Memorandum

To: K. Crady, G. Ediss, R. Groves, A. R. Kerr, D. Koller, G. Lauria, S. -K. Pan

From: J. Effland

Date: 2001-01-04

Subject: Production Test Dewar Interfaces for Balanced, Sideband Separating Mixers

This memo provides updated Dewar interfaces for three configurations planned to test balanced sideband separating mixers. The interface information included here is simply a tally of the total number of wires required in the Dewar. This information is based on previous versions of the attached drawings that have been updated based on A. R. Kerr's latest note, "Mixer-Preamp Configurations for ALMA Receivers," dated 2000-12-31. In addition to the wires specified in that note, a "case ground" wire will be included between each component mixer and its respective bias supply because one is used in the present implementation.

The Dewars must continue to support testing of other mixer types, such as single-ended and balanced double sideband mixers, but the configurations given here require the most wires and hence are the worst-case scenario.

After the present L-band tests produce meaningful results, wide band IF testing is planned that uses balanced IF amplifiers in the Dewar to provide a wide bandwidth matched load to the mixer IF ports. Initially, it will be necessary to warm up the Dewar and manually reconfigure cables to measure mixer performance through both IF ports. A transfer switch is being ordered from Radiall to support automated IF port switching, but it has an 18 week lead time. That switch has the same internal RAMSES design as the present 6-way Radiall IF switch to minimize static discharge during switching.

Figure 1 and Figure 2 respectively show the interfaces when using the balanced IF amps both without and with the capability to switch between the mixer IF ports with the Radiall switch. A new requirement for two wires to carry mixer heater current is also included. These heaters may be required to remove trapped flux.

Figure 3 shows the interfaces when the IF preamps are integrated with the balanced sideband separating mixer and the Radiall switch is available to select the IF output.

