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## **General Distribution**

### **GENERAL LETTER GL13 049 DUAL CHAMBER ORIFICE FITTING COMPLIANCE TO AGA 3 (2000)**

The NUFLO (North Star) Model 4055 dual chamber fittings with their unique ball closure and pressure tap system have been tested to ensure the fittings meet the uncertainty statements required by the latest AGA-3 (2000) standard.

In 2006 Cameron performed a product performance evaluation as it was apparent that the AGA-3 standard did not consider the innovative design of the North Star fitting. Cameron wanted to ensure that the performance of the fitting under operational flowing conditions produced the results expected by AGA-3. To confirm this, samples of different sizes were tested by CEESI where the flows coefficients were found to statistically similar with the results used in the generation of the AGA-3 equations, within the bound of uncertainty of CEESI's test equipment. The tests were performed with the range of beta ratios and Reynolds numbers chosen to be consistent with the then current draft of the API Chapter 22.1 testing protocol for differential producing primary elements. The fitting was also subjected to an AGA-3 physical compliance audit and plate deflection test. These tests indicated that even with pressure tap design deviation; the fittings met the performance specifications in the standard.

he Colorado Engineering Experiment Station Inc. (CEESI) were selected to perform this testing as this internationally recognized flow testing facility was a key contributor of empirical test data used by AGA to develop the current AGA-3 standards.

In addition to the testing specified by Cameron, The Government of Canada from within the Measurement Canada division of Industry Canada issued in 2012 Approval AG-0028 Rev. 2 verifying the NUFLO Dual Chamber fittings are approved nationally for the custody transfer measurement of natural gas. This approval agency is the highest authority in Canada and is recognized by all provincial agencies as equal or superior to their measurement requirements.

Yours truly,  
CAMERON

Don Hammill R.E.T,  
Product Manager