3.785 liter/gal.

Visit-Pre-acceptance - 7-12 Apr 69

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STAT

STAT

OK Transport Speed

Poor Tracking - Film stops - Poor splices, squeegee,

Instrumentation of gages - Temp control - all tanks

Sensi strips, OK scratches, Poor uniformity

OK Carryover

ON!

Sensi strips [redacted] above formulation.

STAT

Trouble leakin wash module

Caps on old refill openings

Sleeve on idler

Reference #'s on dryer control + temp indicator.

Look into end of film sensor on magazine.

70mm Take up spindle binds. 9½" spindle needs spring.

Declass Review by NIMA/DOD

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INSTALLATION ENGINEERING DATA

Date form completed 3 March 1969

(See Remarks at end of form)

Tentative [ ] Valid until _____

Final data [✓]

I. INSTRUMENT

A. Name of instrument: [redacted] WIDE FILM PROCESSOR STAT

B. Manufacturer: [redacted] STAT

C. Contract number: [redacted]

D. Delivery date: Tentative: _____ Final: _____

II. PHYSICAL FEATURES

A. Sub-assemblies:

1. Number of sub-assemblies: N/A
2. Largest sub-assembly: Weight ____ lbs; ____" H x ____" W x ____" D
3. Heaviest sub-assembly: Weight ____ lbs; ____" H x ____" W x ____" D

B. Assembled instrument: W - 41" H - 7'9¼" L - 10'7"

1. Number of major components: 1
2. Largest component: Weight 2000 lbs; ____" H x ____" W x ____" D
3. Heaviest component: Weight ____ lbs; ____" H x ____" W x ____" D
4. Total floor space required after assembly, including maintenance access space. 9 Ft. 6 In. High x 7 Ft. 0 In. Wide x 17 Ft. 0 In. Deep.
5. Total weight of assembled instrument: _____ lbs.

C. Type of base of mount: Flat ____; 3-point suspension ____; 4-point suspension ✓

D. Does the instrument have built-in mobility? Yes* ✓ No ____ * CASTERS

E. Is the instrument particularly sensitive to vibration? Yes ____ No ✓
Will the instrument generate vibration? Yes ____ No ✓

F. Are any special or unusual tools or fixtures necessary or adviseable for the installation of the maintenance of this instrument? Yes ____ No ✓.
If "Yes," please describe: _____

III. UTILITIES FOR PROCESSOR (ONLY) * SEE ATTACHED SHEET FOR ADDITIONAL UTILITIES

A. Electrical:

| | AC | DC |
|---|---|---|
| 1. Voltage | 115/240 Volts / ____ Volts | ____ Volts / ____ |
| 2. Current | 100 Amps/phase | ____ Amps |
| 3. Frequency | 60 cps | |
| 4. Nr. of phases | 1 Ph | |
| 5. Nr. of wires | 3 | |
| 6. Power required | ____ Watts | ____ Watts |
| 7. Power factor | 63 ~~84~~ (Leading) (~~Lagging~~) | |

8. Type of outlet: Two prong ____; three prong ____; Twist lock ____; Perm. ✓
9. Type of ground: Building conduit ✓; Direct earth ground ____.
10. Should the instrument be shielded, either from external electromagnetic signals or to prevent interference with other equipment? Yes ____ No ✓
If "Yes," to what extent? _____

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B. Air conditioning:
1. Desired environment: Room air temperature of 70 °F + 75 °F and relative humidity of 40 % + 45 %.
2. Input Air: Is a direct connection necessary? Yes ____ No ✓; Adviseable? Yes ____ No ✓; If "Yes," what is the connector type and size? _____ Recommended input air temperture ___ °F + ___ °F. Relative humidity ___ % + ___ %. If input air must be filtered, what is the maximum particle size in microns? ____ What particle count? _____/ cu. ft.
3. Output Air: Is a direct connection to the ~~[illegible]~~ DRY BOX air duct necessary? Yes ✓ No ____. Adviseable? Yes ✓ No ____. Connector type and size? 8"X8" SQUARE. Output air temperature 120 °F + 190 °F. Relative humidity 40 % + 50 %. Output heat 150 BTU/Hr. Flow of 300 CFM. Is output air toxic? Yes ____ No ✓; Noxious? Yes ____ No ____.

