

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
HAYSTACK OBSERVATORY  
WESTFORD, MASSACHUSETTS 01886

December 24, 2002

*Telephone: 978-692-4764*

*Fax: 781-981-0590*

To: Mark 5 Development Group

From: Dan L. Smythe

Subject: The Mark 5A I/O Panel

The Mark 5A VLBI recording system is a direct hardware replacement for a Mark 4 or VLBA tape transport at either a field station or at a correlator. This compatibility is provided by a universal I/O panel with connectors for connecting cables from a Mark 4 Formatter, from a VLBA Formatter, to a VLBA Data Quality Analyzer (DQA), and to a VLBA or Mark 4 Station Unit. A block diagram of the I/O panel is shown in Dwg. No. 1 on the next page.

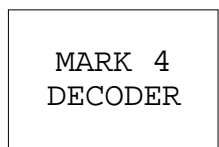
The I/O panel has two 50-pin and two 40-pin input connectors for connecting the output of a Mark 4 formatter at a data rate of 1 Gb/s. Signals from two selected tracks are routed to the Mark 4 decoder via the formatter, as shown in the block diagram.

The I/O panel also has four 40-pin input connectors for connecting the outputs of two VLBA Formatters at a combined data rate of 512 Mb/s. (Most sites outside the VLBA have only one set of formatter cards, with a maximum data rate of 256 Mb/s.) There is also a 20-pin connector compatible with the VLBA DQA input cable.

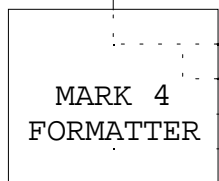
If a station has both a VLBA formatter and a Mark 4 formatter, only one set of cables can be connected at any given time, because the connectors for the VLBA formatter and for the Mark 4 formatter and decoder are connected in parallel.

The panel also has four 40-pin output connectors compatible with the data input connectors of the station unit at a Mark 4 correlator. The VLBA correlator requires an adapter module between the Mark 5 I/O panel and the station unit

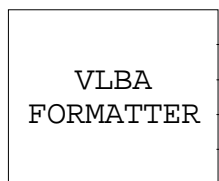
A sketch of the I/O panel is shown on pages 3 and 4, and schematic diagrams of the I/O panel are on pages 5-7.



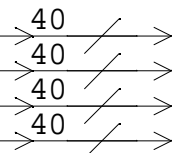
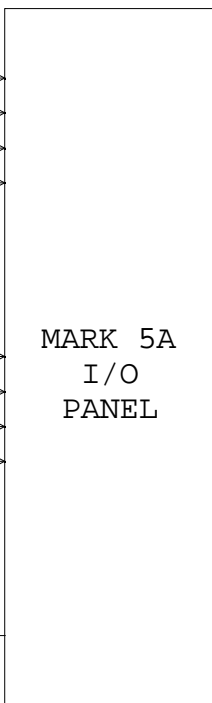
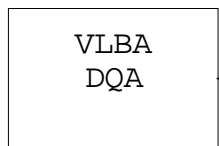
8



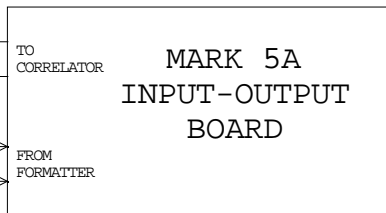
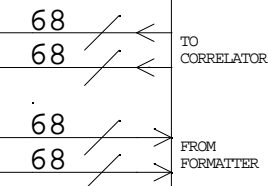
1 Gb/s



