Interoffice

SGP MEMO NO. 23

National Radio Astronomy Observatory

Very Large Array

September 28, 1982

To: M. S. Roberts, H. Hvatum, R. Ekers

From: R. C. Bignell and B. Clark RCB BGC

Subject: Pipeline Progress Report

Due to the recent concern over the software development of the Pipeline project, we will review progress to date and restate our goals.

Pipeline Development Goals

The memo "Short Term Pipeline Plans" dated June 1, is the most recent statement of our goals. It states that " ...the goal is to have a stable complete system sometime near the end of 1983 and an early but quite limited spectral line capability by the end of 1982."

In the context of the general recommendation of the Computer Advisory Group that the NRAO develop a "... short range operational plan with milestones covering calendar year 1982", we identify the goal of "...short range operational plan..." (SROP) as the "...quite limited spectral-line capability by the end of 1982". Our short term plans cover both the SROP recommended by the Computer Advisory Group and the plans for the 1983 calendar year for the work necessary to create a stable and complete system. The original plans were outlined in the memo dated April 26, 1982 and updated in the June 1 memo. The specific plans are kept current and distributed as necessary on a

weekly basis in the form of the Time schedule chart. We presently believe that our general goals for both the 1982 SROP and the 1983 plans as outlined in the June 1 memo are attainable and anticipate no major delays.

Pipeline Plans and Current Progress

The basic plans are outlined Table I which lists and identifies the individual tasks and in Figure 1 (Time schedule) and 2(Task dependency diagram). Table II gives a list of manpower involved. These plans reflect our current estimates. The progress to date is briefly summarized in Table I under the STATUS column. Each task is given a status description and a date. The status description is one of the following:

(a) Complete. The task is declared complete at the point where all of the features currently proposed for the program have been coded and some (usually very limited) testing has been carried out. In many cases the program is really not complete because there are still many months of extensive testing and new features yet to be added.

(b) Started. The task has already been started but is not yet complete under the above definition.

(c) Scheduled. The task had not yet been started. It will be started in 1983.

(d) *. The task will be started before the end of 1982.

The date assigned to each task is that of completion under the definitions given above. The proposed completion dates are included in brackets for tasks not yet completed and actual completion dates are given without brackets.

More Specific Description of SROP for 1982

We will outline the basic capabilities of the system currently planned for the end of 1982 to clarify some of the details and help prevent any misunderstandings or misconceptions. Our current plans call for:

(1) Transfer and sort line and continuum data from the MODCOMPS (on-line) or from the archive tape (off-line) and store into the Pigeon Hole Database (PHDB) on SORTER

(2) send calibration parameters from DEC 10 (complex gains only) to SORTER

(3) make maps (both continuum and spectral-line)

(4) clean maps

(5) Output maps to FITS tape

(6) rudimentary capability to list data from the PHDB and to plot gridded data from SORTER.

(7) rudimentary map display of maps made on SORTER

The system will have many more features, be more user friendly and more stable by the end of 1983.

TABLE I - PIPELINE TASKS

TASK**	DESCRIPTION	STATUS
DEC10 Flagging	Pass editing information from the database on the DEC 10 to SORTER	Complete 4/82
CLEAN	Clean maps on the pipeline.	Complete 5/82
FITS	Write and read FITS tapes on SORTER.	Complete 5/82
GRID and MAP (WB pac)***	Grid and make maps on the pipeline	Complete 3/82
UV db/structure	Design and implement the visibility data base (pigeonhole data base - PHDB) on SORTER.	Complete 4/19/82
UV db/verifier	Verifies the structure and contents of the PHDB.	Complete 4/19/82
UV CATLAST	Summarize the contents of a PHDB on SORTER	Complete 5/17/82
db/bac/res del CONT	Program to back up, restore and delete PHDBs from SORTER for continuum data	Complete 5/17/82
Interface WB to SORTER	Interface the gridding and FET software package written by Wim Brouw with the PHDB.	Complete 5/24/82
Tape FILLER CONT	Program to read the VLA archive tape, transfer and sort uv data into the PHDB.	Complete 7/5/82
Graph Plans Gen	Design the general features of the graphics system to be used on the pipeline.	Complete 7/12/82
Stable MAPCON	generate a system version of the pipeline control program MAPCON which will be stable for Users of the MAPPER software.	Complete 8/23/82
Pipeline DOC	Documents the overall features of the pipeline system and their relationships.	Complete 9/6/82
Combine CONT + SPL on MC	Combine the continuum and spectral line on-line observing systems on the MOD COMPs into one system.	Complete 9/13/82
Tape Filler SPL	Program to read the VLA Archive tape transfer and sort uv data into the PHDB for spectral-line data.	Complete 9/13/82

