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MCGWG-M-34

COMIREX MAPPING, CHARTING AND GEODESY WORKING GROUP

Minutes of Meeting Held in Room 1D918
Pentagon
0930-1145, 20 June 1968

PRESIDING

[redacted] 25X1
Deputy Chairman

MEMBERS OR ALTERNATES PRESENT

[redacted] 25X1

CONSULTANTS PRESENT

[redacted] 25X1

Purpose of Meeting - General

1. The announced purpose of the meeting was to review the four items forwarded members by Memorandum dated 14 June. [redacted] commented that it would not be possible to discuss the Minutes of the last meeting since they had not been received. [redacted] indicated that the Minutes were available in draft form, but because the secretary normally responsible for this had resigned there was a delay, but the minutes would be distributed within the next few days. Anyone needing information in the Minutes could obtain such from DIA. 25X1 25X1

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Recommendations for KH-4B Mission 1104 for Improving Positioning Accuracies

2. Copies of a Memorandum for the MC&G Working Group, Subject: Report of Subcommittee for Mission Planning, dated 17 June 1968 (see enclosure 1), signed by [redacted] Chairman of the Sub-Working Group for Mission Planning was distributed for members' review. [redacted] stated that an extended effort had been made to place as much important substantive information as possible in the memorandum which would not only set forth the stated requirement and detailed proposal, but also point up the possible penalties to general intelligence caused by variations in mission parameters from those established by optimizing the mission for highest priority intelligence objectives. In this regard, [redacted] indicated that he had received good cooperation from the NRO, and it was possible to include in the paper an indication of those tradeoffs that would be involved if the inclination of Mission 1104 were moved to 72°. However, since there seemed to be comparable or possibly greater benefits to MC&G positioning by holding the normal inclination and changing the launch time, a request had been made by DIAMC to the NRO to provide computer data which would indicate possible differences in results achievable. It was explained and confirmed by [redacted] that some additional time would be required to obtain such results for evaluation. With respect to enclosure 1, there was very little discussion resulting in any changes in the substantive information in [redacted] memorandum. In support of the MC&G objective being sought [redacted] felt that the intelligence PI-Analysts might accept the changes that could be caused by different sun angles over prime objectives. In further discussion, he brought out that the difference in sun angle would probably not be significant, and that in his opinion it could have the added advantage of enhancing intelligence exploitation through obtaining a different signature because of the shift in sun angle. [redacted] indicated that he thought the same intelligence targets could be covered by a change in launch time with the principal change being not so much a matter of sun angle change, but a given target would be covered on a different day during the mission. In any event, the Working Group was encouraged by the apparent indication at this time that changes in mission parameters to help the positioning problem seemed to have little, if any, detremental affect on the accomplishment of prime intelligence objectives. [redacted] indicated that he would make further studies at NPIC and make available to all concerned the analysis information resulting from different mission parameters. [redacted] expressed satisfaction with what was being proposed, and [redacted] stated that the short arc technique was very important from the standpoint of the Air Force, in that it represented the only major improvement in positioning prior to implementing whatever the NRO proposes to meet the 450 foot horizontal and 300 foot vertical, 90% assurance accuracy requirements for world-wide positioning--which could be one to two years away. It was brought out in the discussion that a significant reason for

proceeding with the short arc technique at this time would permit saving 3 to 6 months' time in data reduction to meet the 450 and 300 foot requirements at some later date. [redacted] indicated that while the Working Group was waiting on further analysis information from NRO and NPIC to complete a paper for forwarding to the Chairman of COMIREX, it would be important to clear up any other questions about the paper as soon as possible. In this connection, [redacted] indicated that DIA could possibly add further to the requirements statement and that he would like to have [redacted] discuss enclosure 1 with representatives of their office to identify further questions on the requirement, objectives and possible penalties. This early action was sought in order to expedite the forwarding of the proposal to the Chairman, COMIREX. This was important since [redacted] had pointed out that the NRO would normally begin cutting the tape for Mission 1104 by approximately 15 July.