tank exhaust 3x3

C. Plumbing:
1. Is water required? Yes ✓ No ____; Pressure 60-80 PSIG, flow *5 GPM. *METERED
2. Type of water required:
Tap ___ °F + ___ °F  Deionized ___ °F + ___ °F
Tempered 105 °F + 110 °F  ✓Filtered ___ °F + ___ °F
If filtered, give maximum permissible particle size in microns and the maximum permissible count. 10 microns _____ particles/cu. ft.
3. Pipe required:
Galvanized ____  Copper ____  Size 1/2" TO 1"
Stainless Steel ✓  Plastic ____  Type of connector FEMALE
4. Floor drain:
Diameter of drain 4"  Galvanized drain? ____
Plastic drain? ✓  Glass drain? ____
5. Are any chemical solutions used in the device? Yes ✓ No ____. If "Yes," state the nature of the solution(s), permissible temperature range, flow rate in appropriate units and the filtration necessary for each solution ① DEV. ② STOP, ③ FIX, ④ HYPO ELIM - 110 °F TEMP. FLOW RATE APPROX 1 G.P.M.
6. Size of pipes and connectors ~~N/A~~ FLOW METER CONNECTION 1/4"

D. Compressed air:
Is compressed air required? Yes ____ No ✓. Water free? ____ Oil Free? ____
Type and size of connector? _____. Pressure _____PSIG. Flow in CFM
Maximum ____, minimum ____, average ____.

E. Vacuum:
Is vacuum required? Yes ____ No ✓. Pressure ____PSIA or (inches of water) (millimeters of mercure). Displacement in CFM, maximum _____, minimum _____, average _____. Type and Size of connectors _____.

F. Peripheral Devices:
Will the instrument be connected to any peripheral devices such as a computer or data input or data output device? Yes ____ No ✓. If "Yes," give, in detail, the nature of the connection to the peripheral device such as coaxial cable, multiple wire connector, etc.

IV. REMARKS
A. Use additional sheets if more space is required for environmental conditions or utilities not mentioned above.
B. Submit three typed copies of the completed form to the Technical Representative.

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C. Attach three copies of a dimensioned outline drawing of each major component and of the completed assembly. Include the estimated weight of each major component and of the completed assembly. Indicate, on the outline drawing of the completed assembly, the space required for access to the instrument for maintenance.

D. If a question does not apply to the instrument, insert "N/A" (Not Applicable) in the appropriate blank space.

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III, UTILITIES [redacted] FOR PROCESSOR DRY BOX

ILLEGIB

A. Electrical:

| | | AC | DC |
|---|---|---|---|
| 1. Voltage | | 115/240 Volts / ____ Volts | ____ Volts / ____ |
| 2. Current | | 50 Amps/phase | ____ Amps |
| 3. Frequency | | 60 cps | |
| 4. Nr. of phases | | 1 Ph | |
| 5. Nr. of wires | | 3 | |
| 6. Power required | | ____ Watts | ____ Watts |
| 7. Power factor | | .37 (Leading) (~~Legging~~) | |

8. Type of outlet: Two prong ___; three prong ___; Twist lock ___; Perm. ✓
9. Type of ground: Building conduit ✓; Direct earth ground ___.
10. Should the instrument be shielded, either from external electromagnetic signals or to prevent interference with other equipment? Yes ___ No ✓
If "Yes," to what extent? _____

III B. 3. OUTPUT AIR IS A DIRECT CONNECTION TO THE EXHAUST (TANK MODULES) NECESSARY YES ✓ NO ___ ADVISEABLE YES ✓ NO ___ : CONNECTOR TYPE AND SIZE _____ OUTPUT AIR TEMP. 108 °F + 120 °F RELATIVE HUMIDITY. ___ % + ___ %
OUTPUT HEAT 110 BTU/HR. FLOW OF ___ C.F.M. AS OUTPUT AIR TOXIC YES ✓ NO ___ NOXIOUS YES ___ NO ___

NOTE:

