

Service News



Editor

Charles E. Wright, II

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Vice President,
Hercules Programs
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**Front Cover: A rainbow adorns the
Kulis Air National Guard ramp in
Anchorage, Alaska. Photo by TSgt.
Michael DeYoung.**

**Back Cover: A "Hurricane Hunter"
C-130J emerges from the hangar.**

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the Alaska Air National Guard.

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Focal Point

C-130J: Another Member of a Prestigious Family

The fundamental idea behind the development of the C-130J was to provide an economical choice that would allow operators to replace existing high time/high operating cost aircraft with a modern, up-to-date airlifter. The C-130J realizes this goal through modernization of two primary areas: propulsion and avionics. The new propulsion system dramatically improves aircraft performance and reduces manpower required to maintain the aircraft. The new avionics significantly automate aircraft operation thus reducing the manpower required to fly the aircraft and also reduce maintenance manpower. While Lockheed Martin never envisioned every mission would be suitable for a two-person cockpit, the advanced avionics package provides enough automation to allow two pilots to comfortably and safely operate the aircraft on most tactical and strategic missions.



B. F. Bernstein

The new Allison AE2100D3 engine and Dowty six bladed composite propeller combination completely redefined the aircraft operating envelope through their significant efficiency and performance improvements. The use of the Head Up Display (HUD) as a primary flight instrument and the Electronic Circuit Breakers (ECB) on the C-130J are both firsts in the certification world. These technological improvements have extended the certification process beyond what we had anticipated. I would like to take this opportunity to thank our customers for their patience and assure them the certification process is moving forward as quickly as possible.

The C-130J World Tour that we initiated in February is giving many potential operators a chance to experience first-hand the operating advantages of the new systems. Although some people are initially skeptical of how the C-130 could be dramatically improved, virtually everyone who has experienced the C-130J for even a short time in the cockpit has become a believer. The World Tour is proving that the transition to an airlifter with cutting-edge technology is possible and rewarding. At the conclusion of the first leg of the deployment type environment of the World Tour, which included the Middle East and Europe, we are extremely pleased to report that only 4 unscheduled maintenance hours were required for more than 60 flight hours. During April and May, the World Tour will include stops in Asia, Australia, and New Zealand.

I am confident that the C-130J will hold up its end of the bargain as the newest member of the Hercules family. It has the capability required for today's missions as well as the versatility for tomorrow's. It will continue the Hercules tradition and will remain the transport of choice for both humanitarian and military missions for decades to come.



B. F. "Bill" Bernstein
Vice President,
Hercules Programs

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FORMATION STRIP LIGHTING SYSTEMS



by Phillip Gammell,
Design Engineer, Specialist
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Photo by MSgt. Michael Phillips, Alaska Air National Guard

The formation lights installed on the C-130J and certain C-130H aircraft are commonly referred to as strip lights but are actually electroluminescent lights. Electroluminescent (EL) lights are made of a phosphor material between two plates which glows when power is applied. The required voltage for the EL lights is 115 VAC. The EL lights are installed on the aircraft so that all positions and attitudes can be seen from a distance of at least four thousand feet. All of the lights are dual mode lights; the two modes being normal and covert.

EL Lighting System

The EL lighting system is comprised of fourteen EL lights for tanker aircraft and twelve EL lights for non-tanker aircraft. The difference between tanker and non-tanker aircraft is that the tanker aircraft have additional EL lights mounted under the wing on the aileron access drop-down panel just outboard of the refueling pod at outer wing station 330. These lights are used to mark the position of the refueling pod.

Each of the EL lights is installed to mark a particular part of the aircraft in addition to showing the exact attitude of the aircraft. The optimum location for each light was determined through an extensive study. Relative EL light locations are shown on Page 4.

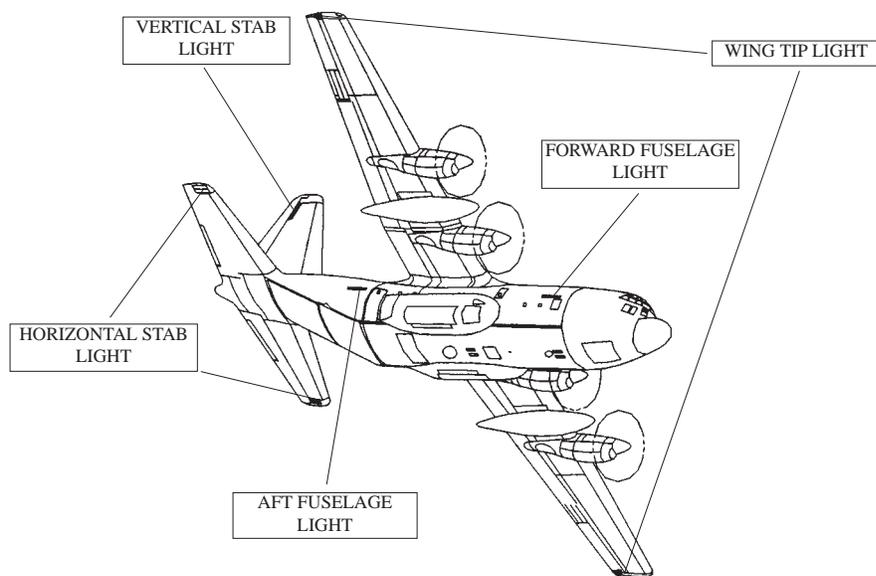
The forward and aft fuselage lights are installed to primarily indicate a change in the pitch of the aircraft. The fuselage lights combined with the EL lights on the vertical stabilizer indicate the roll attitude of the aircraft.

