DTI's Technical Report #25

Stress relaxation test on high strength bolt and Coronet Load Indicator

Introduction

The design of a high strength bolted joint depends on the maintenance of static tension in the bolts throughout their working life. The test examines relaxation over a number of years.

Summary

Over a period of eight years there was no measurable loss of tension.

Procedure

A 7/8" diameter bolt was tightened in a simulated joint with a Coronet Load Indicator under the bolt head and a flat round washer under the nut. Measurements of overall bolt length and Indicator gap were taken at intervals.

Observations

The slight variations which have occurred throughout these tests will be seen to go up and down and are considered to be due to ambient temperature variation.

Results Bolt length before tightening – 3.983"

Date Readings Taken	Duration Hrs.	Length After Bolting	Load Indicator Gap at Each Measuring Point				Average Gap	Bolt Extension
7/26/63	Nil	3.9920"	.013"	.015"	.016"	.016"	.015"	.0090"
8/16/63	(500)	3.9920"	.013"	.013"	.015"	.016"	.0142"	.0090"
11/29/63	(3000)	3.9918"	.016"	.016"	.014"	.013"	.0147"	.0088"
9/15/66	(10000)	3.9920"	.016"	.016"	.014"	.014"	.015"	.0090"
11/5/66	(20000)	3.9923"	.016"	.016"	.014"	.013"	.014"	.0093"
12/29/66	(30000)	3.9922"	.015"	.014"	.016"	.013"	.014"	.0090"
6/8/71	(8 years)	3.9923"	.016"	.016"	.014"	.013"	.014"	.0093"

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