280' 4800KD ANGLE LEG GUYED TOWER
McIntosh, ON
Report No: 9999

TOWER INSPECTION REPORT
SITE INFORMATION:

Coordinates:  
Latitude: ~ 43° 58' 57” North  
Longitude: ~ 81° 07' 05” West  

Structure:  
Height: 280 ft  
Type: 4800KD  
Face Width: 48” c/c  
Panel Height: 40” c/c  
Manufacturer: Trylon Manufacturing  

Site Access: 2WD  

INSPECTION DETAILS:

Inspected by: Martin Piercey, P.Eng  
Michel Robert  
Kincardine Cable TV Ltd: Bryan Walden  

Weather Conditions: -3°C, Overcast with a SW wind @ 10 kph.  
Date of Inspection: 7-November-2002  

DISTRIBUTION:  
Kincardine Cable TV 2 copies  
Trylon TSF 1 copy
OBSERVATIONS AND MEASUREMENTS

A. Tower Members: The tower members appear satisfactory.

B. Connections: All tower connections appear satisfactory.

C. Ladder and Safety Device: The ladder and Trylon safety rail system are in satisfactory condition.

D. Guys and Guy Hardware: The guys and guy hardware are in satisfactory condition. See Table A for accompanying hardware components. See Photo #4.

E. Foundations: Visible portions of the foundations appear satisfactory.

F. Antennas and Antenna Mountings: The antennas and mountings are in satisfactory condition. See Table B for list of antennas on this structure.

G. Transmission Lines:
   1. There are several loose 1/4” transmission lines throughout the length of the tower. This is tolerable.
   2. There is a loose relay box in the second cluster of antennas. See Photo #8.
   3. There is a loose transmission line splitter connection. See Photo #9.

H. Waveguide Bridge: The waveguide bridge and port into the building are in satisfactory condition. See Photos #2 and #3.

I. Grounding: The grounding is satisfactory.

J. Conduit and Lighting: The DOL on face 3-1 at 142’ and beacon at the top of the tower are in satisfactory condition.

K. Paint: The paint is in excellent condition and approximately 90% effective.

L. Galvanizing: The tower galvanizing appears satisfactory.

M. Guy Tensions: The guy tensions are mainly within recommended CSA limits. See Table C.

N. Tower Alignment: The tower alignment is satisfactory. See Table D.

O. Additional Remarks:
   1. There is no security fence or anti-climb system in place to restrict unauthorized personnel from accessing this structure.
   2. There are numerous unused yagis and dipole antennas lying behind the building. See Photo #10.
### TABLE A
#### GUY HARDWARE

<table>
<thead>
<tr>
<th>Guy Level (ft)</th>
<th>Guy Diameter (in)</th>
<th>Guy Termination (bottom)</th>
<th>Shackle (bottom)</th>
<th>Turnbuckle Gaps (in)</th>
<th>Turnbuckle (top)</th>
<th>Shackle (top)</th>
<th>Guy Termination (top)</th>
</tr>
</thead>
<tbody>
<tr>
<td>58.3</td>
<td>7/16” GS</td>
<td>Preform</td>
<td>5/8”</td>
<td>¾” x 18” J-E</td>
<td>11¼</td>
<td>10½</td>
<td>11½</td>
</tr>
<tr>
<td>128.3</td>
<td>5/8” BS</td>
<td>Preform</td>
<td>3/4”</td>
<td>1” x 18” J-E</td>
<td>8½</td>
<td>8</td>
<td>11¼</td>
</tr>
<tr>
<td>195.0L</td>
<td>9/16” GS</td>
<td>Preform</td>
<td>3/4”</td>
<td>1” x 18” J-E</td>
<td>13¾*</td>
<td>14¾*</td>
<td>12</td>
</tr>
<tr>
<td>195.0R</td>
<td>9/16” GS</td>
<td>Preform</td>
<td>3/4”</td>
<td>1” x 18” J-E</td>
<td>10</td>
<td>8½</td>
<td>9¼</td>
</tr>
<tr>
<td>283.3L</td>
<td>9/16” GS</td>
<td>Preform</td>
<td>3/4”</td>
<td>1” x 18” J-E</td>
<td>10</td>
<td>13*</td>
<td>13¼*</td>
</tr>
<tr>
<td>283.3R</td>
<td>9/16” GS</td>
<td>Preform</td>
<td>3/4”</td>
<td>1” x 18” J-E</td>
<td>9¼</td>
<td>9¼</td>
<td>9¼</td>
</tr>
</tbody>
</table>

* Outside recommended CSA limits.