512 Mb/s



OUTPUT TO  
CORRELATOR OR  
SECOND MARK 5 UNIT



TO CORRELATOR  
FROM FORMATTER

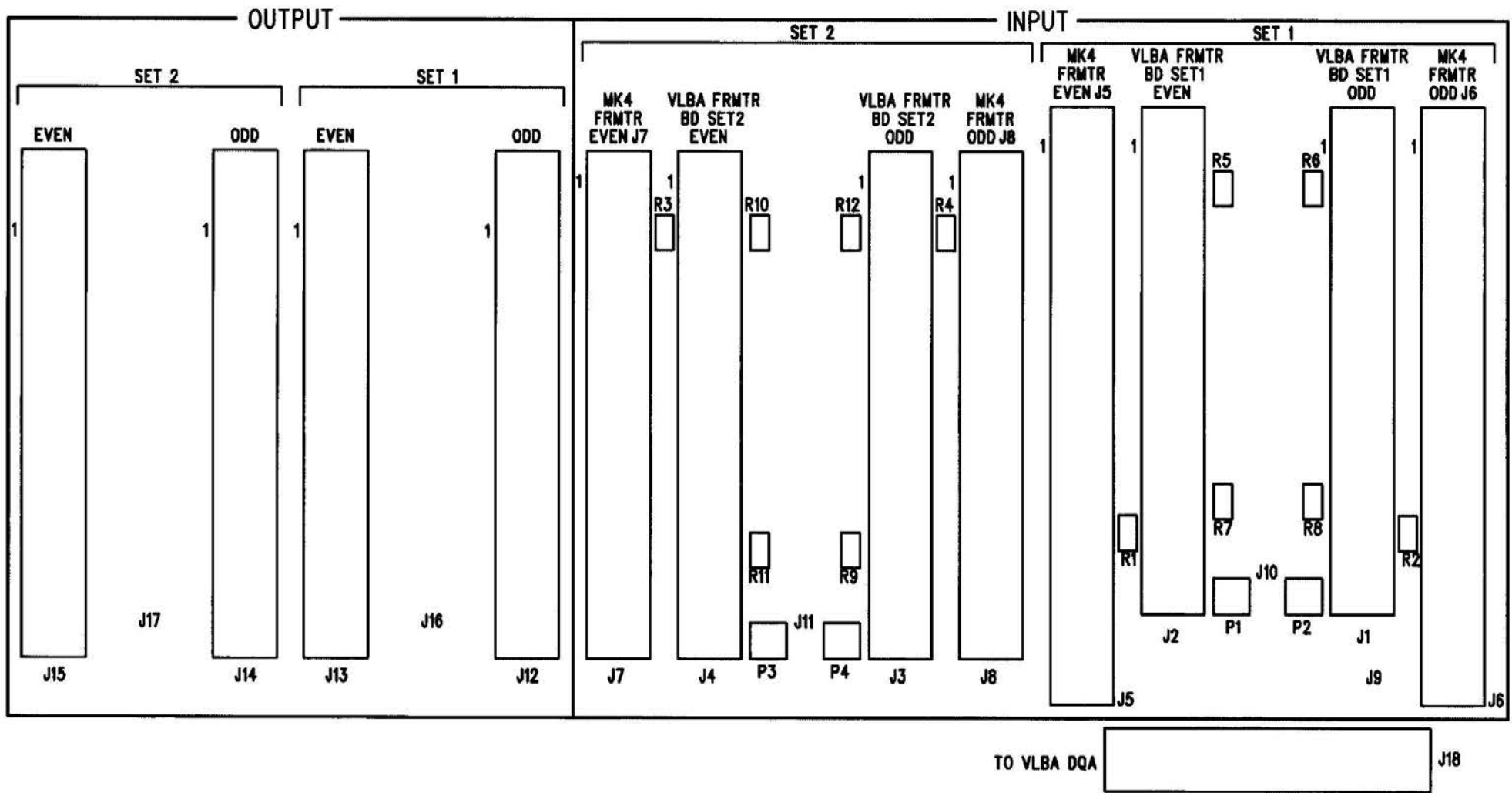
FPDP BUS



NEROC - HAYSTACK OBSERVATORY  
WESTFORD, MA 01886

MARK 5A I/O PANEL  
BLOCK DIAGRAM

ENGR:	DAN SMYTHE	DATE:	12-24-2002_10:15	DRG. NO.:	1	REV.:	