*db - data base
***WB - Wim Brouw

pac in MAPCON	Bring up MAPCON on SORTER and interface with the Wim Brouw's gridding and mapping package.	Started (9/27/82)
Detailed Graphics Plans	Describe in more detail the implementation of the Graphics options for the pipeline.	Started (9/27/82)
UV bac/res/del SPL	Program to back up, restore and delete PHDBs from SORTER for spectral line data.	Complete 9/24/82
Design EXP FMT	Design the new Export Format structure.	Started (10/25/82)
On-Line FILLER CONT	Program to transfer and sort continuum uv data from the MODCOMPS to the PHDBs in real time.	Scheduled (11/1/82)
UV VISPLT	Program to display the uv data stored on SORTER.	Scheduled (1/3/83)
Move Integration to hardware	Move the on-line integration of visibility data from the software into hardware in the Correlator Room.	Started (12/6/82)
Increase SPL Cap on MC	Increase spectral line capacity to 7000 channel baselines from the current 5000	Started (12/6/82)
sign Pipeline terface	Design the overall user interface of the pipeline.	Started (12/6/82)
On-line FILLER SPL	Program to transfer and sort spectral-line data from the MODCOMPS into PHDBS.	Started (1/3/82)
EXPORT Tape	Program to transfer and reformat uv data stored on SORTER to a tape for export to other systems.	*(2/21/82)
MAPCON improvements	Many tasks to be carried out to improve the overall performance, maintainability and user friendliness of the MAPCON controlling software (eg. modular IO, more meaningful messages to users, etc).	Started (2/7/83)
Stable WB pac	Stabilize and trace down software and hardware "bugs", add features and improve performance.	Started (2/7/83)
Float pnt conv	Convert on-line software to handle the modified floating point format for uv data and to increase spectral capacity to 16000 channel baselines.	Scheduled (3/7/83)
plement Pipeline er Interface	Implement the software and hardware plans for the Pipeline control computer (s) and begin software for user interface.	*(3/14/83)

B & D IFs on MC	Implement the on-line software to turn on the B and D IFs.	Scheduled (6/27/83)
SELF CAL	Design and code software to carry out self-calibration in the Pipeline.	Scheduled (5/9/83)
Activate CORBIN	Bring up software to use CORBIN for collecting uv data on-line to increase spectral-line capacity to 32000 channel baselines.	Scheduled (5/30/83)
SORTER TO GRIDDER	Move the controlling software for WB package to GRIDDER.	Scheduled (5/30/83)
Float pnt DEC10	Convert software in the DEC10 to handle the new modified floating format for uv data and implement the software to handle the B & D IFs.	Scheduled (8/29/83)
Full SPL on-line sys	Increase spectral line capacity further by sorting on the fly.	Scheduled (9/5/83)
Graph Impl	Implement the graphics options for the pipeline.	Scheduled (1983)
SPL BLC to SORTER	Transfer the baseline calibration corrections for spectral line data to SORTER and turn on the correction in SORTER.	Scheduled (1983)
UV LISTER	Program to list uv data on pipeline.	Scheduled (1983)
Graphics Flagging	Capability to flag data directly from the graphics system.	Scheduled (1983)
FITS improvements	Unify and improve FITS on SORTER, MAPPER, DISPLAY and DEC10.	Scheduled (1983)