### TABLE B
#### TOWER ANTENNAS

<table>
<thead>
<tr>
<th>Antenna Type</th>
<th>Height</th>
<th>Location</th>
<th>Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Small 12 Element Yagi</td>
<td>105’</td>
<td>Leg 1</td>
<td>320°</td>
</tr>
<tr>
<td>2. Large 6 Element Yagi</td>
<td>105’</td>
<td>Leg 2</td>
<td>160°</td>
</tr>
<tr>
<td>3. Large 6 Element Yagi</td>
<td>111’</td>
<td>Leg 1</td>
<td>20°</td>
</tr>
<tr>
<td>4. Small 12 Element Yagi</td>
<td>111’</td>
<td>Leg 2</td>
<td>160°</td>
</tr>
<tr>
<td>5. Medium 5 Element Yagi</td>
<td>118’</td>
<td>Leg 1</td>
<td>330°</td>
</tr>
<tr>
<td>6. Medium 5 Element Yagi</td>
<td>118’</td>
<td>Leg 2</td>
<td>160°</td>
</tr>
<tr>
<td>7. Large 6 Element Yagi</td>
<td>140’</td>
<td>Leg 2</td>
<td>170°</td>
</tr>
<tr>
<td>8. Medium 5 Element Yagi</td>
<td>140’</td>
<td>Leg 3</td>
<td>350°</td>
</tr>
<tr>
<td>9. Large 6 Element Yagi</td>
<td>146’</td>
<td>Leg 3</td>
<td>210°</td>
</tr>
<tr>
<td>10. SRL 310C-4</td>
<td>150’-160’</td>
<td>Leg 1</td>
<td>50°</td>
</tr>
<tr>
<td>11. Large 6 Element Yagi</td>
<td>200’</td>
<td>Face 1-2</td>
<td>75°</td>
</tr>
<tr>
<td>12. Very Large 8 Element Yagi</td>
<td>215’</td>
<td>Face 1-2</td>
<td>75°</td>
</tr>
<tr>
<td>13. Very Large 8 Element Yagi</td>
<td>225’</td>
<td>Face 1-2</td>
<td>75°</td>
</tr>
<tr>
<td>14. 8’ PL Dish</td>
<td>245’</td>
<td>Face 3-1</td>
<td>320°</td>
</tr>
<tr>
<td>15. Dual Panel Antennas</td>
<td>270’-280’</td>
<td>Face 2-3</td>
<td>200°</td>
</tr>
<tr>
<td>16. Large 10 Element Yagi</td>
<td>277’</td>
<td>Leg 1</td>
<td>130°</td>
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### TABLE C
**GUY TENSIONS**

