FILE OSI/IL

DK-521
4 March 1970

[redacted] STAT

Attention: Paul S.

Dear Paul:

Per your request we are enclosing two (2) copies of a trip report covering the meeting with [redacted] STAT 25 February, on the Scan and Search Photointerpreter Station. One copy for your records and the other for Ray S.

[redacted] STAT

Enclosures

2-5910-10-142
3 March 1970

To: [redacted] STAT

Subject: Trip Report: [redacted] STAT
25 February 1970

Place Visited:

[redacted] STAT

Purpose:

A meeting was held [redacted] on 25 February STAT
to discuss the human factors aspects of the Scan and Search Photointerpreter Station. The meeting consisted of discussions concerning potential equipment design problems and a review of a mock-up.

Attendees:

Ray S. - Sponsor Technical Representative

[redacted] STAT

Specific Items Discussed Were:

1) Frame Identification

The subject rear projection viewer has the capability of rear projecting on a 30 x 30 screen from either of two rolls of 6.6 inch-wide film. To know which frame on which roll is being displayed is important information for the operator. Still more important is to know film coordinates in a particular frame where area of interest lies. This information is required both for reporting new targets and to permit easy relocation of an area previously identified as being of interest.

Nixie Tube Readouts are provided for Y position information and scales along the vertical edges of the viewing screen are provided for X information. A standardized procedure must be developed to be used in locating areas of interest within a frame. It is suggested that this procedure be developed by IEG.

2) Image Rotation

Either roll or film may be optically rotated 190° from its original orientation. Knowledge of the degree of rotation of the film being viewed is useful information for the operator.

A film rotation indicator will be provided which will indicate which roll of film is being projected and the degree of ratation at any given instant. It was agreed that this display would adequately provide the operator with the necessary information.

3) Film Transport

Film transport for large screen scanning and for film positioning on the light table is accomplished by joystick control. Location of the joystick for performing scanning operations is adequate. However, operation of the joystick to position film for microscope viewing will be difficult when the operator is seated at the light table. However, there is no location at which the joystick could be placed which would complement film positioning for both screen and light table.

An area being viewed on the screen can automatically be placed under the microscope and vice versa. This can be accomplished at either magnification. This is an excellent feature.

4) Film Handling and Loading Operations

In the present configuration, one roll of film is loaded from the front and one from the back of the viewer. Film must be attached to a "leader" strip which then threads it for viewing. The motorized film

transport system is controlled by a set of four pushbuttons operated from the side of the viewer. The situation warrants the following considerations:

- Loading of film from both the front and rear is time consuming and increases "set-up" or readying operations considerably over a configuration which would allow both rolls to be loaded from the front. To promote operator convenience and hence efficiency, a method of loading both rolls of film from the front of the viewer should be considered, Elimination of loading from the rear of the viewer would also save considerable floorspace by allowing the viewer to be placed flush with walls. With the present design, space must be left behind the viewer for the operator to work. Page 4-24 of the design guide gives a recommended space of 40 inches for this type of operation.

- The present automatic film threading technique requires that the film be "taped" to a leader strip which then threads the film into the viewer. The "taping" of the film to the leader strip with masking tape is no improvement over past operations. Also, no workspace for the "taping" operations has been provided. A more convenient and rapid method of attaching the film to the leader strip should be devised.

- The present location of the film transport control pushbuttons used to accomplish loading operations are located on the side of the viewer. The rear film spool cannot be observed from a normal control operating position. However, if the controls were located at the front of the viewer in close proximity to both film spools, the operator could accomplish loading operations without having to physically move from the front of the viewer.

5) Anthropometrics

A wood and cardboard mock-up was inspected and an engineering drawing of the rear screen viewer was reviewed. These provided gross dimensions of the viewer and the basis for the following comments:

- Eyepoint Height

  The center of the viewing screen is 39 inches above the floor and coincides with the recommended height given in the Human Engineering Design Guide for Image Interpretation Equipment, [redacted] STAT 1969.

  The microscope eyepoint height will, as presently being considered, be at a fixed height from the floor. Engineering drawings indicate that an eyepoint of about 45.0 inches for a Zoom 240 Stereomicroscope with rhomboid attachments will be the fixed eyepoint height. Forty-five inches was calculated as follows: 25.0-inch high kneewell, 5.0-inch thick light table base, and 15.0 inches from table top to eyepieces. This height will comfortably accommodate the 95th percentile male operator if he sits on an 18.0-inch high chair. For maximum comfort, a 20.5-inch high chair is recommended. The 18.0-inch high chair is necessary for thigh clearance.

  Adjustable eyepieces capable of being inclined 0 through 60 degrees up from the horizontal would provide an eyepoint adjustment of from 43.0 to 45.0 inches.

  The small operator (5th percentile female) can comfortably use an eyepiece no higher than 42.0 inches above the floor. However, she could reach a 44.0 inch high eyepiece (and still have thigh clearance) if she sat on a 18.0-inch high chair. A 2.5-inch high footrest would be required.

If the light table was made suitably adjustable so that the stereomicroscope eyepoint height could be lowered to 40.0 inches and raised to a maximum height of 47.5 inches, the 5th percentile female and 95th percentile male could use the microstereoscope while seated on chairs of recommended height.

- Kneewell

  The kneewells for the viewer and the light table meet the minimum requirements imposed by the Design Guide.

- Kickspace

  Present console configuration provides a kickspace of 2-3 inches deep. The Design Guide, page 4-30, recommends a kickspace 4 inches high and 4 inches deep.

- Seating

  Because the operator must move intermittently from the viewer to the light table and back to the viewer, and so forth, the present standard government chair which is used in conjunction with other viewing devices cannot be used. Since no operator chair is being developed as part of the viewer, consideration must be given to the type of operator chair which will conveniently interface with the viewer.

  Based on the calculations presented in the preceding section for light table stereomicroscope eyepiece height, a chair adjustable 14.0 through 20.5 inches from the floor is required. This adjustment range would accommodate the 5th percentile female and the 95th percentile male operators.

6) Console Control Panel Layout

An engineering drawing of the control arrangement of the viewer console control panel was reviewed.

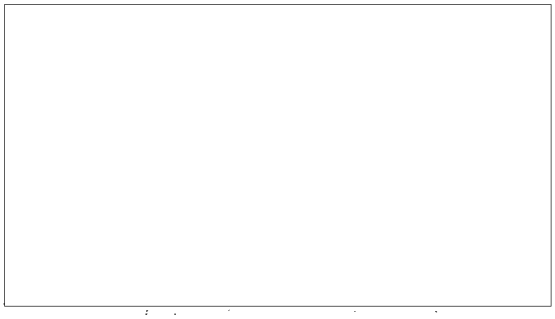
Joystick location appears acceptable. An associated display which

indicates when the film stage has reached its scanning limits is a good feature. Location of a group of three pushbuttons which control scanning mode direction; X, Y, or in both X and Y, is acceptable.

Illumination controls for screen and light table brightness, and the image rotation control, are continuous position control knobs. They should be serrated and at least .5 inches in depth and 1.0 inch in diameter and have a resistance of no greater than 6 inch-ounces (Design Guide, page 4-21). Present locations are acceptable.

The microswitch pushbuttons which will be used are backlighted and labelled. The groupings appear adequate. With exception of the focus controls, control type appears adequate for intended function. A knob would provide better operator control for focusing. No specific layout of the pushbuttons was decided upon.

The two film rolls are referred to as front and rear at the light table and upper and lower at the viewer. One nomenclature should be selected and used.



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