

Power Transformers

Last Issue Date: 09/10/2020		Type Of Service				
Activity		A	B	C	D	E
1	<p>INSTALLATION SPECIFIC MAINTENANCE: Refer to the manufacturer's recommended maintenance procedures or the specific maintenance instructions developed for the installation. Notify the FMSP in writing of any significant safety issues, failures or major components requiring replacement identified during the maintenance procedures. Rectify the issues in line with the maintenance agreement and record any modifications in the logbook.</p>		Y		Y	Y
2	Check pressure gauge readings, oil and pressure levels.		Y		Y	Y
3	Check the door hinge mechanisms to ensure they have not become dislodged causing the door to make contact with the transformer LV bushing.		Y		Y	Y
4	<p>GENERAL INSPECTION, to include: a) General condition and any signs of damage. b) General cleanliness. c) Adequate ventilation. d) Evidence of overheating. e) Evidence of moisture ingress. f) Corrosion. g) Audible discharge. h) Signs of vermin presence. i) Combustible materials adjacent. j) Damage to or settlement of the plinth. k) Signs of transformer oil (or other cooling medium) leaks. l) Mechanical damage or signs of corrosion to any exposed earthing connections. m) Confirm that all safety signage is in place and in good legible condition.</p>				Y	Y
5	GENERAL TESTING - use a heat sensitive detector to locate any hot spots or joints. Notify the FMSP and seek approval for further investigations if required.				Y	Y
6	<p>GENERAL EXAMINATION AND OVERHAUL: a) Use a vacuum or brush to remove as much dirt and debris as possible from around and within the enclosure. Then use low pressure dry air to remove the remaining dirt and debris. b) Inspect for any signs of overheating (e.g. discoloured copper or insulation). c) Inspect for any signs of carbon tracking or cracking on insulation and insulators. d) Inspect the tap changer and tap connections. Ensure that all bolted connections are torqued to the correct tightness. e) Check for any corroded or loose connections. Ensure that they are tight and making good contact. f) Check for any loose mountings. g) Verify adequate electrical clearances. h) Inspect any support isolators, including vibration and isolation supports. i) Clean any air filters and ventilation openings. If windings or internals are found to be dirty, add air filters to ventilation openings where appropriate. j) Complete a turns ratio test. k) Complete an insulation resistance test. Measure the high side to low side windings</p>					Y

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	and then both high and low to ground. l) Complete any other diagnostic testing as appropriate (e.g. power factor and resistance testing). m) Inspect all auxiliary equipment (e.g. controls, fans, alarms, resistors, heaters and annunciators) and confirm the correct operation. n) Inspect fuses for protection of primary windings. o) Check the door hinge mechanism to ensure that they have not dislodged causing the door to make contact with the transformer LV bushing.					
7	OIL FILLED TRANSFORMERS - general inspection, additional requirements: a) Check for any general signs of oil (or similar insulating medium) leaks around and / or within the transformer enclosure. b) Check the oil level indicator and pressure gauges and confirm levels and pressures are adequate. c) Inspect for any damage or obstructions to any pressure relief devices. d) Confirm the temperatures of the windings and oil temperatures are correct (where possible).				Y	Y
8	OIL FILLED TRANSFORMERS - examination and overhaul, additional requirements: a) Test the insulating oil, include testing a sample of oil as per AS1883. Replace if necessary. b) Confirm the winding and oil temperatures are correct. c) Check the diaphragm or bladder for leaks if there is a conservator. d) Confirm the correct operation of all thermometers, pressure gauges, level indicators and other indicating devices. e) Examine and clean the bushings. Inspect for any signs of leakage, cracks and carbon tracking. f) Test the operation of any protection devices and relays. g) Test the operations of any alarms, fans and pumps / pump controls. h) Examine the pressure relief devices and replace if showing signs of degradation or beyond their operational life. i) Examine all sealing and breathing systems for any signs of moisture ingress or oil leaks. For sealed systems, confirm the correct pressures of gasses.					Y
9	DRY TYPE TRANSFORMERS - general inspection, additional requirements: a) Confirm that any fans or active ventilation systems are operating correctly and are free from dust and debris.				Y	Y
10	DRY TYPE TRANSFORMERS - examination and overhaul, additional requirements: a) Confirm the correct pressures for any gas filled transformers. b) Clean and examine any cooling and ventilations systems. Test and confirm operation. c) If the transformer is mounted within a room that has forced ventilation or air conditioning, confirm the operation of the system. Confirm that the system is being adequately maintained with the FMSP. d) Inspect the windings for dirt or heat discoloured insulation and structure problems.					Y

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11	Clean and inspect the condition of all exposed insulation especially for damage, cracks, signs of tracking or blistering and any defects.					Y
12	Take oil sample, test and replace the oil if it does not meet the required specification. Notify the FMSP in writing of any signs of significant degradation or potential failures.					Y
13	Record the results in the logbook and submit a customer service report to the FMSP.		Y		Y	Y

Special Comments and Technical Data

B SERVICE MONTHLY (THIS FREQUENCY FOR THIS ACTIVITY TO CHECK THE FUNDAMENTALS IS RECOMMENDED - IT MAY BE EXTENDED DEPENDING ON THE MANUFACTURER'S RECOMMENDATIONS AND SITE CONDITIONS.)
 D SERVICE ANNUAL - INCLUDES ACTIVITIES THAT DO NOT REQUIRE A POWER SHUTDOWN.
 E SERVICE EVERY 5 YEARS - INCLUDES ACTIVITIES THAT REQUIRE A POWER SHUTDOWN. THE E SERVICE MAY NEED TO BE MORE FREQUENT (UP TO EVERY 2 YEARS) DEPENDING ON EQUIPMENT SPECIFICS, LOADING AND THE SITE CONDITIONS.

WHERE SHUT DOWN OF SUPPLY IS REQUIRED FOR INSPECTION AND TESTING PURPOSES LIAISE AND CO-OPERATE WITH THE SITE REPRESENTATIVE FOR A TIME TO MINIMISE ANY DISRUPTION TO THE AGENCY'S OPERATIONS.

FOR TRANSFORMERS WITH INTEGRAL RMU AND/OR LV DISTRIBUTION SECTIONS, REFER TO THE RELEVANT SECTIONS OF TDSs E06 AND E12.

A SPECIALIST LICENSED SUB-CONTRACTOR IS REQUIRED FOR THIS SERVICE. ESTABLISH SAFE WORKING CONDITIONS FOR THE MAINTENANCE OF THE TRANSFORMERS.

APPLICABLE LEGISLATION AND STANDARDS: WH&S REGULATIONS, EPA REQUIREMENTS, AS3000, AS60076.1, AS 2467, AS1883.

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