

CAESAR II 2011 Ver.5.30.0, (Build 101122) Date:OCT 9,2012 @16:17 Pg: 1  
 Job: ...\\1080.FLGD:\OPTC PTA\CALCULATIONS\P-120220\1080.FLG

# CAESAR II ANALYSIS REPORT: Flange Leakage/Stress Calculations

## Effective gasket width parameters:

Effective gasket seating width, b.....(mm.) 2.2500  
 Diameter of gasket load reaction, G....(mm.) 135.0010

## SAFETY FACTOR SUMMARY for the different Flange Models analyzed. (SAFETY FACTOR = Allowed/Actual)

### SAFETY FACTOR

Flexibility/Gasket Compression Model (Leakage).. 22.66  
 ANSI B16.5/Equivalent Pressure (Stress)..... 0.34  
 ASME Model Operating (Stress)..... 0.69  
 ASME Model Seating (Stress)..... 1.08

## FLANGE FLEXIBILITY MODEL -----

### BOLTED FLANGE CHARACTERISTICS:

Initial Tightening Stress in the Bolt (Not the seating stress): 293 N./sq.mm.

Approximate Torque required to induce the above initial stress: 1 KN.m.

## GASKET COMPRESSION: COMPRESSION (mm.)

After Initial Boltup (Ci)..... 1.1732200384

Loss-of due to Pressure (Cp)..... 0.0161325578  
 Loss-of due to Applied Moment (Cm).. 0.0326005220  
 Loss-of due to Applied Force (Cf)... 0.0001546050  
 Loss-of due to all loads (CL)..... 0.0488876849

Initial minus all Losses (Ci-CL).... 1.1243323088  
 For Leak-Proof Joint (Creq)..... 0.0652619526  
 Excess available (Ci-Creq) ..... 1.1079581976

## LEAKAGE SAFETY FACTOR: (If less than one then joint leakage is predicted.) (Allowed/Actual)

Pressure Only (Ci-Creq)/Cp ..... 68.68  
 Force Only (Ci-Creq)/Cf ..... 7166.38  
 Moment Only (Ci-Creq)/Cm ..... 33.99

Pressure+Force+Moment (Ci-Creq)/CL ..... 22.66

## EQUIVALENT PRESSURE MODEL -----

Equivalent Pressure (bars ) ..... 220.91  
 ANSI B16.5 Flange Allowable Pressure Rating . 74.91

## STRESS SAFETY FACTOR: (If less than one then joint failure is predicted.) (Allowed/Actual)