DESIGNER:		DATE:		SHEET:	1	OF:	1



MARK 5 I/O PANEL

MK5A  
INPUT BD  
J10



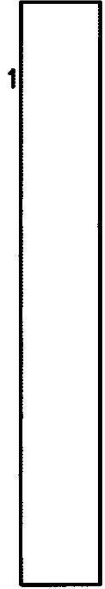
MK5A  
INPUT BD  
J11



MK5A  
OUTPUT BD  
J16



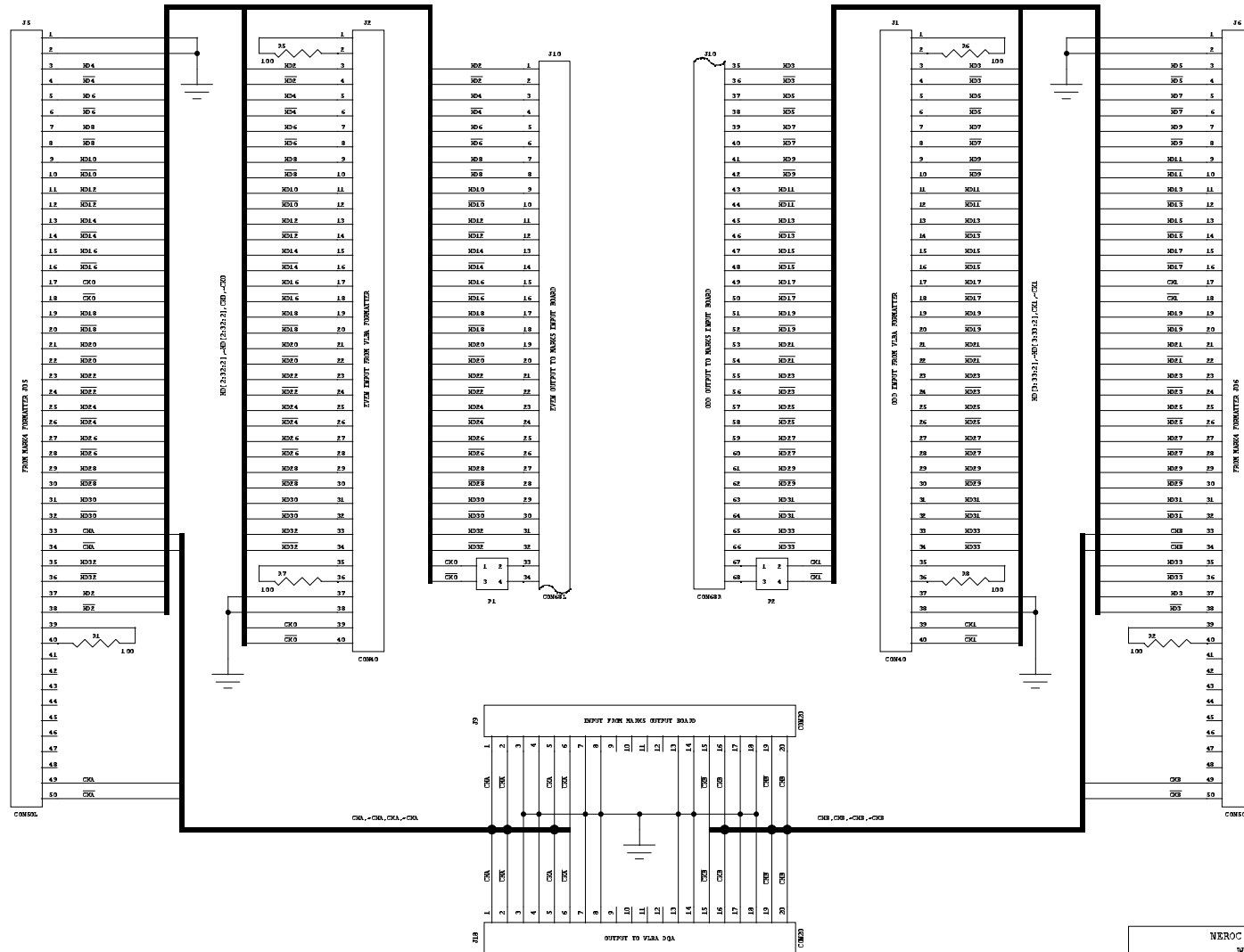
MK5A  
OUTPUT BD  
J17



MK5A  
OUTPUT  
