Check list incident report

Replacing ALL99003.doc

General information

Operator: _____ Date: _____

Contact: _____

E-mail address: _____ Phone number: _____

Substation

Operating site: _____

Address: _____

Transformer data

Note: Please mark accordingly ☒

Manufacturer: _____ serial number / designation: _____

Application: Network ☐ power station ☐ furnace ☐ electrolysis ☐ rectifier ☐

Phase shifter ☐ HVDC ☐ other: _____

Nominal power: _____ [MVA] nominal voltage: _____ [kV] nominal current: _____ [A]

Load: _____ [%] Vector group: _____

On-load tap-changer in intermediate circuit: yes ☐ no ☐

Neutral-point treatment: insulated ☐ direct ☐ resonant earthing ☐

Commissioning date: _____

On-load tap-changer data

Type: _____ serial number: _____

Current number of tap-change operations: _____

Last on-load tap-changer maintenance date: _____ No. of tap-change operations: _____

Maintenance by MR: yes ☐ no ☑

Is an oil filter unit installed? yes ☐ no ☑

Incident description

Date and time of incident: _____

Did the incident occur during a tap change operation? yes ☐ no ☐

If yes, from operating position _____ to operating position _____

Last tap change operation before the incident was from operating position _____ to

operating position _____ on _____ at _____ o'clock.

Current operating position indication on on-load tap-changer head: _____ *on motor-drive unit:* _____

Other information: _____

_____

_____

Protective devices of the transformer

Did protective devices of the transformer respond? yes ☐ no ☐

If yes, which?

Buchholz protection: yes ☐ no ☐ If yes: warning ☐ tripping ☐

Differential protection ☐ distance protection ☐ pressure relief device (transformer) ☐

SERGI ☐ overcurrent protection (fuses, relays) ☐

Overvoltage protection (spark gaps, surge arresters; counter reading: _____) ☐

Are recordings of a fault recorder available? yes ☐ no ☐

If so, we kindly ask you to make the recordings available to MR[1].

Protective devices of the on-load tap-changer

Did protective devices of the on-load tap-changer respond? yes ☐ no ☐

If yes, which?

DW 2000 ☐ protective relay RS1000 ☐ protective relay RS2001 ☐

pressure relief device (e.g. MPreC®) ☐ SERGI ☐

If RS1000 or RS2001 responded, which position was the flap valve in after the incident?

tripped ☐ untripped ☐

Please specify the following information about the RS1000 or the RS2001:

Tripping circuit design: open circuit principle ☐ closed circuit principle ☐ other: _____

Is the transformer exposed to vibrations? yes ☐ no ☐

Continued on next page

[1] MR: Maschinenfabrik Reinhausen GmbH

Protective devices of the on-load tap-changer – continued

Indicate design of the oil systems of transformer and on-load tap-changer

Combined ☐ separate ☐

How are the oil conservators (transformer tank / oil compartment of on-load tap-changer) connected to atmosphere?

Hermetically sealed transformer ☐

Silicagel breather (e.g., maintenance-free dehydrating breather MTraB®) ☐

Network and substation data

Network Primary voltage: cable ☐ overhead line ☐ other: _____

Secondary voltage: cable ☐ overhead line ☐ other: _____

Switchgear Primary voltage: conventional ☐ GIS[2] ☐ other: _____

Secondary voltage: conventional ☐ GIS ☐ other: _____

Circuit breaker Primary voltage: SF6[3] ☐ vacuum ☐ compressed air ☐ other: _____

Secondary voltage: SF6 ☐ vacuum ☐ compressed air ☐ other: _____

Surge arrester design: SiC[4] ☐ ZnO[5] ☐ response voltage: _____ [kV]

Surge arrester arrangement: Phase-ground ☐ phase-phase ☐

Other

Were irregularities detected on on-load tap-changer or transformer before the incident occurred?

Yes ☐ no ☐ If yes, which and when?

_____

Are further circumstances known such as switching operations in the network or in the substation at the time of the incident, or possibly lightning stroke, short circuit etc.?

Yes ☐ no ☐ If yes, which and when?

_____

_____

Which steps were taken after the incident (e.g., mechanical tap-change operations, replacement of diverter switch insert etc.)?

_____

_____

_____

Continued on next page

[2] GIS means gas-insulated switchgear
[3] SF6 means sulfur hexafluoride
[4] SiC means silicon carbide
[5] ZnO means zinc oxide

Other – continued

Were oil sample tests carried out? yes ☐ no ☐

If yes, please provide the following information:

Oil sample 1 Oil sample taken from: OLTC[6] ☐ OLTC oil conservator ☐ transformer ☐

Oil temperature when oil sample was taken: _____ [°C] date: _____

Test standard: IEC ☐ ASTM ☐

Dielectric strength IEC 156: _____ [kV / 2.5 mm] water content: _____ [ppm]

Dielectric strength ASTM D877: _____ [kV]

Interpretation of oil sample 1: _____

Oil sample 2 Oil sample taken from: OLTC ☐ OLTC oil conservator ☐ transformer ☐

Oil temperature when oil sample was taken: _____ [°C] date: _____

Test standard: IEC ☐ ASTM ☐

Dielectric strength IEC 156: _____ [kV / 2.5 mm] water content: _____ [ppm]

Dielectric strength ASTM D877: _____ [kV]

Interpretation of oil sample 2: _____

Documentation of incident

Please take pictures of the damaged on-load tap-changer, and forward the pictures to MR.

Additional notes / sketches:

Please return the completed form to the following e-mail address service@reinhausen.com or to:

Maschinenfabrik Reinhausen GmbH Phone +49 (0)941 4090-0

Falkensteinstraße 8 Fax +49 (0)941 4090-7001

93059 Regensburg

Copies to: CTE, CTPS, CTT, CST, CST1-all, CST2-all, CST3-all, CST3 notice board, CS4T-all, CS4T notice board, CSTA-all, CSxO-all (except CSAO), OPS-Wiki, TS Manual, MR subsidiaries and representatives

[6] OLTC means on-load tap-changer