MARSHALL

C-130 Hercules

MRO Services & Solutions

Service | Sustainment | Engineering

For more information please contact the Marshall sales team

marshallgroup.com

The Ultimate Partnership in C-130 Hercules Support

Contents

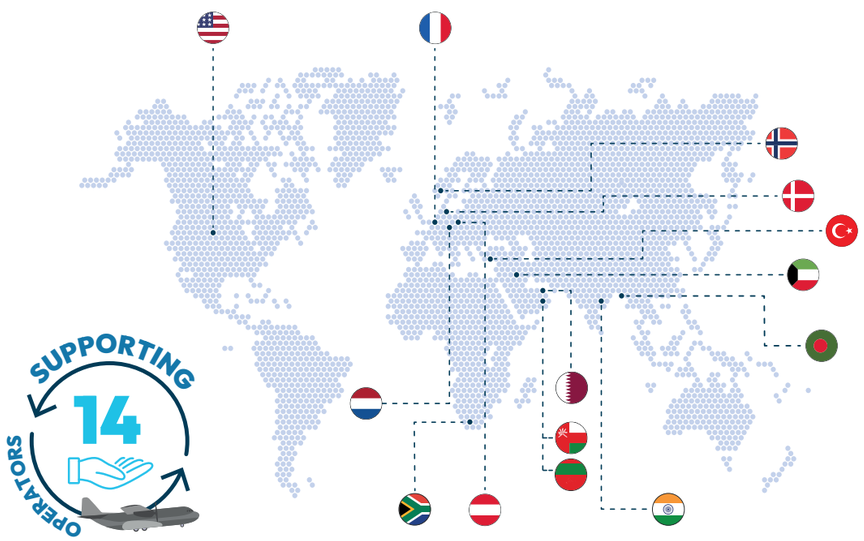
Introduction to Marshall

Our British headquarters is located in Cambridge, United Kingdom, at the Cambridge City Airport. The airfield is licensed by the United Kingdom Civil Aviation Authority (UK CAA) and has one runway that is 1,965m (6,447 ft) in length and can be used by large civil and military aircraft. In addition to its main runway, there are two grass runways conveniently placed for light aircraft.

The airport has a full Air Traffic Control, and Navigational Aids including Instrument Landing System (ILS), Non-Directional Beacon (NDB), Distance Measuring Equipment (DME), Area and Approach Radar and Communications. The image right shows an aerial view of the airport.

The airport also maintains a CAA Fire Category up to Category 7 in order to handle passenger aircraft. The airport is privately owned by Marshall, which allows us to have full control of all aspects of maneuvering the aircraft and provides additional flexibility with regards to the locations and timings of activities taking place.

> Recognised as a global leader in supporting the C-130 aircraft, Marshall holds approvals as a Lockheed Martin approved C-130J Heavy Maintenance Centre (HMC), a Lockheed Martin authorised Hercules Service Centre (HSC) for the Legacy C-130 B thru H aircraft and a Lockheed Martin approved Centre of Excellence for centre wing box replacements on C-130.



A 1,965m / 6,447 ft asphalt runway

Congestion free with no runway slot restrictions

14 Aircraft Maintenance Bays plus 2 x Paint Bays

Skilled Air Traffic Control Staff

State of the art radar equipment and navigation aids

On site restaurant and catering facilities

Open to General Aviation

List X (FSC) Secure Site

CAT I ILS on runway

Can accommodate aircraft up to Boeing 747 (Light Load)

Extensive experience in handling military transport aircraft and in particular C-130 aircraft

On site fuel provision

UK Border Agency

Ground test running facility and Flight Test

Compass Swing Capabilities

117,000m2 of Hangar Space

C-130 Maintenance Repair and Overhaul Experience

Marshall's current HMC and HSC approvals and associated Technical Assistance Agreements, enable Marshall to support C-130B thru H and J aircraft maintenance requirements at its facilities. Furthermore, these approvals enable Marshall to provide technical support to customers at their home bases and to their areas of operation through highly skilled and experienced contractor working parties.

Marshall fully understands the importance of fleet availability, capability and airworthiness, together with the associated challenges for specific military operations. Through delivering long term support contracts on the C-130 for over 59 years, Marshall has developed a unique capability to provide tailored support solutions to meet the requirements of many different military operators.