The EL lights are mounted high on the vertical stabilizer so that a slight change in the roll attitude will show a noticeable change in the relationship of the EL lights. If the vertical stabilizer lights were mounted lower, smaller changes in the roll attitude of the aircraft would not be as noticeable. For example, as the aircraft rolls to either the right or the left, the EL light on the vertical stabilizer will appear to move closer to the EL lights on the fuselage. The closer it appears to the fuselage lights, the greater the angle of bank. The EL lights mounted on the wing tips further mark the attitude of the aircraft. If the wing tips had no EL lights, it could not be determined whether the aircraft was rolling to the right or the left.

The second purpose of the EL lights is to mark all outer boundaries of the aircraft for close formation flight. This is the purpose of the EL lights mounted on the top and the bottom of the horizontal stabilizer tip. The horizontal stabilizer tip lights add additional visual cues necessary for determining the exact attitude of the aircraft. If any of these lights were not present, it would be difficult, if not impossible, to determine the aircraft attitude from all angles.

EL Light Installations

Most of the EL lights are flat and form to the exterior of the aircraft (see photographs, Pages 4 and 5). The only exception to this is the wing tip EL lights which are formed at the factory to the contour of the trailing edge of each wing tip. The EL lights are installed by first attaching a “ring doubler” that forms to the contour of the aircraft, placing the EL light inside



EL Light Locations (Non-Tanker Aircraft).

the “ring doubler” and finally attaching a retainer to the “ring doubler” so that the light is held in place by the retainer. The “ring doubler” is the same thickness as the EL light. This installation method allows the light to “float” inside the “ring doubler.” The “ring doubler” that is used to attach the EL lights to the fuselage is notched to prevent damage from any air leakage behind the EL light. The wires for the lights come with a thirty-six (36) inch pigtail and exit the EL light through a 0.44 inch diameter plastic feed through. The forward and aft fuselage lights are in a pressure environment so the wiring feed through must be sealed. In addition to sealing the wiring feed through, the EL lights must be aerodynamically sealed to prevent air from getting behind the light and possibly pushing the light from the aircraft.

When designing EL lights for installation on an aircraft, careful attention must be paid to the size of the EL lights. Unlike an incandescent lamp which emits light from a very small area or point source, an EL light is an area light and emits light over its entire surface. In order to clearly see an incandescent lamp at a great distance, very high intensity lamps are required. If Night Vision Imaging System (NVIS) compatibility is also a requirement, the filters necessary

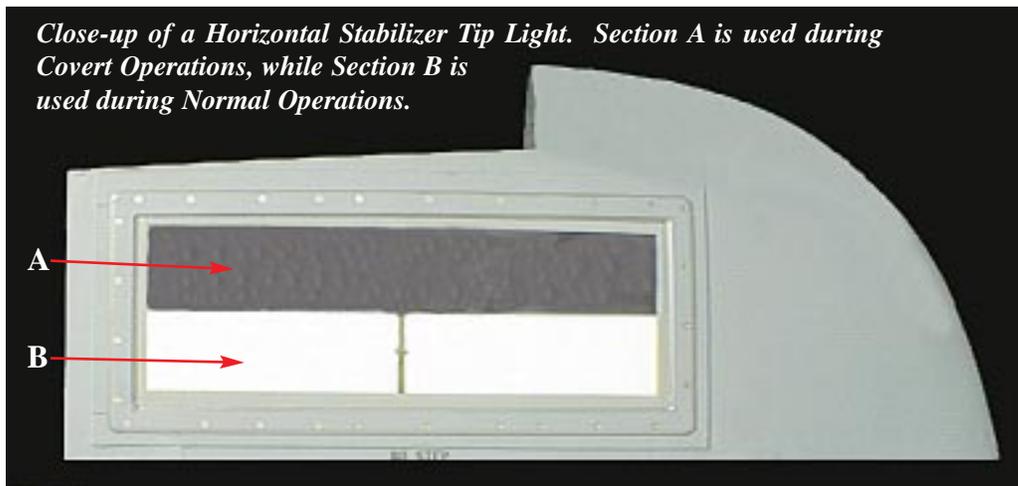
for NVIS will break or even melt since the NVIS filters retain infrared light and heat. EL lights are “cool” lights and are easily NVIS compatible because they emit very little infrared light which is the primary spectra that NVIS goggles amplify. Some EL lights are close to being NVIS compatible with no added filters. In most cases, simply lowering the intensity level of the lights will achieve NVIS compatibility.

