

NATIONAL RADIO ASTRONOMY OBSERVATORY  
Green Bank, West Virginia

Telescope Operations Division Report No. 1

CALIBRATING DIGITAL RECORDING EQUIPMENT AND SANBORN  
RECORDER FOR LUNAR OCCULTATIONS

Troy Henderson

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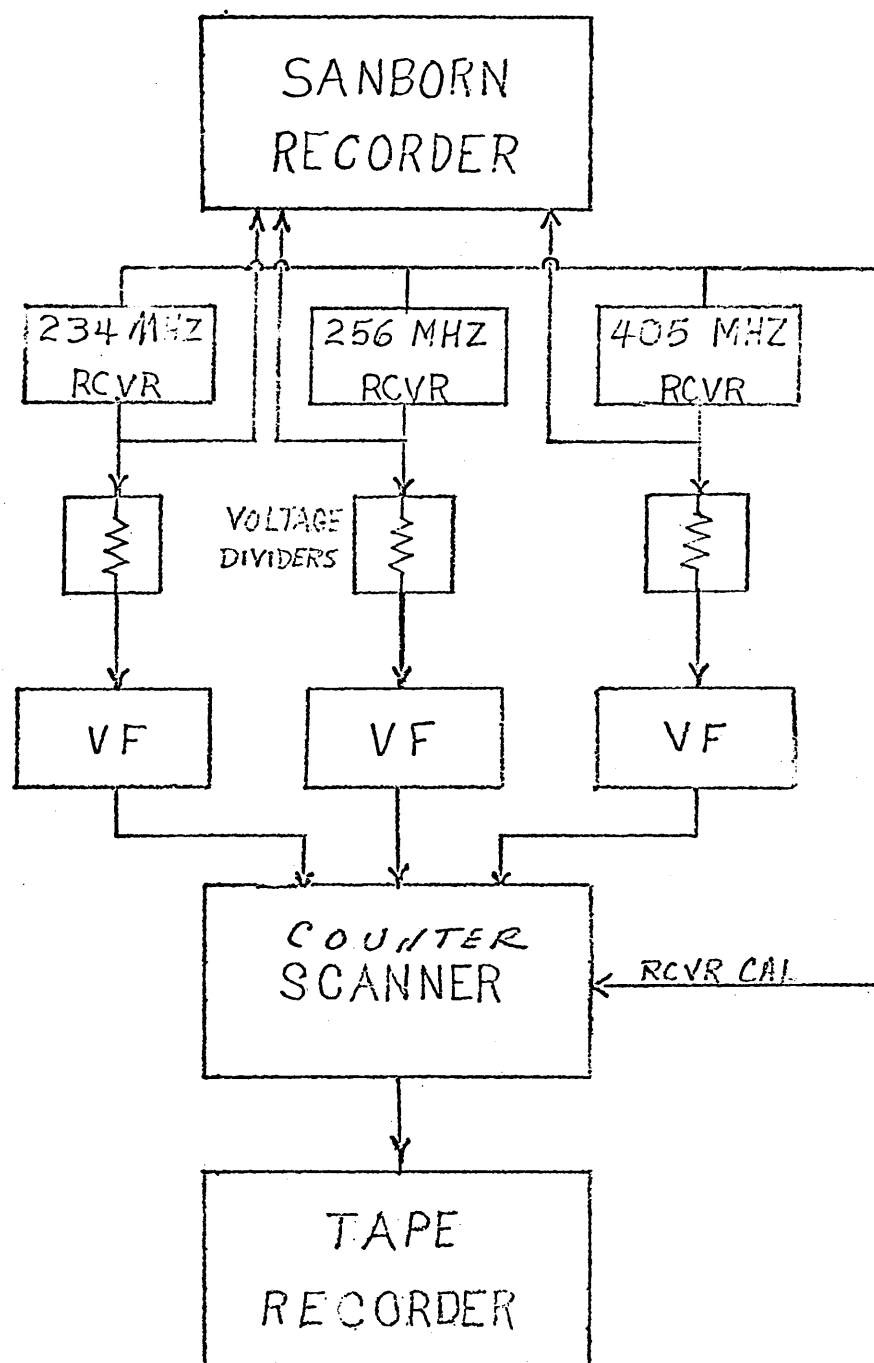
1. Disconnect both receiver input to V-F converter.
2. Place short on V-F input.
3. Put V-F plus-minus offset switch to "off".
4. Set an events/unit/time counter for a 1.0 second gate, and connect to output of V-F.  
(Be careful counter is not overloaded). If overloaded, it will characteristically count high, usually about a factor of 2 and somewhat erratic).
5. Check V-F converter for calibration

V-F Attenuator Setting	Counts/second
1 v	0, max of 1-2 counts
cal +	10,000
cal -	10,000

Adjust appropriate front panel pots if necessary.

6. Place V-F attenuator back to 1 v setting, and offset switch to plus. (This assumes a positive going output from the receiver with an increase in signal). Set counter gate for 0.2 seconds.
7. Adjust offset pot on V-F for a count of 1,000 on counter.
8. Remove V-F input short and connect V-F input to receiver output, using 2-1 divider. Be sure that one of two V-F output jacks are connected to input of digital counter-scanner.
9. Make sure that receiver "cal on" flag is connected to scanner and that remote start on scanner is not connected to anything.
10. Set scanner front panel switches for occultation and for 1/3 minute integration.
11. Balance receiver-counter should read about 1000.

12. Next, the scaling on the Sanborn recorder must be adjusted so that approximately full scale equals 1500 counts and that approximately zero scale equals 500 counts. This is done by the following steps.
13. First, with receiver balanced, adjust Sanborn pen positioning pot for center scale.
14. Adjust Sanborn coarse and fine gain and positioning pots so that when receiver is unbalanced to give a count of 1500 on the counter the Sanborn pen is about 4-5 mm from edge of recorder paper on one side, and when receiver is unbalanced to give a count of 500 the Sanborn pen is about 4-5 mm from the other edge of the paper. The receiver is unbalanced by adjusting compensation fine in most cases. This sets Sanborn scale to be about equal to the digital scale.
15. Rebalance receiver and turn on receiver calibration. Adjust receiver delta gain control on phase detector to give a count of 1500 cycles. Double check Sanborn to see that it remains on scale.
16. Turn cal to off and disconnect counter. System is now ready for data.



DIGITAL SYSTEM  
FOR  
LUNAR OCCULTATION