Based on this experience, Marshall has developed 'best practices' that are further enhanced by a continuous improvement process, leading to accurate scheduling and managing of depth maintenance inputs. At its Cambridge, UK site Marshall has 14 slots dedicated to delivering high-quality, low risk C-130 depth maintenance by 300 fully qualified and experienced C-130 aircraft personnel to support the scheduled and unscheduled maintenance, repair and overhaul requirements. All of which is underpinned by a comprehensive engineering and technical support team and an established supply chain and component repair and overhaul network.

In 2025, Marshall will be fully operational at the newly established US facility in Greensboro, NC, providing a further 6 aircraft maintenance slots plus an additional dedicated paint bay.

Marshall prides itself in consistently providing the highest level of service to its customers through established contract management, scheduling and delivery. With vast experience, Marshall has an in-depth understanding of potential challenges, such as common areas of rectification, diminishing sources of supply and repeatable repairs. By applying effective planning, we are able to minimise aircraft downtime and provide predictable aircraft turn-around-times, ultimately maximising fleet availability.

Marshall can carry out all types of maintenance inspection including:

- Lockheed Martin SMP checks A through to D Inspections
- US Navy Periodic Maintenance Inspections (PMI)/Major Depot Inspections (MDI)
- Programmed Depot Maintenance Inspection (PDM's)
- Calendar based structural inspections
- Fatigue based structural health monitoring inspections

Marshall has a fully capable NDT facility that is equipped to perform a wide range of NDT methods and services to ensure the integrity and safety of materials and components without causing damage. The key methods of inspection include Ultrasonic Testing (UT), Magnetic Particle Testing (MT), Radiographic Testing (RT), Eddy Current Testing (ET) and Liquid Penetrant Testing (PT).

> Marshall fully understands the importance of fleet availability, capability and airworthiness, together with the associated challenges for specific military operations.

Spares and Ground Support Equipment

Marshall in partnership with Lockheed Martin are able to offer suitable spares packages based on the customer's operational requirements. Flyaway kits are also available as an option. These kits provide essential spares for 'most likely' failures during a 30 day overseas deployment.

Throughout the service life of any aircraft, spare parts will be required to support the operation and maintenance of the aircraft. Marshall can manage the repair and overhaul of rotables through our partnerships with OEMs and OEM approved service centres. Additionally, Marshall's vast supply network and relationships with C-130 suppliers will be available to our customers to ensure the timely delivery of spares and overhaul/repair activity.

Having conducted maintenance on the C-130 for over 59 years, Marshall has replaced almost every major structural component on the C-130B through H and J. Having the correct Ground Support Equipment (GSE) is vital to ensuring efficient maintenance activity. Over the years, Marshall has developed bespoke GSE to enable maintenance and significant structural items to be replaced in the most efficient, cost effective way. As such Marshall is well positioned to provide the necessary guidance for its customers on the GSE required to suit the level of maintenance required at their main base of operation.

Training and Development

Marshall's training facility provides specialist career and technical training to support many civil and military aircraft maintenance activities and operations. With over 59 years' experience working on the C-130, Marshall is extremely skilled and familiar with the training and education of personnel required to equip them with the necessary skills and knowledge to work proficiently on C-130B thru H and J aircraft.

> As a UK CAA Part 147 approved training facility, we meet the highest standards of quality assurance and regulatory compliance, enabling Marshall to provide world-class technical training and to conduct examinations at the Aircraft Maintenance License level and perform Aircraft Type / Task training for both the civil and defence sectors on the Lockheed Martin C-130B thru H, J and L100/382 aircraft.

We work closely with our customers to identify their specific training needs, ensuring all material is developed and delivered to meet their bespoke training and operational requirements. All Marshall teaching staff are professionally qualified instructors, with many years industrial and military experience in the aerospace sector. Marshall also has the flexibility to deliver training courses at customer's facilities to further support with the development of indigenous skills and capabilities.

