

E13 950612 303

This is an endorsement to E13 950602 302 (Laboratory Report No. 95-1021), and is being submitted in order to catalog which screw samples were discovered to contain cracks at the thread roots and slack-quenched regions. The additional information is as follows:

A request was made by the customer to re-examine the new and used screws for identification of which sets contained cracks and which did not. During the study, a peculiar microstructure was noticed in a transversely mounted specimen from set "H." Closer examination revealed that the microstructure on one side of one screw from set "H" consisted of proeutectoid ferrite on prior austenitic grain boundaries in a matrix of intermediate transformation products. This microstructure was only in the thread root area on a side of a screw that did not contain cracks. A possible explanation for the formation of this microstructure would be a poor quench on one side of the part, resulting in the formation of ferrite on the prior austenitic grain boundaries.

The following table catalogues the screw sets in which cracks were found at the thread roots, and which sets had the slack-quenched microstructure. Note that the exact locations of cracks and slack-quenched microstructures could not be ascertained prior to sectioning; therefore, not all cracks or slack-quenched areas may be accounted for due to the random sectioning process and limited number of samples to work with.

Screw Set*	Cracks Found?	Slack-Quenched Microstructure Found?
New (from sets "A" and "B")	Yes (1 of 8)**	Yes (4 of 7)***
"C"	Yes (1 of 2)	No
"D"	No	No
"E"	No	No
"F"	No	No
"H"	Yes (1 of 2)	Yes (1 of 2)

Comments:

* See original report (95-1021) for screw set definitions. Note that all screws in set "G" and five from set "B" were destroyed during other tests, and could not be re-examined.

** Note that one new screw was received with the original batch of fractured screws (set "A") in which cracks were found at the thread roots. An additional set of twelve new screws was received in set "B", and of the seven screws remaining in set "B" which were not destroyed for other testing, no additional cracks were found.

*** The new screw from set "A" was destroyed for another test, and could not be re-examined for this endorsement.

Approved By: 
Leslie A. Blankenship
Acting Supervisor

Distribution:

Vonda Sisson, IOB-1M-WBN (4)
RIMS, CST 13B-C

J/S7

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