BD J9



MARK 5 I/O PANEL  
BOTTOM SILKSCREEN



NEROC - HAYSTACK OBSERVATORY  
WESTFORD, MA 01886

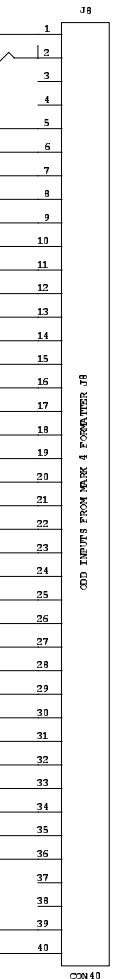
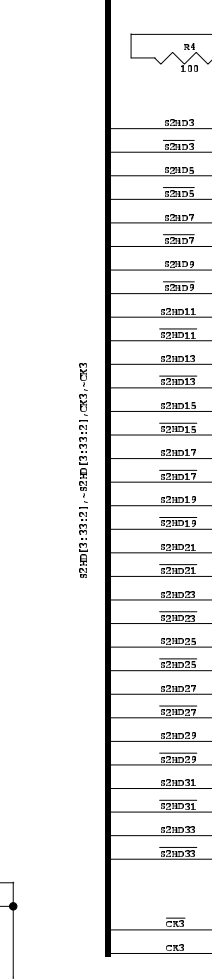
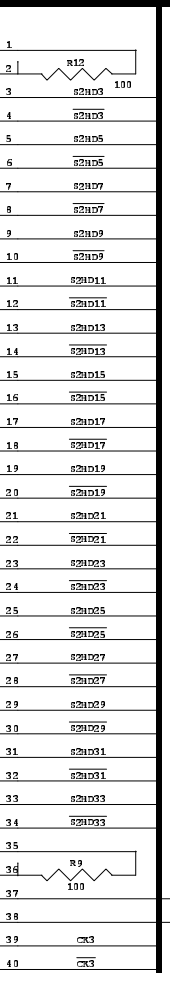
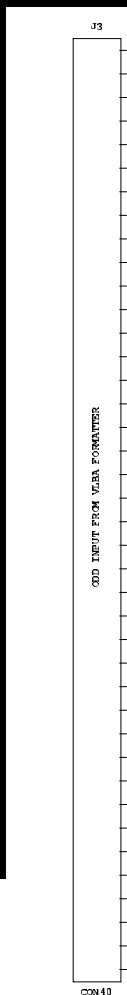
