Carrier INTER-OFFICE LETTER

TO MESSRS. W. A. BARNES (A) ATLANTA
T. PETERSON (A) CHICAGO
C. R. STEELE (A) CLEVELAND
C. D. TERRELL (A) DALLAS
H. A. JOHNSON (A) LOS ANGELES
E. M. TANGEL (A) NEW YORK
J. B. CHIOLINO (A) PHILADELPHIA
R. DETWILER (A) BRAMALEA
R. W. VAN DERPOOL (A) CIL-ADM. BLDG.

J. MOSES (B) ATLANTA
W. H. GUNTHER (B) CHICAGO
R. T. MITCHELL (B) CLEVELAND
L. N. FRICK (B) DALLAS
H. E. GRIFFIN (B) LOS ANGELES
R. B. BARNES (B) NEW YORK
J. R. SOISSON (B) PHILADELPHIA
M. WARDLE (B) BRAMALEA
F. E. DUNN (B) CIL-ADM. BLDG.

MR. M. MASLAK (C) TR-4
MR. R. TIFFT (C) TR-4
MR. R. WALTERS (C) TR-1
MR. C. D. MILLER (C) TR-7
MR. W. W. CAINES (C) TR-7

FROM HOWARD W. SIBLEY DATE 9/18/64

OFFICE DIRECT SERVICE ENGINEERING

SUBJECT FIELD EXPERIENCE REPORT NO. 64-6
BARBER-COLMAN CONTROLS
ON 19D MACHINES

During the last several months, a Barber-Colman control modification for elimination of "hunting" has been successfully field tested. Modification details are as follows:

(1) Install a 1500 ohm (1 watt) resistor between terminals V and W on the chilled water module.

(2) Install a 47 ohm (1 watt) resistor between terminals TC and TB on the chilled water module.

(3) Install a 220 ohm (1/2 watt) resistor between the feedback potentiometer lead to terminal TB and terminal TB itself.

The above arrangement results in a non-linear feedback signal or throttling range having a ratio of 7 to 1. The 47 ohm resistor produces the non-linear effect by paralleling part of the feedback potentiometer, and the 220 ohm resistor limits the current through the module transformer that results after installing the 47 ohm resistor. This "fix" should be used on 19D machines experiencing control "hunting". Attached is a Wiring Diagram of the proposed control modification.

FILING INSTRUCTIONS: CENTRIFUGAL FIELD EXPERIENCE REPORTS MANUAL
TAB: CONTROLS-WIRING

Recommended Control Modification - Cont'd.

faster compensation in the 0 to 20 per cent opened region, eliminating excessive control point overshoot and reducing the frequency of vane oscillations due to frequent load changes. The following is the non-linear feedback modification that is recommended for the Barber-Colman chilled water amplifier which experiences "hunting":

(1) Add a 150 ohm resistor across terminals TB-TC on the Barber-Colman chilled water amplifier.

(2) Reset the vane indicator potentiometer to obtain 50 ohms at the fully closed position of the vanes. This can most easily be done by disconnecting the internal module leads to TC, TR and TB, installing an ohmeter across TC to TR on the B-C module, and adjusting the follow-up potentiometer counter-clockwise until 50 ohms is reached on the ohmeter. Disconnecting the internal module leads is required to eliminate the module resistance from the 50 ohm setting. Reconnect leads after 50 ohm setting.

(3) Open the piston chamber oil valve to wide open.

(4) Be sure there is a 1,000 ohm resistor between terminals V and W on the chilled water amplifier.

(5) Be sure there is a 680 ohm resistor between terminals X and Y on the chilled water amplifier. A modification wiring diagram is attached.

Some field regions have discovered that replacing the 1,000 ohm resistor between V and W with a jumper and changing the size of the shunt resistor between X and Y has eliminated "hunting", and they have modified the chilled water amplifier to that fix. Modifying the control in this manner is leaving ones self open for a possible freeze-up hazard and is not recommended by Engineering. All modules thus modified should be reworked to the recommended method described in the preceding paragraph.

This report is not intended to convey the idea that all Barber-Colman amplifiers are to be modified but only those that "hunt" after standard calibration and trouble-shooting procedure fails. Trouble shooting should include examination of the vane indicator linkage connection to the follow-up potentiometer and testing amplifier tubes. Replace amplifier tubes with Barber-Colman replacements only. For example, never replace a Barber-Colman 12AX7 tube with a G. E. 12AX7 tube.

HWS/m
Attachment

Howard Sibley