TISD-68-61
22 June 1961

MEMORANDUM FOR: Director, National Photographic Interpretation Center

THROUGH: Chief, Technical Plans and Development Staff

25X1A SUBJECT: [redacted] Laboratory Proposal

1. The proposal submitted by [redacted] concerning a [redacted] quality processing facility has been reviewed.

2. The design and environment for the proposed laboratory reflects some very advanced thinking and thorough understanding of the attendant problems of processing high-quality, high-resolution film and the generation of subsequent photographic reproductions. Particular attention has been given to air conditioning, humidity control and dust control. The views on this particular subject have been expressed several times by the undersigned in memoranda to Chief, TISD, and Chief, DMD. The testing of incoming chemicals and photographic supplies has also been advocated by this writer as a means of quality control. The particular subject of the incoming water treatment is a matter of some controversy among chemists with whom this subject has been discussed over the past two years. There appears to be two schools of thought almost diametrically opposed. One school advocates the use of demineralized, de-ionized and distilled water, particularly that water which is used for mixing chemical solutions and even the washing of photographic products, such as film, glass plates and paper prints. The other group demonstrates rather conclusively that certain impurities in the water are a necessary requirement for the desired chemical reactions incurred in the reduction of silver salt to metallic silver. However, both schools are agreed on the one point of proper filtration to the particular sizes mentioned in the [redacted] proposal.

25X1A

3. It is the opinion of the undersigned that these chemical impurities in the water are more necessary in color processing both additive and subtractive and the use of pure water has some advantages in the black and white processes.

4. The design of the laboratory area in regard to floors, ceilings and walls and the regard for personnel hygiene is indicative of a complete appreciation of the existing problems. In the past two years the undersigned has visited many so-called "white gloves" photographic laboratories. None of the installations visited achieved the degree of cleanliness and environment proposed by [redacted]

25X1A

5. At first glance it might appear that this proposal is a little ambitious in its desire to achieve a processing facility having almost perfect environment and equipment and the attendant cost of achieving these goals is reflected by their desire to achieve perfection. For some years, it has been the opinion of the undersigned that the amount of money expended in the photographic laboratory processing facility has been totally inadequate when compared to the cost of the various collection systems, the exploitation equipment and the need to generate highest quality photographic materials. The equipment and environment which were more or less adequate when dealing with low resolution materials (10 to 30 lines per millimeter) are entirely unsuitable when considering higher resolution materials (50 lines per millimeter and more). The problems of equipment and environment become extremely acute when considering 100 lines per millimeter or more and the type of laboratory necessary to generate materials of extremely high resolution has been adequately described in the [redacted] proposal. 25X1A

6. In conclusion, the photographic laboratory facility planned for [redacted] should include all of the features mentioned in this proposal. Any compromise would be indicative of poor planning. 25X1A

25X1A

25X1A

[redacted]

25X1A NPIC/TPDS/[redacted]:jem(3591)

I. LABORATORY DESIGN

Primary consideration has been given to maximum efficiency in work flow and the extremely high quality of the final product. In addition, the mechanical layout of water, electricity, walls, doors, etc. lends itself to simple installation of additional photographic processing and printing equipments, or to more sophisticated types of processing and printing machines.

For maximum cleanliness, the processing solutions are pumped from a central chemical mix room to each of the developing rooms. Each of the dark rooms may be isolated from the Laboratory proper with no inconvenience to overall laboratory operations.

Moving parts, such as pumps, blowers, compressors, etc. have been isolated away from the critical laboratory proper and into a central equipment room.

II. FACILITIES AND UTILITIES

The entire building is divided into four zones. Offices, library, conference rooms, etc. designated as general area will be controlled at 70° ± 3°F - 50% ± 5% RH, dust count 200 particles per cubic foot maximum size 5 microns. The processing machine section, and wet darkrooms will be maintained at 70° ± 1°F, 50% ± 2% RH, dust count 10 particles per cubic foot maximum size 1 micron. Film storage, sensitometry sections, etc. will be maintained at 70° ± ½° F, 50% ± ½% RH, dust count 5 particles per cubic foot maximum size 0.3 microns. The fourth zone will be known as sterishields. These are special designed enclosures around film analyzing machines with dust counts less than 5 particles per cubic foot maximum size 0.1 micron. Dust, temperature, and relative humidity will be maintained by separate air-handling systems for the sterishields.

