INTRODUCTION AND SUMMARY

Three Category 1 Proprietary Device Tests were completed and one prospectus item DSP-11 was completed documenting the performance of random packing at high pressure. A test of **IMTP® 25** provided by Koch-Glitsch was a 2005 Category 1 Random Packing Test. A test of the Shell **ConSep**™ Tray was the 2006 & 2007 Category 1 Tests for Trays. The **ConSep**™ Tray tests were conducted sequentially to reduce installation time later in the experimental program.

A Category 1 Proprietary test of a 11.74 ft (3.58 m) bed of **IMTP® 25** packing was tested in the 4 ft (1.22 m) diameter low pressure column of the $FRI_{(SM)}$ distillation unit with the o/p xylene system at 14.7 psia (1.0 bar) and the iso-butane/normal-butane (iC4/nC4) system at 100 psia (6.9 bar). For o/p xylene 14.7 psia (1.0 bar), the HETP of the **IMTP® 25** packing is about 12 inches (305 mm) over most of the operating range. The **IMTP® 25** packing showed a maximum capacity, on a C_S basis of 0.296 ft/s (0.090 m/s) based on conditions below the bed. For iC4/nC4 100 psia (6.9 bar), the HETP of the **IMTP® 25** packing is about 11 inches (280 mm) over most of the operating range. The **IMTP® 25** packing showed a maximum capacity, on a Cs basis of 0.230 ft/s (0.070 m/s) based on conditions below the bed. This research effort is fully documented in FRI Topical Report 166.

A prospectus item (DSP-11) was conducted in the high pressure column using Raschig **Super-Ring No. 2®** at high pressures. Previous FRI research on random packing with high pressure systems showed that the random packing tends to have high HETP at high pressures. As system pressure increases, it appears that the turn-down ratio decreases. The measured data also have a high degree of scatter for high pressure systems. The objectives of this program are to have a better understanding of the reasons for high HETP with random packing at high pressures; to understand the limits for random packing in high-pressure service; to determine whether the distributor and/or sub-cooled reflux was a cause of the high degree of scatter and lack of turn-down in the previous tests. Raschig was willing to provide Raschig **Super-Ring® No. 2** as well as the liquid distributor. This research effort is fully documented in FRI Progress Report, HIGH PRESSURE RANDOM PACKING TEST – RASCHIG **SUPER-RING® No. 2**, September-October, 2006

A Category 1 Proprietary test started as the 2006 Category 1 tray test with the iC4/nC4 system at 165, 300 and 100 psia (11.4, 20.7 and 6.9 bar). The ConSep™ tray was also selected as the 2007 Cat 1 tray test with the C6/C7 system. After the initial test was completed, Shell Global Solution requested to conduct the 2007 Cat 1 test with the C6/C7 system at 24 psia (1.65 bar) using the same trays and column set-up. This option would eliminate an installation step at a later time in the research program of FRI. The FRI Technical Committee approved Shell's request. Both tests were conducted in the FRI high pressure column. The preliminary data are presented below and this work will be fully documented in a future FRI Topical Report.