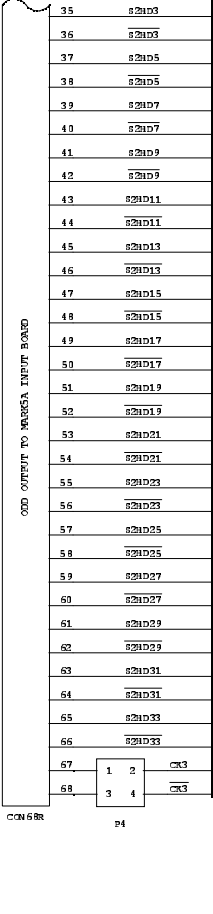
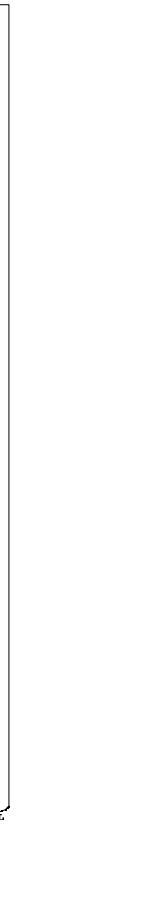
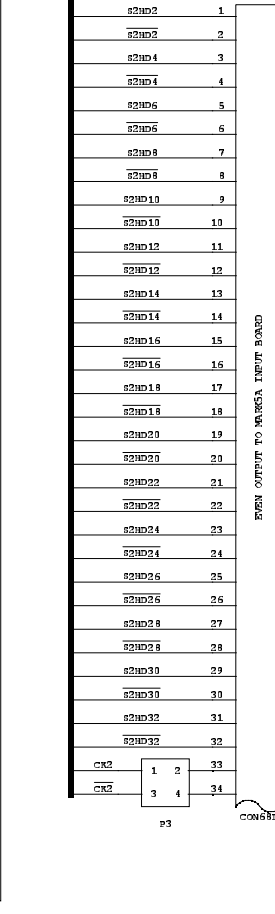
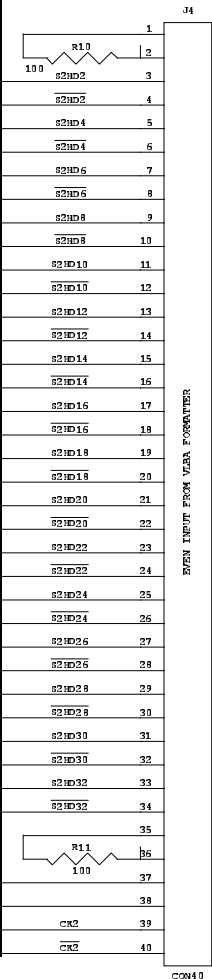
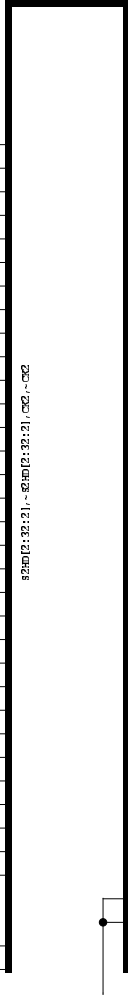
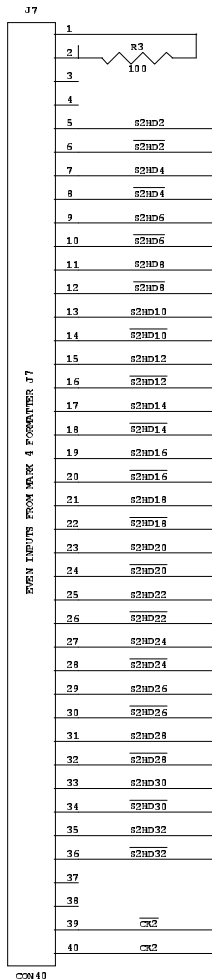
MARK 5A I/O PANEL  
SET 1 FORMATTER INPUTS

