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**Date:** 4/28/04 4:11PM  
**Subject:** FW: Revised Figure 6 & Table 1

Tom,

The attached file contains the two revised sheets we spoke of on the telephone today. The revision was necessary because the SIA internal independent review discovered an error in the value used for the Young's modulus (E) at operating temperature for calculating J. The value used in the initial analysis (results discussed yesterday) was  $30 * E6$  psi. The correct value is  $28 * E6$  psi. This change affects both Figure 6 and Table 1. Specifically, the values given for J<sup>total</sup> in Table 1 increase slightly; and on Figure 6, the box representing SF = 3 on the J-T Applied line moves up the line slightly. Figure 6 now shows that the 94 ft-lb curve falls slightly below the SF = 3 point. The 94 ft-lb curve remains well above the SF = 3, 1.5 point on the J-T Applied line.

In addition, based on NRC comments from yesterday's call, we have modified Table 1 by removing the column titled "J @ J/T = 50" and adding a column "J @ instability".

Please let me know if you have any problems with this file. You may docket this information, as needed.

Thanks!

Guy

>

> <<Revised SIA table and figure 6-- 04-28-04.pdf>>

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**Table 1: J-T Computations for ANO-1 Top Head Remnant Crack using ASME Section XI Appendix K Approximate Method**

| Safety Factor | $K_{Ip}$ | $K_{Ir}$ | $K_{total}$ | $r_p$  | $a_e$ | $\sqrt{(a_e/a)}$ | $K'_{total}$ |
|---------------|----------|----------|-------------|--------|-------|------------------|--------------|
|               | ksi/in   |          |             | inches |       |                  | ksi/in       |
| SF=1          | 3.7      | 90.7     | 94.4        | 0.131  | 1.631 | 1.043            | 98.4         |
| *SF=3, 1.5    | 11.1     | 136.1    | 147.2       | 0.319  | 1.819 | 1.101            | 162.0        |
| SF=2          | 7.4      | 181.4    | 188.8       | 0.525  | 2.025 | 1.162            | 219.4        |
| SF=3          | 11.1     | 272.1    | 283.2       | 1.182  | 2.682 | 1.337            | 378.7        |
| SF=3.5        | 13.0     | 317.5    | 330.4       | 1.609  | 3.109 | 1.440            | 475.6        |
| SF=4          | 14.8     | 362.8    | 377.6       | 2.101  | 3.601 | 1.549            | 585.1        |

| Safety Factor | $K_{Ip}$ | $K_{Ir}$ | $K_{total}$ | $K'_{total}$ | $J'_{total}$            | $T$    | $J'@$<br>Instability    |
|---------------|----------|----------|-------------|--------------|-------------------------|--------|-------------------------|
|               | ksi/in   |          |             |              | in-kips/in <sup>2</sup> |        | in-kips/in <sup>2</sup> |
| SF=1          | 3.7      | 90.7     | 94.4        | 98.4         | 0.315                   | 0.916  | 4.4                     |
| *SF=3, 1.5    | 11.1     | 136.1    | 147.2       | 162.0        | 0.853                   | 2.483  | 4.4                     |
| SF=2          | 7.4      | 181.4    | 188.8       | 219.4        | 1.564                   | 4.551  | 4.4                     |
| SF=3          | 11.1     | 272.1    | 283.2       | 378.7        | 4.660                   | 13.559 | 4.4                     |
| SF=3.5        | 13.0     | 317.5    | 330.4       | 475.6        | 7.353                   | 21.392 | 4.4                     |
| SF=4          | 14.8     | 362.8    | 377.6       | 585.1        | 11.125                  | 32.367 | 4.4                     |

