CENTER ROUTING SLIP

FROM	DATE
IEG/OD/TPB	01 JUN 1970

TO		INITIALS	DATE
DIRECTOR	4	GCL	6/8
DEP/DIRECTOR	3		6/9
EXEC/DIRECTOR	2		6/1
SPECIAL ASST	1	M	6/1
ASST TO DIR	5	MAC	6/16
ASST TO DEP/DIR			
CH/PPBS			
DEP CH/PPBS			
EO/PPBS			
CH/IEG			
DEP CH/IEG			
EO/IEG			
CH/PSG			
DEP CH/PSG			
EO/PSG			
CH/TSSG			
DEP CH/TSSG			
EO/TSSG			
CH/SSD/TSSG			
PERSONNEL			
LOGISTICS			
TRAINING			
RECORDS MGT			
SECURITY			
FINANCE			
DIR/IAS/DDI			
CH/DIAXX-4			
CH/DIAAP-9			
CH/DIAD			

REMARKS

FYI

IEG summary of the factors leading to the light Table/rhomboid procurement decision. Good background piece

Well done, concur backup to the right decisions!

GCL

DECLASS REVIEW by NGA

IP FM 30 (11-68) - OBSOLETE PREVIOUS EDITIONS

Procurement: 1

IEG-148/70
26 May 1970

MEMORANDUM FOR: Chief, Planning, Programming and Budgeting Staff

SUBJECT : IEG Decisions on Equipment Selection

1. This report summarizes advantages and disadvantages of the prototype model 1540 Split Format Light Tables produced by [redacted] 25X1 [redacted] and the Model 28 and Model II stereorhomboids. It outlines the path followed in reaching the decision to purchase the [redacted] light tables and the Model 28 stereorhomboids. The report includes description of the characteristics of the equipment, comments on modifications requested and recommends a study of light sources.

2. [redacted] 1540 Split Format Light Tables.

a. Based upon the results of technical and operational suitability evaluations, IEG has selected [redacted] 25X1 [redacted] for production of the 1540 light tables.

b. A brief summary of the comparison between the two prototype tables is provided:

[redacted] 25X1	[redacted]
. Outstanding film drive system.	. Outstanding stereoscope mount design.
. Dry light source.	. Film threading display and automatic switching feature superior.
. Quiet and cool operation.	
. Poor stereoscope mount design.	. Poor film drive system.

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- Counterbalance system for carriage movement in "Y" axis inferior.
- Other minor design and human engineering deficiencies.
- 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.

X1 c. Both the [redacted] prototype tables require rework or modification to several features. The companies have provided their solutions to each problem in letters of intent. They presented their methods for solution in general terms; TSSG/RED analysed each solution and assigned confidence statements.

d. IEG expresses confidence in [redacted] 25X1 to correct their deficiencies and thus 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.

X1 e. [redacted] probably can correct most of their deficiencies; however, the high degree of uncertainty in their ability to produce an acceptable dry light source, in a timely manner, reduces IEG's confidence in their product. The many problems associated with their liquid cooled light source, and the history of poor performance of the light source on their 940 Split Format Light Tables, renders the [redacted] table un- 25X1 acceptable.

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f. Cost competitive factors also favor [redacted] 25X

3. Zoom 240 Stereoscope System (Model 28 Rhomboids) and prototype Model II Advanced Stereorhomboids.

a. Based upon the results of technical and operational suitability evaluations, IEG has selected the commercially available Model 28 over the Model II stereorhomboid.

b. A brief summary of the comparison between the two instruments is provided:

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 to change operation - stereo to mono.	• Automatic shift via optical switch - stereo to mono or vice versa.
• Stereo mode - 10% less light transmittance than the Model II.	• Stereo mode - 10% more light transmittance than the Model 28.

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. Mono mode - 5 times more light transmitted than the Model II.	. Mono mode - 5 times less light transmitted 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."

c. From a subjective standpoint the IEG photo interpreters 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.

d. 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.

X1

e. 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.

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f. IEG's decision to procure the Model 28 rhomboid system is based on the following factors:

(1) Approximately equal optical resolution qualities of the Model II and Model 28.

(2) Approximately equal performance of each system in the stereo mode.

(3) Apparent higher performance of the Model 28 in the mono mode.

(4) Psychological effects of light loss in mono of the Model II.

(5) PI preference for the Model 28.

(6) More rapid production of the Model 28.

(7) Cost factors.

4. IEG supports a general research and development effort in investigation of methods of improving light sources. There may be significant positive effects on PI performance if more light could be made available through the lens systems of direct viewing instruments. This may suggest a point light source or collimated light.

25X

[redacted]

Chief, Imagery Exploitation Group
NPIC

Distribution:
Orig. + 1 - Addressee
1 - Ex Dir/NPIC
1 - Ch/TSSG
1 - TSSG/RED
2 - IEG/O/C
1 - IEG/OD
1 - IEG/OD/TPB