

Substation Inspections for Monday & Tuesday, June 27-28, 2005:

Notes: This summary for the substation(s) inspected represents typical observations noted by Staff engineers during the field inspection and DOES NOT represent all of the problems or potential problems that may exist in the substation(s). In many cases, there were portions of the substation(s) that were not inspected at all. No effort was made to perform a thorough, detailed inspection as may need to be done by the utility.

Field Report – Monday, June 27, 2005

Staff: John Stutsman
ComEd: Keith Frost; Betty Gallagher
Substations Inspected:
TSS70 Bradley
TDC 446 Lansing
TSS150 Calumet
TSS38 Humboldt Park
TDC550 Clearing

Substation TSS70 Bradley

Some weeds in yard and around equipment and some oil spills.
Rust observed on some equipment
Oil levels on some equipment looked on the high side.
Some oil gauges are difficult to read.



P6270003 – weeds in yard

Appendix D: Substation Inspections

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P6270004 – TR 76 Xfmr Tap at 10L w/range from nR to 12L. TR 77, 78, 79, 73 were similar.



P6270005 -- Hydran at TR 76 with some oil leakage or spillage



P6270008 – Fresh oil on ground at TR 77

Bushing oil leak observed at TR 78



P6270012 – TR 74 old oil leaks below fins has not been cleaned up.

TR 71 Active oil leaks observed on two sides of Transformer

TR 71 Disconnected Fan on cooling fins because blade was hitting shroud

Wildlife protection observed on equipment

Substation TDC446 Lansing

Cntl Bldg looks pretty clean. Cntl hse looks good – very compact

On one tower just outside the substation it was noted that barbed wire was hanging down.



P6270025 – Vegetation within Substation. There was some trash in this area but ComEd personnel with Staff picked it up as they came into the Substation.



P6270026 – FDR4674 Bus Disc – with rust & bad paint job

Some unusual work practices for equipment grounds from buss work to cable shield of distribution cables were observed.



P6270031 – Dirt visible on cooling fins on transformer XFMR71



P6270032 – Oil on ground below cooling fins of XFMR71

XFMR71 LTC tap limits are not evenly distributed around neutral as would be typically expected. XFMR74 was similar.

Active leak around flanges of XFMR74 observed



P6270036 – Leak on other side of XFMR 74. Noted ground cable partly out of ground

Substation TSS150 Calumet

No single line (“SL”) diagram displayed but there is sort of a SL on panels
Compartments 41 & 42 are open.

Also noted A phase oil leak at Tank P.U. 3.1 – ComEd noted that these tanks are out of service

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Saw a lot of cases of oil tank levels very near or at full on breakers.
TR 74 & 78 OCB A & C phase tank pegged full and oil on ground.
BT 3.4 OCB B phase bushing pegged "H" & tanks rusty
BT 3.4 OCB All tanks oil levels pegged full
XFMR78 oil leak from cooling fins



P6270040 – XFMR78 oil leak on ground from secondary cable



P6270041 – XFMR 78 tripping hazard.

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P6270043 – XFMR76 Trash around XFMR and oil stain.

XFMR76 rust observed on the outside

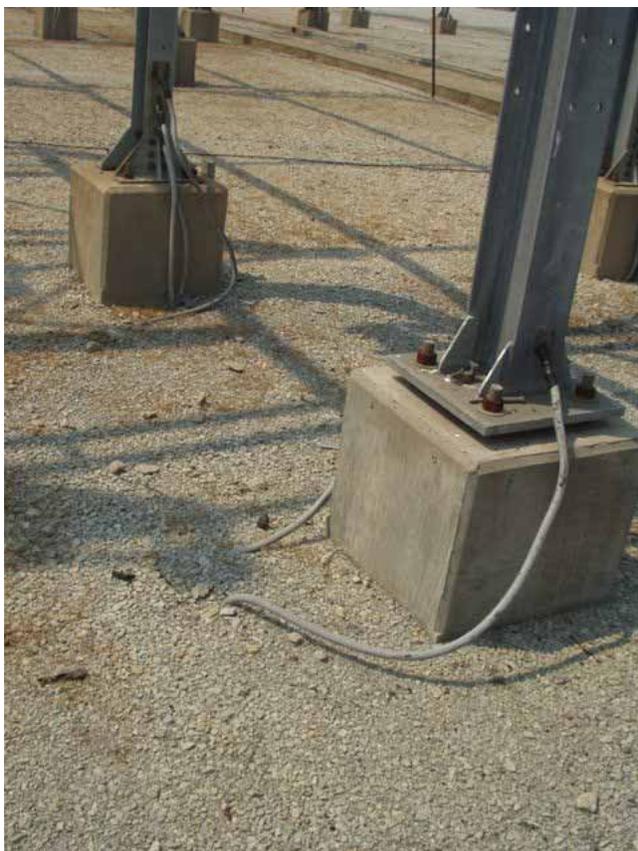
XFMR 76 oil leak at top of cooling fins and body of XFMR



