

50038

14 May 1970

MEMORANDUM FOR THE RECORD

SUBJECT: Center Decision on the Light Table and Rhomboid Problem

1. On 5 May 1970, the Executive Director, NPIC met with the Chiefs of IEG, TSSG, and PPBS, and members of their organizations, to be briefed on the 1540 light table/rhomboid situation and to receive a recommendation as to the course of action to pursue regarding these items of equipment.

2. Following introductory remarks by the Chief, PPBS as to the purpose of the briefing [redacted] IEG presented the factors and rationale which were the basis for IEG's decision to utilize the [redacted] Model 28 Rhomboid (as opposed to the [redacted] Model II) and the [redacted] light table (as opposed to the [redacted]). Significant points of that presentation are shown below:

A. Light Table

[redacted] Outstanding film drive system.

Dry light source.

Quiet and cool operation.

Poor stereoscope mount design.

* Counterbalance system for carriage movement in "Y" axis inferior.

Other minor design and human engineering deficiencies.

[redacted] Outstanding stereoscope mount design.

Film threading display and automatic switching feature superior.

Poor film drive system.

Excessive heat from light source.

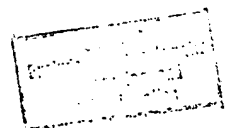
Poor history of performance from liquid cooled light source - leaks and air bubble formation.

Recent phenomenon of green hue in the mineral oil (coolant).

Other minor deficiencies and human engineering deficiencies.

Declass Review by NGA/DoD

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(1) Both the [redacted] prototype tables require rework or modification to several features. The companies provided their solutions to each problem in letters of intent, presenting their methods for solution in general terms.

(2) TSSC/RED analysed the proposed solutions and assigned confidence statements to each. These statements, plus IEG's assessment, result in relatively high confidence that [redacted] can correct their deficiencies and produce an acceptable light table. This confidence is based primarily on the strength of their outstanding film drive system and the cool, "dry" light source.

(3) [redacted] may be able to correct most of their deficiencies; however, the many problems associated with the liquid cooled light source, and the history of poor performance of this type of light source on their 940 Split Format Light Tables introduces a high degree of uncertainty in [redacted] ability to solve this problem.

(4) Unit costs significantly favor the [redacted] table.

B. Rhomboids

Model 28

Model II

Image rotation in eyepieces.

Image rotation in the rhomboid arms.

Objective lenses not parfocal - working distances not uniform.

Parfocal objectives and uniform working distance.

Interchangeable objective lenses.

Interchangeable objective lenses.

Individual focus control on each objective lens.

Individual focus control on each objective lens.

0.43X, 1.0X and 2.0X objective lenses - 3-60X magnification

1.0X, 2.0X and 3.0X objective lenses - 7-90X magnification.

Rhomboid assembly slides to rear of Zoom 240 Pod when operation is changed from stereo to mono.

Automatic shift via optical switch - stereo to mono or vice versa.

Stereo mode - 10% less light transmittance than the Model II.

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Mono mode - 5 time more light transmitted than the Model II.

Stereo mode - 10% more light transmittance than the Model 28.

Optical resolution essentially equal to Model II. Slightly less "off axis."

Optical resolution essentially equal to Model 28. Slightly better "off axis."

(1) From a subjective standpoint, the IEG photointerpreters considered the two instruments to be equal in performance in the stereo mode. However, the light reduction in the Model II in the mono mode is dramatic; the PI's were unanimous in their preference for the Model 28 for mono operation.

(2) An experiment was conducted by TSSG/RED/ATB and the [redacted] to assess the effect of light loss on interpretability. The experiment, utilizing IEG PI's as subjects, compared the two instruments in stereo and mono modes of operation. PI performance in the stereo mode was approximately equal when viewing with the Model II and the Model 28. In the mono mode, the percentage of confidence in reporting targets was slightly higher for the Model 28. The significance of this difference and the effect it might have on the exploitation process is unknown.

(3) The Model II operational utility is less encumbered than the Model 28. The physical actions required of the operator to change from one mode of operation to another are minimized by the parfocality of objective lenses and the optical switch of the Model II. However, the light loss in the mono mode of the Model II, and the psychological effect this loss has on the PI, make the mono mode of operation of the Model II undesirable.

(4) In summary -

a. Approximately equal optical resolution qualities of the Model II and Model 28.

b. Approximately equal performance of each system in the stereo mode.

c. Apparent higher performance of the Model 28 in the mono mode.

d. Psychological effects of light loss in mono of the Model II.

