

1 Q. **Replace Transformer T1 – Buchans, Tab 19, Volume II, Page 2**

2 *“Dissolved Gas Analysis (DGA) has indicated high concentrations of gases in the*  
3 *main tank including ethylene, acetylene, and carbon monoxide. This is a result of*  
4 *thermal heating and electrical discharge and is an indication of either an internal*  
5 *fault, or a leaking tap changer. Its oil quality is IEEE Class 3, which is considered the*  
6 *worst class by IEEE standards. Bushings are suspected to contain poly chlorinated*  
7 *biphenyls (PCB’s).”*

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9 Provide all dissolved gas analysis reports for Buchans T1 for the past 10 years.

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12 A. Below is the Buchans T1 dissolved gas analysis (DGA) results for the period of 2007  
13 to the present. As can be seen from the DGA there has been high concentrations  
14 of gases in the main tank including ethylene, acetylene, and carbon monoxide. The  
15 transformer oil has been assigned a quality of IEEE Class 3, which is considered the  
16 worst class by IEEE standards. Based on an assessment by ABB, the transformer  
17 manufacturer, the Buchans T1 transformer has been identified as a high risk for  
18 dielectric failure due to poor oil quality and high levels of combustible gases.

**NP-NLH-027**  
**2018 Capital Budget Application**

	Hydrogen	Oxygen	Nitrogen	Methane	Carbon Monoxide	Carbon Dioxide	Ethylene	Ethane	Acetylene	Propylene
<b>Sample Date</b>	<b>H2</b>	<b>O2</b>	<b>N2</b>	<b>CH4</b>	<b>CO</b>	<b>CO2</b>	<b>C2H4</b>	<b>C2H6</b>	<b>C2H2</b>	<b>C3H6</b>
2007-03-14	10	25200	61000	5	348	2100	105.0	2.0	42.0	
2009-03-10	0	25900	56700	0	115	802	11.0	0.0	0.0	0
2010-03-09	0	26400	60500	0	316	1840	96.0	0.0	35.0	22
2010-12-19	0	25600	61000	0	346	1770	87.0	0.0	26.0	0
2011-04-08	0	25000	63100	0	321	1660	89.0	0.0	27.0	0
2012-02-26	0	24100	57300	0	353	1880	104.0	0.0	29.0	0
2013-03-21	0	24100	59800	0	355	2130	114.0	3.0	33.0	0
2014-03-06	0	24700	60400	0	307	2010	124.0	0.0	38.0	26
2014-06-25	15	22400	58700	0	352	2240	117.0	0.0	39.0	0
2014-10-06	0	22900	59700	0	361	2230	113.0	2.0	34.0	0
2014-11-07	0	23000	58000	0	358	2170	116.0	0.0	36.0	0
2015-02-09	0	25400	61300	0	318	2040	115.0	0.0	38.0	26
2015-02-25	0	24200	59200	0	317	2010	108.0	0.0	36.0	0
2015-08-12	0	20500	59600	0	397	2320	111.0	0.0	38.0	0
2015-09-10	0	24200	60200	0	361	2220	115.0	0.0	39.0	0
2015-11-03	0	26500	70100	0	398	2350	105.0	0.0	36.0	0
2016-02-02	0	23400	58600	0	331	2150	110.0	0.0	37.0	24
2016-05-16	0	25500	59300	0	302	2020	102.0	0.0	35.0	0
2016-11-29	0	23600	58500	0	332	2160	107.0	0.0	37.0	11
2017-01-27	0	24200	60300	0	356	2230	112.0	0.0	37.0	21
2017-05-30	8	30367	86882	5	428	2211	116.0	0.3	43.0	0