<table>
<thead>
<tr>
<th>Guy Level</th>
<th>Anchor</th>
<th>Diameter (in)</th>
<th>Guy Type</th>
<th>Length (ft)</th>
<th>Required Tension</th>
<th>Measured 3 Pulse</th>
<th>Measured Tension</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>58.3</td>
<td>1A</td>
<td>0.4375</td>
<td>GS</td>
<td>205.0</td>
<td>2.184</td>
<td>2.88</td>
<td>2.199</td>
<td>1</td>
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<td>58.3</td>
<td>2A</td>
<td>0.4375</td>
<td>GS</td>
<td>205.1</td>
<td>2.182</td>
<td>3.01</td>
<td>2.014</td>
<td>-8</td>
</tr>
<tr>
<td>58.3</td>
<td>3A</td>
<td>0.4375</td>
<td>GS</td>
<td>217.7</td>
<td>2.181</td>
<td>3.16</td>
<td>2.059</td>
<td>-6</td>
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<td>128.3</td>
<td>1A</td>
<td>0.6250</td>
<td>BS</td>
<td>234.3</td>
<td>5.165</td>
<td>3.55</td>
<td>3.988</td>
<td>-23*</td>
</tr>
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<td>2A</td>
<td>0.6250</td>
<td>BS</td>
<td>235.4</td>
<td>5.158</td>
<td>3.39</td>
<td>4.414</td>
<td>-14*</td>
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<td>3A</td>
<td>0.6250</td>
<td>BS</td>
<td>247.6</td>
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<td>4.769</td>
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<tr>
<td>195.0L</td>
<td>1A</td>
<td>0.5625</td>
<td>GS</td>
<td>276.1</td>
<td>3.533</td>
<td>4.18</td>
<td>3.240</td>
<td>-8</td>
</tr>
<tr>
<td>195.0L</td>
<td>2A</td>
<td>0.5625</td>
<td>GS</td>
<td>277.9</td>
<td>3.528</td>
<td>3.94</td>
<td>3.693</td>
<td>5</td>
</tr>
<tr>
<td>195.0L</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>289.2</td>
<td>3.537</td>
<td>4.38</td>
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<td>195.0R</td>
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<td>0.5625</td>
<td>GS</td>
<td>276.1</td>
<td>3.533</td>
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<td>0.5625</td>
<td>GS</td>
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<td>3.528</td>
<td>4.20</td>
<td>3.250</td>
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<tr>
<td>195.0R</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>289.2</td>
<td>3.537</td>
<td>4.25</td>
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<td>258.3L</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>323.7</td>
<td>3.475</td>
<td>4.97</td>
<td>3.149</td>
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<tr>
<td>258.3L</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>325.9</td>
<td>3.472</td>
<td>4.62</td>
<td>3.693</td>
<td>6</td>
</tr>
<tr>
<td>258.3L</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>336.3</td>
<td>3.480</td>
<td>4.89</td>
<td>3.511</td>
<td>1</td>
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<tr>
<td>258.3R</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>323.7</td>
<td>3.475</td>
<td>4.80</td>
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<td>258.3R</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>325.9</td>
<td>3.472</td>
<td>4.82</td>
<td>3.393</td>
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<tr>
<td>258.3R</td>
<td>3A</td>
<td>0.5625</td>
<td>GS</td>
<td>336.3</td>
<td>3.480</td>
<td>4.76</td>
<td>3.705</td>
<td>6</td>
</tr>
</tbody>
</table>

* Outside recommended CSA limits (± 10%).

### TABLE D
**TOWER DEFLECTION & ROTATION**

<table>
<thead>
<tr>
<th>Height (ft)</th>
<th>X</th>
<th>Y</th>
<th>Resultant</th>
<th>Allowable</th>
<th>Measured</th>
<th>Allowable</th>
<th>Overall Measured</th>
<th>Overall Allowable</th>
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<tbody>
<tr>
<td>0.00</td>
<td>0.12</td>
<td>0.12</td>
<td>0.17</td>
<td>0.70</td>
<td>-0.24</td>
<td>± 2.92</td>
<td>-0.24</td>
<td>± 2.92</td>
</tr>
<tr>
<td>58.3</td>
<td>0.12</td>
<td>0.12</td>
<td>0.00</td>
<td>0.84</td>
<td>0.29</td>
<td>± 3.50</td>
<td>0.05</td>
<td>± 5.00</td>
</tr>
<tr>
<td>128.3</td>
<td>0.24</td>
<td>0.63</td>
<td>0.50</td>
<td>0.80</td>
<td>0.74</td>
<td>± 3.34</td>
<td>0.79</td>
<td>± 5.00</td>
</tr>
<tr>
<td>195.0</td>
<td>0.49</td>
<td>-0.57</td>
<td>0.08</td>
<td>0.76</td>
<td>-0.21</td>
<td>± 3.17</td>
<td>0.58</td>
<td>± 5.00</td>
</tr>
<tr>
<td>258.3</td>
<td>* Outside recommended CSA limits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TOWER PROFILE

EL = 280'

15' TORSION RESISTOR

EL = 258.3'

EL = 195'

15' TORSION RESISTOR

EL = 128.3'

3/8" 1x7 GUY STRAND (GRIP & GRIP)
LT = 3.5 kips

3/8" 1x19 BRIDGE STRAND (COMP. SLEEVE & GRIP)
LT = 1.6 kips

EL = 58.3'

3/8" 1x7 GUY STRAND (GRIP & GRIP)
LT = 2.0 kips

EL = 0'

TOWER DESIGNED TO:
CSA S37 - MR6
WIND: Qe = 450 Pa
ICE: CLASS 2

280' - 4800 KD TOWER - McIntosh
GENERAL NOTES

1. All inspections are performed in accordance with CSA S37-01 and other applicable codes.

2. Anchor one (1) is typically designated as the first anchor clockwise of True North (or Magnetic if declination is unknown). Other anchors are noted in a clockwise direction (looking from tower base).

