

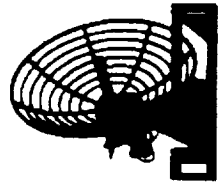
**PREPROCESSING DATA COLLECTED WITH
THE ACTS PROPAGATION TERMINAL**

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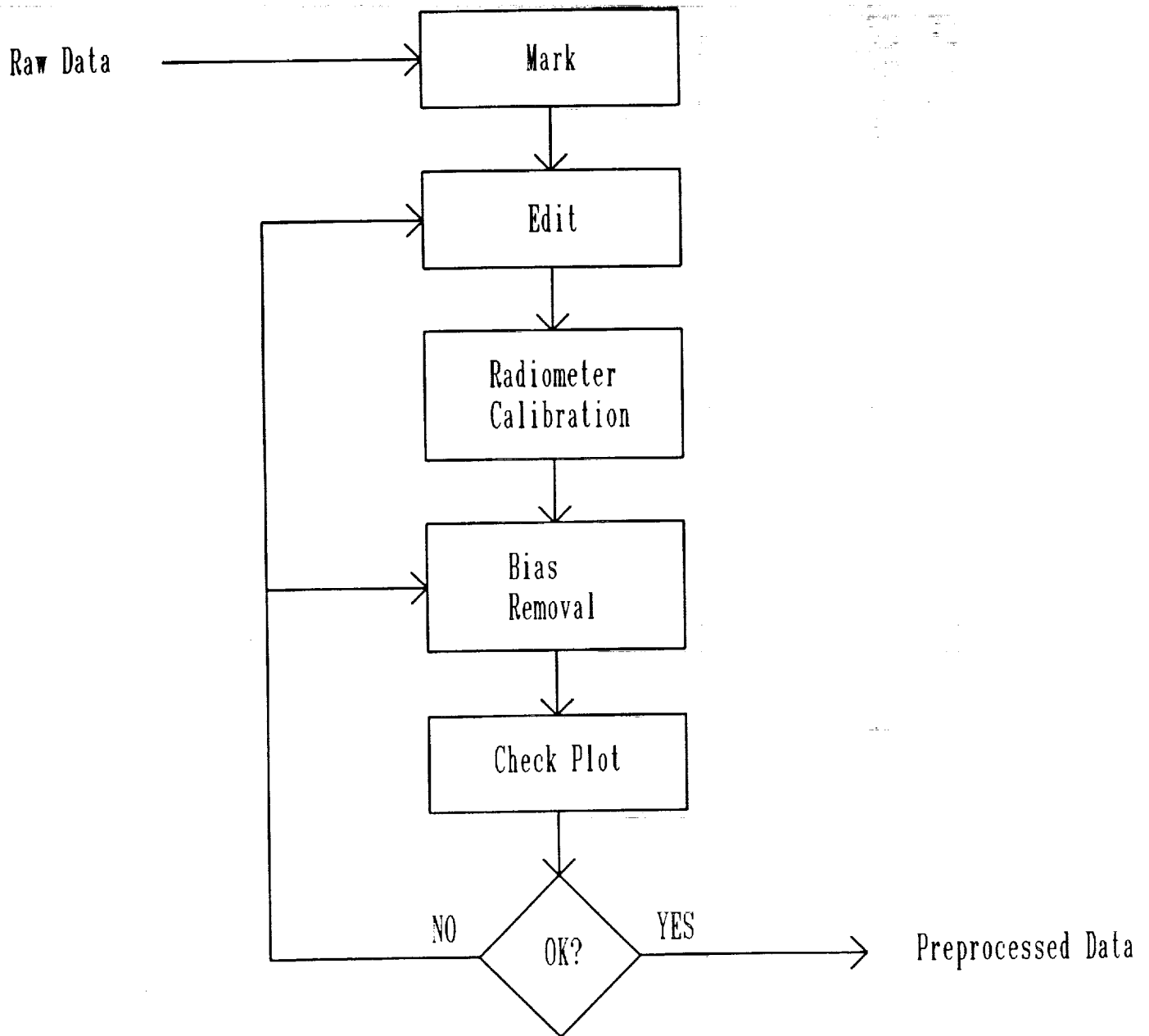
**ACTS MINI-WORKSHOP
PASADENA, CA**