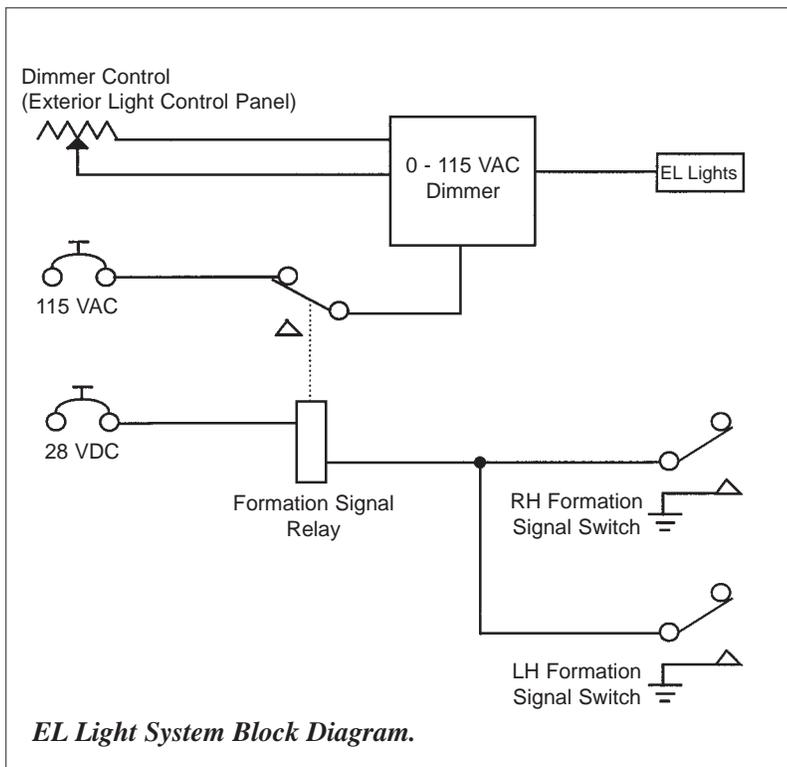
Even though EL lights in general draw less power than incandescent lamps, the size and number of lights on the Hercules dictate the need for two separate dimmers for the

EL lights. Each EL dimmer will handle a maximum of 500VA. (Each EL light draws 2ma per square inch of light area.) Because the dimmers are electronic, the wiring must be shielded to prevent electromagnetic interference (EMI). All returns for the EL lights and shielded jumpers are grounded at the dimmer.

Power to both dimmers is supplied from the Essential AC Bus through the Formation Signal Relay. On the C-130J, the Dimmer Control is mounted on the Exterior Light Control Panel. This panel reads the position of the Covert/Formation Dimmer Control and feeds the information through the Mission Computer. The Mission Computer then sends the information to a Bus Adapter Unit which in turn varies the voltage from 0 - 28 VDC. This variable voltage is used to vary the output of an electronic dimmer from 0 - 115 VAC. On the C-130H, a variable resistor is located on the

Close-up of a Horizontal Stabilizer Tip Light. Section A is used during Covert Operations, while Section B is used during Normal Operations.





Exterior Light Control Panel. The dimmers output 0 - 115 VAC depending on the position of this variable resistor. The remainder of the system is the same as that of the “J” model.

The EL Formation Signal Switches are located on each of the side walls just forward of the paratroop

Final Installation of Forward Fuselage Light.



doors. They remove power to the EL dimmers when the Formation Signal Switch pistol grip is activated, energizing the relay and interrupting power to the dimmers. These switches are used by the loadmaster to signal other aircraft. Output of each dimmer is routed through contacts on a Normal/Covert Relay whose coil is controlled by the Normal/Covert switch located on the Exterior Light Control Panel. The deenergized state of the relay is the Covert mode and the energized state is the Normal mode. The EL dimmers are protected against overcurrent on the output and overvoltage on the input. An overcurrent may cause the EL lights to strobe when one or more of the EL lights is partially or completely shorted.

NVIS Lighting

As mentioned earlier, the EL lights are dual mode fixtures: Normal and Covert. As seen in the photograph on Page 4, the covert mode illuminates a different section of the fixture that utilizes a filter to eliminate virtually all visible light. The remaining light coming from the fixture is focused primarily in the infrared spectrum, which makes it ideal for use with NVIS equipment. While operating in Covert mode, the lights are nearly invisible to the unaided eye, but completely visible to the aided eye.

While operating in Covert mode, the EL lights become an integral part of a completely NVIS compatible aircraft. All baseline military C-130J aircraft incorporate NVIS compatible cockpit and cargo bay lighting and offer EL Formation Strip Lights as an option. Many C-130H aircraft manufactured since 1992 are equipped with NVIS compatible cockpits. Lockheed Martin offers retrofit kits to install NVIS compatible cargo bay lighting and EL Formation Strip Lights. Inquiries concerning these retrofit kits should be directed to the Lockheed Martin Aeronautical Systems Support Company, P.O. Box 121, Marietta, GA 30061-0121, USA. Telephone: 770-431-6600. Fax: 770-431-6666. □

Hercules Operators Update

During the Hercules Operators Conference last October, several operators raised questions that time constraints prevented from being answered during the Conference. In this issue of *Service News*, we address Action Item Numbers 3 and 4 and provide an update on the Crack and Corrosion Database. The next issue of *Service News* will contain additional Action Item responses. For those of you who did not attend the Conference, this will give you a glimpse of what you missed. We encourage all Hercules operators to make plans now to attend this year's conference, which is scheduled for 12 through 16 October 1998, here in Marietta, Georgia.