GUY TENSIONS

3. Initial Tension is the design tension at 10°C. If not specifically given, it is assumed to be 10% of the breaking strength of the wire as recommended by CSA S37-01.

4. Measured pulse times are for a total of three pulses or swings.

5. Torsion resistor (outrigger) levels are indicated through L - Left and R - Right reference when looking towards the tower.

6. Anchor convention is indicated as: Outer (A), Middle (B), Inner (C), and so forth.

7. One kip is equal to 1000 pounds force.

TOWER DEFLECTION

8. Direct and Reverse transit readings are used to compensate for any transit / theodolite errors.

9. Leg width is the overall perpendicular distance in inches normal to the line of sight.

GUY HARDWARE

10. Guy hardware legend:
    - GS: 1x7 galvanized guy strand
    - BS: 1x19 galvanized guy strand or equivalent
    - Preform: Slater Guy Grip, Big Grip or equivalent
    - CC: Crosby U-Bolt Clip
    - FG: Twin-base Clips (Fist Grips)
    - CS: Compression Sleeve or Mechanical
    - RS: Rocket Socket or equivalent
    - J-E: Jaw-Eye turnbuckle
    - E-E: Eye-Eye turnbuckle

11. Refer to the typical anchor photograph for a clear view of the hardware type and arrangement.
RECOMMENDATION RATING SYSTEM

Trylon TSF conducted a tower inspection of this tower located in the McIntosh, Ontario region on November 7, 2002. The purpose of this review was to sample the condition of the structure as recommended by Appendix D of CAN/CSA S37-01 Standard, Antennas, Towers and Antenna Supporting Structures.

The work was carried out in a manner outlined in the aforementioned standard. The items in this section require corrective action as noted. A description of the associated Priority Ratings used in this section is given below.

A priority is placed on each recommendation made in this report to help the Owner in allocating funds for remedial work or future attention.

Recommendations are assigned a priority rating of Immediate, Short Term, Long Term, or Monitor. These ratings are related to safety, structural integrity, system performance, and proper maintenance of the tower and attachments.

Priorities are assigned based on CSA safety standards as well as the experience and knowledge of our engineering staff. In all cases, safety is of paramount importance.

Priority Rating:

**Immediate**  Repairs / replacement should be carried out immediately.

This includes items or faults which, if not corrected, may lead to collapse or failure of the structural system or antenna or pose a threat to the safety of personnel that might be on the site.

**Short Term**  Repairs / replacement should be carried out within the current year.

This includes items or faults which have or will impact on the quality of transmission signals or items that will in time shorten the service life of the tower or its elements.

**Long Term**  Repairs / replacement should be carried out at the Owner’s discretion.

This includes items or faults related to ease of access to the tower, the ladder condition, anti-climb condition, fencing, gates, locks, access roads, etc.

**Monitor**  Future attention should be carried out by personnel when on site.

This includes items or faults which require further investigation either by a Professional Engineer qualified to work with Communication Structures or attention on a regular basis by qualified tower inspection personnel.
RECOMMENDATIONS

Our terms of reference do not include analytical review of this structure for conformance with the strength requirements of CSA S37-01 or other pertinent CSA Standards.

Summary of Outstanding Deficiencies and Items Requiring Further Attention As Noted In Report:

Priority Rating

Long Term  Remove the unused yagis and dipoles from behind the building.
Long Term  Supply and install an anti-climb gate.
Long Term  Secure the loose 1/4” tx lines throughout the tower, along with the loose splitter and relay box.
Photo #1 - Tower Profile.
Photo #2 – Tower Base and Waveguide Bridge.

Photo #3 – Waveguide Port Into Building.
Photo #4 – Typical Anchor 3A.

Photo #5 – Top Antennas.
Photo #6 – Middle Antennas.

Photo #7 – Bottom Antennas.
Photo #8 – Loose Relay Box.

Photo #9 – Loose Line Splitter Connection.
Photo #10 – Discarded Yagis Behind Building.

Photo #11 – Inside the Tower.