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## TRIP REPORT - CALIFORNIA June 6-11, 1966

J. C. Schuchman

June 1966

Collider Accelerator Department  
**Brookhaven National Laboratory**

**U.S. Department of Energy**

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Accelerator Department  
BROOKHAVEN NATIONAL LABORATORY  
Associated Universities, Inc.  
Upton, L.I., N.Y.

AGS DIVISION TECHNICAL NOTE

No. 21

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V.J. Buchanan, D. Hooper and J. Schuchman visited the following manufacturers and laboratories to gain detailed information on certain vacuum seals and couplings which could be used on the converted AGS. Listed below are the companies visited, people involved, and brief discussion of meetings.

1. Marman Division of Aero-Quip Corp.  
11214 Exposition Blvd.  
Los Angeles, Calif.  
(213) GRanite 8-0921  
Mr. R. Forrester,  
Nuclear Products Mgr.  
Mr. C. Ohoshi, Engineer

Marman will quote on a double con-o-seal joint with pump-out, OFHC copper gaskets, flange material S/S 304L, gasket retention, inner seal 8" I.D., 3/8" axial flange movement available to remove and install gaskets. Two style couplings will be proposed, one typically per their drawing MJC-63517, and another style for the 3/8" axial movement probably an over center toggle with two take-up bolts ninety degrees to either side of the toggle.

Marman's facilities and capabilities are impressive and they could handle any coupling work we could give them. Detailed machining information on flanges is available.

2. Parker Seal Company  
10567 Jefferson Blvd.  
Culver City, Calif.  
(213) 837-5101  
Mr. R. Soloff, Mgr.  
Mr. A. Kutas, Engineering  
Mr. B. Woods, Testing

Two "Vee seals" are now available 1/8" and 3/8". In time a complete line is planned. The seal is made from inconel-718. It is rolled into rings, electron-



5. LRL Livermore, Calif.  
Mr. T. Bayzer - Mech. Engr.

T. Batzer designed the Whittaker valve. It is all metal and claims approximately 2000 cycles with little noticeable leakage. A 12" valve cycled 1200 times had a closed conductance of  $10^{-9}$  std cc/sec. A detailed drawing of this valve was obtained. The aluminum foil Batzer seal is used throughout the areas we visited. It is useful from cryogenic to bakeout temperatures.

6. SLAC, Palo Alto, Calif.  
Mr. R. Conviser - Vacuum Engr.

R. Conviser stated that the Ultek pumps seemed to pump helium quite well. A leak in a piece of counting equipment permitted argon to directly enter the vacuum system. The 600 l/sec Ultek pump would automatically trip off due to high currents caused by the high pump pressure. The system was re-evacuated and the pumps started. Again the argon leak caused the pumps to trip off (the time interval was about 3 hours). When helium was substituted for the argon, without fixing the leak, the pumps maintained the design vacuum, hence they must pump helium very well.

### Conclusion

It is doubtful if one metal seal can be developed which can be used throughout the AGS. Rather a few types should be used, each type being the best for a particular application.

The Marman coupling design seems to be the one to follow. A program should be set-up to test the double Con-o-seal and a double Oval seal. The Oval seals should be made in flat flanges.