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Notes on first chart: - 1MCC

What we intend to do at the Cape

Early Gemini flights

Early Apollo R+D flights

Hope and desire to get 1MCC of Houston operational as early as possible for experience - probably have both 1MCC & 1MCC going at the same time to gain this exper.

(Will have a Gem. trainer tied in to both Cont Cent for training purposes.)

FUNCTIONS OF THE NMCC

Control of communications for all manned space flight - switching - testing - diversification. Note that for other space flight missions acts as switching and relay center & either SPL or Goddard becomes comm cont center.

Displays are means of getting all the information necessary to control of the flight to the flight controllers. Automation required because of large amounts of systems and trajectory info. Computer relationships.

SCATS - Primarily a method of training the ground and flight crews in how to conduct the mission and to respond rapidly in real time. Point out mission simulator and its train with NMCC.

Also extensively used as a method of checking out the entire GASS sys leading to a manned space flight.

The PCC is of course the heart of the
MCC since all of the trajec + sys computations
are performed within it. Basis of display.
Associate contr to MCC contr.

Events Leading To Evaluation.

Make point that RFP stated a rather firm 14CC design concept and that justification required for changes.

Need for list of preproposal qualifcat required of conotr.

Made eval and sent RFP's to those chosen (list who they were) also sent to any other desiring with letter telling them we recommend not bidding because they hadn't met desired qualifii.

COST BREAKDOWN.

In area of hardware - price much the same or - you can explain wide differences such as Lockheed manual system.

RCA's lack of costing certain exp such as carrier & intercom and use of PCC to perform comm switch.

Hi degree of IBM sophis - unwarranted.

In software - Sta indicates the unit of manpower to be applied to job - Significant that several companies having experience were somewhat the same - lack of manpower by 177 spec in MCC & COS inteq.

Ops. & Mainten. - 177's on shift operation
An estimate by Philco - even so still high.
Buyer's clause - NASA's prerogative to put out on bids at anytime desired.

Realism of Philco price - all costs when desire to do job as we want to be much the same in cost.

Notes on Cost Breakdown.

1. Large degree of similarity in the capability of hardware systems provided by ITT & Philco.
2. In the 4 top bidders ITT underestimated the IMCC integration task. Significant that other 3 had experience in this area.
3. ITT provided only 1 shift for M&O support. Philco estimate contained error, nevertheless cost still appears high.

PHILCO

Completeness of design in that they gave us a coherent and well thought out central center. Only bidder which was able to show us a working facility.

Reflects USC desires as indicated in RFP and have shown this to us - have given rational sys which shows conclusions drawn have been given careful thought -

Obviously - as to be expected - since they do have this background and knowledge stated in their proposal that they ^{are best} ~~are best~~ do have the best chance of meeting schedules.

Are in a position over all other bidders to go ahead almost immediately after contract award.

Good centralized management concept located in Houston -

As pointed out previously USC thinks costs are probably the most realistic.

ITT

Believe this to be a good proposal in that they thoroughly understand the tasks to be performed.

~~However, we have serious reservations that this design concept is dangerous.~~ But their use of the communications processor to do all jobs within it as opposed to a ~~modular~~ separated concept will make initial design complex-oriented system so too interdependent - and future system changes very difficult to achieve.

Firmly believe success of these network is due the use of modular concept

Singular feature of ITT design is a common JCA which ~~performs~~ is involved in all of the major systems of display, communications, and simulation and checkout and in the data inputs to the real time computer complex. This concept of putting all your eggs in one basket is considered by us to be potentially dangerous.

We have in truth gone through this ^{design} concept ~~and~~ ourselves and discarded for the reasons

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just given.

This design concept could also have a profound effect on the presently conceived computer complex and result in very serious delays in proceeding with the computer program.

Their management organ was considered very good but their proposed ~~manpower~~ ^{manpower} was considered to be inadequate. This finding was confirmed to us by the field committee sent out to investigate the contractor's past performance. These facts have been brought ~~to~~ out with regard to their proposed cost.

In addition, ^{the} field committee investigation showed ~~a~~ a previous customer to be ~~very~~ dissatisfied with 177's performance.

(Biglally II - Col Philipall.)

These observations led the ~~to~~ SEB to accept the recommendations of the Tech committee and downgrade the score of 177.

Realization:-

Change of use of computers would cause IIT to redesign their entire systems.

In area of displays they would also require considerable invest - they are lacking seriously in this area. - really made lots of suggestions but did not have a system design -

RCA

Costs to be expected because of RCA's experience they had a good appreciation of the tasks to be performed and had a proper approach to the MCC design.

The significant factors of the RCA proposal were: -

They assumed that all control process and display driving would be done in the MCC which was contrary to the RFP - Further it was difficult to discern what RCA was proposing - in that they stated the above and then proceeded in the detail design to do it differently (used additional computer etc) It is significant that their costs were based on the cheapest approach and not what appeared to be their recommended approach.

Secondly - they assumed ~~the~~ an extensive and undue reliance on the commercial carrier for terminal equipment and the leasing of the intercommunication system. Based on past experience this is not desirable and it is felt that

This is an improper management concept. It is far better to have this gear under the direct control of the MCC conts. This approach also resulted in a significant reflection in the low cost ~~of~~ proposed by RCA.

RCA's proposal is a long way from being a final system design and RCA would have to ~~to~~ spend considerably more time in system design and would require a great deal of NASA effort with them to accomplish this task.

backhead.

1. Good appreciation of the tasks to be accomplished during the implementation. The problems associated with the scheduling, integration, COSS unification, check-out, ~~and~~ maintenance and operation were well defined. In these areas their experience on the Discoverer Program was clearly reflected.

2. They had a complete misconception of the requirements imposed on the IMCC and COSS by manned spaceflight. Namely the safety of the spacecraft which requires that the ground can react rapidly and effectively to assist the crew in an emergency. The manual system prepared for the display and communications area would be unable to cope with the large amount of data to be handled in support of the Gemini and Apollo programs. The communications system prepared is not as automated as the present OSFC system. High speed data is virtually eliminated, all traffic being handled at TTY

speeds. The concept of system expansion by transferring from TTY to high speed is naive and indicates a lack of presently employed communications techniques.