

National Radio Astronomy Observatory
Charlottesville, Virginia

March 7, 1983

To: COG Members

From: Arthur M. Shalloway

Subject: Network Communications for Charlottesville-Ivy and Tucson

I. CHARLOTTESVILLE-IVY TO CHARLOTTESVILLE-EDGEMONT

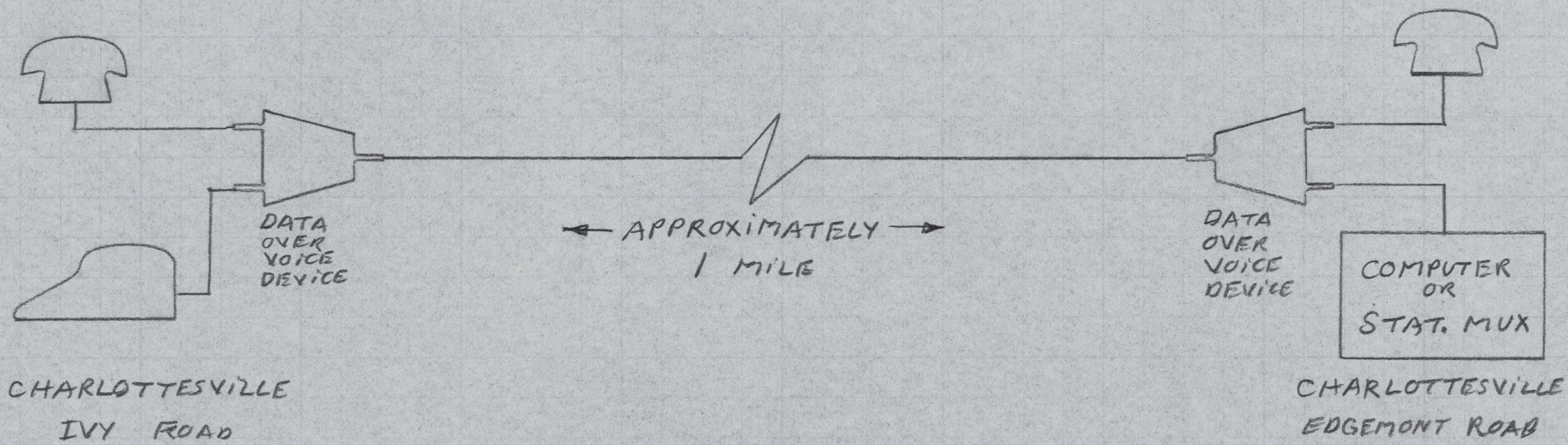
A. Present Requirements (all asynchronous):

Item	FROM (Ivy Road)		TO (Edgemont Road)	Baud Rate
	Room	Equipment		
1	203	Tektronics Graphics Terminal	VAX	1200
2	203	Visual 50	VAX	4800
3	114	TEC	IBM	2400
4	111	Microprocessor Development System	Codex Stat. Mux. To GB Terminal	1200

Items 1 and 2 will be moved to Room 212 before summer.

B. Method of Accomplishment

The telephone wires between Ivy Road and Edgemont Road are in a cable going directly between the two buildings with no amplifiers or loading on these wires. Therefore, we are able to use short haul modems or equivalent type devices. For this purpose, we have selected a "data over voice" device made by Gandalf and called a Line Miser. It is a box inserted in the line at each end as shown in Figure 1. The voice currents and data currents can coexist on the same line and will not interfere with each other. The units at Ivy Road will be in the room with the terminal. The units at Edgemont Road will be in the telephone room. If a change in terminal location at Ivy Road is desired, Gene Runion should be notified.



NRAO CHARLOTTESVILLE LAN

FIG. 1

MARCH 8, 1983
ARTHUR M. SHALLOWAY

C. Cost

List prices are as follows:

5 ea.	DOV 1150 SA Remote Line Miser	\$295.00	\$1,475.00
5 ea.	DOV 1152 RM Central Line Miser	245.00	1,225.00
1 ea.	LDS 1000 Rack	600.00	<u>600.00</u>
			\$3,300.00

In addition to the above will be cables, connectors, etc. for a few hundred dollars.

