APPLIED TECHNICAL SERVICES, INCORPORATED ISO 9001

1049 Triad Court, Marietta, Georgia 30062 • (770) 423-1400 Fax (770) 424-6415

COMPARISON OF CHAIN SAW CHAINS

0.325" Pitch, 0.050" Gauge

ATS JOB # D108936 –6

PURCHASE ORDER # VERBAL - LACY

Prepared for

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MATERIALS TEST REPORT

Purchase Order # Verbal – Lacy

Steve Lacy, President
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Subject

Comparison of Chain Saw Chains with 0.325" Pitch, 0.050" Gauge, 72 Drive Length

Objective and Background

Chains from three independent manufacturers were obtained for comparative analysis. All chains were tested on a Husqvarna 350 with a 18 inch bar. Comparable chains from each manufacturer were used for:

- Speed/Life Test of two new chains from each manufacturer
- Tensile Strength Test of three new chains from each manufacturer

The three manufacturers of chains are designated as:
A) Carlton K1C-72E
B) Oregon 20BP072G
C) Trilink 0.325" Pitch 0.050" 72

Test Procedure for Speed/Life Test

A fixture was built to hold the oak log on a roller bed and hold the saw in place and provide a consistent downward force of 9 pounds while cutting (Figure 1). A Chatillon force gauge was used to set the cylinder pressure to obtain the 9 pounds of force. A new chain was installed on the chain saw. The chain saw was placed into the fixture and secured. The throttle on the chain saw was fixed to run full throttle during the test. A foot pedal switch was pressed to start the saw cutting into the log. The amount of time it took to cut through the log was recorded with a calibrated stop watch. Once the saw cut through the log, the saw fixture contacted another pressure switch which returned the fixture to the start position. The log was then moved approximately one inch and the process was started over, until one hundred cuts were made.

Test Procedure for Tensile Test

A fixture was built to hold the chains in the Universal Test Machine (Figure 2). Once the fixture and the chain were installed into the Tinus Olsen Tester, a tensile load was steadily applied until the chain broke. The ultimate load (lbs) was recorded.

Results of Speed/Life Test

All the recorded times were put into a graph format to show a comparison between the three manufacturers. See Table 1 for the comparison of the entire first set of chains from each manufacturer and Table 2 for the second set of chains from each manufacturer. See Table 3 for the comparison of all chains.