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- c. PI preference for the Model 23.
- f. More rapid production of the Model 28.
- g. Significantly lower cost of Model 28.

3. The second portion of the briefing, given by Chief, IEG was a runout of PI positions within the Center, the purpose of which was to provide the basis for the third portion of the briefing - the numbers of light tables/rhomboids required by IEG.

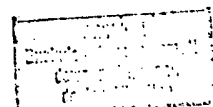
25X1 [redacted] presented the following information:

	<u>Number of PI's</u>	
	<u>CIA</u>	<u>DIA</u>
FY 70 T/O	114	116
FY 71 T/O	20	20
Conversion in FY 71 T/O of CSR's to PI's	9	
Additional req. upon DIA to match CIA's input		<u>7</u>
	143	143
Less PI supervisors	<u>13</u>	<u>13</u>
Working PI's	130	130

4. On the basis of the numbers of working PI's, and the decision by IEG that each of these PI's must be equipped with the 1540/rhomboid set in order to exploit the mission inputs predicted, [redacted] IEG, proposed that IEG's total equipment order for light tables should be as follows:

260 - 1 each working PI
5 - maintenance, training, etc.
 265

It was recognized that this statement of equipment needs differed from earlier statements in two respects; namely, (1) our previously indicated (5-Year Plan, etc.) total was for 223 units, and (2) the light-table total was previously spread through FY 73. The decision to increase the numbers was based on the following:



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a. A reassessment by Chief, IEC of the situation the [] will impose upon IEC's exploitation resources, and the action taken by IEC, in this regard, to convert [] collateral support positions to working PI positions.

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b. A review of the 940 light tables presently in IEC's inventory and the decision not to supplement the 1540 inventory by these 940's.

5. The last part of the briefing was concerned with alternative approaches to meeting the funding requirements of the 1540's and rhomboids. These alternatives are covered in Attachment A.

6. At this meeting the Executive Director, NPIC made the following decisions:

a. 265 sets (light table plus rhomboid) of equipment are basic to the Center's exploitation needs;

b. the [] Table and the [] Model 28 Rhomboid be acquired to satisfy the total inventory needs of 265 sets;

c. to accept the alternative funding approaches recommended, with emphasis being placed on Alternative 1 - a request that additional funding for the total package be requested;

d. no further R&D work at this time be undertaken on the [] Model II Rhomboid;

e. The FY 70 R&D project proposal, Low Power Objective Lenses [], be placed in hold because of its direct relation to the Model II Rhomboid; and

f. consideration be given by TSG for a project in the FY 71 R&D Program devoted to investigating methods of improving light sources - for example, point light sources or collimated light.

25X1

[Signature]
[]

Chief
Planning, Programming & Budgeting Staff

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Distribution:

- Orig - NPIC/ODIR
- 1 - NPIC/IEG
- 1 - NPIC/PSG
- 1 - NPIC/TSSG
- 2 - NPIC/PPBS

GROUP 1
Excluded from automatic
downgrading and
declassification

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02058

IEG-284/70
28 August 1970

MEMORANDUM FOR: Chief, Technical Services Group, NPIC

SUBJECT : IEG Decisions Concerning [] Equipment Queries

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1. [] discussed IEG interest in two items manufactured by [] These were the 15X eyepiece for the 240 Microstereoscope and the Model II Stereorhomboids.

2. I cannot foresee a requirement for the 15X eyepieces since the range of magnification available in the 10X and 20X eyepieces and the range of magnification of the Advanced Stereo Rhomboid System will be sufficient for our stereoscopic work. In the monoscopic mode sufficient overlap exists in the 10X and 20X eyepieces with the available zoom range to cover the 15X capability. Additional field of view of the 15X eyepieces would not offset the cost for a duplication in magnification range. In addition, the resolution will not be increased through use of the 15X eyepieces.

3. At this time IEG does not have any interest in the Model II Stereorhomboids.

[]
Chief, Imagery Exploitation Group
NPIC

25X1

Distribution:

- Orig. & 1 - Addressee
- 2 - NPIC/IEG/O/C
- 1 - NPIC/IEG/OD
- 1 - NPIC/IEG/OD/TFB

On this basis, we have dropped the 15X eyepiece project.
BEM

GROUP 1
Excluded from automatic
downgrading and
declassification

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25X1

Approved For Release 2005/06/23 : CIA-RDP78B05171A000400030102-7

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