D. Alternatives

Teltone makes a similar unit for a lower price. However, their unit is only guaranteed for 5,000 feet of transmission line, whereas Gandalf's is designed for 18,000 feet. The actual transmission line is approximately one mile (5,286 feet). Also, the Gandalf unit is expandable to 12 units before we have to buy another chassis, whereas the Teltone unit is expandable to 8 units or a larger more expensive chassis to 32 units. The main choice is based on the distance and the fact that our network modems are Gandalf.

II. TUCSON-DOWNTOWN TO VLA SITE

A. Present requirements (all asynchronous):

Item	FROM (Tucson)		(TO)	Baud Rate
	Room	Equipment		
1		PDP-1144	PDP-1147 VLA	1200
2		Visual 50	IBM-CV-Edgemont	1200

B. Method of Accomplishment

A dedicated 4-wire D conditioned line will be leased from Tucson to the VLA site. Gandalf Super Modems will be installed at each site. A Codex 6030 Statistical Multiplexer will be installed at Tucson. The multiplexer will be capable of only one trunk line (the line to the VLA site) and will handle only asynchronous data.

C. Cost

GSA prices are as follows:

1 ea.	66031 Intelligent Network Processor 6030		\$ 4,200.00
1 ea.	S4B.12 Software		n/c
1 ea.	66103 Processor Module (for VLA)		595.00
2 ea.	66131 Dual Terminal Port Module (for VLA)	\$ 210.00	420.00
1 ea.	Relay Rack		500.00
2 ea.	SM9600-04R Gandalf Multi-Channel Modems	\$3,640.00	7,280.00
1 ea.	9000A Gandalf Modem Chassis		200.00
			<u>\$13,195.00</u>

D. Alternatives

No alternatives are recommended. Several alternative statistical multiplexers and other methods were looked at but although there are some savings, it becomes a patchwork system with much less flexibility for future expansion and presents an even greater problem of spares required.

III. SPARES AND DESIRABLE EXTRAS

A. Present requirements

The equipment listed under II, above, is the bare minimum and leaves practically nothing for expansion or for spare testing. Listed below under B are the minimum spares recommended. These are spares for expansion and a very little bit of testing and true stocking of spare components. Someday, the spare situation will have to be faced. If a modem or statistical multiplexer fails, a good part of the network can be down for several days until we get a Codex repairman in or get Gandalf to ship a replacement modem.

B. Method of Accomplishment

Spares recommended are one memory card at the VLA. This will provide some safety if the data input-output gets heavy. It will also reduce the amount of constraint (holding up of transmissions) from the individual ports.

The other spares are terminal port cards as follows
(each card contains two ports):

Tucson	- 1
Socorro	- 1
VLA	- 2
Charlottesville	- 2
Green Bank	- 1

C. Cost

GSA prices are as follows (all Codex):

1 ea.	66114	16K Byte Buffer Memory	\$ 700.00
7 each	66131	Terminal Ports	\$210.00
			<u>1,470.00</u>
			\$2,170.00

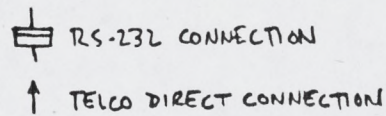
I have set up a COG meeting for Thursday, March 10, 1300 EST,
telephone (203) 797-9075, to discuss all of the above.

