- This station supplies two 4.16 kV feeders via very old oil circuit breakers. As with MS#1, we would be concerned that spare parts could not be obtained for these breakers.

- Warning signs are adequate; location sign should be added.

- Fencing is good.

- There is no spill containment curb at this transformer.

- There is a minor oil leak at the transformer, near the base.

- The 27.6 kV fuse ratings appear to be 125E.

- This station is slated to be phased out in the next 2 to 3 years.

3.3 Municipal Station #3 – Town Line Road and Tillson Street

- There is a 5000 kVA transformer located here, 27.6/4.16 kV, 1977 vintage.

- Impedance: 5.24%

- This station supplies three 4.16 kV feeders (one out of service) via air circuit breakers.
- Warning and location signs need to be added at this location.
- Fencing seems adequate; however, severe tree trimming is required along the north fence.
- The 27.6 kV fuses appear to be 125E, which should be adequate.
- Spill containment curb is at this transformer, but it needs to be repaired.
- This site also contains the PCB storage container. Records of PCB transactions are located here, as well as in the office.
- A sign should be added to the main gate to indicate that this is a PCB storage site. The signs on the container are good.
- The long-range plan is to remove #3 MS from service and move it totally to the site of MS#1, and to retire the MS#1 equipment.

3.4 Municipal Station #4 – 10 Lisgar Avenue

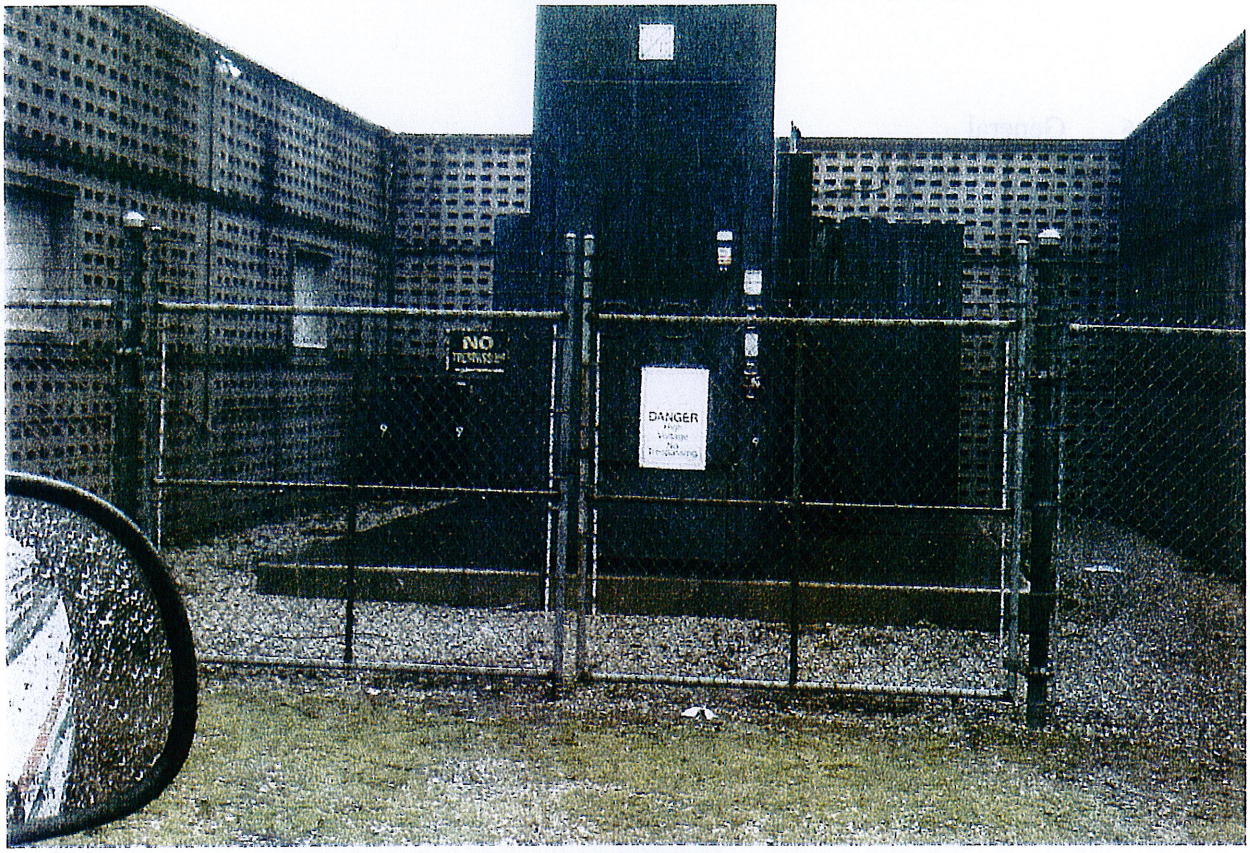
- There is a 5000 kVA transformer located here, 27.6/4.16 kV, 1975 vintage.
- Impedance: 5.49%
- This station supplies four 4.16 kV feeders, via fuses.
- We were unable to determine the size rating of the 27.6 kV fuses.
- Warning and location signs should be added to the gate and fence.

- This station is located in the back yard of the storage-garage building. The gate to the structure is left open during working hours. We believe this is a risky situation, which could be corrected by either adding remote control to the rear gate, or fencing the substation separately.

