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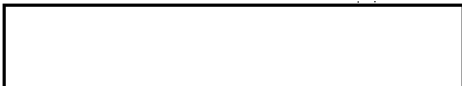
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October 31, 1965

Monthly letter progress report - Contract



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LOG OF ACTIVITIES

Friday, October 1, 1965

Preparation of reports. (Principal Associate,  $\frac{1}{2}$  day, Task II)

Wednesday, October 6, 1965

Continue literature search on lamps for data on carbon arc performance. (Principal Associate, 1 day, Task II)

Monday, October 11, 1965

Library search for additional technical literature on new lamp developments and carbon arc lamp performance. (Principal Associate,  $\frac{3}{4}$  day, Task II)

Wednesday, October 13, 1965

Review data on promising new iodide vapor arc lamps. (Principal Associate,  $\frac{1}{2}$  day, Task II)

Friday, October 15, 1965

Compare carbon arc data and iodide vapor and multivapor lamp performance. (Principal Associate, 1 day, Task II)

Thursday, October 21, 1965

Search for carbon arc lamphouse data on steadiness, maintenance, carbon replacement. (Principal Associate,  $\frac{1}{2}$  day, Task II)

Friday, October 22, 1965

Review data on iodide vapor and multivapor lamps and request more information from lamp manufacturers. (Principal Associate  $\frac{3}{4}$  day, Task II)

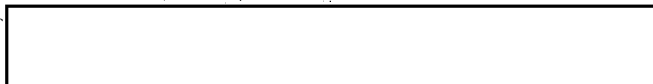
Tuesday, October 26, 1965

Continue requests to lamp manufacturers for additional engineering photometric data on new lamps. (Principal Associate,  $\frac{1}{2}$  day Task II)

Wednesday, October 27, 1965

Review carbon arc lamphouse data and other data collected for report on lamps. (Principal Associate, 1 day, Task II)

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October 31, 1965

Log of Activities (Continued)

Thursday, October 28, 1965

Review technical data on lamps, structural vibration and target recognition and discuss with Technical Representative of Contracting Officer in local conference. (Principal Associate,  $\frac{1}{2}$  day, Task II)

Friday, October 29, 1965

Preparation of Reports. (Principal Associate, 1 day, Task II)

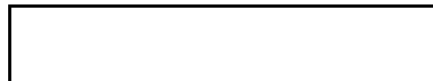
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Comments on Status

Task I - Item 1 "Special Investigations"

There were no specific requests for visitations this period.

Task II - Item 1 "Submicron Measurement Error Analysis"

Two specific areas have been investigated and reported under item 1 since its initiation. They are: a) Physical and metallurgical properties of materials and b) Structural rigidity and vibration control.

Reports No. 1 and No. 2 dealt with the physical and metallurgical properties of materials. Reports No. 3 and No. 4 dealt with structural rigidity and vibration control. The aspects that require further work are:

- a.) Search for data on the internal damping coefficients of materials (especially granite)
- b.) Further information on development status of Owens-Illinois Cer-Vit C-100 glass which has zero coefficient of thermal expansion.
- c.) Transmissibility of vibration through an air bearing in a direction normal to the air cushion.
- d.) When some of the basic dimensions of the precision stereo comparator have been established, a dynamic model of its vibration characteristics can be analyzed.
- e.) Investigation of the availability of an 8 cps pneumatic isolator.

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[REDACTED]  
 Comments on Status (Continued)

October 31, 1965

In the computer analysis of the building floor slab submitted in report No. 4, the fundamental frequency was found to be 15.6 cps. The analysis was based on 2,000 psi concrete. The architects drawings of the building indicated that 3,000 psi concrete was used in the floor. The fundamental floor slab frequency varies as the square root of the concrete strength. Therefore the frequency should be:

$$15.6 \sqrt{\frac{3,000}{2,000}} = 19.1 \text{ cps}$$

The increase of the floor slab fundamental frequency to 19.1 cps does not materially alter our previous conclusions.

We were advised that the Bureau of Standards had been requested to measure vibration levels in the particular building areas of interest. I believe the most useful data would be a vibration power spectrum plot with coordinates of  $G^2/\text{cps}$  vs cps.

Our concern over use of a 2 cps pneumatic isolator centers on the large excursions an operator will encounter in his normal work sequence. I suggest the technical staff examine the optical bench in the Laboratory Branch which is mounted on 2 cps "Serva-level" pneumatic isolators. I also suggest that a trial installation of the 2 cps "Serva-level" isolators on an existing piece mensuration equipment be considered.

Task II - Item 4 "Automatic Target Recognition"

Over the past few months the [REDACTED] has done further work on the transformation of aerial photo imagery by generating the fraunhofer diffraction pattern with coherent light from a laser. They were encouraged by the distinctiveness of the signatures of various terrain features and culture. I suggest a visit by the technical staff to GMDRL in the near future is in order to examine the recent work.

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Task II - Item 5 "Lamps for Rear Projection Viewers"

Considerable data has been collected on carbon arcs and also on some new enclosed gaseous arc discharge lamps under development. Preparation of the second technical report on this subject has been initiated. Services of [REDACTED] will be needed for the preparation of the report.

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