TABLE II

Pipeline Manpower

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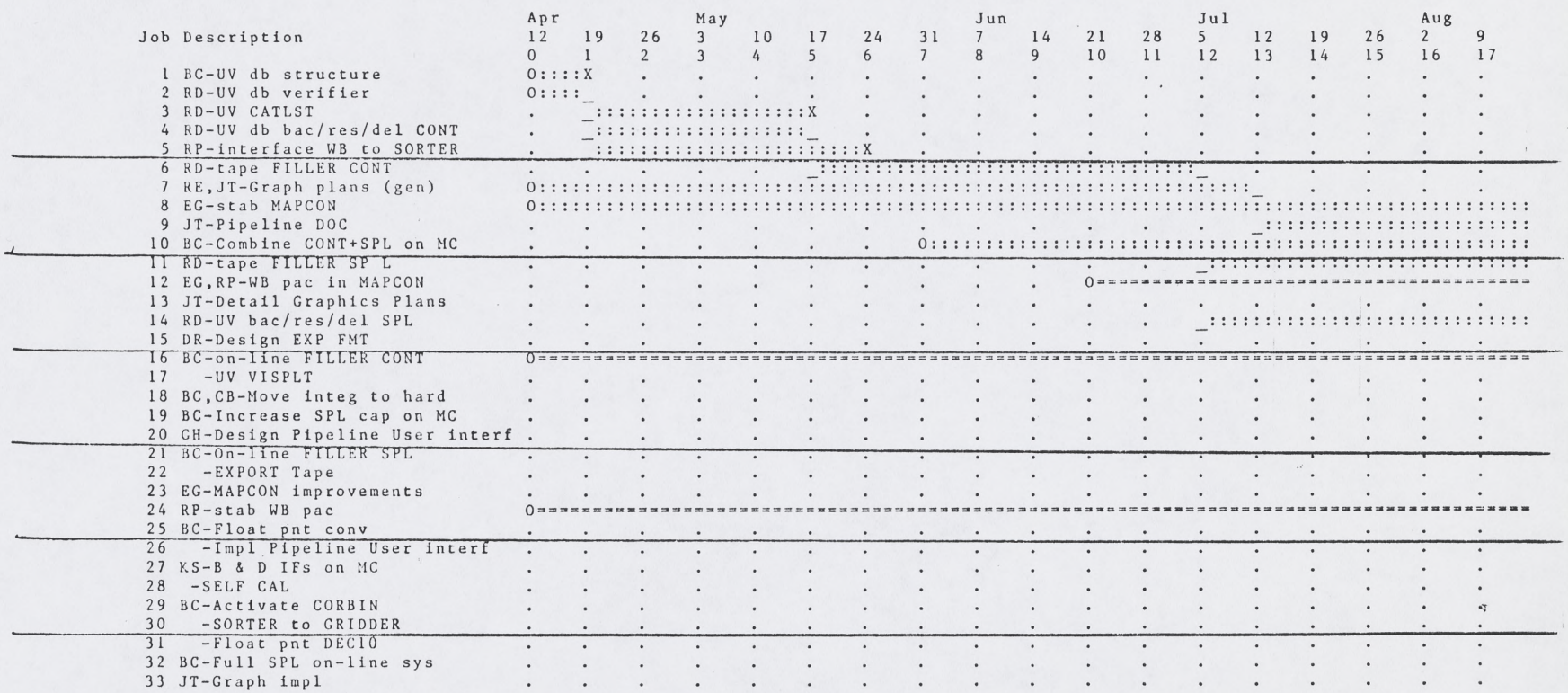
E. Graham
R. Payne
J. Torson