June 61

III. EQUIPMENT AND FACILITIES

In addition to equipment familiar to those versed in the state of the art, specialized equipment will be installed in the super-critical area.

For example, all incoming chemicals will be certified according to ASA specifications. Formulae and processing solutions will be maintained according to Strict specifications. These and many more chemical analytical assays will be conducted with visible, ultra violet and infrared spectroscopy. Polarography, titrimetry and pH measurements will be continuously performed.

Microscopic slides of micron sections of film will be prepared and analyzed. Dust counts (size, shape, and number) will be studied under high power microscopes and photographed for reference.

Sensitometers and densitometers will be available capable of resolving 500-1000 lines/mm. An extremely high calibre darkroom will be available for sensitometric analysis of film and processing conditions.

Incoming water will be demineralized and triple distilled in order to prevent sludge deposits larger than 0.1 microns from adhering to or forming in the photographic emulsions.

Mixing rooms and storage tanks will be housed in ultra clean areas. Floating lids and/or nitrogen atmosphere can be provided for.

Stand by generators will guarantee continuous operation of air handling equipment and non-interruption of processing machine. Stand by equipment in critical areas will eliminate down time.

White room technology will exist through the laboratory. Conductive linoleum which prevents static electricity will be used throughout. Stainless steel walls and air ducts will provide for minimum dust promotion. Floors and ceiling will be coved. Air locks pressure chambers, sticky mats, shoe brushes, non-filament wearing apparel will be standard equipment. Continuous personnel hygiene and work habits will be under strict surveillance and control. Furniture will be specially designed.

IV. SUMMARY

Dust count and analysis will be conducted primarily as a quality control function. In addition eausitive agents can be identified and becomes a primary tool in education of personnel. A systematic screening (personnel interview) and follow up (education) will guarantee the continuous employment of a "white room type" and the fulfillment of the street objectives set forth.

V. ESTIMATED COST FOR:

1 White Room

1 Process Machine

1 Darkroom

All specialized test equipment.

Approximate Cost: [redacted]

Additional Process [redacted] X1A

IV. EQUIPMENT AND FACILITIES

A. Chemical Laboratory - In addition to the accepted laboratory furniture the additional equipment will be as follows:

1. UV and Visible Spectrophotometer - [redacted] Model DK-2 recording 25X1A

2. Infrared Spectrophotometer recording - 25X1A [redacted] - Model #137

3. 25X1A [redacted] Analytical Bal. Type S

4. 25X1A [redacted] Zeromatic pH Meter - Model 15

5. [redacted] Auto Titrimeter - Model K

6. [redacted] Manual Larograph - Model 3 25X1A

Approximate Cost [redacted]

B. Optical Lab.

1. 25X1A [redacted] Res. Microscope Model RTES-98

2. [redacted] - Model L Camera

3. Other accessories-(ocular, objectives, micrometer stage, illuminator,etc.) 25X1A

Approximate Cost [redacted]

C. Sensitometry

1. 25X1A [redacted] Model 23050-Recording Microphotometer
25X1A or [redacted] Model 3 - Microdensitometer or [redacted] 25X1A
Microdensitometer. 25X1A

2. 25X1A [redacted] Sensitometer or [redacted] 25X1A
Sensitometer

Approximate Cost [redacted]

D. Office

25X1A

Dictaphone Telecord Dictation system complete

Approximate Cost [redacted]

E. Water Supply

25X1A

25X1A [redacted] Demineralizer and Distilling equipment complete for 300 gals. per hr. cap.

Approximate Cost [redacted]

F. Wide Webb Process Machine-

Approx. speed 4 ft. per min - 18" wide cap.

25X1A

[redacted]

Approximate Cost

G. Miscellaneous Dark Room — Approximate Cost

H. Mixing and Storage Area (price dependent upon daily production)

I. White Room - This white room will be approx. 5,000 sq. ft. — Approximate Cost