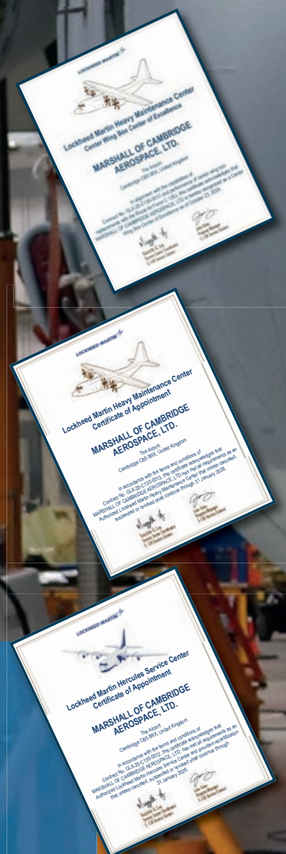
Combined with Lockheed Martin's state of the art, purpose built Hercules Training Centre, Marshall, in partnership with Lockheed Martin, can provide the necessary training for ground crew, flight engineers, flight crew and other functions of the customer's organisation, to ensure they have the necessary training, skills and regulatory qualifications to meet their operational requirements.

WORLD'S FIRST **AUTHORISED** LOCKHE ED MARTIN **HERCULES SERVICE CENTRE** FOR LEGACY C-130 B-H AIRCRAFT

WORLD'S FIRST LOCKHEED MARTIN **APPROVED CENTRE OF EXCELLENCE FOR CENTRE WING BOX REPLACEMENTS** ON C-130 HERCULES AIRCRAFT

WORLD'S FIRST MRO TO GAIN **OEM APPROVAL** FROM LOCKHEED MARTIN FOR **IN-HOUSE MANUFACTURE OF C-130J PARTS**

WORLD'S FIRST **AUTHORISED** LOCKHEED MARTIN **HEAVY MAINTENANCE CENTRE** FOR C-130J SUPER HERCULES AIRCRAFT



Recognised as a global leader in supporting the C-130 aircraft, Marshall holds approvals as a Lockheed Martin authorised Hercules Service Centre for the Legacy C-130 B thru H aircraft, a Lockheed Martin approved Centre of Excellence for centre wing box replacements on C-130 and is one of only three Lockheed Martin approved C-130J Heavy Maintenance Centres in the world. In 2024, Marshall celebrated 58 years of cooperation with Lockheed Martin on the C-130 platform.

C-130 Manufacturing Capability

C-130B-H/J parts manufactured by Marshall since 2021

8000+

Marshall's in-house parts and components manufacturing team produces high-quality, certified aerospace parts and components, backed by state-of-the-art equipment and decades of expertise.

Our Part 21G and NADCAP-accredited facility in Cambridge, UK, can undertake all aspects of high-complexity manufacturing for military and civil customers alike, serving as a single source for finished parts or turnkey sub-assemblies.

Marshall has nearly 60 years of experience providing full lifecycle maintenance, repair, overhaul (MRO) and engineering for the Lockheed Martin C-130 Hercules platform. Fleet operators around the world value our ability to independently produce, repair and refurbish parts and components with OEM-level authority to manufacture.

We produce roughly 2,000 parts per year on average across legacy C-130 models and the current production C-130J Super Hercules. We are proud to have manufactured more parts for more C-130 operators than any other MRO organization.

For parts that are difficult to obtain or have particularly long lead times, in-house production can significantly de-risk the maintenance process, enhancing fleet availability by making turnaround times more predictable and dependable. Similarly, we are able to respond at short notice to emergent work arising from the discovery of defects during routine maintenance process.

Marshall's integrated project team (IPT) approach guarantees a seamless experience, as our manufacturing support specialists remain in constant contact with the teams working on the aircraft in our hangars.

Summary of manufacturing operational capabilities and limitations:

Commodity	Operation and Limitation	
Sheet Metal	CNC Routing	5.0 x 2.5 Metres
	Cutting & Forming	4.0 Metre
	Shrinking, Stretching	Max 0.125" Thick
	Rubber Press	30.0 x 20.0 inches
Assembly	Complex electrical/mechanical assembly Bonding (Heat cured & room temperature) Large reconfigurable area and tooling for 2m+ assemblies	
Tooling	Assembly and Form Tool Manufacture, metallic/jabroc/resin	
Pipes	Flared/flareless	0.25 – 3.50 inch Dia (min bend rad 2.5D)
Machining	Turning (CNC & Manual)	10.0 Dia x 30.0 inches long
	Milling (Manual)	59.0 x 25.0 x 20.0 inches
	3-Axis CNC	40.0 x 40.0 x 20.0 inches
	5-Axis CNC	40.0 x 40.0 x 20.0 inches
	Jig Bore	30.0 x 28.0 x 20.0 inches
CAD CAM Programming	Catia V5	
Grinding	Cylindrical	6.0 Dia x 18.0 inches
	Centreless	3.0 inches Dia Max
	Surface	18.0 x 6.0 inches
	Honing	3.0 – 50.0mm Dia
	CNC Cutter Grinding	25.0mm Dia Max
Inspection	CMM	98.0 x 59.0 x 36.0
	Optical Projector	
	Planar Projector	
	Ink Jet Identification (Part Mark)	
Electrical Assembly	Cable Harness Manufacture Panels & Trays Electrical Testing Test Rigs Electrical Bond Testing Wire & sleeve printing	
Special Processes	Heat Treatment	
	Solution Treatment	0.6 x 0.6 x 1.8 Metre
	Precipitation Hardening	2.26 x 2.17 x 1.73 Metres
	Surface Treatments	
	Chromic Anodise	2200 x 600 x 1050mm
	Sulphuric Anodise	2200 x 600 x 1050mm
	Chromate Conversion Coatings:	
	Alocrom	2200 x 600 x 1050mm
	Alodine	2200 x 600 x 1050mm
	Paint Spray Booths (x2)	6.0 x 5.0m
	CAD Plate (Dalic only)	

Fully integrated manufacturing

Marshall's precision manufacturing facility produces high-quality, certified aerospace and defence parts, components and subsystems.

Our NADCAP-accredited facility in Cambridge, UK, is vertically integrated and houses every stage of the production process, including complex machining, sheet metalwork, assembly, inspection, testing, treatment and paint. We possess the skilled workforce, state-of-the-art equipment and accreditations to take a request all the way from drawing to end product (and in-service support) entirely in house.

For our customers, working with Marshall from start to finish avoids the complexity, cost and risks associated with subcontracting. We provide complete transparency throughout the process, from materials and supply chain to manufacture, inspection, treatment and delivery.

Our in-house capabilities

Complex machining and fabrication

- Production engineering
- CNC programming
- CNC milling and turning
- Manual milling and turning
- FDM additive manufacturing (3D printing)
- Engraving
- Tool making
- Honing and grinding
- Sheet metalwork
- Pipework

Surface treatments and coatings

- Heat treatment
- Surface treatments
- Chromate conversion coating
- Chromic anodising
- Sulphuric anodising
- CRS passivation
- Painting
- Non-Destructive Testing

Final assembly

- Assembly
- Welding
- Electrical wiring and looming
- CMM inspection
- Manual inspection

Flight Test Capability

Marshall recognises that not all C-130 operators will have the immediate ability or resource to conduct flight test. Marshall is able to offer the services of its highly qualified and experienced C-130J flight test pilots and flight test engineers to support its customers. Along with conducting any flight tests associated with the maintenance, Marshall's pilots can deliver the aircraft to the customer's main base of operation.

> Marshall pilots are approved to support and conduct all categories of flight test meeting both military (UK MoD and many foreign Air Forces) and civil (UK CAA, EASA, FAA) requirements, from experimental and developmental testing through to production and operational trials.

Paint Capability

Marshall is pleased to offer a truly world class, in-house, full strip and repaint capability in Cambridge. This facility together with our fully trusted, dedicated paint partner Satys ensures a cost effective and high-quality paint finish. Marshall's paint facility capabilities include stripping the aircraft to bare metal or heavy sanding, resealing of all production joints, corrosion removal and treatment, composite repairs and complete aircraft repainting.

Marshall's ultra-modern aircraft paint facility opened in early 2015 as one of the largest paint facilities in Europe and has already supported customer requirements under contract to LM Aero. As well as supporting civil customers, it is used extensively for our C-130 aircraft customers and the USG. Marshall has been commended by existing C-130 operators for the quality of our paint capability.

Marshall typically carries out full paint strip and repaint on 10 x C-130 aircraft per year, with capacity to fully strip and repaint up to 12 aircraft annually. Full paint strip to bare metal takes approximately seven days to complete. For the aircraft repaint, time varies depending on customer bespoke paint specification i.e. pre- coats, final coat etc. however, 14-17 days is the average repaint duration from bare metal.

