 DOUG WOOD, NRAO/AOC

THE VLA OBSERVER'S PREFLIGHT CHECKLIST

This 'preflight' checklist helps you check your observe file in preparation for VLA observations. It asks a number of questions about your file and about your observing strategy to help you avoid common problems. Since this is a general list, it won't be completely applicable to your project and it can't be expected to alert you to every potential problem with your observations. Use your own judgement about your sources and your scientific goals.

References are provided to help you decide if your plans are ok. They are abbreviated:

OSR	*Observatory Status Report*, available from Meri Stanley (505) 835-7310
SIRA	*Synthesis Imaging in Radio Astronomy*, R. A. Perley, F. R. Schwab and A. H. Bridle, eds. ASP Conference series vol 6, 1989.
CM	*Calibrator Manual*, available from Theresa McBride (505) 835-7000
VLAIS	VLA Information system: telnet 146.88.1.4, login: VLAIS, no password required
SLGuide	A Short Guide for VLA Spectral Line Observers, A. Rots, v8.0, June 1990 available from Theresa McBride (505) 835-7000
OBSERVE	Is the program you use to prepare your observe file. It will alert you to some potential problems with your observations.

Getting Help:

If you have questions about your observe file contcat the Data Analysts at (505) 835-7359 or send e-mail to analysts@nrao.edu. They can help you with most problems. If you'd like to discuss scientific issues or more technical points, talk with your 'VLA friend.'

All Observations

Strategy

Is your source larger than the primary beam at this wavelength? (OSR, Table II)

Is your source larger than the largest mappable structure (hole in the uv plane) for this array and frequency? (SIRA p.446, OSR Table II)

Are your sources up when you are observing them? (OBSERVE will alert you of this.)

Will confusion due to extragalactic background sources be a problem? (SIRA p.452)

Have you observed each source long enough to achieve the desired sensitivity? (OSR Table III, SIRA p.451)

General

Do the LST start and stop times and date of your observe file fit within the time slot that was scheduled?

Are your sky frequencies within the receiver tuning limits? (OSR, Table IV)

Are you observing a weak source at a high frequency in an extended array? (Not a good idea.)

Are you observing at P or L band near the sun during a solar max? (Although band and channel width dependent, this is generally a bad idea.)

Will interference be a problem? If so, have you done something about it? (VLAIS, OSR 2.4 has a yearly summary)

Are the sky frequencies you are observing within the standard VLA bands? (OSR Table IV)

Is your file in LST STOPTIMES? (Duration are for special applications only.)

Calibration

Have you observed a flux calibrator for each combination of bandwidth and frequency? (OSR 2.8, CM)

Have you observed a phase calibrator for every source and frequency? (CM. You can use the same phase calibrator for several different sources.)

Have you allowed enough time for each calibrator and source observation? (Note the 'on-source' time reported by OBSERVE)

Are your phase calibrators acceptable at each frequency and in the current array configuration? (Marked P or S in the CM)

Are you using a primary flux calibrator that is acceptable at each frequency and in the current array configuration? (Intro to CM)

Do any of your calibrators require uv restrictions that would make calibration more difficult? (CM, & Intro to CM)

If you want to do a polarization observation, have you observed a polarization calibrator with sufficient parallactic angle coverage?
(OSR 2.9) Note: Your OBSERVE reports list the parallactic angle of each observation.

Have you given the same qualifier codes to your sources and their calibrators to make them easier to select in AIPS?

Coordinates

Have you specified the correct epoch for your coordinates in your observe file? (The characters following the source coordinates indicate the epoch:
' ' =B1950, 'C' = J2000, year = a particular epoch)

Have you used different epochs in your observe file? (Don't)

Are the coordinates of your sources correct? Is the Dec sign right?

Continuum Observations

LO settings

Are your AC and BD IFs at different frequencies?

Is your bandwidth small enough to reduce bandwidth smearing to an acceptable level? (SIRA p.448, OSR Table Va)

Correlator Setup

Is your integration time short enough to reduce time smearing to an acceptable level? (SIRA p.450, OSR Table Vb)

Line Observations

Calibration

What spectral dynamic range is required? (SIRA Lec. 18)

Have you observed your bandpass calibrator long enough to achieve that spectral dynamic range?

Correlator Setup

If you want on-line Hanning smoothing have you specified that? (H on the DS card) (SLGuide, Appendix D)

If you want on-line band pass normalization have you specified that? (B on the DS card) Are you sure you want to normalize? (SLGuide, Appendix D)

What is your velocity resolution and is it sufficient to resolve the line? (OSR Table VIIa,VIIb)

Do you have enough bandwidth to measure the continuum emission?

Is your integration time short enough to avoid time smearing? (OSR Table Vb)

If the total number of channels produced by the correlator is greater than the number of channels you have selected with your DS card, have you set the starting channels parameter to select the desired channels? (OSR Table VIIa,b)

If you want polarization data, have you chosen the correct mode? (e.g. 2AB *vs* 2AD, PA *vs* PB, etc. where A,B = RCP C,D = LCP)

LO Setup

Are the rest frequencies of your lines correct? Are they in MHz?

Are the velocity offsets of your sources correct? Are they in km/s?

Have you specified radio (V) or optical (Z) velocity definitions for your velocity offsets? (Z or V on the FI card) (SLGuide, Appendix D)

Is the rest frame correct? (B=barycentric, L=LSR or ? on the FI card) (SLGuide, Appendix D)

Have you chosen to center your line in the center of the band? (T on the FI card)