2000# 1. WEIGHT OF ASSEMBLED UNIT WILL BE DETERMINED AT LATER DATE APPROX 3/8/69
2. EXHAUST OUTPUT AIR WILL BE DETERMINED AT LATER DATE APPROX 3/11/69 (B.3)
3. TWO ELECTRICAL UTILITIE BOXES WILL be Required one - main processor 100 AMP SERVICE
Two - processor dryer 50 AMP "
4. Each replenisher line to processor flow meters (4) will require pre heating to 110°F

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TEST PARAMETERS

The following work statements have been extracted from design proposal [redacted]. This proposal is an integral part of the contract for the prototype development of the [redacted] Wide Film Processor.

STAT

STAT

Notes along the proposal page numbers are comments made by the DED contract monitor. Comments below work statement are from TEB.

| Item | Statement | Proposal Page No. |
|---|---|---|
| [redacted] (a) @ 108° water | ...a prototype [redacted] processor that will properly process wide film (70mm to 9-½ inches) to archival standards. | 1-1 Still Valid. |
| (b) | The machine will handle photographic films from 70mm to 9-½ inches wide with a base thickness range of 0.002 to 0.007 inch, coated on mylar, acetate, or other suitable support. | 2-8 Still Valid. |

STAT
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(a) Not presently planned to test for archival quality [redacted] during pre acceptance. Test for fixation and washing required. Can probably be accomplished [redacted] if time permits.

STAT
STAT

(b) Tests planned [redacted] with [redacted] film [redacted] as a major film. Some tests with [redacted] films will be made if [redacted] can get film [redacted]. Films presently specified for developing in the [redacted] (by contract monitor) do not include any 0.007 inch material.

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Requires in house testing to 0.007 inch processing capability.

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25X1

2 10'6" 7'9 1/4"

As compared with conventional wide-film processors of similar quality, the proposed [redacted] processor will be approximately one-fourth the cubage and one-fourth the weight, including support equipment.

1-1 ? Size & weight of conventional process

The machine design will emphasize compactness. The overall length will not exceed 10 feet, and a length of 8 feet will be a design goal.

2-6 Still valid.

STAT

Check [redacted]

3 Bullshit

...the machine would require nominal attention and very little maintenance...

1-2 Doubtful - Will require considerable maintenance and constant attention

The design of the machine will facilitate easy and rapid cleaning without danger of damage to machine parts.

OK

2-8 Easy & rapid cleaning is in doubt. Will have to see.

Only very general statements can be made after tests [redacted] More time needed to evaluate the machine for this requirement.

STAT

4 No heat shock

The heat-shock technique aids materially in producing high-quality imagery under short access conditions. A side effect is an apparent increase in effective film speed.

1-4 ? A statement

Heat shock is effective in eliminating undesirable grain growth... Because the gelatin is exposed to the elevated temperature for such a short period, it does not have an opportunity to swell. Therefore, grain clumping is reduced, reticulation is eliminated, and drying becomes easier.

2-15 ? Statement.

Requires in house testing to determine.

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| Item | Statement | Proposal Page No. |
|---|---|---|
| 5 110° water required | The efficient washing system should result in processing with a fraction of the amount of water consumed by more conventional processors. | 1-4 Don't know - will have to ascertain when installed. |
| 5-8 gal/minute to achieve archival | The machine will operate from a constant-temperature water supply whose temperature range shall not exceed 68°F. minimum or 80°F. maximum. Water consumption will be minimized. | 2-10 Ditto |

Requires in house testing to determine

| | | |
|---|---|---|
| 6 OK | The selection of all components and materials will be on the basis of optimum quality, reliability, and maximum suitability for the particular application. | 1-4 Valid. |
| OK | All materials and components will be selected for high quality, reliability, and suitability for their task. Corrosion-resistant materials and fabrication methods shall be used wherever parts are exposed to corrosive chemicals or chemical fumes. | 2-10 Valid. |

Only very general statements can be made after [redacted] tests. Need more time with machine