Marshall will work closely with LM Aero to establish appropriate paint slots and will use the customers paint schemes to provide a high-quality paint finish on their aircraft, as demonstrated here on the Blue Angels C-130J a/c.

Marshall truly boasts a complete C-130 Center of Excellence under one roof, ensuring the customer is delighted with a memorable experience from start to finish of all maintenance activities.

What makes Marshall MRO special?

MRO IPT
The Integrated project team (IPT) purpose is to enable the AC team in line with the AC critical path and delivery.

Without the IPT taking ownership for these topics, the AC critical path and onward delivery is always impacted negatively.

Each member of the IPT needs to understand the AC or multiple AC milestones and manage their deliveries according to the criticality e.g. pre paint milestone.

The IPT works best when the various members are on site in close proximity to the AC and accessible by the AC team. This allows proactive and real time flow of communications in both directions and clears many issues without drawn out remote communications.

This IPT should consist of up to 10 SMEs across the full spectrum of support, these should include, MRO leadership, Supply chain, Engineering, Estimating, Manufacturing, Commercial and Customer Service Manager.

A clear principle is that the IPT should be face to face sat together accessible by the AC team and have shift cover that is reflective of the 24/7 working. Not having an IPT that is commensurate to the AC team shifts creates many issues and work load build up that does not support efficient working to the critical path.

To facilitate full effectiveness of the IPT, regular meetings are held across x3 Tiers, these enable rapid status sharing, decision making and escalation opportunities as appropriate.

C-130J Capability Enhancement

Marshall is approved by the EASA, UK CAA and UK MAA to conduct design activities from concept through to verification and flight test. Marshall has developed expertise in the design, installation, commissioning and testing of avionics and structural upgrades, having a proven track record in delivering upgrades on the C-130 platform worldwide for over 40 years. Marshall is able to develop commercial-off-the-shelf systems to provide cost effective, low risk solutions. Marshall is able to offer our customers a number of modifications to enhance the safety and operational capability of their C-130J aircraft.

These modifications can be embodied during the Entry into Service process or during a later maintenance input as part of the long-term support that can be provided by Marshall.

Satellite Communication System & Blue Force Tracker

When operating within remote and harsh conditions, clear, comprehensive two-way communication, with an accurate understanding of the aircraft's location is essential for operations staff and the aircrew. Current Beyond Line of Sight (BLOS) communication is provided by the HF Radio, however, this is subject to interference and atmospheric conditions and requires complex and costly base stations. Marshall understands the importance of having a reliable, cost effective communication system that enhances the customer's operational capability.

The Iridium Satellite Communication System (Satcom) system proposed by Marshall has an in-built Blue Force Tracker (BFT) that transmits the aircraft's GPS position over the Iridium Satcom network every 15 seconds. This system will provide the customer with world-wide communication capability for the aircrew (voice, short message system text and short burst data for email) and precise aircraft tracking information for their operations staff through the Marshall provided base station. The Satcom and BFT system proposed by Marshall will utilise some of the BLOS Satcom provisions (structural and wiring) that were retained on the aircraft following the removal of the RAF Iridium Satcom system, helping to reduce costs and the duration of the installation.

Marshall's combined Satcom and BFT system was developed to provide C-130 operators with a low risk, cost-effective communication and aircraft tracking system that satisfies the operational support requirements of the UN.

Value and Benefits

- Provides world-wide cost-effective communication capability using the Iridium satellite network
- Provides location tracking of aircraft while operating anywhere in the world
- Low risk solution that satisfies the UNs' operation support requirements
- Increases crew confidence for operations conducted in remote environments
- Backed by Lockheed Martin and supported by more than 50 years of C-130 maintenance, repair, overhaul and modification experience

External Fuel Tanks

The external fuel tanks provide extended operational range capability of the C-130 by approximately 1200 nautical miles (dependant on payload and flying conditions), extending the aircraft's total range to around 4,700 nautical miles. The external fuel tanks come with explosive suppressant foam installed per the aircraft's internal fuel tanks.