CB/bmg

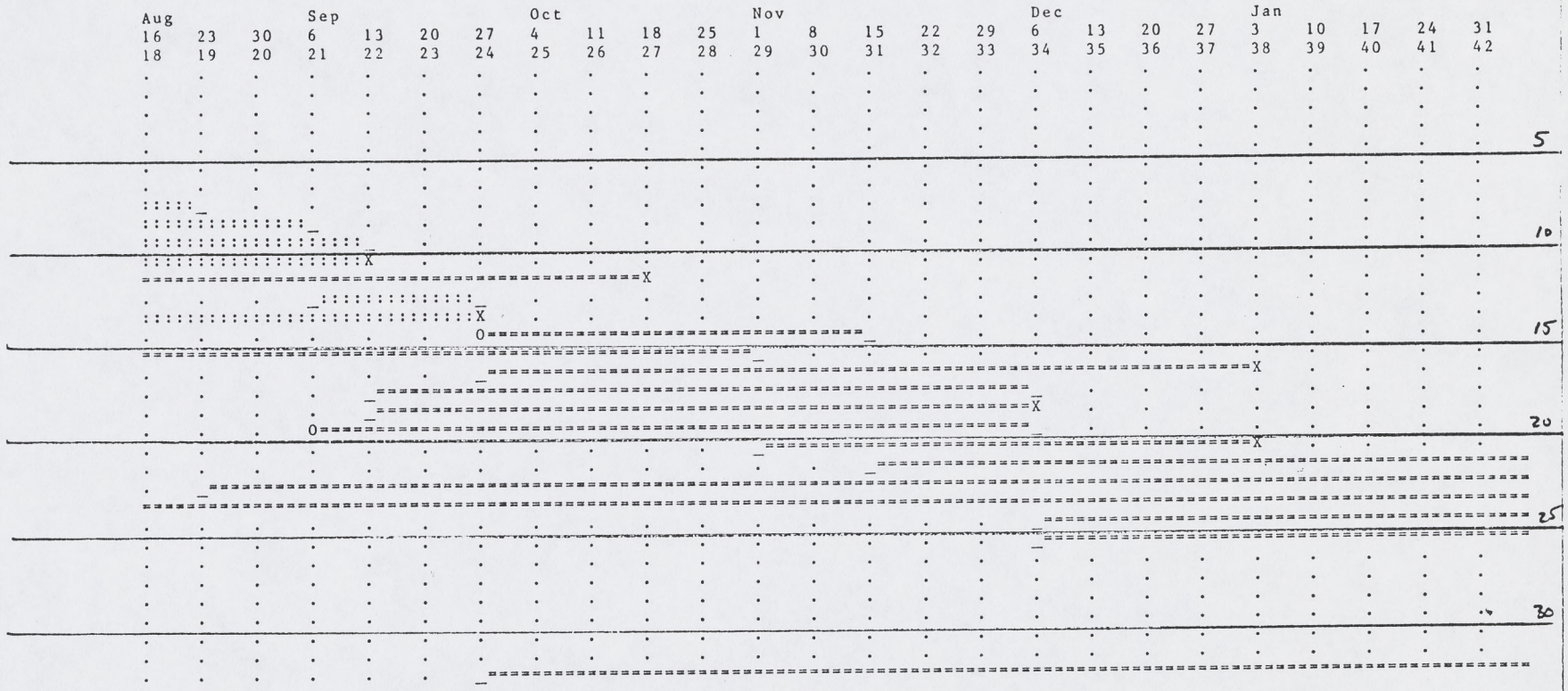
SPL PIPELINE, Revision 6, 10/6/82
Prepared by C. Bignell



Symbol - Explanation

_----_	Duration of a normal job
_...._	Slack time for a normal job
_====_	Duration of a critical path job
_::::_	Duration of a completed job
*	Job with zero duration
O----_	Job with no prerequisites
----X	Job with no successors

