



CLIENT: **Accon, Inc.**
14350 North 60th Street
Clearwater, FL 34620
Attn: Mr. John Czipri

DATE: 17 April 1989

LAB NO: 28439

SUBJECT: Twelve (12) Boat Cleats

METHOD: **ASTM A-370**, Standard Tensile Testing of Steel Products

REPORT OF TEST

1.0 INTRODUCTION

1.1 Applied Research Laboratories was retained by **Accon, Inc.**, to determine the tensile properties of several boat cleats. The test specimens were to be tested in both of two directions (**axis**).

1.2 This Test Program was authorized through the Work Authorization Form signed by **Mr. John Czipri**, President, on January 31, **1989**.

2.0 TEST SAMPLES

2.1 The client submitted a total of twelve (12) boat cleat samples **for** the test program. Six (**6**) samples measured six (6) inches in length while the other six (**6**) samples were eight (**8**) inches in length.

Each sample was marked with a **Sample** Number 1, 2, 3, 4, 5 or 6 of 6 for the 6 inch or 3 inch samples for identification purposes during testing.

The samples submitted for testing were polished stain-steel units. The units were unique in that the rope attachment section dropped into the boat deck when not in **use**.

3.0 TEST METHODS

3.1 Testing was conducted in accordance with the procedures outlined in ASTM A-370, "Standard Tensile Testing of Steel Products."

ARL was instructed to test the samples as follows:

Three (3) 6-inch cleats **forward (x) axis**
Three (3) 6-inch cleats **sideways (y) axis**
Three (3) 8-inch cleats **forward (x) axis**
Three (3) 8-inch cleats **sideways (y) axis**

APPLIED RESEARCH LABORATORIES

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CLIENT: Accon, Inc.

Page 2 of 3

DATE: 4/17/89

SUBJECT: Twelve (12) Samples
of Boat Cleats

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3.2 Three samples from each unit (6 inch or 8 inch) would be tested on the (x) axis and three on the (y) axis. Each test sample was individually attached to a heavy steel ARL test fixture using four (4) 1/4-20 bolts with nuts provided by the client. The test was conducted with the cleat in an extended position. A heavy duty cable was attached to the cleat for the pulling reaction.

A calibrated **Rhiele** test instrument with a capacity of **60,000** pounds was used to perform the tensile pulls.

3.3 The test was to continue until a failure occurred to either a) the cross bar under the cleat; or b) some of the bolts failed in the testing.

4.0 RESULTS

4.1 The following results were recorded when testing three samples of the 6 inch cleats on the (x) axis.

| <u>SAMPLE NO</u> | <u>TENSILE</u> (in lbs) | <u>REMARKS</u> |
|------------------|----------------------------|-------------------------|
| 2 of 6 | 11,400 | Crossbar on back broke. |
| 4 of 6 | 11,360 | Crossbar on back broke. |
| 5 of 6 | 12,200 | Crossbar on back broke. |

4.2 The following results were recorded when testing three samples of the 6 inch cleats on the (y) axis.

| <u>SAMPLE NO</u> | <u>TENSILE</u> (in lbs) | <u>REMARKS</u> |
|------------------|----------------------------|-------------------|
| 1 of 6 | 13,500 | Two bolts failed. |
| 3 of 6 | 13,550 | Two bolts failed. |
| 6 of 6 | 13,250 | Two bolts failed. |

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Page 3 of 3

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4.3 The following results were recorded when testing three samples of the 8 inch cleats on the (x) axis.

| <u>SAMPLE NO</u> | <u>TENSILE</u> (in lbs) | <u>REMARKS</u> |
|------------------|----------------------------|-------------------|
| 1 of 6 | 10,520 | Two bolts failed. |
| 5 of 6 | 12,500 | Two bolts failed, |
| 6 of 6 | 11,720 | Two bolts failed. |

4.4 The following results were recorded when testing three samples of the 8 inch cleats on the (y) axis.

| <u>SAMPLE NO</u> | <u>TENSILE</u> (in lbs) | <u>REMARKS</u> |
|------------------|----------------------------|-------------------|
| 2 of 6 | 7,660 | Two bolts failed. |
| 3 of 6 | 8,800 | One bolt failed. |
| 4 of 6 | 11,400 | Two bolts failed. |

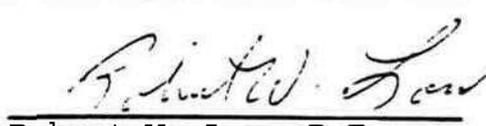
4.5 The results pertain only to the samples tested and may not be indicative of on-going production.

END OF REPORT

Reviewed by:

Report by:


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Director of Engineering


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