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CONTROL SYSTEM ONLY

Information Sheet for COMIREX

DORIAN Camera System

The terms used by General Stewart actually refer to one camera system which has a capability to expose either the primary film or a secondary (alternate) film. The primary film is that used for the majority of the photographic sequences. The secondary film can be selected from available cassettes of high-speed black-and-white, color, infrared color, or black-and-white similar to the primary film but capable of being processed on board by the crew.

The camera is a frame type, capable of taking up to ten frames (of primary film) per target at one second intervals. In the manned MOL mode, the camera is equipped with interchangeable platens that enable exposure of either the primary film or the pre-selected secondary film. Only one secondary film type can be used during any one photographic pass, due to the time required to change secondary film cassettes in the secondary platen assembly. Commands for use of the secondary platen are provided through the vehicle programmer/computer system. The camera and film supplies are contained in the pressurized Lab Module compartment.

Film Handling:

The film handling system consists of the film supply, take-up cassettes, DRV take-up, and equipment required to supply film to the camera assembly and to transport and store film when it is not in the camera assembly. Film chutes, drives, control and logic, cutters/splicers, and sealers are also included.

One supply cassette contains the primary film. Three take-up cassettes are used sequentially to receive the exposed primary film. Film can be transferred from these take-up cassettes to the DRV also located in the LM.

Secondary film is supplied in five supply cassettes. Three of the cassettes could contain special infrared, high-speed black-and-white, or color film. The film to be processed on-board is supplied in the other two cassettes. Three take-up cassettes store and house the exposed film for processing and three others receive the special films.

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Camera Assembly:

The purpose of the camera assembly is to place film at the image plane and provide correct exposure, focus, and image motion compensation (IMC) to accomplish the recording of a high-resolution optical image with a maximum of fidelity within the allotted time. In the M/A mode, the camera can handle either of two strands of film (primary or secondary), as commanded.

The camera assembly includes the shutter assembly, platen assembly, IMC assembly, internal primary and secondary film handling assemblies, focus assembly, data recording assembly, and related electronics.

Shutter Assembly:

The shutter assembly has a variable slit-width focal-plane shutter for changing exposure times and a slit rotation device which provides required orientation of the slit velocity vector for IMC purposes prior to exposure.

Platen and IMC Assemblies:

The platen assembly consists of two separate platens (one for primary film and the other for secondary film) and film clamping mechanisms. The IMC assembly consists of an IMC drive which imparts a controlled motion to the primary platen during exposure and an orientation mechanism which provides orientation of the primary platen velocity vector prior to exposure.

Camera Film Handling:

Primary film handling includes the mechanisms, rollers, drives, and controls necessary to store, index and guide the primary film while it is in the camera assembly. Secondary film handling consists of the secondary film supply and take-up cassettes, and the mechanisms, rollers, drives, and controls necessary to store, advance, and index and guide the secondary film while it is in the camera assembly.

Focus Sensor and Drive Assemblies:

The focus sensor includes the sensor-preamplifier assembly, image shifter disk and drive unit, mirror unit, reticle condenser optics, and necessary drives and controls which will, upon command, perform appropriate positioning to place the reticle in the correct optical location for focus monitoring. The focus drive assembly consists of drives and controls which, upon command, position the film plane with respect to the optical image plane for correct focus.

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Estimated Recurring Costs for MOL Vehicles

Estimated unit costs for manned and unmanned MOL vehicles are based on a launch rate of four per year. Figures are in millions of dollars.

<u>Vehicle Segment</u>	<u>Manned Mode</u>	<u>Unmanned Mode</u>
Lab Vehicle	\$25.3	\$22.0
Mission Module	24.0	22.1
Gemini B	16.5	-
Support Module	-	4.0
Titan III-M	17.0	17.0
Crew/Equipment	0.5	-
Test/Operations	1.0	0.5
GSE/TD*	0.5	0.5
Totals	\$84.8	\$66.1

\* GSE/TD is General Systems Engineering Technical Direction

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