P6270046 – Ground wire laying on ground near L94402 Breaker

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P6270048 – Ground wires laying on/across top of ground



P6270049 – C phase bushing of Oil Circuit Breaker (“OCB”) L0708 oil level is high

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P6270050 – A phase oil level in tank OCB L0707 plug/float up against top of tank oil gauge



P6270051 – Oil leak at B&C phase tanks of BT2.3



P6270053 – P.U. 33.34 C phase Tank bushing oil on “L” and oil leak visible == ComEd personnel noted that it is being decommissioned and is not currently in service



P6270055 – C phase bushing of L15001 OCB level on H

Weeds were observed growing in substation yard



P6270057 – TR 72&76 OCB C phase tank active oil leak



P6270059 – TR 72&76 OCB C phase anchor clamp off – all off on opposite side

XFMR 72&76 OCB C phase rust on tank

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P6270061 – XFMR 71X LTC – noted operation at extreme limit.



P6270062 – XFMR 71X oil leak under fins



P6270063 – XFMR 71Y LTC – note operation at extreme limit



P6270064 – XFMR 72X LTC



P6270065 – XFMR72 missing fan has been disconnected and is out for repairs

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P6270066 – XFMR72 oil on ground



P6270067 – XFMR72Y LTC shows that it has operated in both extreme positions



P6270068 – XFMR73X LTC shows that it has operated in one extreme position – XFMR also missing a fan that ComEd reports was removed for replacement

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P6270069 – XFMR73Y LTC



P6270070 – Xfmr74X LTC



P6270071 – XFMR74Y LTC

Substation TSS38 Humboldt Park

Oil leaks at 138KV pot head for XFMR74
Weeds & trash in substation yard



P6270075 – XFMR LTC



P6270076 & P6270077 XFMR73 oil leaks – note material placed down to absorb the oil for easier clean-up later



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P6270078 – XFMR73 LTC -- Xfmr72 LTC & XFMR71 LTC looked similar



P6270081 – XFMR42 LTC

XFMR41 [12kv-4kv] LTC, XFMR43 LTC, XFMR44 LTC appeared centered about neutral tap and within extreme limits

Substation TDC550 Clearing



P6270084 – XFMR73: Oil coming out of vent – ComEd commented this was due to high oil levels and that the LTC had a leaking headboard.



P6270085 & P6270086 -- XFMR73: oil from overflow onto cntl cabinet and onto ground and stairs – Staff was not able to check LTC position indicator without opening cabinet door because front was covered by oil obscuring view glass on door



P6270087 XFMR73: cylinder held by rope and not chain

Rust was visible on outside of XFMR72



P6270090 – XFMR72 LTC range 13L to 16H

Oil on foundation of XFMR72



P6270093 – XFMR71 LTC – bad paint job on XFMR – old oil spill was also observed at XFMR71.



P6270096 – Ground cable laying on top of ground – trash and weeds in yard.



P6270098 – Ground wire coiled up outside to go inside D5004 switchgear



P6270099 – Trash on XFMR cooling fan.

Field Report – Tuesday, June 28, 2005

Staff: John Stutsman
ComEd: Keith Frost; John Parise
Substations Inspected:

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TSS42 Round Lake
TSS 152 Busse
TDC 581 Frontenac
TDC 557 Butterfield
DCW 384 Butterfield
TDC 559 Woodridge
TSS 103 Lisle

Substation TSS42 Round Lake



P6280103 – Equipment & debris in yard and along fence – as well as equipment stored for later use.



P6280104 – Arm on oil level gauge missing on POT & can't determine fluid level – ComEd personnel at substation said that POT is on W.O. order to replace on next PEG

Bad paint job on some equipment was observed.