STAT

STAT

| | | |
|---|---|---|
| 7 10 rollers | The film [redacted] is supported by a fluid cushion, either liquid or air. The film makes no physical contact with any solid surface from the feed spool to the drier exit; hence, the film is not scratched or degraded. In addition, the film travels in a straight path... | 2-1 modified dryer unit makes this impossible. |
| To under tension at all times. | Consequently, the film is not subjected to stress or flexing nor is it under tension that could distort the image. | 2-1 Valid. |
| | The machine will be designed to transport film without serpentining or excessive flexing in the wet sections. The film base and emulsion will not contact solid parts in the processing section of the machine. | 2-8 Valid. |

Contract discrepancy at present. No tests needed, might be desirable to determine the quality of the product produced by th[illegible] If so, in house tests are needed

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STAT

8 OK The most significant feature of the [redacted] design is a miniaturized Super-Levitron type of air lock between the liquid chambers. This virtually eliminates liquid carryover. 2-1 Valid.

OK The machine design will intrinsically minimize carryover of solutions from one processing chamber to the other. 2-8 Valid.

Requires in house testing to determine

9 (a) OK A turbulation pumping system is installed for each chamber in the wet section. These constantly recirculate the chemicals so that fresh solution is available to the film. 2-2 Valid.

STAT

(b) OK ...in the [redacted] processor, agitation is more vigorous than in contemporary processing systems. Therefore [redacted] local effects due to bromide concentration can be expected to be greatly reduced or eliminated... 2-17 Probably valid - will have to ascertain when here.

STAT

STAT

(a) Check [redacted]

(b) Requires film analysis over long lengths of film (500 ft.) using a solution replenishment system. Requires in house testing to determine.

10 The processor will accept standard, commercially available, prepackaged liquid chemicals which can be poured directly into the chamber-filling spouts. 2-4 Requires constant replenishment (tank form) for long lengths (see note)

Not supplied. Will not process 1000 ft. Will not develop 20' evenly.

The machine will be provided with a replenishment system of sufficient capacity to process at least 1000 feet of film 9-½ inches wide. 2-10 Bottle type - unsatisfactory.

High energy developer required such as NRD-29 which is not standard prepackaged chemicals. The replenishment system probably requires preheated chemicals to maintain isothermic control over long lengths of film. Requires in house testing to determine.

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11 ...it is possible to obtain optimum quality under a wide range of circumstances. This is achieved by selectively matching conditions of subject matter, film, exposure, chemistry, temperature, and processing speed. This technique is facilitated because chamber capacities are small, chambers can easily be drained and refilled, and chemical analysis is unnecessary. 2-4 Valid.

Requires in house Testing to Determine

12 The prototype wide-film [redacted] will consist of the following major components: 2-5 Valid.

STAT

1) Load Station
2) Processing Section
3) Drier Section
4) Takeup Station
5) Film Transport Mechanism
6) Machine Controls
7) Pumps, Blowers, and Heaters as required
8) Provision for Plumbing, Venting, and Electrical Connections
9) Replenishment System
10) Overflow and Drainage System

STAT

Check [redacted]

13 The machine will operate under daylight (room ambient conditions), after attaching a daylight magazine that has been loaded in a darkroom. Alternately, the machine will be capable of darkroom operation by feeding film from a load spindle under safelight conditions, or in total darkness. 2-6 Valid.

D

STAT

Check [redacted]

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14 Convenience of threading will be emphasized in the design. The threading operation will not require more than 10 feet of film (or leader). Likewise, the machine will not require more than 10 feet of trailer for optimum film transport or processing to the end of the film. — 2-6 Probably closer to 30 feet due to new dryer design.

25'-26'

STAT STAT ..[redacted] plans to extend convenient manual threading into [redacted] equipment for wider films. ... — 2-6 ?

No! There is every reason to anticipate that self-threading of film can be accomplished in wide-film [redacted] machines. — 2-7 No - cannot be done.

STAT

STAT Check [redacted]

15 The load and takeup stations will accommodate up to 1000 feet of standard base films. — 2-9 500 ft - by mutual agreement - we do not handle anything over 500'

Changed 500'

STAT Check [redacted]

16 The machine design will feature a short film path. The distance from entry to the wet section to the exit of the drier shall not exceed 8 feet. — 2-8 Sec #14 above.