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Justification for the KH-9 System

3. While not on the Agenda, all members were aware that the Chairman, COMIREX had been asked to respond to the question as to why the KH-9 was needed in view of the capability of the KH-4 and the KH-8. Copies of [redacted] first draft had just been received, and particularly because of the interest of the MC&G community in [redacted] major concern was expressed. It was indicated that [redacted] covered high points of the justification in behalf of MC&G, but that constructive comments could be made to strengthen the justification from the MC&G point of view. It was concluded that prompt attention would be given to provide constructive revisions of the draft to COMIREX members.

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Progress on Meeting World-Wide Positioning Requirements

4. The purpose of this item was to obtain an up-to-date status report on NRO's proposals to meet the world-wide positioning requirements. [redacted] indicated, speaking broadly, that there was no "requirement" for the NRO to respond to. [redacted] summarized the critical actions, known to all, which included USIB approval of the 450 and 300 foot horizontal and vertical positioning requirements, 90% assurance in June 1966, which carried with it the indication that the MC&G community could meet the requirement from existing data, the later statement of July 1967 that informed the Chairman of COMIREX that it would in fact not be possible to meet the 450 and 300 foot requirement with existing data, the personal request of the Chairman, COMIREX to the NRO staff that solutions to meet the requirement be proposed, and the up-to-date action whereby the NRO is trying to finalize their proposal as to how the 450 and 300 foot requirement can be met. [redacted] indicated the up-to-date status to be that a final report was scheduled to be forwarded to the Director of NRO the following week which revised an initial report which led to the need for additional data. [redacted] pointed out that

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additional data relating to Doppler capability had been obtained from DIA and Navy, and that it should be possible to make the proposal to COMIREX within the next week or two. Members reaffirmed the need for early submission of NRO proposals for meeting the positioning requirement. This is especially significant when it is recognized that detailed planning for overt geodetic systems for the next five years is now being attempted in the CIP without a firm indication of the vital complementary activity by the NRO.

KH-4 DISICS

5. [redacted] mentioned that NRO had indicated that the 1 September KH-4 Mission (CR 5) would not include a DISIC and that tentatively Missions CR 10, CR 8 and CR 14 would not include a DISIC camera. [redacted] raised the question as to the requirement guidance expressed concerning DISICS in the last MC&G Working Group meeting, and particularly what was being done to improve the accuracy of the ephemeris which was a tradeoff cited in this guidance. [redacted] reply was that some improvements were underway (SGLE) and that, of course, there were plans to improve the ephemeris as part of the proposal that NRO would make to meet the world-wide positioning requirement. The NRO reduction in DISICS was just one of a number of steps held necessary by the NRO as economy measures. [redacted] expressed that while NRO had its reasons as to which missions would not include DISICS, there were also major factors from the standpoint of the MC&G requirements which would require consideration, and that the question of which missions would not include DISICS should be considered by the MC&G Working Group.

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Other Business

6. a. [redacted] mentioned that since UTB was being considered for the prime camera, the NRO wanted that it also be considered for the DISIC camera of the KH-4 system. He indicated a memorandum to this effect would be initiated. All agreed it deserved careful review.

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b. The other two items on the Agenda, that is, KH re-coverage for areas of firm stereo photogrammetric production and KH-4 collection program to meet USGS requirements were not treated because of lack of time; it is planned that they be included in the next MC&G Working Group meeting.

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for [redacted]
DEPUTY CHAIRMAN
COMIREX MC&G Working Group

1 Enclosure a/s

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DEFENSE INTELLIGENCE AGENCY
WASHINGTON, D. C. 20301

MEMORANDUM FOR MC&G WORKING GROUP 17 June 1968

SUBJECT: Report of Sub-Committee for Mission Planning

1. The Sub-Committee for Mission Planning was formed to consider the geodetic application of the frame materials from the KH-4B systems on an event-by-event basis. Although the specific purpose was to consider the question in terms of the next event, which is 1104 scheduled for August 1968, we have investigated the overall problem of acquiring data to meet the criteria for a short arc solution. Also, we have explored possible penalties which might be incurred in the intelligence collection program should changes be required in the planned mission parameters.