Figure 1.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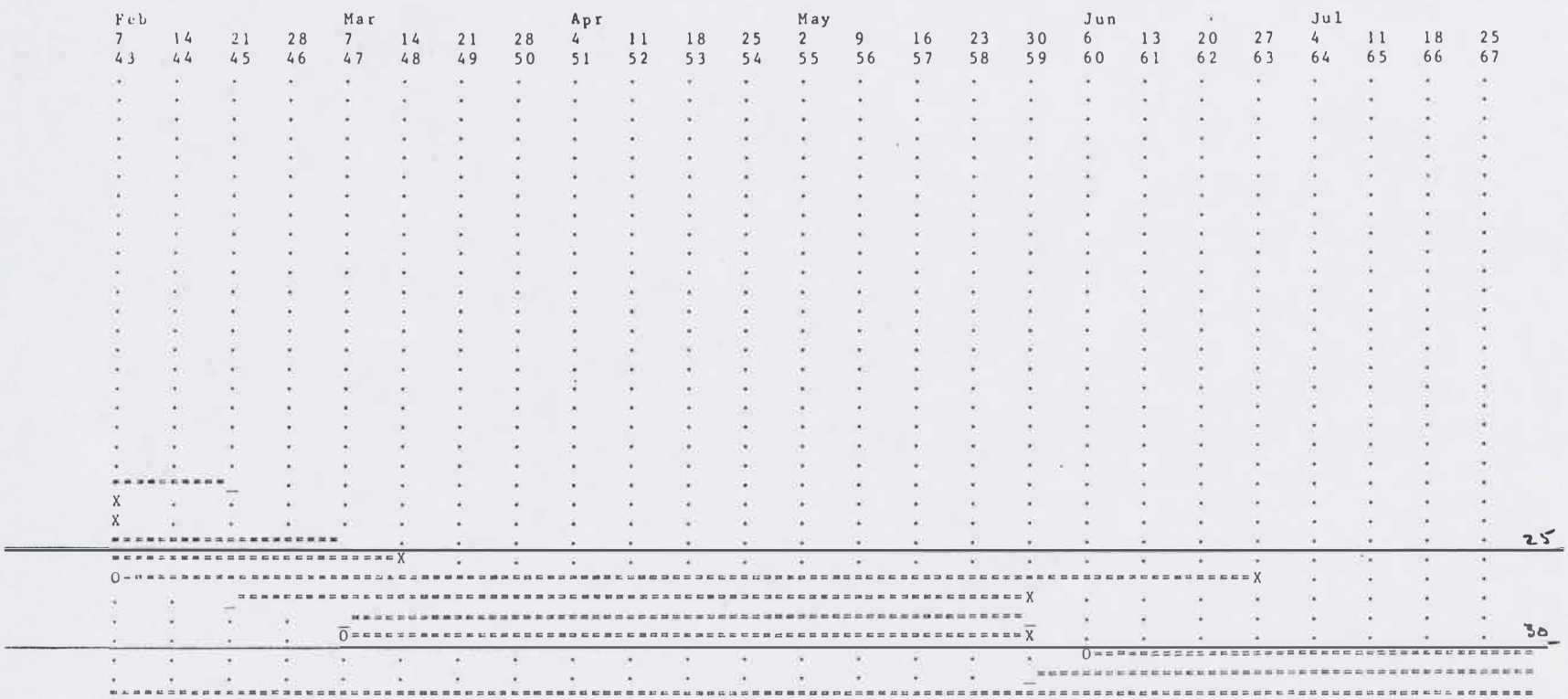
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