Action Item Number 3 - Listing of Lockheed Production Changes

Several operators have requested a listing of Lockheed Production Changes (LPCs) that are approved by Lockheed Martin. Following is a list of recent LPCs; the LPC number is listed first followed by a brief description of the subject of the LPC. LPCs using a 1017-XX number are applicable to the C-130J.

817-490	Alternate Source - 695111 Hydraulic Shuttle Valve	817-511	Center Fuselage Lower Structure Enhancement	817-526	Toilet Drain Duct and Waste Drain Valve Installation
817-491	Auxiliary Power Unit Exhaust Seal	817-512	Center Wing Rib Installation WS 178 Web Change	817-527	Access Door Removal MLG Fairing
817-492	Auxiliary System Motor Pump Improvement (MPEV3-032-2A)	817-513	Fire Blocked Cushions for Bunks	817-528	Pulley Guards for Cargo Winch Accessory Kit
817-493	Digital Flight Data Recorder Installation (209F)	817-514	Replacement of AC Generators (2CM353C1P)	817-529	Improved Fuel Bladder Cells
817-494	APU Exhaust Duct Support Bracket	817-515	Attach Angle - Wing to Fuselage, WS 61.625	817-530	Strap - Ramp Skin, Tension
817-495	Crew Door Changes	817-516	Front and Rear Beam - Center Wing	817-531	C-130 Engine Control Quadrant Cover Assembly
817-496	Bleed Air Duct Material Change	817-517	Improved Digital Fuel Quantity Indicators (697749-15/-17/-19)	817-532	Deletion of Radome Anti-Icing & Redesign of Nose Radome
817-497	Ramp Manifold Valve - Alternate Source	817-518	LAPES Towplate System & Clip Installation (543750-10 or 543903-10)	817-533	Aft Cargo Door Producibility Enhancement
817-498	Hydraulic Fluid Change: MIL-H- 5606 to MIL-H-83282	817-519	Relocation of Power Source for ADI Circuit Breaker	817-534	Windshield Modernization
817-499	Portable Oxygen Bottle Bracket - Pilot's Station	817-520	Rudder Assembly Balance Modification	817-535	Amphenol 165 Series Connectors Replacement
817-500	Fuel Flowmeter Power Supply Replacement	817-521	H94 Block Change Modern Electrical Power System Electronic Flight Instruments (HSI/ADI)	817-536	Empennage Parts Material Change
817-501	New Generator Control Unit (Panel and Regulator) (697-856-1)	817-522	Float Type Oil Quantity Transmitter	817-537	Vertical Stabilizer Identity Change
817-502	Improved Liferaft and Liferaft Inflation Valve	817-523	Fuel Quantity Change - Main Tanks	817-538	Directional Control Valve Alternate Source
817-503	Pressure Fairing Change - FS 477 to 517	817-524	Auxiliary Hydraulic Control Panel Cover	817-539	Composite Trailing Edge Panels
817-504	FSC Annunciator Light Assembly - Alternate Source	817-525	Fireshield - APU Compartment	817-540	Composite Flaps
817-505	FS180 Bulkhead Assembly Beef- up			817-541	Improved APU
817-506	Digital Automatic Flight Control System			817-542	Fire Extinguishing System - Nut Replacement
817-507	Alternate Source - Fuel Probes, Auxiliary Tank (695799-XX)			817-543	Cargo Winch Replacement
817-508	BL 20 Longeron Corrosion Protection Improvement			817-544	Engine Oil Tank Shut-Off Valve (Whittaker)
817-509	Fire Extinguisher Bottle (FE 355 5.0 BCF WR-ALC)			817-545	Oil Cooler Augmentation Manifold - Alternate Source
817-510	Installation of LTN-92 INS & LTN-311 Omega System			817-546	Oil Cooler Door Actuator - Alternate Source
				817-547	Underfloor / Ramp Corrosion Protection
				817-548	Iconel Bleed Air Ducts with Radiographic Inspection
				817-549	Improved Aft Facing Non NVIS Galley

continued on page 11

C-130J

Flight Station

by David R. Ramos,
Field Service Representative
Lockheed Martin Aeronautical Systems Support Company

FOCUS

Editor's Note: The C-130J embodies the latest technological advances in aviation. From the state-of-the-art engine and propeller combination to the updated fuel and environmental systems, the new Hercules will be the very definition of "Airlift" as the 21st century dawns. Since the flight station improvements are among the most significant and visible, we are happy to feature a special "pull-out" section of the C-130J flight station. This section is in the center of the publication so it will easily detach. We hope you find this section informative and interesting.

