

PASADENA WATER & POWER

TM Goodrich Substation
Pasadena, CA

SAVE

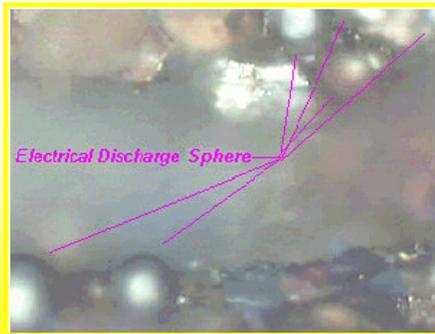
Sample ID: PWP-C-03422-5-1-LTC
Equip. Desc.: C-03422-5-1; Load Tap Changer
Lubricant Type: Shell Dalina
Reservoir Cap.: 345.00 Gal(s) 1,305.83 Ltr(s)
Operations: 65,339
Lube Time: Not Provided Hr(s)

Sample Date: 4/25/2001
Received Date: 5/2/2001
Test Date: 5/4/2001
Prev. Sample: 4/25/2001
First Sample: 4/25/2001
No. Samples: 1

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McGraw Edison Load Tap Changer; C-03422-5-1; is one of two-(2) main LTC of the municipality. Dissolved Gas Analysis (DGA) test results indicates **NORMAL** operation and to sample next year.

LTC³ condition **CRITICAL Recommendation**: Schedule this unit for maintenance action. Specifically, inspect and correct electrical discharge and arcing of contact, secure mounting hardware and reduce water contamination to eliminate electrical discharge inside LTC.



Although the equipment particle concentration (EPC) of 269 is well within acceptable limits for this type of equipment, analytical results show a high concentration of Ferrous metal wear particles. These metal particles are from the LTC mounting hardware. The movement of this hardware has resulted in the electrical discharge to surrounding components and contacts. This image displays the Tectites or Spheres (i.e. the Sparks) from electrical discharge.

Note: This was a **FIRST** time this equipment has been tested.

Upon opening of McGraw Edison Load Tap Changer; C-03422-5-1, contact mounting hardware found to have play and movable by hand. Equipment show signs of electrical discharge and arcing of contacts and internal components.

Secondary Damage, Property Damage and Service Interruption was minimized. Service Interruption & Downtime was minimized. Maintenance scheduled and performed during holiday weekend slow period.

LTC³ optimized equipment performance and savings for the utility, customers and investors.



CUSTOMER ESTIMATED SAVINGS:

Original Component Savings:	1,004,500
Secondary Damage Savings:	24,970
Business Interruption:	37,830
Property Damage:	N/A
Rush Shipping Cost Savings:	15,000
Overtime Repair Savings:	7,195

Total SAVINGS: \$ 1,089,495

REAL Return on Investment: 7,263:1