Proposed program:

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We have about 90 roll[illegible] of tape.

They can be dubbed at the rate of about 4 per hour. About 10 are dubbed. About 20 hours actual time required to dub the remainder. We propose to make this number one priority, and then transfer either the originals, or the dubs to NSA.

We have arbitrarily assigned three phases to the processing program after dubbing. These are:

Phase I: Transfer from the magnetic record to a visual record, with optimum signal-to-noise ratio, timing accuracy, dynamic visual range, frequency accuracy, and manual readability.

Phase II. Transfer from the visual record to computer format, by laborious manual interpretation of the visual record. (Probably to punched cards).

Phase III. Machine computation of the required parameters.

Phase I is what we have been working on....within the past 4 weeks, we have devoted about 12 man weeks to the project....the success we have had is due not so much to the man hours of effort, but rather to availability of the vast store of oddball components in the analyzing business we have collected through the years, the critical items we were able to locate and borrow, and past experience. The instrumentation we have collected is largely "one of a kind", and to duplicate it would require a minimum time span of 3 to 4 months, and would require about 100K if done on this time scale..possibly more. The system we are now using requires about 3½ hours processing time for each roll of tape.

Phase II, it is estimated, will require about a minimum of 20 hours of processing time per roll of tape, and probably much longer.

Phase III, once debugged, should present no problem in processing time.

It therefore is concluded that phase II will be the major roadblock in the system.

Since we (I) have phase I running, (II) it would take a lot of both our time and NSA's time if we were to indoctrinate them in detail to our system, and (III) since we can undoubtedly keep them saturated with Phase I material if they attempt only Phases II and III, it is proposed that for the present, we continue to do Phase I, and also continue to consider methods of refinement... because actually, we consider the present system to be interim, and have a much more efficient system in the design stage.....then after NSA has mastered Phase II, we can indoctrinate them in our latest version of Phase I.

It can be argued that the present S/N condition alleviates the need for special attention to Phase I.....however, we firmly believe that NSA should adopt a physical time and frequency much like our present time-stretched frequency-compressed format, both so they can better spot very short intercepts of a very few number of pulses, and so that a standard Phase II format, also useful for very poor S/N can be adopted. We believe our system has 2 advantages: intercepts of 2 or 3 pulses are clearly defined, and very weak intercepts are brought above the noi[illegible]

~~TOP SECRET~~

HAROLD E. BYEMAN
CONTROL SYSTEM ONLY