June 14, 1993



VIRGINIA TECH
Satellite
Communications
Group

Steps in ACTS Data Preprocessing



MARK Step

- *Automatic Procedure*
- Functions
 - Fills holes in data
 - Transfers status information for beacon and radiometer signals
 - Checks beacon and radiometer data for large slope changes
 - Checks system voltages and temperatures to ensure that they're in range
- Types of Marks put on data
 - Beacon Acquisition Mode
 - Tracking Disabled
 - Bad DRX data
 - Low SNR on Beacon
 - Radiometer Calibration
 - Radiometer in Setup
 - Data Missing
 - Statistical Failure
 - Equipment Failure

EDIT Step

- *User - Controlled Procedure*
- **Functions**
 - User checks "Low SNR," "Statistical Failure," and "Equipment Failure" status tags for possible bad data
 - User marks portions of data bad if necessary
 - All data is "tagged" good or bad upon exit from this step

RADIOMETER CALIBRATION Step

- *Automatic Procedure*
- Functions
 - Convert radiometer voltages to sky temperature in Kelvin and then to ARD in dB
 - Hot and Cold Load calibrations applied
 - Noise Diode and Reference Load calibrations applied

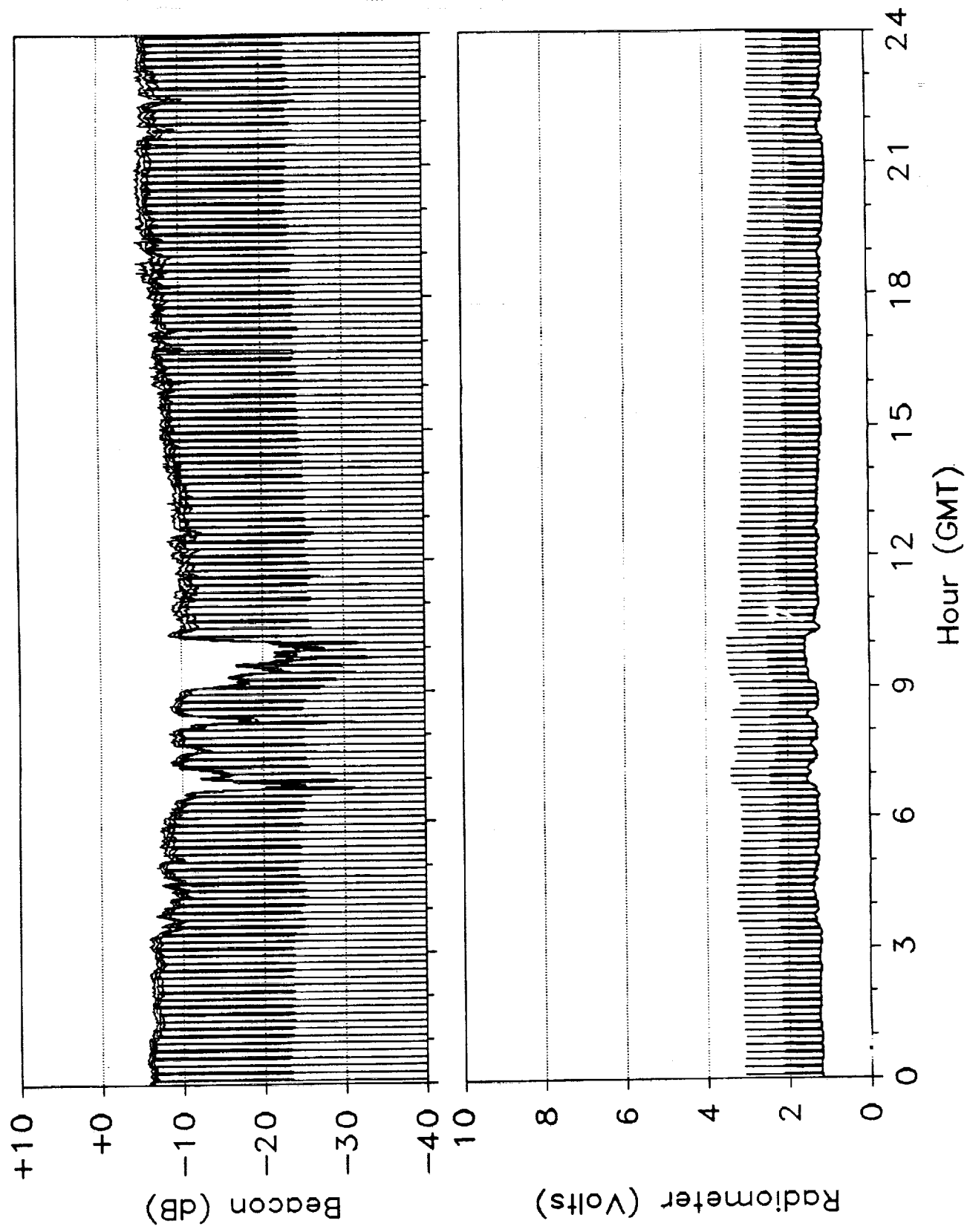
BIAS REMOVAL Step

- *User - Controlled Procedure*
- **Function**
 - User removes signal fluctuations due to diurnal variation, front end heating, ice on the feed, etc.

CHECK PLOT Step

- *Automatic Procedure*
- Functions
 - Generates a plot similar to the daily plot which displays AFS and ARD
 - All data "tagged" bad is excluded from plot
 - User checks this plot to ensure that all bad data and all signal fluctuations were removed in the EDIT and BIAS REMOVAL steps