Table 1: Comparison of first set of chains

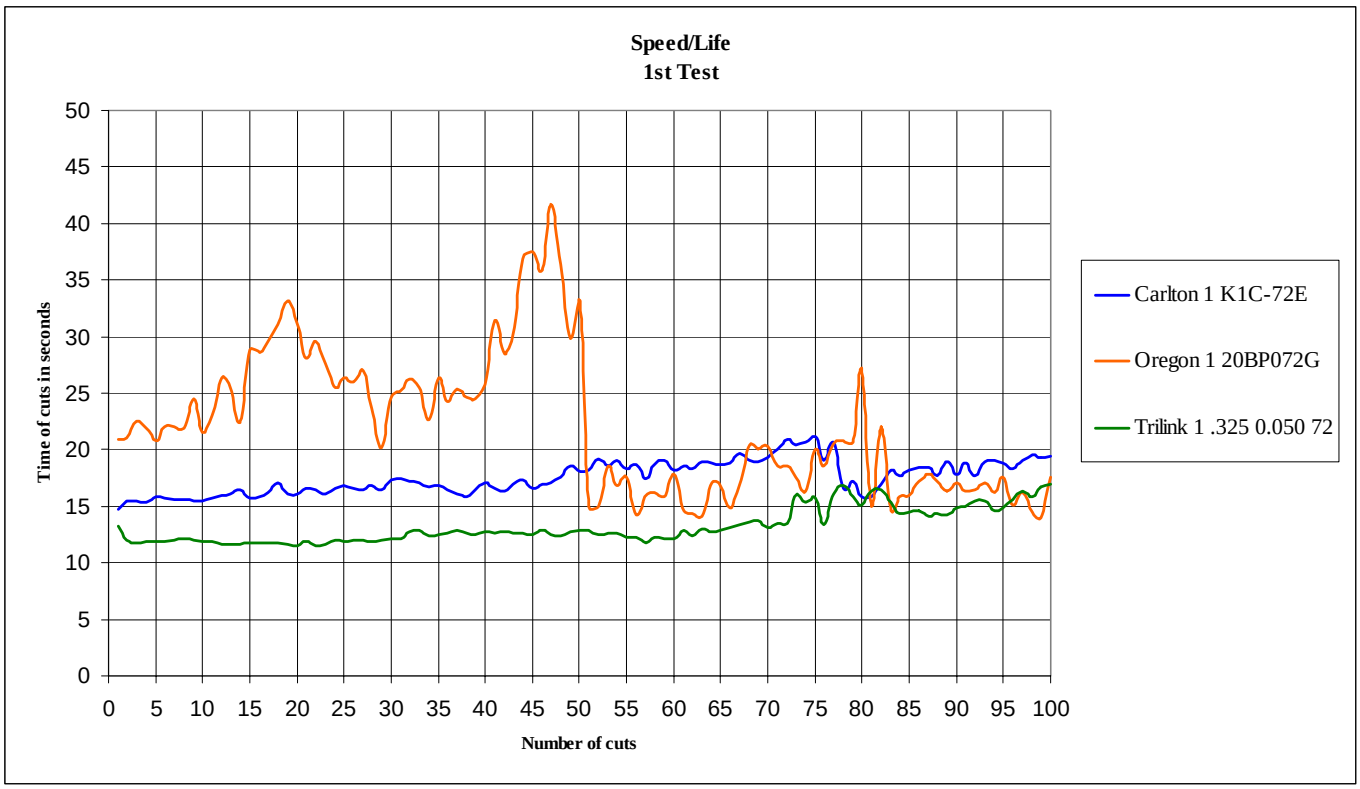

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Table 2: Comparison of second set of chains