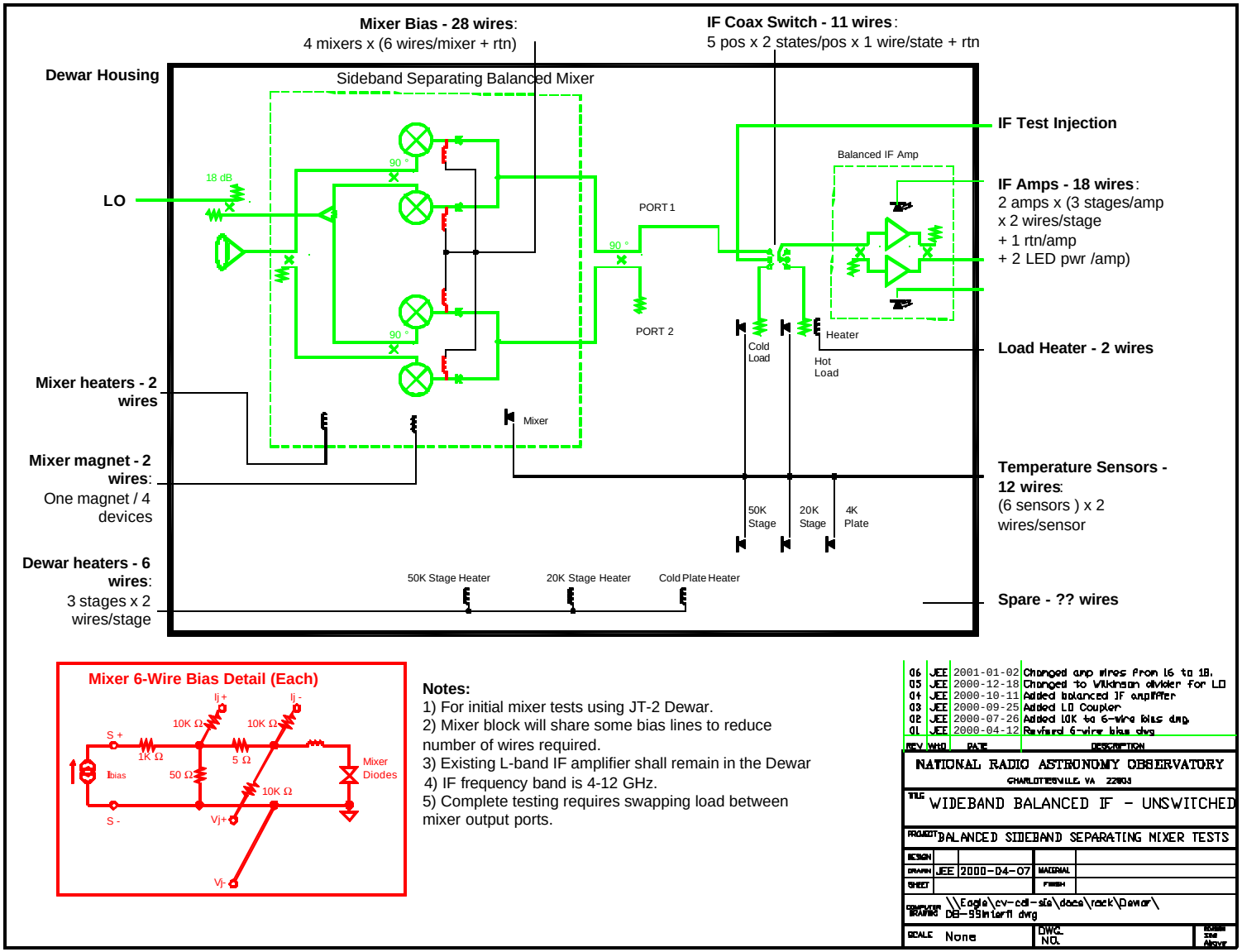

Figure 1: Dewar Interfaces - Unswitched Balanced IF

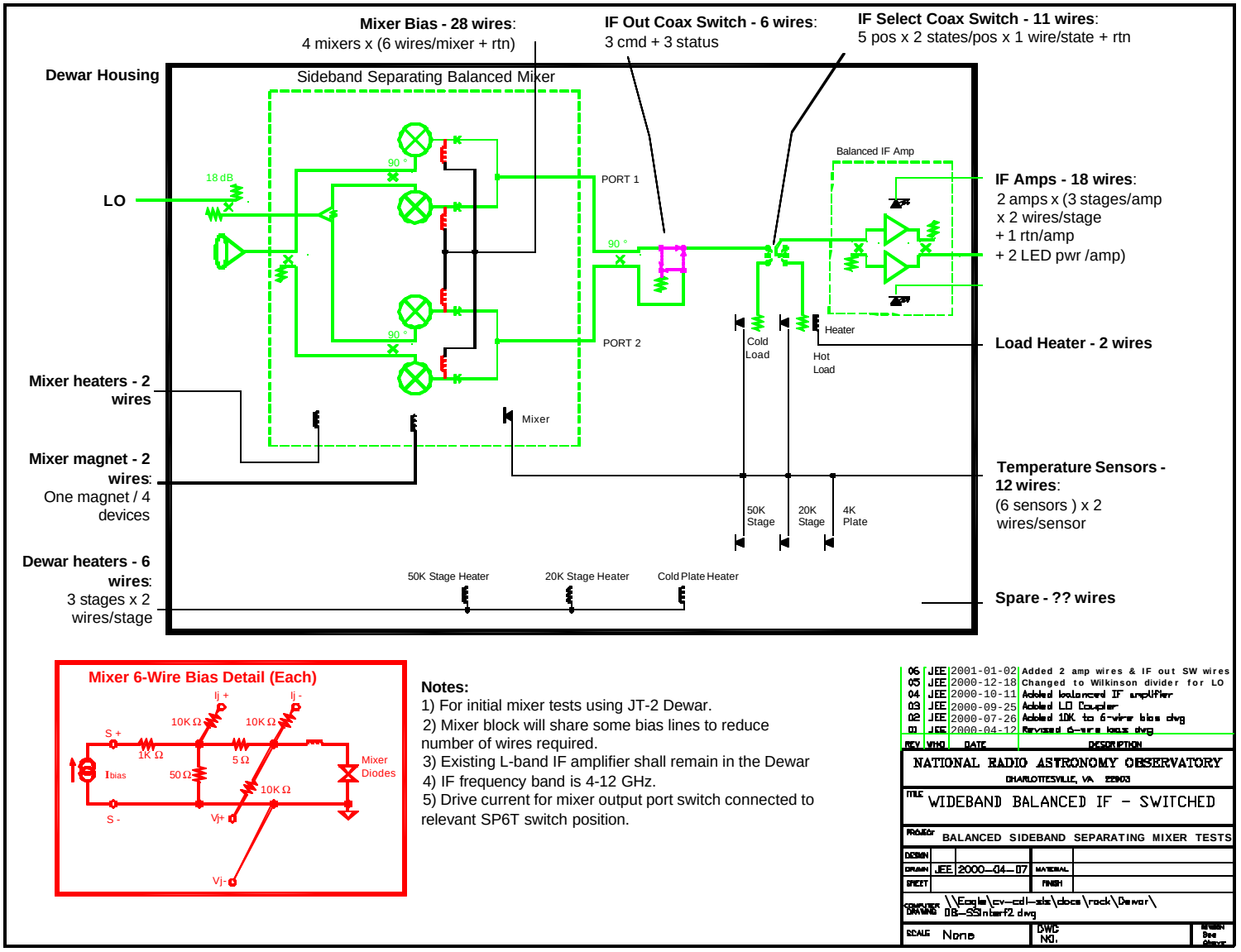