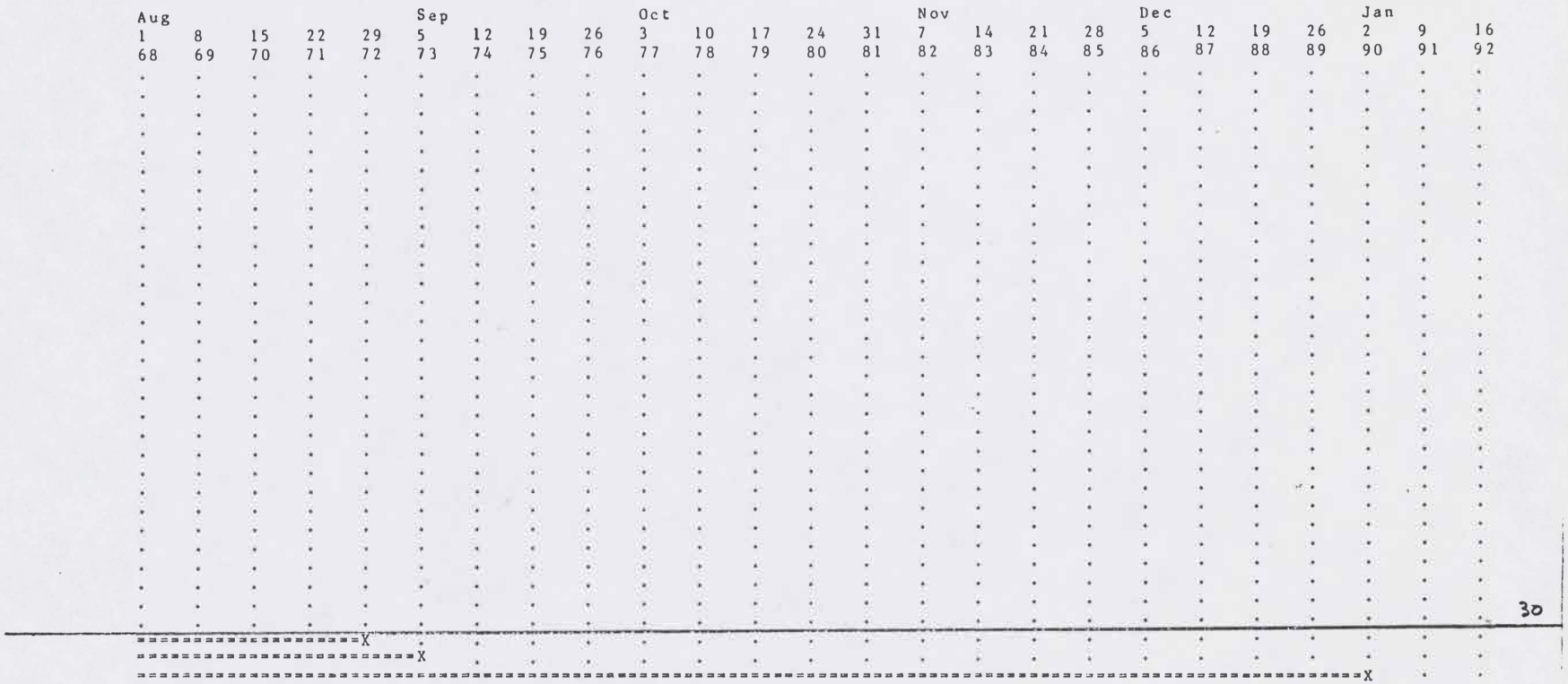
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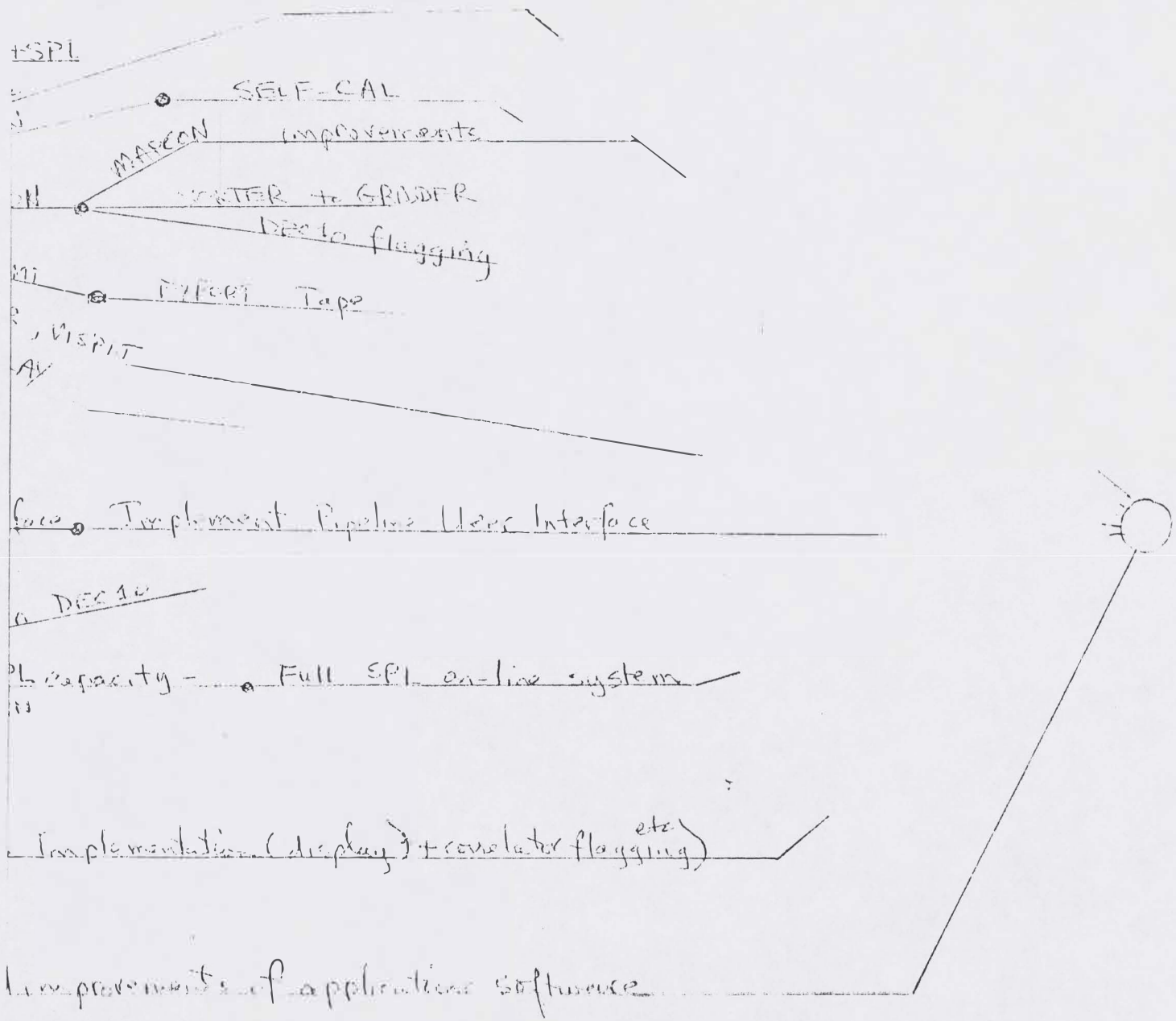


