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4 March 1969

MEMORANDUM FOR: Director of Special Projects

SUBJECT : NPIC Interpretability Ratings of
Thirty-One KH-4 Missions

1. Attached for your information is a graph plotting NPIC GOOD and POOR interpretability ratings of priority targets photographed on 31 KH-4 missions flown during the period July 1965 (Mission 1022) through February 1969 (Mission 1106). Missions 1024 through 1027 are omitted; time permitting, this group may be filled at a later date. FAIR ratings are excluded.

2. Also plotted are the percentage of CLEAR ratings for the same missions. The intent is to provide a crude handle on the impact of atmospherics. While there may be other factors, including psychological, which determine interpretability ratings, it is assumed atmospherics and system performance are the principle ones. There is no intent to imply a significant relationship between interpretability ratings of KH-4 photography and intelligence product. The ratings, however, appear useful in understanding the viewpoint of NPIC and production office personnel when these groups make general statements on the image quality of KH-4 missions. Moreover, they may prove useful in diagnosis of system anomalies. Old CORONA hands may recall certain problems on past missions which might account in whole or in part for the ratings on certain missions.

3. It is assumed over such a long period of time "50 million PI's can't be wrong," or, whatever biases are operative will tend to cancel each other out. Spot checking with ███ missions and ratings gives no indication ███ has influenced KH-4 ratings.

4. The number of targets involved on each mission varies between 100-300, averaging about 150 depending upon readout requirements. It is the readout of these targets which impacts greatest upon
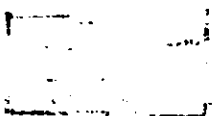
the intelligence community. While there is good reason to believe the distribution of priority targets has remained pretty much the same, obviously changes in distribution could have significant impact upon the ratings.

5. The D&AD is currently studying past KH-4 performance taking into account the readout of NPIC OAK Reports. This data is on tapes. Further work is necessary, however, to sort out these tapes in order to manipulate the data. D&AD's study is concerned principally with atmospheric ratings. A fall-out of this work may be the capability to manipulate data on all 2000 or so targets rated on each KH-4 mission. Should this indeed materialize, we should have for the first time the capability to manipulate a very large body of unique data. The results may prove interesting.

6. I leave it to our qualified analysts to draw any conclusions from the attached. It would appear, however, the KH-4B does indeed consistently provide us with the best of KH-4A image quality. Some summaries of the plots follow.

7. Averaging the percentage of GOOD ratings for the last six KH-4A vs. the last six KH-4B (i.e., all KH-4B flown to date) vs. the best six KH-4A vs. the worst six KH-4A, results in the following:

	GOOD	POOR	CLEAR
1/ Last six KH-4A:	12%	(37%)	(57%)
2/ Last six KH-4B:	23%	(28%)	(66%)
3/ Best six KH-4A:	22%	(38%)	(53%)
4/ Worst six KH-4A:	06%	(43%)	(48%)

1/ 1044-1049. Best was 1048 with 18% GOOD; worst was 1049 (heavy emulsion build-up) with 04% GOOD.

2/ 1101-1106. Best was 1105 with 31% GOOD; worst was 1102 (focus problem) with 06% GOOD.

3/ 1022, 1022, 1033 (GMAIC special), 1035, 1038 and 1048. Best was 1033 with 33% GOOD.

4/ 1030, 1034, 1041 (bad orbit), 1042, 1043 and 1049. Worst was 1049.

8. Averaging the percentage of POOR ratings, as above, results as follows:

	POOR	GOOD	CLEAR
Last six KH-4A:	37%	(12%)	(57%)
Last six KH-4B:	28%	(23%)	(66%)
5/ Best six KH-4A:	28%	(16%)	(51%)
6/ Worst six KH-4A:	57%	(09%)	(44%)

5/ 1022, 1023, 1027, 1042, 1044 and 1045. Best was 1045 with 23% POOR.

6/ 1028, 1029, 1030, 1031, 1034 (tied with 1041) and 1046. Worst was 1031 with 69% POOR.

9. Averaging the percentage of CLEAR ratings, as above, results in the following:

	CLEAR	GOOD	POOR
Last six KH-4A:	57%	(12%)	(37%)
Last six KH-4B:	66%	(23%)	(28%)
7/ Best six KH-4A:	65%	(15%)	(34%)
8/ Worst six KH-4A:	40%	(13%)	(44%)

7/ 1037-Nov (tied with 1047-Jun-Jul), 1038-Jan, 1039-Feb-Mar, 1043-Aug, 1044-Nov and 1048-Sep. Best was 1043-Aug with 69% CLEAR.

8/ 1022-Jul, 1023-Aug, 1028-Dec-Jan, 1030-Mar, 1034-Jun and 1041-May (bad orbit). Worst was 1034-Jun with 36% CLEAR.
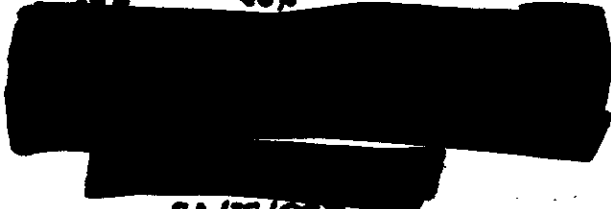
10. Averaging the nine missions in 1966 vs. nine missions in 1967 vs. the eight missions in 1968 vs. one mission 1969, results in the following:

	GOOD	POOR	CLEAR
Nine in 1966:	13%	49%	47%
9/Nine in 1967:	13%	34%	60%
10/Eight in 1968:	19%	34%	58%
11/One in 1969:	22%	25%	70%

Note: If 1033 (GMAIC special) had been an average KH-4 mission for that year, the result would have been:

| Nine in 1966: | 11% | 50% | 46% |

SA/IB/OSP

Attachment: a/s

9/ Includes two KH-4B missions, 1101 and 1102.
10/ Includes three KH-4B missions, 1103, 1104 and 1105.
11/ Mission 1106.

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