Figure 2: Dewar Interfaces - Switched Balanced IF

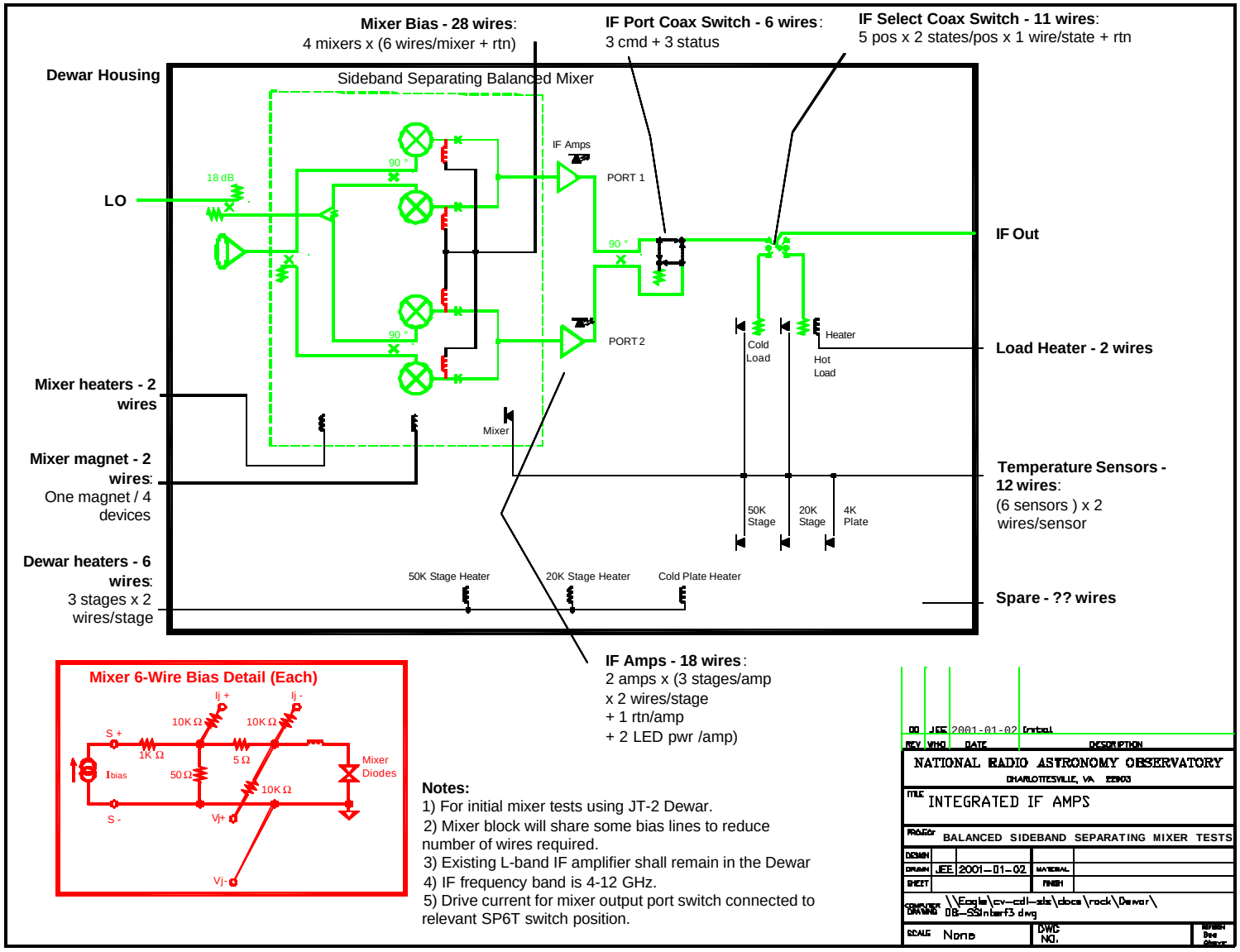

Figure 3: Dewar Interfaces - Integrated IF Amps