27 GHz Propagation Data from the ACTS Experiment



FILE OPTIONS

May 1992

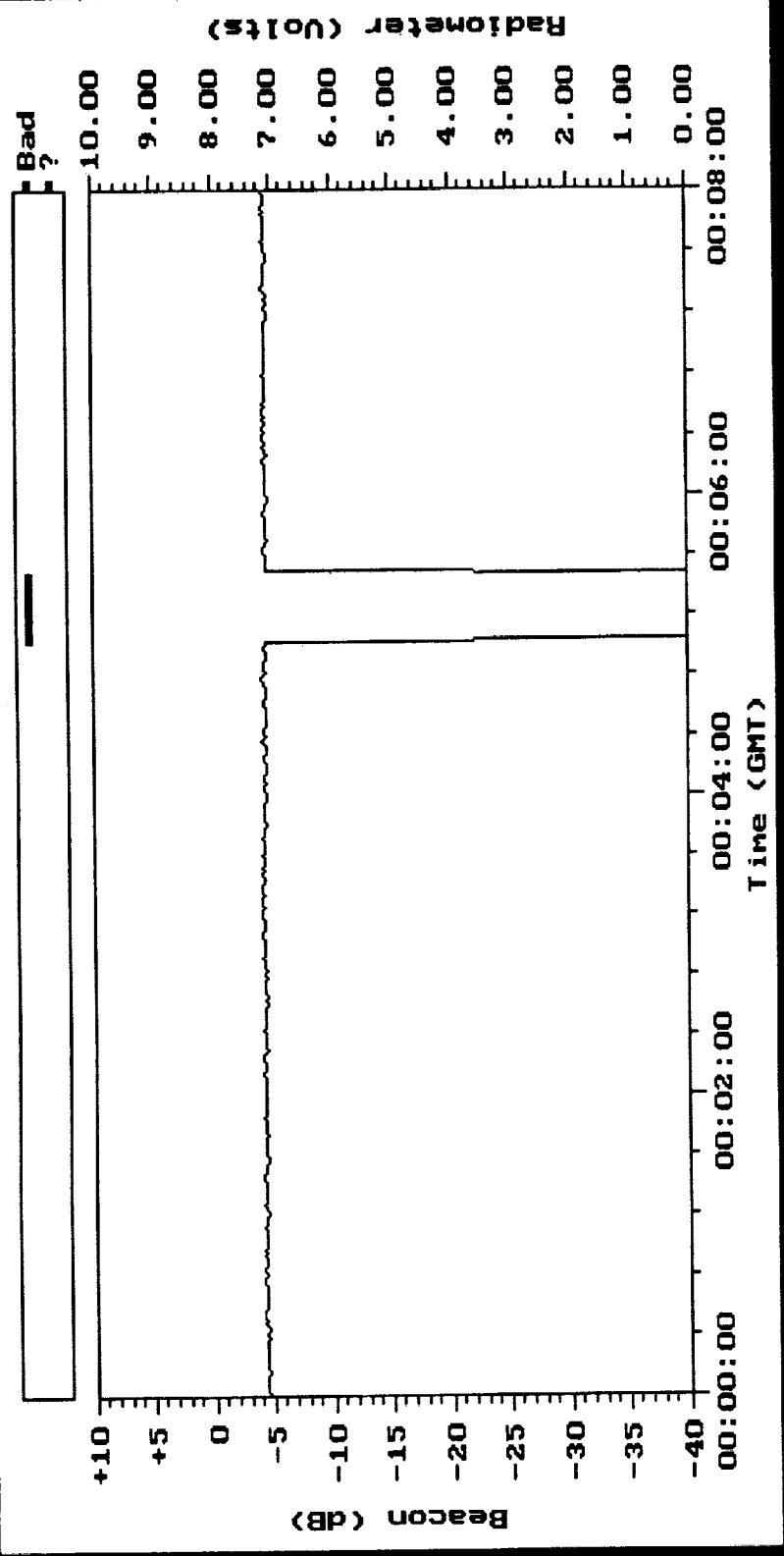
S	M	T	M	T	F	S
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
MARK	MARK	MARK	MARK	MARK	MARK EDIT RAD CAL *BIAS	MARK EDIT RAD CAL *BIAS
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Calendar Key

- MARK - Data marked
- EDIT - Data user-edited
- RAD CAL - Radiometer calibrated
- BIAS - Biases removed
- * - Unfinished step