The core of the C-130J Hercules' advanced technology is its modern flight station. The two-pilot flight station eliminates the need for a navigator and a flight engineer. Redesigned flight station consoles, system controls, and displays have enabled the pilots to control and operate all systems. The fully integrated digital avionics with color multipurpose display units (CMDU) and head up displays (HUD) are designed so navigator and flight engineer functions can now be accomplished by the two pilot crew. Although some instruments and controls are hard wired (conventional wiring), 98% of the wiring has been replaced with MIL-STD-1553 data bus cables (twisted pair shielded wire). This MIL-STD-1553 data bus architecture integrates the state-of-the-art technology via two mission computers. Up to date laser, digital, and software designs have replaced the electro-mechanical equipment of previous Hercules with the glass flight station of the C-130J.

The following control/display panels are installed in the C-130J flight station:

Main Instrument Panel

Hydraulic Control Panel
Landing Gear/Landing Light Control Panel
Avionics Management Units (2)
Color Multipurpose Display Units (CMDU) (4)
Standby Instrument Suite
Flap/Trim Position Indicator Panel
Mode Annunciator Panels (2)
Communication/Navigation/Electronic Circuit Breaker
Control Panel
Reference Set/Mode Select Control, Pilot
Reference Set/Mode Select Control, Copilot
Inclinometers (2)

Center Console

Automatic Flight Control System Control Panel
Communication/Navigation/Identification
Management Units (3)
Pilot and Copilot Lighting Control Panels
Aerial Delivery Control Panel
Radar Control Panel
Heading and Course Select Panels (2)

Center Console (continued)

Trim Control Panel
Flap Quadrant Assembly
Throttle Quadrant Assembly/Power Levers
Intercom System Control and Monitor Panels (3
Control, 1 Monitor)
Cursor Control Panel
Defense System Master Control Panel
Headset Interface Unit Panel

Overhead Console

Cockpit Voice Recorder Microphone Panel Assembly
Engine Start and Fire Control Panel
Air Conditioning Control Panel
Electrical Control Panel
Exterior Lighting Panel
Oil Cooler Flaps Control Panel
Propeller Control/Full Authority Digital Engine
Control (FADEC) Panel
Auxiliary Power Unit (APU) Start and Fire Control
Panel
Bleed Air Control Panel





Overhead Console (continued)

Control Boost Panel
Emergency Locator Transmitter (ELT)/Wiper Control Panel
Fuel Management Panel
Ice Protection Panel
Pressurization Control Panel
Head Up Display (HUD) Control Panel (2)
Oxygen Regulator Panel
Pilot and Copilot Reading Light Control Panels
Headset Interface Unit Panel (2)

Pilot's Side Console

Intercom System Monitor Panel
Oxygen Regulator
Secure Voice Control (4)

Copilot's Side Console

Get Home Control Panel (VHF/UHF)
Dual Slot Data Transfer Unit
Oxygen Regulator
Intercom System Monitor Panel
Operational Flight Program Load Enable Switch
Secure Voice Controls

Augmented Crew Station

Headset Interface Unit Panel
Oxygen Regulator Panel
Additional Crew Station Lighting Control Panel
Intercom System Control Panel
Intercom System Monitor Panel
Portable Maintenance Aid Port
110 Volt / 60 Hz Receptacle
Test Power Receptacle

In View of Pilot and Copilot

Head Up Displays (HUD) (1 each)
(Pictured in the Forward Stowed Position)

The controls and displays have been engineered so that a technician can remove a particular component without necessitating the removal of other components. During routine maintenance or fast paced operations, a technician can troubleshoot and isolate systems from the flight station. Even though the C-130J design changes have eliminated many hard circuit breakers, circuits can be isolated by pulling an electronic circuit breaker via the Communication, Navigation, and Electronic Circuit Breaker Control Panel (Com/Nav/ECB Panel). Troubleshooting can also be achieved from the flight station by displaying the Advisory, Caution, and Warning System Alerts or a Fault Log. These systems will alert the technician of any malfunctions or possible component failures. To further assist the technician, a Dual Slot Data Transfer Unit located on the copilot's side console can be utilized to upload all system communications and reactions between the mission computers and the components to a removable cartridge that can be used in conjunction with a Ground Maintenance System.

The Portable Maintenance Aid port on the Augmented Crew Station will also aid troubleshooting by allowing the technician to use a laptop size computer called the Portable Maintenance Aid (PMA) to isolate and verify component failures in any aircraft system. The PMA will serve as the primary interface between the maintainer and the C-130J aircraft systems. It can be used to load software into the mission computers, manipulate different systems, and act as a system bus analyzer during troubleshooting. The PMA will be stored on the aircraft and will be deployed with the aircraft, but will only be used during ground maintenance operations. It connects to the aircraft via both an RS-4322 interface and a MIL-STD-1553B interface.

