

DEVON ENERGY

|                             |                            |
|-----------------------------|----------------------------|
| Operator: DEVON ENERGY CORP | Well Name: TODD 26 FEDERAL |
| Project ID:                 | Location:                  |

Design Parameters:

Mud weight ( 9.20 ppg) : 0.478 psi/ft  
 Shut in surface pressure : 765 psi  
 Internal gradient (burst) : 0.100 psi/ft  
 Annular gradient (burst) : 0.000 psi/ft  
 Tensile load is determined using air weight  
 Service rating is "Sweet"

Design Factors:

Collapse : 1.125  
 Burst : 1.00  
 8 Round : 1.80 (J)  
 Buttress : 1.60 (J)  
 Body Yield : 1.50 (B)  
 Overpull : 0 lbs.

| Length<br>(feet) | Size<br>(in.)                               | Weight<br>(lb/ft) | Grade                  | Joint                      | Depth<br>(feet) | Drift<br>(in.)                               | Cost             |
|------------------|---------------------------------------------|-------------------|------------------------|----------------------------|-----------------|----------------------------------------------|------------------|
| 1                | 850                                         | 13-3/8            | 48.00                  | WC-40                      | ST&C            | 850                                          | 12.559           |
|                  | Collapse<br>Load Strgth S.F.<br>(psi) (psi) |                   | Burst<br>Load<br>(psi) | Min Int<br>Strgth<br>(psi) | Yield<br>S.F.   | Tension<br>Load Strgth S.F.<br>(kips) (kips) |                  |
| 1                | 406                                         | 740               | 1.823                  | 850                        | 1700            | 2.00                                         | 40.80 308 7.55 J |

Prepared by : C. W. HORSMAN, Oklahoma City, OK

Date : 08-17-1992

Remarks :

Minimum segment length for the 850 foot well is 800 feet.

Surface string:

Next string will set at 4,400 ft. with 10.00 ppg mud (pore pressure of 2,286 psi.) The frac gradient of 1.000 at the casing seat results in an injection pressure of 850 psi. Effective BHP (for burst) is 850 psi.

**NOTE:** The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - Collapse (with evacuated casing), 1.0 - Burst, 1.8 - 8 Round Tension, 1.6 - Buttress Tension, and 1.5 - Body Yield. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser. Costs for this design are based on a 1990 pricing model. (Version 1.0G)