

DATE: September 10, 1984
TO: Mike Balister
FROM: Howard Brown
SUBJECT: Conference on quality control in manufacturing and assembly of cryogenic refrigerators.

On September 6, 1984, at the request of John Harvell and Leon Audette of Cryogenics Technology, Inc., I attended a conference at CTI at Waltham, Massachusetts. The purpose of this conference was to discuss problem areas in cryogenics refrigerators. At my request, Rudy Latasa of NRAO-VLA also attended. Representatives of CTI present were:

John Harvell, Marketing
Don McLean, Manager of Product Services
Harry G. Nicoll, Engineering Technology
Leon Marchand, Product Engineer
Mike Eacobacci, Engineering Manager
Bob Pantzer, Operations Manager
Ken Tillinghost, Manufacturing Engineer, Cryopumps
Mario Colantoni, Refrigerator Assembly Group
James Harrington, Engineer, Models 22 and 350 Refrigerators
Ann Stram, Lead Assembler, Model 22 Refrigerator
Leon Audette, Quality Control

The findings were as follows:

I. Driver/displacer assembly

A. Bushing

1. Not properly seated
2. Evidence of displacer side loading
3. Questionable alignment in housing
4. Cracked due to improper installation

B. Rod

1. Scoring
2. Burrs

C. Yoke

1. Rifling due to poor machining
2. Burrs

D. Collar

1. Rust

II. Cylinder

- A. Evidence of displacer side loading
- B. Flatness of top plate