Color Key

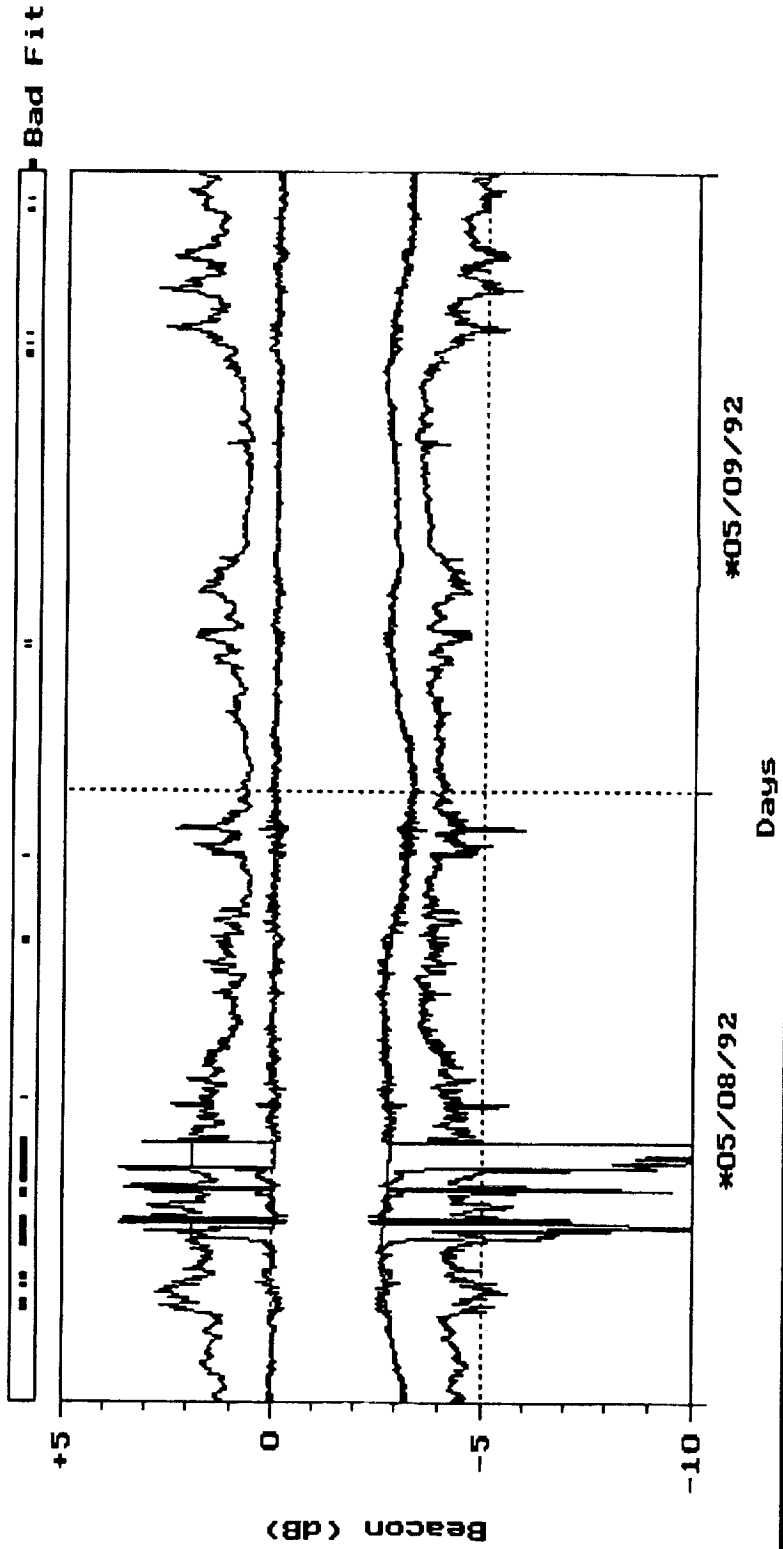
- Data file for day unavailable
- Day not finished
- Day finished



Source: 050892.ed

- 20 G Beacon
- 27 G Beacon
- 20 G Radiometer
- 27 G Radiometer

- 8 min.
- 1 hour
- 3 hours
- 24 hours
- +10 to -40 dB
- +10 to -10 dB
- 0 to 10 U
- 0 to 5 U
- 4 Channels
- Classify
- Next
- Previous
- Width
- Add
- Delete
- Restore



Channel: 20G 05/08/92 ████████████████████ 05/09/92

- | | | | |
|--|---------------------------------------|--------------------------------------|--------------------------------------|
| <input checked="" type="checkbox"/> Beacon | <input type="checkbox"/> +5 to -5 dB | <input type="checkbox"/> Sin/Cos Fit | <input type="checkbox"/> + Order |
| <input checked="" type="checkbox"/> ARD | <input type="checkbox"/> +5 to -10 dB | <input type="checkbox"/> Poly Fit | Order = 5 |
| <input checked="" type="checkbox"/> Beacon + ARD | <input type="checkbox"/> Select | <input type="checkbox"/> Remove Fit | <input type="checkbox"/> - Order |
| <input checked="" type="checkbox"/> Fit | <input type="checkbox"/> Channel | <input type="checkbox"/> Deselect | <input type="checkbox"/> Auto Select |
| <input checked="" type="checkbox"/> ACA | | | |

27 GHz Propagation Data from the ACTS Experiment