25'

STAT Check [redacted]

17 The machine will produce no deleterious effect to the film. — 2-8 Valid.

Does → Poor Tracking Uneven take-up 340 didn't dry at 130°

...made to insure proper tracking and even takeup. Drier design will be aimed at efficient surface-water removal, and optimum air flow and temperature to thoroughly dry the film at the recommended processing speed. — 2-10 Valid.

Can be checked in part [redacted] Requires in house testing for full determination

STAT

18 The machine will have an average processing speed of 10 feet per minute when used to process standard aerial films with standard chemicals whose chemical concentrations and temperatures have been tailored to the machine design. 2-8 0'-25' possible

Can be checked in part [redacted] Requires in house testing for full determination.

STAT

19 Present tests being conducted on standard emulsions [redacted] indicate that a density variation of not more than ±.05, at a nominal density of 1.0 can readily be achieved. During the proposed study contract it is felt that a density variation can be controlled to 0.05 with a design goal of 0.02. 2-9 Valid?

Uneven density — greater that 0.05

STAT

Can be checked in part [redacted] (Only short lengths of film will be processed due to lack of replenishment system [redacted] Requires in house testing for full determination.

STAT

20 Temperature control of chemicals in the processing section will be maintained within ± ½°F, when measured at the sensing probe. The temperature control range will be continuously variable from 68° to 160°F. 2-9 Valid but dependent upon replenishment heaters largely.

(amendment 80° to 130°)

Can be checked in part [redacted] ability to maintain temperature control requires tests with replenishment system. Requires in house testing for full determination.

STAT

21 Film processed in the 70mm to 9-½-inch [redacted] will meet archival standards for its film class and its residual thiosulphate as specified in American Standards Specification for "Photographic Films for Permanent Records," ASA PH 1.28 - 1957. (maximum residual thiosulphate of 0.005 milligram per square inch). 2-10 & 2-4 Valid.

Accept film

STAT

Not presently planned to test for archival quality [redacted] In house testing desired using replenisher system.

STAT

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22 The machine will be designed to operate from 115/208 volt, 60-cycle power. 2-10 Valid

STAT

Check [redacted]

23 The machine will be provided with suitable types of standard plumbing, venting, and electrical connections. 2-10 Valid

STAT

Check [redacted]

24 ...because aerial films of both original and duplicating types normally have standard pelloid backings or no backing. Some have an antistatic coating. Any backing layer, such as those normally present on aerial films, will be processed successfully in the [redacted] 2-14 Valid

STAT

STAT

Aerial Taking films [redacted] have a dyed gel backing which requires cleaning. Tests [redacted] with these films will be made only if [redacted] can get film from Air Force. Otherwise --- Requires in house testing to determine.

STAT

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25 Under ambient conditions normal to most processing, refrigeration is not required with the heat-shock technique. Therefore, the complexity and package size of the processor is greatly reduced. 2-15 Not using heat shock.

When did the heat shock technique get waived as a requirement? [redacted] STAT

[redacted] STAT

... This method is termed "Heat Shock" and consists of the application of extremely high temperatures (190°F to 200°F) for very short periods of time, followed by rapid cooling or quenching of the emulsion. — ... Increasing the rate of development by increasing the developer temperature (100°F to 130°F) is generally believed to result in degradation of image quality ...

STAT [redacted] processing temperature is now "normally" set at 110°F. This is 40°F above temperature for conventional processing. Is this a heat shock technique? If not, why does the proposal state that it is? Requires in house testing to determine.

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| Item | Statement | Proposal Page No. |
|---|---|---|
| 26 | At the conclusion of program, a final report, a manual of operation and maintenance instructions, and two reproducibles of all sketches and drawings required in the fabrication of the prototype will be supplied to the customer. | 1-5 Will be combined as report & ops manual. Asked for only mfg drawings - Jan 1969. |

T&E not required.

The following details have been added to the contract statement of work by the DED contract monitor.

Item 1 - Specific film types to be developed in the [redacted] Wide Film

STAT

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[redacted]

duplication film

duplication film

reconnaissance camera film

reconnaissance camera film

Jan 1969.

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