**\* Appropriate Safety Factor case for ductile material: SF=3 on primary, 1.5 on secondary**

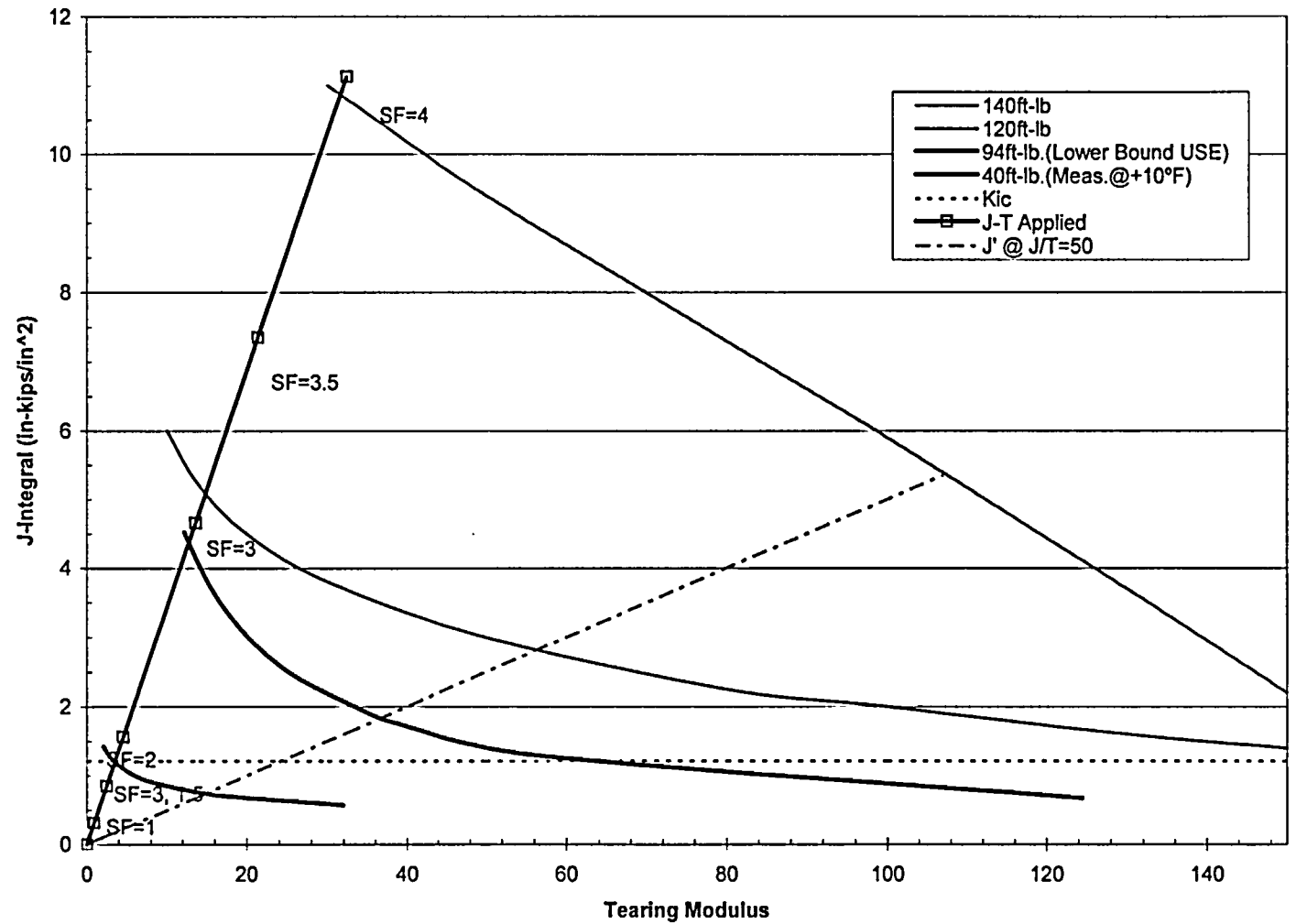


Figure 6– Results of EPFM Stability Analysis for ANO-1 Top Head Remnant Cracking Concern