

NATIONAL RADIO ASTRONOMY OBSERVATORY
Green Bank, West Virginia

April 23, 1993

MEMORANDUM

To : Addressees

From : R. Norrod

Subject : **GBT Electronics Drawings**

Many individuals are now generating drawings, schematics, and other documents related to the GBT Electronics construction project. We must see that equipment is properly documented at the completion of the project. To help reach that goal, please follow the following guidelines dealing with drawings for Electronics projects 352XX:

1. Because drawings are generated at both CV and GB, a single individual at each site will have primary responsibility for the assignment of drawing numbers for Electronics projects 352XX. These persons are Greg Morris in CV and Bob Simon in GB. Division of assignment responsibilities between the two sites will be on a project by project basis. Currently projects 35243 and 35208 are assigned in CV; all others in GB. In the absence of Greg, Walter Brown will handle CV assignments. In the absence of Bob Simon, GB assignments will be handled by Bob Simmons or Brian Crouse.
2. The primary record of drawing number assignments will be notebooks maintained by the individuals mentioned above. In GB, a computer database of drawing numbers will also be maintained and updated on a daily basis. The data file is located on the GB network file system in directory "/s/gbtelec/database", and can be read by any PC on the GB LAN running File Express 5.1.
3. A reproducible, up-to-date drawing original must be available for each drawing number assigned. Flat drawing file drawers will be provided for each project. It is the responsibility of the person who requested the drawing number to see that a reproducible original is kept in the project drawing file.

4. Originals that have been superseded by more recent revisions should be kept, but clearly marked OBSOLETE. Revision letters will be assigned and recorded by the same individuals who assign drawing numbers, but it is not their responsibility to see that drawings are kept up-to-date or that reproducible originals are on file.
5. Drawing numbers shall conform to the specification A35102N007, copy attached.
6. All assemblies (circuit cards, chassis, racks, etc.) should be marked with a top-level assembly or bill-of-material drawing number. Referring to that top-level drawing should allow anyone to determine all related drawings required to copy or service the assembly. For example, the BOM for a power supply chassis, in addition to all purchased and machined parts, should list the wirelists, schematics, and other related drawings.
7. Although hard-copy, reproducible drawings are the primary drawing archive, copies of electronic files (if any) used to generate the drawings should also be maintained. A directory has been configured on the GB network file system which will serve as this archive: "/s/gbtelec/drawings". This directory contains a set of sub-directories, titled by project number (e.g. "35260"), one for each of the Electronics projects. Drawing files should be placed in the applicable project sub-directory, titled using the Type letter and sequence number. The file extension should be indicative of the program used to generate the file. (Note also that the generating program name and version is recorded in the drawing number notebooks and database.) For example, if drawing C35260K005 was generated with Autocad, the Autocad file should be stored as "/s/gbtelec/drawings/35260/K005.DWG". If drawing A35243D001 was generated using WordPerfect, the file should be stored as "/s/gbtelec/drawings/35243/D001.WP".

A special case occurs when certain computer-aided-design programs are used to design a device. Many computer files are typically generated by the program, all of which would be required to edit or modify the design. For example, ORCAD or FutureNet may maintain 20-30 files dealing with a single circuit card design. It is important to properly archive such design environments for future design revisions. To handle these cases, a drawing Type letter, V - COMPUTER ARCHIVE FILES, has been included. Designers should use a compression/archive utility to compress all the related files into an archive file, have a drawing number assigned, and store the archive file in the proper

"/s/gbtelec/drawings" directory. On a MS-DOS PC, a shareware program called PKZIP is inexpensive, widely available, and easy to use. Similar programs are available on most computer platforms. For example, if ORCAD were used to design a circuit card in project 35260, the designer requests a V type drawing number and is assigned the number Z35260V015. He compresses the ORCAD files using PKZIP to an archive file which is saved in /s/gbtelec/drawings/35260/V015.ZIP. The entry in the drawing log for Z35260V015 indicates to which circuit card this archive relates, and that PKZIP was used for the compression. The top level assembly drawing or BOM for the card should reference the V015 archive and describe it as the ORCAD design archive.

