

Back Pressurization of DF Antennas

A Technical Application Note from Doppler Systems

June 13, 2009 Revised August 5, 2011

1.0 Introduction

Since late 2005 all Doppler 8-element fixed site antennas have employed a fitting on the base plate that can be used for low pressure dry nitrogen back filling. The antennas are sealed and pressure tested, but are supplied with a 90 micron filter on this fitting. This filter allows the inside of the antenna to "breathe" through a environmentally protected vent so as to avoid hydrostatic pumping. Under extreme conditions of temperature cycling and humidity, however, the same fitting may be used for connection to a dry nitrogen supply as described in this note.

2.0 Plumbing Connections

The filter is a black plastic device fitting into a 1/8" NPT female pipe welded to the lower base plate of each antenna. Carefully remove the filter using a pair of pliers and replace it with a 1/8" male to 1/4" female NPT brass adapter. Use teflon tape on all threaded fittings. Connect EPDM rubber hose with 1/4" brass fittings between the antenna and the air supply. The air supply should be a tank of dry nitrogen with a low pressure regulator and pressure gages on both the high (tank) and low (DF) side of the regulator.

If more than one antenna in a stack is to be pressurized, order EPDM fittings long enough to reach one or two brass TEEs located at the bottom of the stack, then run a single EPDM hose to the air supply. The following photographs show a stack of three DF antennas with the lower two connected to the air supply inside the building.



Tubing Connection to DF Antenna



Typical TEE Connection at Base of Antenna Stack



Nitrogen Tank with Pressure Gauges and Regulator



Stack of Three DF Antennas Showing Routing of EPDM Hoses to Lower Two Antennas

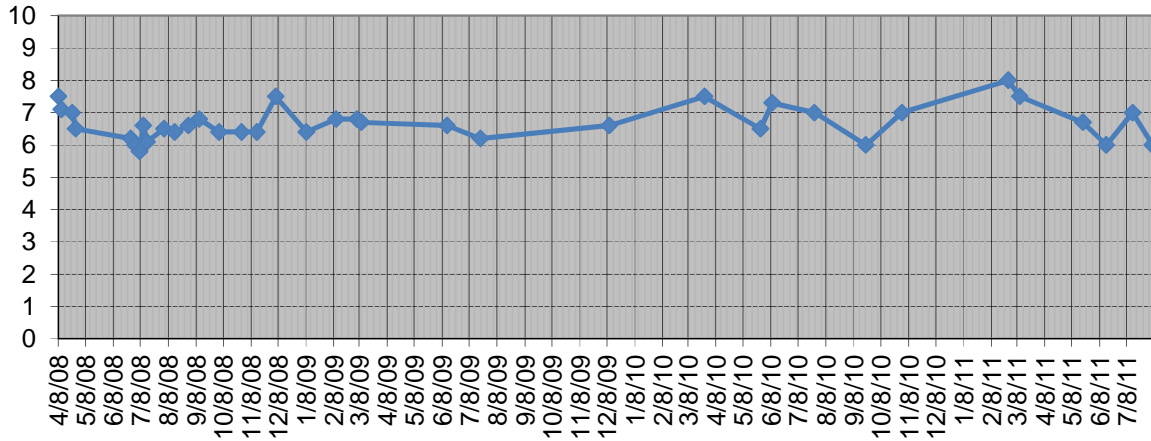
3.0 Operation

Set the pressure regulator between 5 and 10 psi. ***Do not exceed 15 psi (1 atmosphere)***. Turn off the tank valve and observe the low pressure gauge for 15 minutes or so. If all connections are tight, the pressure should hold constant. Then turn the main supply back on. When the main (tank) pressure drops below a few hundred psi, change the tank.

The data below shows the pressure drop on a test system which has two antennas connected.

(Graphs updated 8/5/11).

DF Pressure PSI



Tank Pressure PSI

