

TABLE I

STRESS DISTRIBUTION FOR  $1 \times 10^6$  psi PUNCH ASSEMBLY

| Position         | Rings ABC<br>(psi) | Rings ABCD<br>(psi) | Total Assembly<br>Unloaded<br>(psi) | Total Assembly<br>Loaded<br>(psi) |
|------------------|--------------------|---------------------|-------------------------------------|-----------------------------------|
| o.d. A           | $f_t = 28,000$     | $f_t = 67,600$      | $f_t = 76,900$                      | $f_t = 98,700$                    |
| AB interface     | $p = 23,000$       | $p = 126,000$       | $p = 254,000$                       | $p = 554,000$                     |
| o.d. B           | $f_t = 33,050$     | $f_t = 80,050$      | $f_t = 91,050$                      | $f_t = 116,750$                   |
| i.d. B           | $f_c = 57,000$     | $f_t = 15,700$      | $f_t = 141,250$                     | $f_t = 181,250$                   |
| BC interface     | $p = 23,000$       | $p = 126,000$       | $p = 254,000$                       | $p = 554,000$                     |
| o.d. C           | $f_t = 51,100$     | $f_t = 124,200$     | $f_t = 32,750$                      | $f_t = 73,000$                    |
| i.d. C           | $f_c = 80,000$     | $f_t = 15,700$      | $f_t = 98,000$                      | $f_t = 178,000$                   |
| CD interface     |                    | $p = 103,000$       | $p = 231,000$                       | $p = 531,000$                     |
| o.d. D           |                    | $f_c = 163,000$     | $f_c = 128,000$                     | $f_c = 49,000$                    |
| i.d. D           |                    | $f_c = 264,000$     | $f_c = 128,000$                     | $f_c = 164,000$                   |
| D Vega interface |                    |                     | $p = 128,000$                       | $p = 428,000$                     |
| o.d. Vega        |                    |                     | $f_c = 128,000$                     | $f_c = 428,000$                   |
| Punch (center)   |                    |                     | $f_c = 256,000$                     | $f_c = 821,000$                   |

**TABLE II**  
STRESS DISTRIBUTION FOR  $1 \times 10^6$  psi DIE ASSEMBLY

| Position           | Rings ABC<br>(psi) | Rings ABCD<br>(psi) | Total Assembly<br>Unloaded<br>(psi) | Total Assembly<br>Loaded<br>(psi) |
|--------------------|--------------------|---------------------|-------------------------------------|-----------------------------------|
| o.d. A             | $f_t = 12,564$     | $f_t = 33,060$      | $f_t = 47,563$                      | $f_t = 50,063$                    |
| AB interface       | $p = 11,458$       | $p = 55,307$        | $p = 144,037$                       | $p = 924,037$                     |
| o.d. B             | $f_t = 13,714$     | $f_t = 36,068$      | $f_t = 51,886$                      | $f_t = 54,613$                    |
| i.d. B             | $f_c = 37,780$     | $f_t = 1,387$       | $f_t = 29,103$                      | $f_t = 33,880$                    |
| BC interface       | $p = 11,458$       | $p = 55,307$        | $p = 144,037$                       | $p = 924,037$                     |
| o.d. C             | $f_t = 24,029$     | $f_t = 63,196$      | $f_t = 91,912$                      | $f_t = 96,689$                    |
| i.d. C             | $f_c = 49,240$     | $f_t = 15,096$      | $f_t = 60,535$                      | $f_t = 68,385$                    |
| CD interface       |                    | $p = 43,849$        | $p = 132,579$                       | $p = 912,579$                     |
| o.d. D             |                    | $f_c = 101,980$     | $f_c = 56,541$                      | $f_c = 48,691$                    |
| i.d. D             |                    | $f_c = 145,830$     | $f_c = 42,576$                      | $f_c = 24,776$                    |
| D-Vega interface   |                    |                     | $p = 88,730$                        | $p = 868,730$                     |
| o.d. Vega          |                    |                     | $f_c = 92,400$                      | $f_c = 74,600$                    |
| i.d. Vega          |                    |                     | $f_c = 93,000$                      | $f_c = 70,050$                    |
| Vega-Die interface |                    |                     | $p = 88,730$                        | $p = 868,730$                     |
| i.d. Die           |                    |                     | $f_c = 181,000$                     | $f_c = 599,000$                   |