The environment of the flight station has also been improved. The galley now faces inboard, giving easy access to controls; lighting is 100% night vision imaging system compatible for special operations; and the soundproofing is designed to limit flight station noise while giving it a commercial airline appearance. The overall design of the flight station on the next generation Hercules will not only improve the technology and environment, but will also reduce manpower requirements and cost while enhancing the C-130J's capabilities. □

continued from page 6 (Action Item Number 3)

817-550	46 Man Liferaft	1017-9	Standby Airspeed/Altitude Indicator Vendor Change	1017-15	Redefine Military PMA Functionality
817-551	New Main Landing Gear Brakes	1017-10	IFF Data Bus	1017-16	EGI with SPS ILO PPS
817-552	Nacelle Production Improvements (Spares Only)	1017-11	CMDU, AMU & CNBP Vendor Change	1017-17	Standby Magnetic Compass Vendor Change
817-553	Defensive Systems Structural Improvements (Inline)	1017-12	New Regulated Power Supply	1017-17	Standby Magnetic Compass Relocation
817-554	Not Used	1017-13	Stick Pusher System	1017-18	Oxygen Regulator Vendor Change
817-555	Non-Metallic Urinal	1017-14	Delete Wing Tank Group A Provisions (382J)	1017-19	Oil Cooler Augmentation
1017-1	C-141 Oxygen Heat Exchanger	1017-14	Delete NVIS/Covert Lighting Modes	1017-20	Fire Bottle & Agent Change
1017-2	Nacelle Product Improvement	1017-14	Delete GCAS, Maintenance Messages Display, SMS & Engine Maintenance Monitoring System (382J)	1017-21	Replacement of Connectors in Fuel Quantity Indicating System
1017-3	Deletion of ACP from AN/ARC-190 HF System	1017-14	Delete DSDTS, DFDR & UHF DF (382J)	1017-22	Deletion of Doppler Velocity Sensor
1017-4	New Radar Altimeter Mounts	1017-14	Delete DVS & GPS (382J)	1017-23	New Engine Mounts
1017-5	Dual Slotted Data Transfer System	1017-15	Digital Map Unit Additional Capability	1017-24	HUD Eye Box Change
1017-6	Stall Warning System - Audible/Visual			1017-25	Fire Handle Lights
1017-7	Wing Isolation Valves			1017-26	Avionics Cooling
1017-8	Aft Nacelle F/ODS Simplification				

Action Item Number 4 - Correct Positioning of Insulation/Soundproofing

The question was raised at the Hercules Operators Conference as to exactly where insulation and soundproofing should and should not be placed. In particular, information regarding the exact relationship between insulation/soundproofing and moving parts was requested.

Lockheed Martin installs insulation and soundproofing in accordance with established guidelines found within the various data used for building the aircraft. Specific details are provided to ensure proper installation of parts and assemblies.

The above referenced data relating to installation of insulation and soundproofing during aircraft manufacture specifically calls for at least one (1) inch minimum clearance between the insulation/soundproofing batts and moving parts (whether rotary or linear). These instructions are emphasized and enforced to prevent interference with push-pull rods, cables, and associated moving parts. We, therefore, recommend that the areas around moving parts be regularly inspected visually to ensure no insulation, soundproofing, etc. will come in contact or cause interference with the normal operation of such parts. When insulation is replaced, the old part should be used as a pattern and all openings around moving parts should be adequate to provide the one (1) inch minimum clearance. □

C-130 Hercules Crack and Corrosion Database

During the 1997 Hercules Operators Conference (HOC), several attendees expressed a desire for a C-130 Hercules crack and corrosion database. This would be a reciprocal program whereby each operator would provide data concerning cracks and corrosion found on their aircraft. The data would then be collected into a corrosion and repair recording program with crack data integration.

A form was distributed to interested attendees to complete and return to the Lockheed Martin HOC Co-Chairman to indicate interest in the program. To date, only six (6) responses have been received, of which, three (3) indicated a willingness to participate in the development and cost sharing of the program.

We feel the program would have a minimal chance of success with only a small cross section of the C-130 Hercules fleet in participation. Therefore, with the lack of response to the survey, we can only conclude that the need expressed for such a program is not sufficient and Lockheed Martin is not going to pursue this any further. □

C-130 Brake Assembly

Part Number

9560685-1

by C. W. "Charlie" Callan,

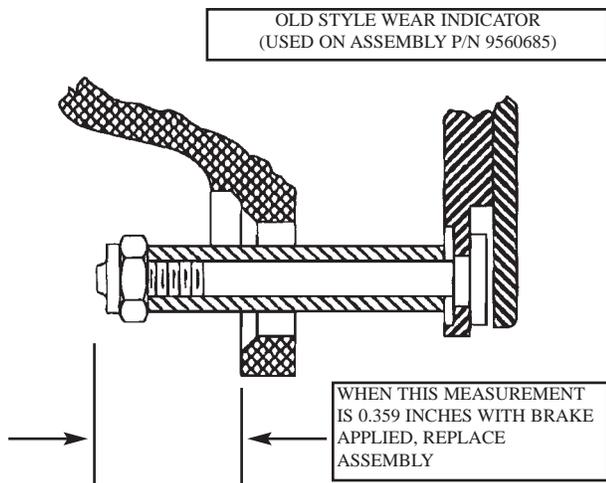
Specialist Engineer

Lockheed Martin Aeronautical Systems

Several years ago, the United States Federal Aviation Administration (FAA) established a worn brake rejected takeoff (RTO) requirement. This requirement was the result of an airliner that was not able to stop on the runway during an RTO even though the brake wear was within acceptable limits. This new requirement required all manufacturers of commercial transport aircraft with takeoff weights over 75,000 pounds to revise the brake wear criteria so that fully worn brakes could adequately absorb the energy of an RTO.