DESIGN: DAN SWITZER	DATE: 12-26-84 DWG_11-01	REV. C	SHEET 1 OF 3
---------------------	--------------------------	--------	--------------

FILE: IOPANEL

DWG:

REV.	APPROVED	DATE



NSROC - HAYSTACK ORO SERVICERY  
 WE STAFFORD, MA 01886

**MARK 5A I/O PANEL**  
**SET 2 FORMATTER INPUTS**

DESIGNER DAN SMYTHS	DATE 12-26-2002_11:11	SHEET 2	PAGE NO. B	REV. OF 3
------------------------	--------------------------	------------	---------------	-----------------

A

B

C

FILE: IOPANEL

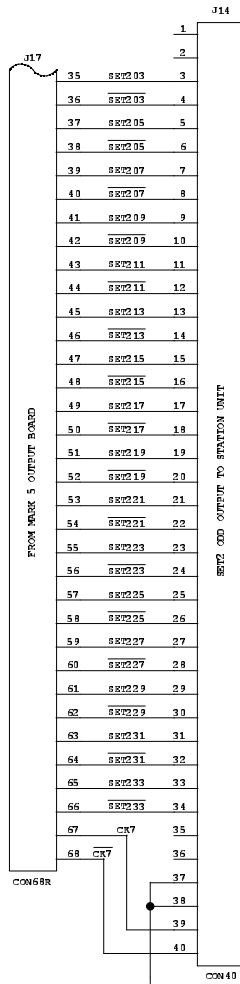
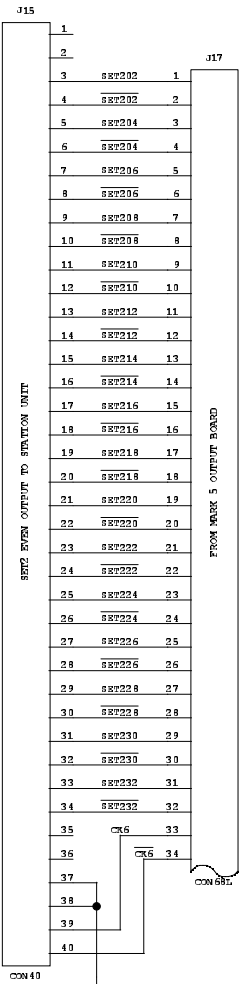
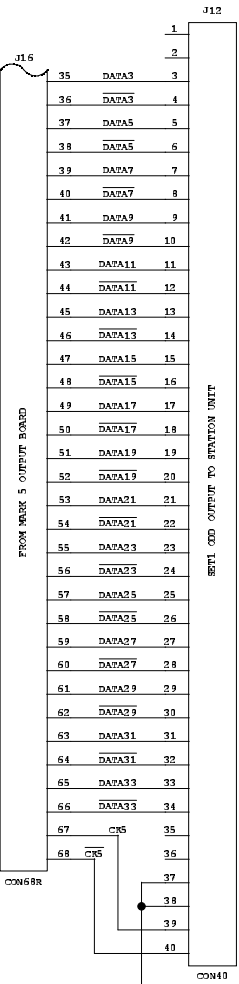
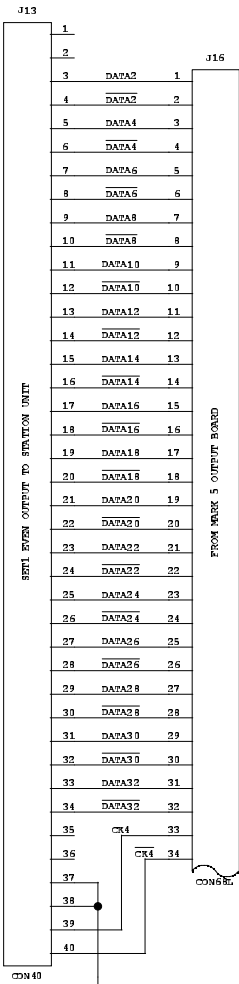
A

B

C

DWG:

REV.	APPROVED	DATE



NEROC - HAYSTACK OBSERVATORY  
WESTFORD, MA 01886

**MARK 5A I/O PANEL**  
OUTPUTS TO STATION UNIT

TASK	SHEET NO. B	REV.			
<table border="1" style="width: 100%;"> <tr> <td style="width: 33%;">A ENGR., DAN SWYERS</td> <td style="width: 33%;">B PROJ.,</td> <td style="width: 33%;">C DRG.,</td> </tr> </table>	A ENGR., DAN SWYERS	B PROJ.,	C DRG.,	DATE 12-26-2002_11:12	SHEET 3 OF 3
A ENGR., DAN SWYERS	B PROJ.,	C DRG.,			