-	Work in accordance with MSDS	C-	Team Member	MSDS
		Manual Handling / Muscular Stress	C+	Manual Handling Training Use mechanical lifting device according to SWI where practical	C-	Team Manager Team Member	SWI: Lifting Gear - Devices
		Fall from heights	B+	Use EWP if practical (SWI) or Attached Climbing (SWI)	C+	Supervisor	SWI: Elevating Work Platforms SWI: Fall Arrest Systems (all)
		Contact with sharp objects	C+	Remove or blunt if possible Gloves	C-	Team Member	
		Exposure to hazardous substances (eg. Asbestos dust in building cladding or arc chutes, lead products, silicates, PCB's SF6 gas etc)	B+	Seal asbestos chute in plastic if removing. Do no work that may cause dust where Asbestos is present Work in accordance with hazardous substance register, written instructions & MSDS	C+	Team Member Supervisor	SMS-06-RG-0109
		Crush injuries from circuit breakers or hand tools	B+	Remove energy from springs Secure moving parts if possible Remain clear of crush zone	C-	Team Member	
		Struck by flying object	B-	Eye protection	C-	Team Member	
		Contact with hot objects	C+	Gloves	D	Team Member	

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1	Carry out maintenance work continued	Slips and trips at same level	C+	Remove or barricade potential hazards	C-	Supervisor	
		Bites & Stings	C+	Inspect and spray following MSDS Gloves	C-	Team Member	MSDS for insect spray
		Compressed air from relief valves, damaged pipes, etc	C+	Eye protection Avoid contact with compressed air	C-	Team member	
		Objects falling from heights	B-	Secure loose objects Hard hat Defined exclusion zones if practicable	C-	Team Member Supervisor	
		Noise from switch gear equipment	C-	Hearing protection where required	D	Team Member	

Appendix A: Service Schedules

ACCBs	ACCBs	ACCBs	ACCBs	Power Transformers	Rectification	Rectification	Rectification	DC Switchgear	DC Switchgear	AC Auxiliary Power Supplies	Auxiliary Services	Electric Braking	Protective Earthing, etc	Distribution Transformers	Signal Air Compressors	Fault Protection	Distribution Substations	Distribution Substations	Distribution Substations
E01002	E01045	E01095	E01153	E02003	E03002	E03037	E03072	E04001	E04072	E05001	E06002	E07002	E12001	E16001	E18002	E19001	E97011	E97059	E97102
E01003	E01046	E01096	E01154	E02004	E03003	E03038	E03078	E04002	E04074	E05002	E06003			E16003	E18003	E19002	E97013	E97060	E97103
E01004	E01047	E01097	E01155	E02005	E03004	E03039	E03079	E04115	E04075	E05004	E06010			E16005	E18005	E19003	E97015	E97061	E97104
E01005	E01049	E01105	E01156	E02023	E03005	E03040	E03080	E04004	E04098	E05005	E06021			E16006	E18006	E19004	E97016	E97062	E97105
E01006	E01050	E01107	E01157	E02016	E03006	E03041	E03081	E04005	E04120	E05006	E06024			E16007	E18008	E19005	E97017	E97063	E97106
E01008	E01051	E01109	E01158	E02017	E03007	E03042	E03082	E04121	E04079	E05007	E06028			E16008	E18010	E19006	E97018	E97065	E97108
E01134	E01052	E01111	E01159	E02041	E03008	E03043	E03083	E04122	E04080	E05008	E06060			E16011		E19007	E97019	E97066	E97109
E01010	E01054	E01113	E01160	E02050	E03009	E03044	E03084	E04007	E04081		E06061			E16012		E19008	E97020	E97067	E97111
E01011	E01055	E01142	E01162	E02051	E03010	E03045	E03086	E04008	E04119					E16013		E19009	E97021	E97068	E97112
E01012	E01056	E01116	E01163	E02052	E03011	E03046	E03087	E04012	E04082					E16014		E19010	E97022	E97069	E97114
E01013	E01057	E01117	E01164	E02053	E03012	E03047	E03088	E04013	E04089					E16015			E97024	E97070	E97116
E01015	E01064	E01118	E01166	E02060	E03013	E03048	E03089	E04014	E04091					E16016			E97025	E97071	E97118
E01016	E01065	E01119	E01168	E02061	E03014	E03049	E03090	E04015	E04092								E97027	E97073	E97120
E01017	E01066	E01121	E01170	E02063	E03015	E03050	E03091	E04025	E04093								E97029	E97074	E97121
E01018	E01067	E01123	E01171	E02064	E03016	E03051	E03092	E04026	E04094								E97031	E97075	E97122
E01019	E01069	E01125	E01172	E02084	E03017	E03052	E03093	E04078	E04095								E97032	E97076	E97123
E01020	E01070	E01127	E01173	E02085	E03018	E03053	E03094	E04117	E04099								E97034	E97077	E97125
E01022	E01071	E01128	E01175	E02089	E03019	E03054	E03095	E04118	E04100								E97035	E97078	E97126
E01024	E01072	E01129	E01176	E02090	E03020	E03055	E03096	E04055	E04101								E97037	E97079	E97127
E01025	E01074	E01131	E01177	E02103	E03021	E03056	E03097	E04056	E04103								E97038	E97080	E97130
E01026	E01075	E01132	E01178		E03022	E03057	E03098	E04057	E04104								E97039	E97081	E97131
E01027	E01078	E01133	E01179		E03023	E03058	E03099	E04058	E04105								E97040	E97082	E97132
E01029	E01079	E01136	E01180		E03024	E03059	E03102	E04059	E04106								E97041	E97083	E97133
E01030	E01080	E01137	E01181		E03025	E03060	E03103	E04060	E04107								E97042	E97084	E97134
E01031	E01081	E01139	E01183		E03026	E03061	E03104	E04061	E04108								E97043	E97085	
E01032	E01082	E01141	E01184		E03027	E03062		E04062	E04109								E97044	E97086	
E01034	E01084	E01144	E01186		E03028	E03063		E04063	E04110								E97045	E97087	
E01035	E01085	E01145	E01187		E03029	E03064		E04064	E04111								E97046	E97088	
E01036	E01086	E01146	E01188		E03030	E03065		E04065	E04112								E97048	E97089	
E01037	E01087	E01147	E01189		E03031	E03066		E04066									E97049	E97090	
E01039	E01089	E01148	E01191		E03032	E03067		E04067									E97050	E97091	
E01040	E01090	E01149	E01196		E03033	E03068		E04068									E97052	E97095	
E01041	E01091	E01150	E97128		E03034	E03069		E04069									E97053	E97096	
E01042	E01092	E01151			E03035	E03070		E04070									E97055	E97098	
E01044	E01094	E01152			E03036	E03071		E04071									E97057	E97100	