Lockheed Martin performed dynamometer testing on the 9560685 brake and established a more conservative wear limit as a result of that testing. Once the new wear limit was established, all FAA certificated Hercules aircraft were placed under the brake removal requirements of Alert Service Bulletin A382-32-47 which was issued 1 March 1995.

The requirements of the Alert Service Bulletin are illustrated below. Previously, the brake was allowed to remain in service until the wear pin protrusion reached 0.239 inches. Under the Alert Service Bulletin, the brake must be removed from service when the wear pin protrusion reaches 0.359 inches. This new wear criteria was approved by the FAA for certificated aircraft including the L-100 (382B), L-100-20 (382E), and L-100-30 (382G).



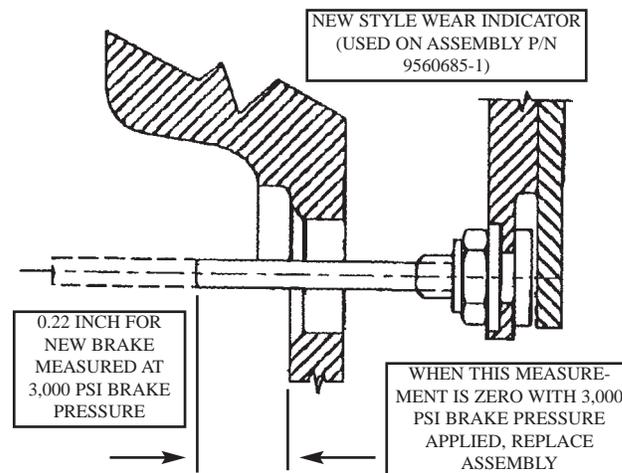
Requirements of Alert Service Bulletin A382-32-47.

Some minor design changes were performed on the 9560685 brake prior to retesting for approval on the new C-130J. After the design changes were accomplished, the brake was reidentified as Part Number 9560685-1. The changes in the new brake unit are as follows:

1. Stronger Number 1 Rotating Disc.
2. Improved Adjuster Cartridge.
3. A More Accurate Wear Pin.

The No. 1 rotating disc was strengthened by reducing the depth of the radial relief slots. The adjuster mechanism was improved by eliminating the grip & tube type wear compensator in favor of a more reliable swage tube type.

The wear pin on Brake Assembly Part No. 9560685-1 has been redesigned so that brake replacement is required when the wear pin is flush with the housing. The wear pin is now trimmed after assembly to eliminate adverse manufacturing tolerance accumulation.



Trimmed wear pin for accuracy.

Brake Assembly Part No. 9560685-1 is the configuration that will be used on all future production aircraft. It is also the preferred spare for all C-130 aircraft that utilize the multi-disk brake systems (Serial No. 4101 and later).

Aircraft Braking Systems has issued a Service Bulletin (Lockheed Martin Vendor Service Bulletin V382-32-003 and V82-32-003) to convert Brake Assembly Part No. 9560685 to Brake Assembly Part No. 9560685-1. Kits to do the conversion are available as Kit Part No. 5013311.

The new brake configuration is physically and

functionally interchangeable with the old configuration and is suitable for retrofit on military aircraft. Aircraft Maintenance Manuals, Illustrated Parts Breakdowns, and Brake Overhaul Manuals are being revised to reflect the new Brake Assembly.

It should be noted that none of these changes results in brake performance improvement. They are product improvement type changes that increase the reliability of the brake and accuracy of wear measurement. □

How to Contact the Hercules Support Center...

The Hercules Support Center in Marietta, GA, has a new electronic mailbox to better serve operators who have Internet capability. As always, traditional mail, telephone, and facsimile are also available.

**Lockheed Martin Aeronautical Systems Support Company
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Smyrna, GA 30080-7605 USA**

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To Our Readers...

We would like to take this opportunity to thank you for your continued support of this publication. Our goal is for the subjects covered in this magazine to be timely and relevant to you. In order to continue to publish the information that is most pertinent to you, we ask that you contact us to let us know what topics you would like to see covered in future issues of *Service News*. Also, if you have found any unique solutions to problems you have encountered, we encourage you to submit details so that others may learn from it. As Royal Australian Air Force Squadron Leader Alex Gibbs pointed out in the last issue's "Focal Point", it is likely that every Hercules operator has a lesson for us all.

Many of the photographs that have appeared in past issues were submitted by operators in the field. We always welcome your photographic submissions for publication. When submitting a photograph, please provide us with either a slide, negative, or clear color print and information for the photographic credit.

We would like to recognize and thank the members of the 176th Airlift Wing, Kulis Air National Guard Base, Anchorage, Alaska, for their tremendous photographic support for this issue.

