

June 2, 1970

ACTIVITY SUMMARY

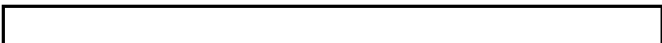
To: John C.
 From: [redacted]
 Subject: Contract Visit to Customer Facility
 May 25,26,27, 1970
 Contract [redacted]
 Reference: [redacted] 2201201-AS-6

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On May 25,26,27, 1970



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[redacted] conducted a laboratory visit under the above program. This visit was used to achieve three results; make linear motion targets, make correction filters for the targets and process the smeared imagery to obtain reconstructed images.

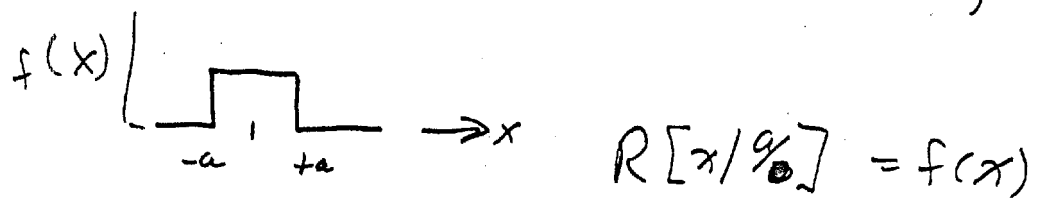
Reference to the lab notebooks will show the smeared imagery, filters and the first filtered results. John C. had pictures taken of the interferometer and the coherent processor for use in our first monthly letter report.

RAP/c

To John C.
From [redacted]

① Working Notes

Smearred Point Function, width = 2a



$$F(\omega) = \int_{-\infty}^{\infty} R[x/g] e^{i \frac{2\pi \omega x}{\lambda F}} dx$$

$$= \int_{-a}^{+a} e^{i \frac{2\pi \omega x}{\lambda F}} dx$$

$$= \frac{e^{i \frac{2\pi \omega a}{\lambda F}} - e^{-i \frac{2\pi \omega a}{\lambda F}}}{i \frac{2\pi \omega}{\lambda F}}$$

$$\sin x = \frac{e^{ix} - e^{-ix}}{2i}$$

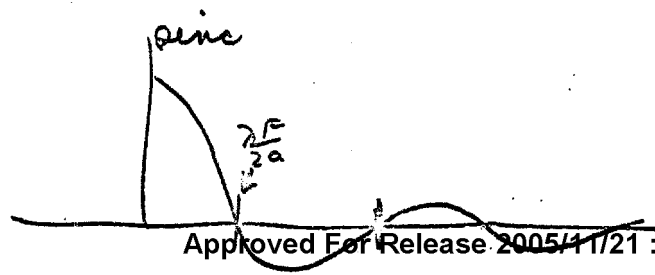
$$F(\omega) = \frac{\sin \frac{2\pi \omega a}{\lambda F}}{\frac{\pi \omega}{\lambda F}}$$

$$= 2a \operatorname{sinc} \frac{2\pi \omega a}{\lambda F}$$

1st zero occurs at

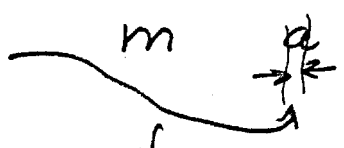
$$\frac{2\pi \omega a}{\lambda F} = \pi$$

$$\omega = \frac{\lambda F}{2a}$$



a) smear distance is

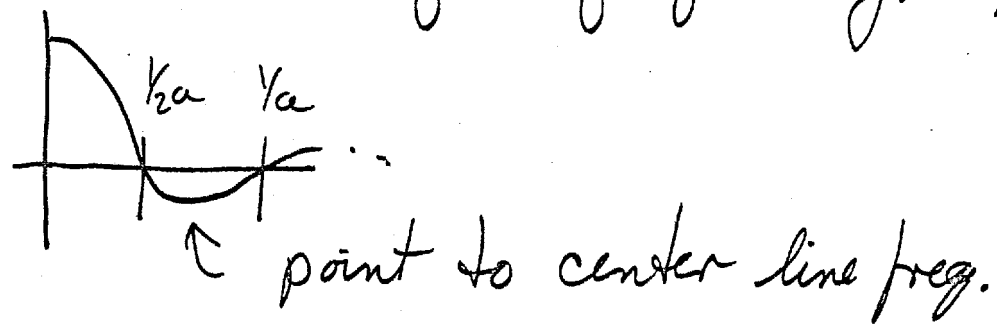
$2a = 0.09''$, Zeros at 11.1, 22.2, 33.3 etc $\ell/in.$

b) line spacing of lettering $\approx 0.045''$ 
this corresponds to a line frequency of
 $\frac{1}{0.045} \ell/in. = 22.2 \ell/in.$

Conclusion

This target is a good illustration of information lost because of the image blur. The print linefreq. occurs at a null of the frequency response.

To use this target as a demo, the blur distance should be altered so that the print spacing frequency is not at a null of the frequency response.



This is

$\frac{1.5}{2a} = 22.2 \ell/in$, $\frac{1}{2a} = 14.7 \ell/in$,

$2a \approx 0.07 in.$

Working Notes

25X1

To:

From

Subj. Projected Schedule and
Manpower Requirements for
Image Manipulation Program.

Date 4 June, 1970

Ref. no. / 2201201 - AS - 8

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Working Notes

⁻¹⁻
Planned Schedule

Optical Image Manipulation Program

The program schedule during the past 6 weeks has involved weekly visits by [redacted] personnel to the

25X1 [redacted] This schedule has been above the projected average for the whole program in order to implement program activity with the holographic system and coherent processor during these initial weeks.

These systems are now functional and demonstrable results are being collected for briefing purposes.

Following this, we will commence image manipulation activity using the Beck optical bench. A normal travel schedule, once every two weeks, is projected. Flexibility will be

required so that adjustments in the

schedule can be made for circumstances as they arise.

Projected Schedule

June - August, 1970

- | Week | Tasks |
|--------------------|--|
| 8 June | Data completion for briefing. |
| 29 June 29,30,1 | Briefing preparations. Outline of initial activities for Beck bench. |
| 6 July 6,7 | Briefing. Final program description for initiation of image manipulation program up to the first milestone. |
| 13 July 13,14,15 | Set-up and alignment of optical components on Beck bench. Define any new equipment requirements or modifications (e.g. filter wheel...). Initiate fabrication of first filter set. |
| 27 July 27,28,29 | Complete first filter set and requirements for demonstrating the first image manipulation series. |
| 10 August 10,11,12 | Initiate system manipulation procedures. Collect data. |

24 August Demonstration and recording
of results.

Projected Manpower Requirements[†]

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personnel 24 man days

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personnel.

It is expected that the lab requirements ~~will~~ require a full-time effort of one scientist.

†

The above schedule and manpower estimate was made without reference to the proposal and cost status of the program and therefore subject to some inaccuracy.