RailCorp Level 2 Risk Matrix - Regional & Local (Workplace)

		Likelihood/Frequency						
		Event Frequency	Less than once every 1000 years	Once every 100 to 1,000 years	Once every 10 to 100 years	Once every 1 to 10 years	More than once per year up to and including 10 times per year	More than 10 times per year
		Historical (Likelihood)	Unheard of in the rail industry	Has occurred once or twice in the rail industry	Has occurred many times in the rail industry, but not in NSW	Has occurred once or twice in NSW	Has occurred frequently in NSW	Has occurred frequently at specific locations
		Workplace Predictive (Likelihood)	Not expected to occur	May occur only in exceptional circumstances	Could occur at some time but not likely	You would expect it to occur at least once in the next 10 years performing similar activities	You would expect it to occur at least once this year performing similar activities	You would expect it to occur at least once this month performing similar activities
			F1	F2	F3	F4	F5	F6
Consequence			Incredible	Improbable	Remote	Occasional	Probable	Frequent
>10 Fatalities	C6	Disastrous	B-	B+	A	A	A	A
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	A
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	A
1 Major Injury	C3	Major	D	C-	C+	B-	B+	A
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B+
First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	B-

Extreme
High
Medium
Low

Definition for Use - Regional & Local level (Workplace)

Used for workplace hazards and safety risks that do not consider the whole of the network. Indicatively this matrix is appropriate for use where the hazards under consideration are up to 10% of the total network exposure. This includes regional and local workplace risk assessments.

As an example, the Level 2 scale would be used when examining the risk of slips, trips and falls on specific RailCorp platforms within a region or at a particular station, or the risk of fire within a depot.

There are 3 options for descriptors which can be used to determine the frequency category. One set of descriptors is provided for frequency, one for historical likelihood, and one for predictive liklihood in the workplace. Choose the most appropriate.

To score the risk, follow the steps:

1. Identify the magnitude of the credible consequence if the risk were to occur. If applicable, risks should be considered in terms of the safety (this matrix), commercial and environmental impact (using other matricies).

2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)

3. Score the risk using the combination of likelihood and consequence ranking.

Note: Where there are a range of credible consequences which may lead to a different level or risks and/or where the controls may be different. It may be useful to score the risk more than once.

NOTE: Each work group or team member must sign off on the SWMS to acknowledge they have been briefed about or instructed in the SWMS

Team member name (Please print)	Team Member signature	Instructor/ Briefer name	Date	Team member name (Please print)	Team Member signature	Instructor/ Briefer name	Date