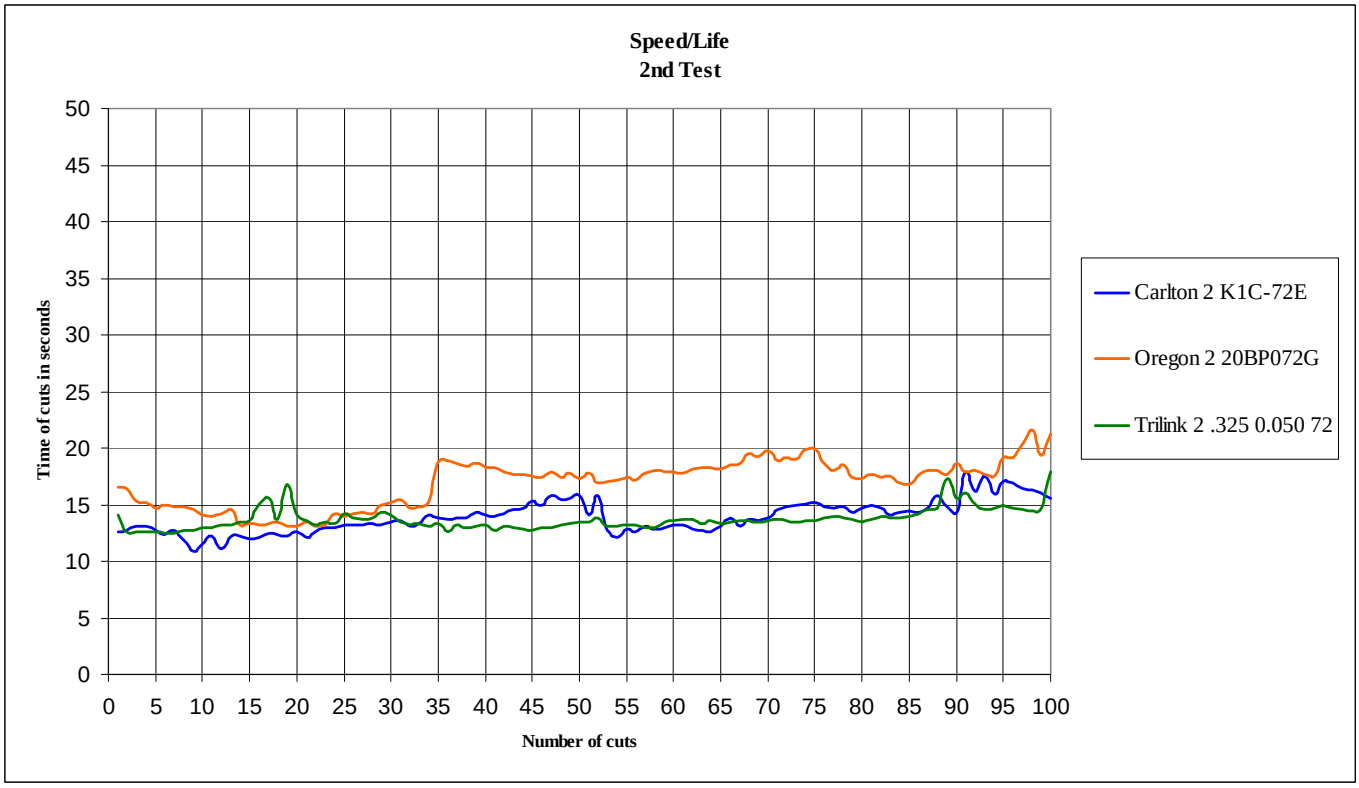

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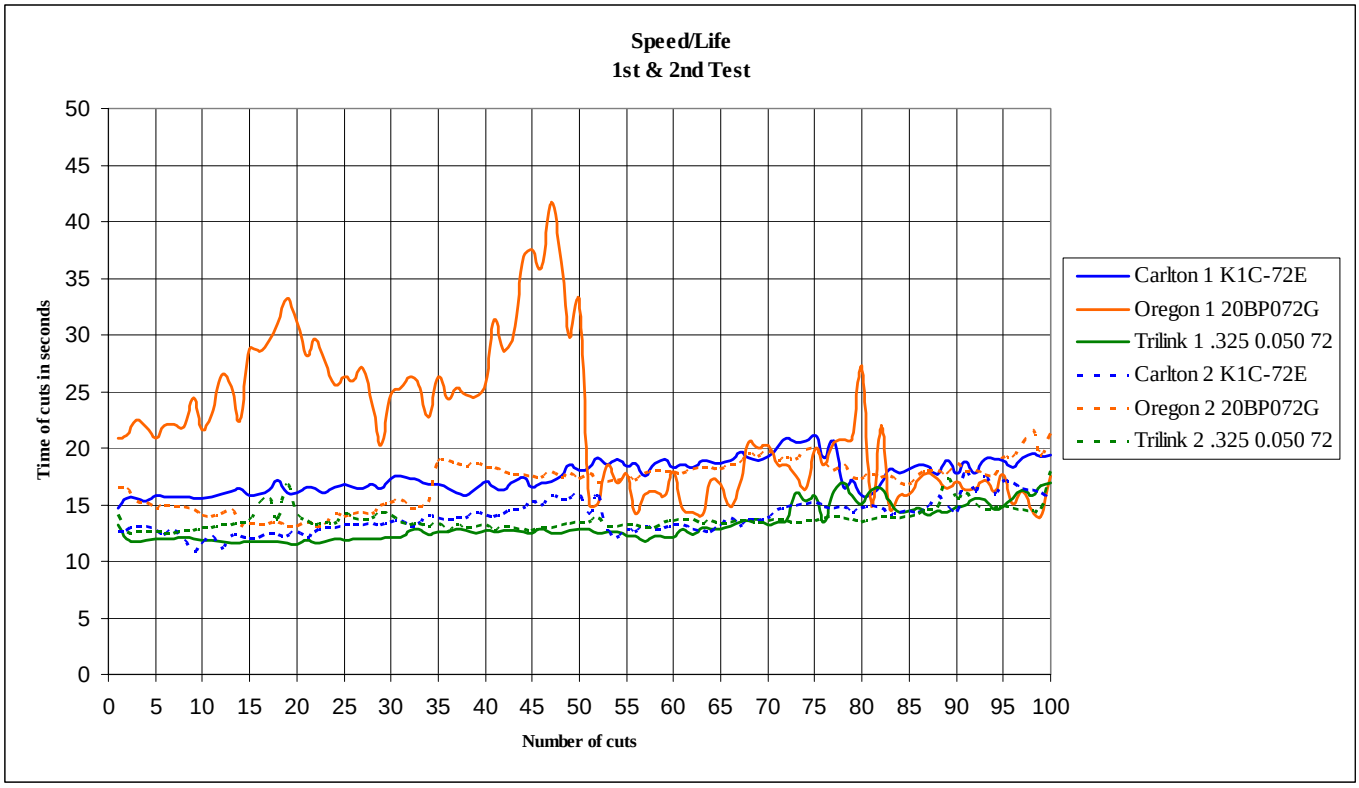
Table 3: Comparison of all chains tested