Please address all correspondence regarding *Service News* to Editor, *Service News*, at the address listed above. The telephone number for the Editor is 770-431-6544.

New Retrofit:

A Flushable Toilet for the Hercules Airlifter

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The extensive use of the C-130 for long-range missions and the mixed gender of today's military necessitate improved onboard crew relief facilities. Lockheed Martin Aeronautical Systems Support Company offers a kit to retrofit Hercules aircraft built prior to Serial Number 4992 with a flushable toilet system identical to the one currently installed on new production Hercules aircraft. In addition to providing privacy and convenience, the flushable toilet facilitates maintenance and helps control the corrosion that has been associated with the previous toilet system.

Location and Features

The flushable toilet is installed in the cargo compartment immediately aft of the right paratroop door. Privacy is ensured by a thermoplastic enclosure around three sides of the toilet seat and a track-mounted curtain which shields the view from the front (see photo above and next page). Foot support is provided by an aluminum platform which rotates to the vertical position when not in use to clear the cargo-loading envelope. The oxygen regulator locat-

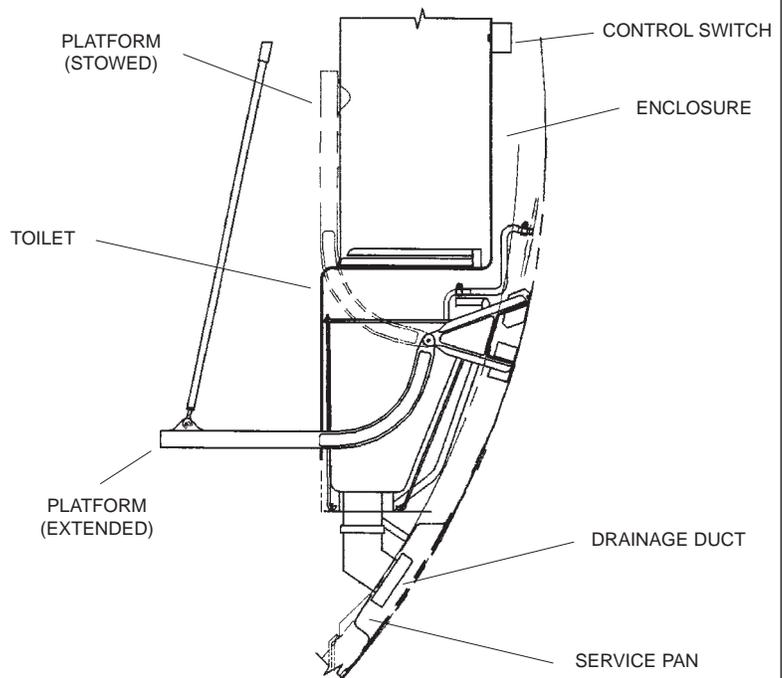
ed beside the paratroop door is moved to the outside of the enclosure for accessibility from within or outside the toilet.

The toilet system consists of a bowl, seat, holding tank, control switch, 28 VDC electric motor, flushing pump, and plumbing. The flushing action is activated by a pushbutton control switch. The toilet system is powered from the aircraft's main DC bus through a circuit breaker and circuitry added to the aft fuselage junction box. A ventilation tube routed from the holding tank to a pressure fitting in the fuselage vents air from the tank overboard.

The system recycles the fluid so an unlimited number of flushes are available. However, due to filtering limitations, approximately 25 - 30

flushes are available before the fluid quality begins to degrade.

Flushable toilet installation, right side of aircraft, looking forward.



Unit Servicing

The flushable toilet not only enhances crew comfort, but also features sanitary, external servicing using a standard ground cart. A servicing pan installed in the right side of the fuselage contains two ports for pressurized servicing, as shown in the photograph below. The smaller port is a recharging port used for system flushing and liquid replenishment. The larger drainage port is connected to the toilet's holding tank by a four inch diameter duct with a capped nipple assembly. In remote areas where no service cart is available, draining can be accomplished using gravity.

Corrosion Prevention

The design of the toilet system prevents the corrosion that has resulted in the past from spillage in the area surrounding the old toilet facility. The enclosure around the toilet seat extends over the inboard face and top of the holding tank, providing a barrier against potential spills. The top cover is equipped with a lip on the

Privacy is ensured by curtains in the front.



Sanitary, pressurized servicing of the flushable toilet is accomplished through two external ports that connect to a standard ground cart.



inboard edge and slopes inward to drain into the bowl. Spillage during maintenance is avoided by using the external service ports.

Installation

In addition to offering privacy, convenience, and corrosion prevention, the new toilet contributes to the health and comfort of flight crews, facilitates maintenance, and reduces costly structural repairs.

Both the U. S. Coast Guard and the Belgian Air Force have retrofitted aircraft with this kit. Inquiries concerning the retrofit kit for the flushable toilet should be directed to the Lockheed Martin Aeronautical Systems Support Company, P.O. Box 121, Marietta, GA 30061-0121, USA. Telephone: 770-431-6600. Fax: 770-431-6666. □



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