Distribution:

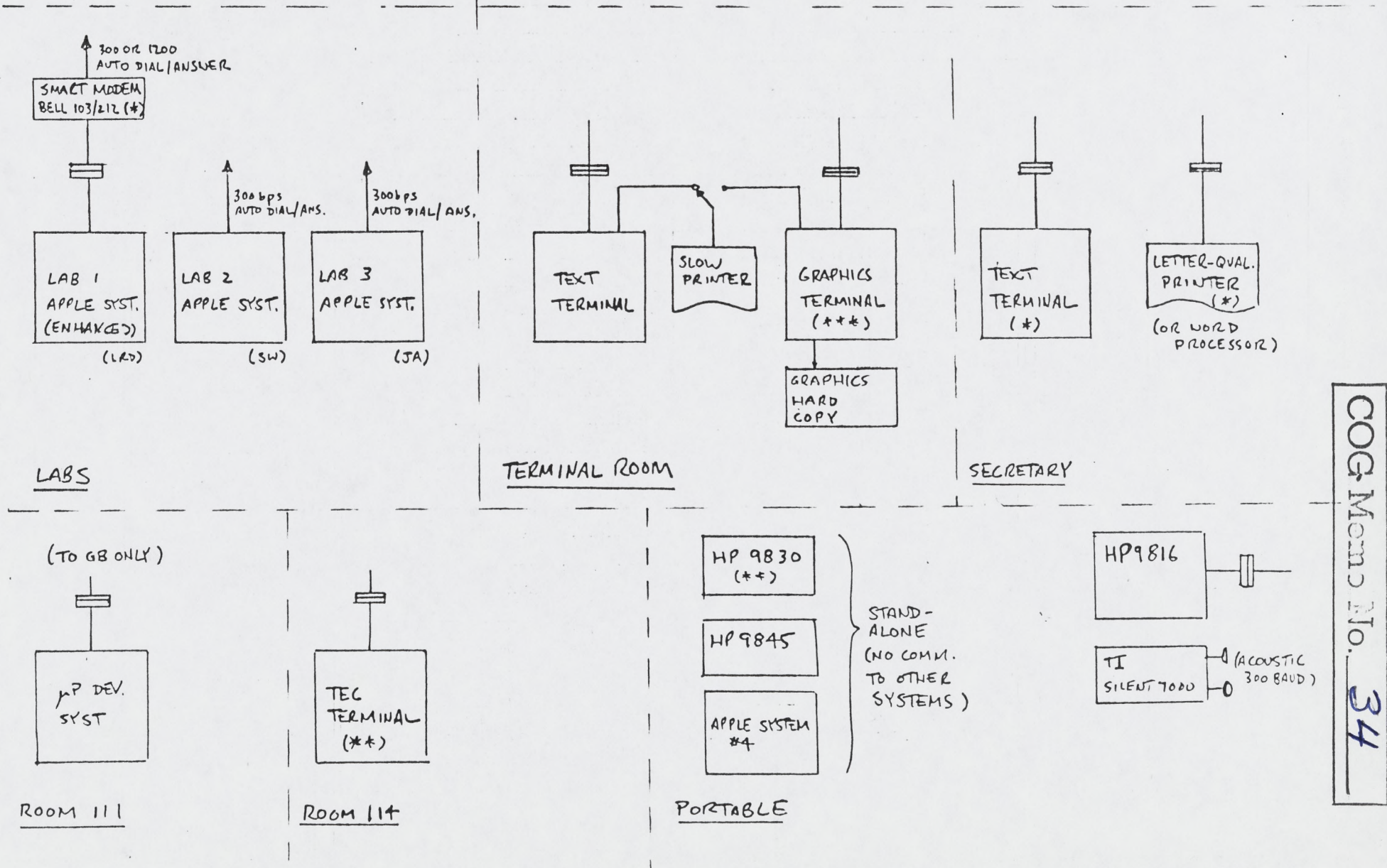
M. Balister
C. Broadwell
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Ivy - ROAD COMPUTING - COMMUNICATIONS

- * = TO BE ACQUIRED
- ** = TO BE DELETED EVENTUALLY
- *** = MAY BE REPLACED BY A SIMILAR DEVICE
(ALL OTHERS EXIST OR ARE ON ORDER)



TOTALS: 8 RS-232 DEVI
 3 DIRECT-CONNECT, NO PHONE NEEDED
 1 ACOUSTIC CONNECT TO PHONE



COG Memo No. 34

LAD 830310