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Results of Tensile Strength Test

The Ultimate Load (lbs.) from three chains from each manufacturer was recorded and then the average was taken. See Table 4 for the results. All chains failed in a drive link around one of the rivet holes. See Figure 3.

Table 4: Comparison of Tensile Strength

Load Test Data				
Chain Identification	Ultimate Load (lbs.) Sample A	Ultimate Load (lbs.) Sample B	Ultimate Load (lbs.) Sample C	Average
Carlton K1C-72E	3,671	3,644	3,646	3,654
Oregon 20BP072G	3,461	3,485	3,423	3,456
Trilink 0.325 0.050 72	3,688	3,541	3,667	3,632

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Figure 1: Speed/Life Test Fixture

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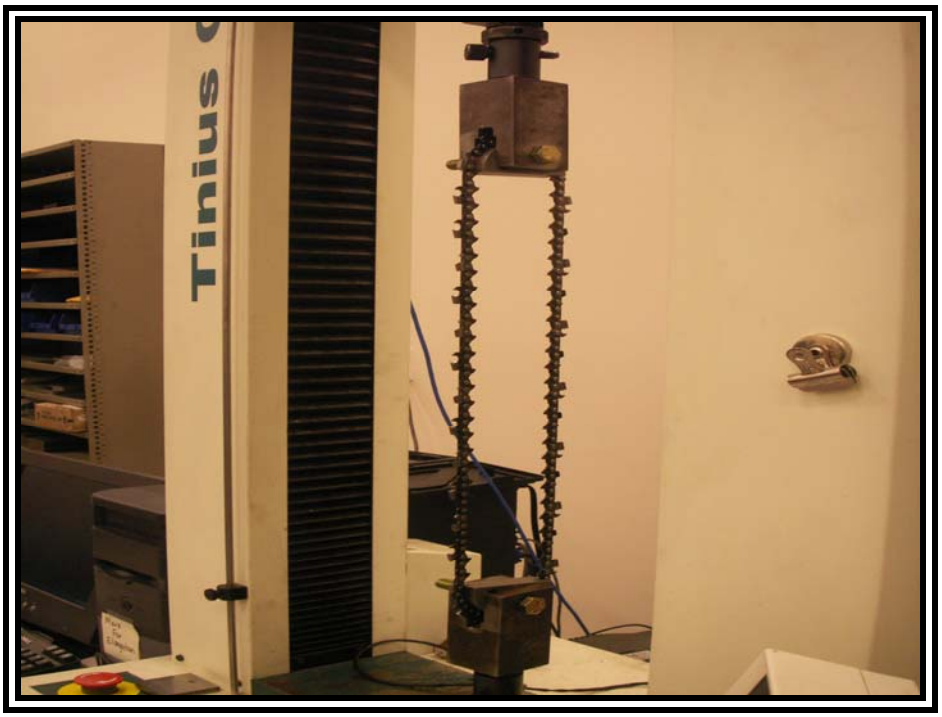

Figure 2: Tensile Strength Test Fixture

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Figure 3: Tensile Failure Location