2. Since it is generally agreed that a short-arc solution (SAR) will not meet the requirement unless additional control is available inside the Sino-Soviet Bloc, the question as to why go the short-arc route at all was discussed. One advantage is that such a solution would provide a capability to improve the position of targets to an accuracy of 550-600 feet (Air Force feels that you could possibly do better) prior to the operation of a direct targeting system such as Doppler on the KH-4 system. Informal discussions with NRO suggests that such a system could be operational by August 1969. An additional advantage results from the fact that a SAR geometric network could be analytically adjusted to the direct system solution to shift the computed target positions simultaneously. In this manner the accuracy requirements for those targets contained in the SAR could be met without the necessity for additional mensuration. This would enable a considerable amount of the photo mensuration to be accomplished prior to the operational deployment of a direct system. Specifically, it would be possible to position 290 priority one targets now over 750 ft and complete the photo mensuration for 535 now over 450 ft.

3. In considering the photographic coverage to meet SAR requirements several points were brought out. Arcs should be flown so as to cover areas of geodetic control on both entrance to and exit from the Sino-Soviet Bloc and form a pattern of intersecting cross flights internal to the bloc. Arcs from a mission flown at 82° inclination with a 2200Z launch time and an perigee-apogee of 85-135 n.m. do not cover areas of geodetic control on entrance to and exit from the Sino-Soviet Bloc nor do the intersecting cross-flights occur. Preliminary investigations on the part of ACIC indicate that an inclination of 72° with a launch window of 0130Z would provide the optimum control coverage (Europe and Southeast Asia, Japan) with the required intersections. An inclination of 82° with a launch window of 0130Z would provide control coverage (North America and Southeast Asia) although the resultant arcs would be longer. Although this is a less desirable situation, the criteria for control as well as intersecting passes are met. Whether the inclination is changed or not it would be

necessary to alter the launch time in order to get the intersecting passes.

4. Since the next KH-4B mission is scheduled for a launch time of 2130Z ±15 minutes, the minimum criteria for a short-arc geometric network would not be met. To meet optimum conditions both the inclination and launch time would need to be altered although the minimum criteria could be met with a change in launch time only. From informal discussions with CIA and NRO it appears that a change in the inclination would be of more concern, especially at this time of year. As an example six targets are missed if the inclination is changed from 82° to 75°. NRO has also indicated some concern about the ability to insert updated weather information into the satellite at a lower inclination. On a few occasions the vehicle would be out of range of telemetry stations for up to 5 revolutions. This could result in a 5°-8° percent loss in coverage because of weather. Additionally it is estimated that some time in orbit (one day approximately) would be lost due to the extra fuel expendature requirement to achieve the lower inclination from the Western Test Range. While a change in inclination appears to be of definite concern a change in launch time, to 0130Z, does not appear to be serious. Essentially it means that photography will be acquired generally four hours later. As an example, the time over Moscow ranges from 1230 - 0930 for a 2130Z launch while the time for a 0130Z launch is from 1530 - 1230. The later launch time means that, on descending passes, the minimum sun angle is reached at higher latitude. However, at no time would this be higher than 10° south. Since the intelligence data has always been collected on the descending passes and no Northern Hemisphere coverage is lost, this does not appear to be a problem. If intelligence data is collected on ascending passes the scale will be somewhat smaller because of the higher altitude. Another area which has to be reviewed is the different thermal (heating) conditions caused by a change in launch time. This does not present a problem, but requires some time for evaluation.

5. The estimates of required launch time and inclination for obtaining SAR data and possible penalties involved are based on our analysis and informal discussions with NRO and CIA. Although it is believed that our analysis is valid NRO has been formally requested to provide more accurate estimate as to the effects of a change in launch time and a specific recommendation concerning the most optimum mission parameters for meeting the SAR requirements with minimum impact on the intelligence mission.

6. Based on our investigations it is recommended that the launch time of the KH-4B mission scheduled for August be changed to meet the SAR requirements as explanied above. It should be pointed out that the August mission will be the last opportunity before next spring to collect the necessary data without a significant change in inclination.

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