P6280106 – XFMR77 LTC – looks like operation is symmetrical about neutral.



P6280107 – Bird nest in equipment [center of photo] and rust on equipment.



P6280108 – XFMR72 LTC shows operation at extreme lower limit. XFMR71 LTC was similar.

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P6280111 – 12KV Cap bank #2 ground [center of picture]



P6280114 – XFMR76 LTC



P6280115 – example of the large amount of animal protection installed at Round Lake



P6280116 – New design squirrel guards that rotate [balls on line in center]

Substation TSS152 Busse

Weeds seen along fence.



P6280122 – XFMR71 LTC – noted some oil on XFMR pad and in rock around XFMR



P6280123 – XFMR72 LTC – Bushing oil on XFMR looked high and noted some oil around base



P6280124 – XFMR73 LTC



P6280125 – XFMR74 LTC – noted that XFMR had new radiators



P6280126 – Two+ Monk Parakeet's and nest on transmission tower located in substation



P6280128 – Tower grounds [lots of them] tied into station ground mat

SCADA single line on panel in relay house

Substation TDC581 Frontenac

Alarm switch on relay house door observed set to work
Single line drawing on wall



P6280133 – XFMR71 oil leak on fins – note absorbent material placed to capture leaking fluids making for easier cleanup later.



P6280134 – XFMR71 oil leak on fins



P6280135 – XFMR71 LTC



P6280136 – XFMR72 LTC



P6280137 – XFMR73 LTC



P6280138 – XFMR73 possible slow leak from top flange and down side



P6280139 – XFMR74 LTC



P6280140 – L14310 OCG 138KV BREAKER – B phase bushing oil low – ComEd personnel know about it and are waiting for the next planned outage to correct



P6280141 – L14310 OCG 138KV BREAKER – C phase bushing oil level gauge glass broken – ComEd personnel know about it and are waiting for the next planned outage to correct

Substation TDC 557 Butterfield

Single line in relay house & Log book observed

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P6280145 – XFMR71 LTC



P6280146 – XFMR72 LTC



P6280147 – New gravel being put in place around fence – noted that ground in station has “smoothed out” in many places.

Substation DCW 384 Butterfield



P6280148 – While at Butterfield looked at a new substation design which DCW384 Butterfield is the first[located just outside the fencing of TDC557 Butterfield]

DCW384 is called “DC in a Box” and is referred to the ComEd engineer who developed it as “Thinking Inside the Box”

It was an impressive & innovative design concept



P6280150 XFMR in larger box on left of picture followed by three 1phase regulators to the right of the XFMR

Substation TDC 559 Woodridge



P6280156 – XFMR72 LTC – also noted that C phase bushing oil level was high



P6280157 – XFMR71 LTC



P6280158 – paint on top of XFMR B phase bushing covering glass indicator for oil level – ComEd noted that the oil level can still be seen and the glass was only partially covered by paint.

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P6280160 – phone line loosely draped across poles and along substation fencing



P6280162 – birds nest in framework for light in substation



P6280163 – guy wire that looks close to primary



P6280165 – broken/missing cover/molding on ground wire on pole. Usually see this in rural areas where tractors may have hit the pole and knocked off the cover but inside a substation and next to the fence not sure how this would occur

Substation TSS103 Lisle

Single line in relay house
Station alarm on door was observed to be set properly



P6280170 – XFMR71 LTC – some rust on equipment – some oil leakage at this XFMR



P6280171 – 138KV BT 1-2 OCB A phase bushing oil near/at H – glass cracked



P6280172 – XFMR72 LTC – stop at 16 lower



P6280173 – XFMR77 lose tape on insulator



P6280174 – XFMR77 tape cover top part of window for oil level – ComEd noted that the oil level can still be seen.



P6280175 – XFMR77 LTC



P6280176 – XFMR73 LTC – stop at 16 lower



P6280177 – XFMR74 LTC



P6280178 – XFMR78 2 phases on low side can't read oil level from ground without binoculars



P6280179 – XFMR78 LTC -- XFMR 79 LTC similar



P6280180 – 34KV10342 – oil leak on tank



P6280181 – Bus 2 pots c phase cracked indicator window



P6280185 – 345KV BT1-2 – A phase bushing looks high
B phase bushing looks high on other side
C phase bushing looks high on other side

ComEd personnel know about bushing leaks on 345 OCB Bushings A phase and C phase