I strongly recommend that individuals also maintain copies of drawing and archive files on floppies.

Addressees:	L. Beale	G. Behrens	W. Brown
	B. Campbell	E. Childers	B. Crouse
	J. Downs	R. Escoffier	Rich Hall
	M. Masterman	D. Schiebel	R. Simmons
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NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia
GBT Project

Specification: A35102N007 Rev. B

Title: Drawing Numbering System

Prepared By: Greg Morris

Approved By: RHALL Gm

The following drawing numbering system will be used on all drawings pertaining to the Green Bank Telescope (GBT) project. Drawings received from contractors will be reassigned numbers to conform to this system. The number will consist of a ten character identifier that includes the project number.

1.0 Format

Drawing numbers shall be of the form

SPPPPPTNNN

where:

S = size designator

Designation	Paper Size (in.)
A	8½ x 11
B	11 x 17
C	17 x 22
D	22 x 34
E	34 x 44
F	34 x cut length
Z	computer file

PPPPP - first five digits of project number; this number is assigned by management and is also used for fiscal planning.

T = drawing type designator (1 of 26 letters), including:

Common Types

B - bill of materials
A - assembly
M - mechanical
N - specification
Z - sketch
F - fixtures

Primary Structural

Y - control drawing
C - civil and concrete
H - heavy equipment
E - electrical
T - structural

Primary Electronics

S - schematic
L - logic diagram
W - wire list
P - printed circuit board, mechanical
Q - printed circuit board, artwork
I - silkscreen
D - data list, documents
K - block diagram
V - computer archive files

The remaining letters (G, J, O, R, U) are not yet assigned

NNN - sequence number, a three digit number, from 001 through 999, assigned consecutively for each type under each project (but not for each site). Example: A35102T001 and C35102M001 are two different drawings.

2.0 Guidelines

1. Drawing numbers must be ten characters long.
- * 2. A drawing may have more than one sheet, but all sheets must be the same size. The title block information must be the same for each sheet. All revisions to the drawing will be recorded on the first sheet. The revision level of the first sheet will dictate the revision level of the other sheets. *ex.* If only sheet 2 of a drawing was revised, the revision will be recorded on the first sheet and all other sheets will go to that revision level.
3. For filing, drawings will be sorted by size, project, type and sequence number. Initially, original drawings will be stored at the site where they are generated; later, they will be combined into a common file at the designated site.
4. Individual drawing numbers will normally be assigned and logged by a single designated person. However, blocks of numbers may be allocated to a particular individual at each site, who will then assign individual drawing numbers and periodically report them to the designated person.

GBT ELECTRONICS PROJECTS

PROJECT NUMBER	PROJECT NAME	PERSON	DATE OPEN	DATE CLOSED
10301	8 - 10.1 GHZ RX			
17222	USNO S-X RX			
35201	ELECTRONICS, GENERAL	NORROD	01-07-91	
35202	FEED WINDOW	CLOSED	03-01-91	01-30-92
35203	CONTINUUM RECEIVER	SCHIEBEL	03-01-91	
35204	FUTURE USE			
35205	HOLOGRAPHY SYSTEM	WHITE	01-07-91	
35206	VLBA TERMINALS		01-07-91	
35207	CRYOGENICS	WILLIAMS	01-07-91	
35220	FEEDS, COMMON	SRIKANTH	03-01-91	
35240	RECEIVERS, COMMON	NORROD	03-01-91	
35241	PRIME FOCUS RX	BEHRENS	01-30-92	
35242	1.15 - 1.73 GHZ RX	MASTERMAN	01-30-92	
35243	18.0 -26.5 GHZ RX	MASTERMAN		
35244	3.9 - 5.85 GHZ RX	MASTERMAN		
35245	40 - 52 GHZ RX			
35246	12.4 - 18 GHZ RX	NORROD		
35247	26.5 - 33 GHZ RX			
35260	LO / IF COMMON	NORROD	03-01-91	
35501	MONITOR AND CONTROL	CLARK		