Figure 2 Pipeline Job Dependencies

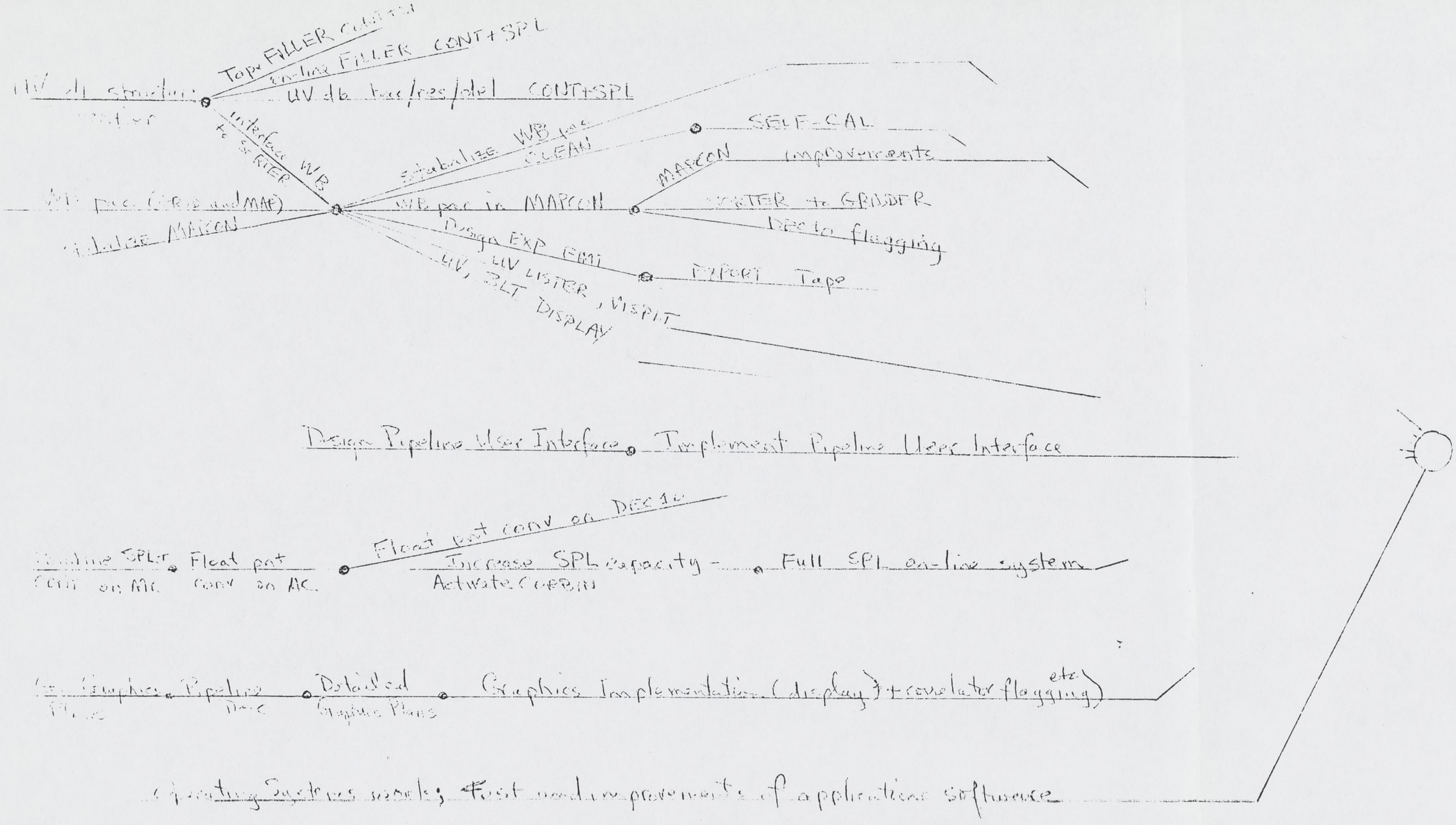
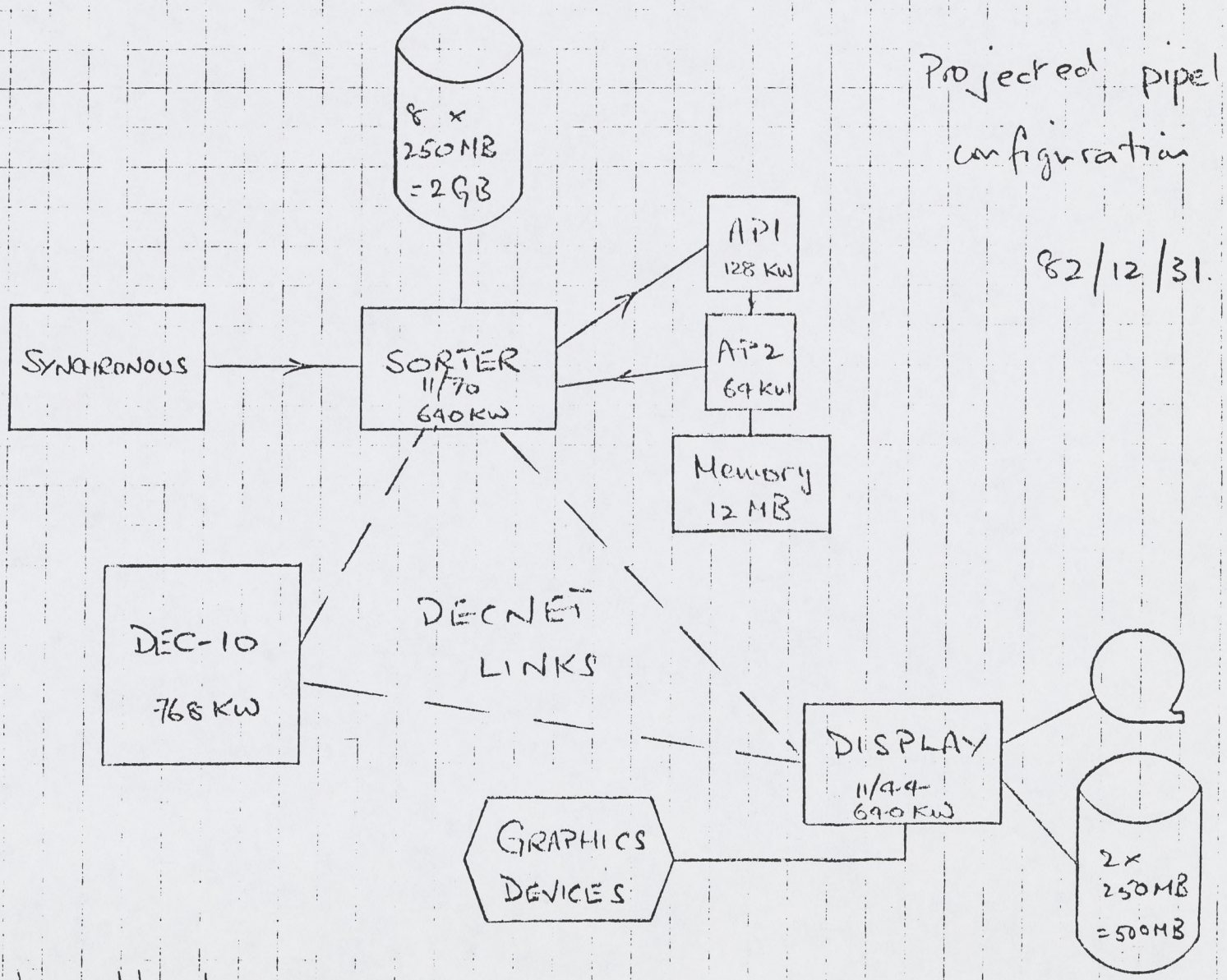


Figure 2 Pipeline Job Dependencies

82/10/08
GCH.

Projected pipeline configuration

82/12/31.



Pipeline Hardware Configuration

Figure 3