- There is a propane tank located in this yard as well, which is apparently slated for removal.

- Spill containment curb has been added around the transformer.

Municipal Station #5 – North Street and Woodcock



- There is a 5000 kVA, 27.6/4.16 kV transformer located here.

- Impedance: 5.24%

- This station supplies three 4.16 kV feeders via fuses and disconnects on the 4.16 kV.

- We were unable to determine the size rating of the 27.6 kV fuses.
- Fencing is adequate.
- Location signs should be added to the front of the building.
- There is no spill containment, but a curb could be added around the transformer.

3.5 One-Line Operating Drawings

These should be located in all substations.

3.6 General

Many of our comments relating to substations, particularly in the area of grounding, fencing, and signage, refer to the Ontario Electrical Safety Code for customer owned substations. Some of these requirements may be "grandfathered" with respect to utility owned stations. However, this determination has not yet been made. In any case, it is expected that there will be no relaxation of the code where public safety is concerned.

3.7 Buildings

As well as the substation properties, Tillsonburg PUC owned the office, garage and warehouse building located at 10 Lisgar Avenue, now known as Tillsonburg Customer Service Centre.

3.8 Meter Reading

Meter reading is performed by contract. At present, Proson is performing this service. Tillsonburg handles the billing process on a Harris computer system.

Meter testing and re-verification is being done at Ingersoll. Installation and removal is done by Tillsonburg staff.

3.9 Easements

All easements are registered, or are very close to being registered.

3.10 After Hours Emergency

After hours calls go to Tillsonburg police, who in turn notify linemen by pager.

3.11 Employees

At the time of transfer to the town, Tillsonburg PUC had approximately 12 employees dedicated to electrical, and approximately 8 dedicated to water. For an electric system, this indicates an efficient operation, i.e. approximately 500 customers per employee.

From discussions, with John Puhr, Richard Breit, Kevin Hicks, Jack McMurchie and Peter Fung, it was deduced that the Tillsonburg Electric system has been efficiently and effectively run. We were impressed with the dedication to customer service exhibited by the employees with whom we had discussions.

Two management and 2 employees are certified safety reps.

Technical and safety training is kept up to date. Pole top rescue, CPR and First Aid are also kept up to date.

Tillsonburg is approaching 500,000 hours without a lost time accident.

Tillsonburg has good emergency co-ordination plans.

They maintain up-to-date system maps in all vehicles, and operate an effective emergency response system.

3.12 Vehicles

The Tillsonburg Electric System operates 7 vehicles:

1 – 1998 Amador single bucket – 50 ft.
1 – new Amador – 50 ft. single bucket
1 – Radial Boom Derrick - 1989
1 – Underground repair vehicle
1 – Pick-up truck - 1998
2 – Service vans

The large boom trucks are dialectrically and mechanically tested annually.

3.13 Debts

Tillsonburg has no significant outstanding debts or risk management liabilities.

3.14 Controllable Costs

Controllable costs for 1999 were $919,192/6,000 = $153.00/customer, or $919,192/199,159 = $4.61 per MWHR delivered.

3.15 Outage Records

Outage records are kept up-to-date indicating SAIDI and SAIFI.

4.0 CONCLUSIONS

We were able to conclude that the Tillsonburg Electric System has been well managed. It has operated efficiently and has provided effective service to its' customers. They have operated safely with good safe practices, policies and procedures.

The physical systems and vehicles are in good condition. For the most party, they appear to have been well maintained. We would recommend, if possible, that the conversion to 27.6 kV be accelerated, in order to reduce losses and to speed up the decommissioning of the older substations.

As always, there are a few areas where improvement is recommended. These areas are outlined in the following Action List. We have placed a ✯ symbol on items we feel need immediate attention, prior to your new Board of Directors taking over.

5.0 ACTION LIST

- The nomenclature system will need to be reviewed or revised.

★ **All stations need current single-line diagrams posted to reflect what is in service, what is open, and what is closed. Every station needs a current AC and DC elementary, so that proper isolation can be achieved for personnel doing work on equipment**

- Switches, which are non-load break, should be labelled as such, to prevent inadvertent operation under load.

- Work protection courses are an ongoing requirement and must be reviewed and recorded annually.

- Written switching procedures should be developed for switching loads between stations.

- System losses are relatively high, at 4.48% in 1998. An accelerated program of conversion to 27.6 kV would help to reduce losses.

★ **There are several rear lot overhead circuits remaining, which may constitute a public safety concern. A plan should be developed for rectification of this situation.**

- Plans should be developed to accelerate removal of very old circuit breakers in MS #1 and MS #2.

★ **Location signs should be added at all stations.**

- A spill containment curb should be added at MS #5.

- There is a minor oil leak at the transformer, near the base – MS #5.

★ **At MS #3, severe tree trimming is required along the north fence.**

★ **Spill containment curb needs to be repaired at MS #3.**

- A sign should be added to the main gate, at MS #3, to indicate that this is a PCB storage site.

- The 27.6 kV fuses at all stations should be checked to confirm size rating (should not be greater than 150E.)

- We would recommend that a Fuse-Relay Co-ordination Study be implemented for those stations to remain in-service.