Value and Benefits

- Provides an increased range capability
- Provides a low risk solution combining existing knowledge, experience and the confidence that the modification is installed under a Lockheed Martin Service Bulletin (SB)
- Utilises the existing fuel management systems and fuel gauges fitted to the aircraft
- Role fit, external tanks are interchangeable with compatible aircraft

Wireless Intercom

The Wireless Intercom System being offered by Marshall enhances the existing system currently installed on the C-130J aircraft by removing the use of the long lead by the Air Load Masters. The Marshall hands-free system enhances crew safety within an operational environment by removing trip and snag hazards associated with the existing long lead. It also increases optimisation and communication of the loadmaster with non-flying crew and enables freedom to move around the aircraft interior and exterior without the current restrictions. The wireless system also enables the loadmaster to communicate to multiple users at the same time on the ground and in flight.

With encrypted communication between users and a system range of up to 300 meters (line of sight), the system can be used in all mission scenarios including loading and unloading, medical evacuation, search and rescue, paratroop and dropping operations and can be used by maintenance and ground crews.

Value and Benefits

- Provides a hands-free system that enhances crew safety within an operational environment
- Significant through life cost savings due to no requirement to replace damaged long leads
- Removes trip and snag hazards associated with the existing long lead
- Allows increased optimisation and communication of crew operations on ground and inflight with multiple users on the same intercom
- Provides encrypted communication between aircraft crew when operating away from home base

Aeromedical Evacuation System

C-130 Operators are increasingly supporting humanitarian missions around the world, many of which are in remote and isolated locations. These missions can involve the evacuation of personnel including the medical evacuation of critical patients that require immediate medical treatment.

Marshall's Aeromedical Evacuation System (AMES) provides medium / high dependency patients with the optimum chance of survival during transportation by air. Its modular design enables multiple AMES modules to be interconnected to support multiple medium / high dependency patients being transported at any one time.

Marshall's AMES has been developed alongside medical experts and C-130 operators and is designed and built against the highest medical human factors and safety standards. Manufactured to a high medical specification with an extremely rugged construction, Marshall's AMES is designed and qualified for the C-130 and other military transport aircraft compatible with the 463L pallet system. Marshall AMES is fully configurable to customer specific operational / medical evacuation needs.

Value and Benefits

- Palletised system enabling interchangeability across multiple military transport platforms
- Provides medium / high dependency patients with the optimum chance of survival during transportation by air
- Provides tactical and strategic medical evacuation mission capability
- No modification required to aircraft, utilises existing aircraft power supply
- Fully configurable to customer specific operational / medical evacuation needs

Underbelly Protection

Many operators are increasingly supporting humanitarian missions or have operational commitments where the use of unpaved runways are required. Without underbelly protection, operators often experience stone damage to the belly skins or antennas during landing, causing loss of function of antennas and requiring the aircraft structure to be assessed. In some cases depressurisation of the aircraft has occurred due to the penetration of stones through the belly skin, resulting in the aircraft being grounded for repair.

Installing underbelly protection provides protection from impact damage to the underside of the aircraft including to the antennas and all but eliminates stone damage to the underside of the aircraft. Underbelly protection has been tried and tested for over 30 years on the C-130 and is currently installed on the UK RAF C-130J fleet of aircraft. However, during the strip and repaint of the aircraft, the existing belly protection will be removed.

Value and Benefits

- Provides mission critical protection of the underside of the aircraft and lower antennas
- Increases crew confidence when operating from unpaved landing zones
- Protects the structural integrity and airworthiness of the aircraft
- Reduces the probability of puncture damage to the fuselage from stones and debris
- Provides an additional benefit of erosion and corrosion prevention

Self-Protection Systems

With aircraft operating in hostile/combat environments, the need for a Self-Protection Systems (SPS) could not be greater. On the C-130J, the typical SPS consists of a Counter Measures Dispensing System (CMDS) and Missile Approach Warning System (MAWS). Combined they provide a total protection system that significantly enhances the safety of the crew, the aircraft and the likelihood of mission success.

- CMDS delivers aircraft survivability from InfraRed (IR) and Radio-Frequency (RF) guided missile attacks. This system is installed on many military platforms that operate within hostile/combat environments. The system uses information from integrated Electronic Warfare (EW) sensors, including MAWS to determine the correct response to defeat incoming IR guided missiles by dispensing flares or chaff as appropriate.

- MAWS is an EW system designed to protect aircraft against IR missile threats (and laser-guided/ laser-aided threats and hostile fire, depending upon version procured). Upon detection of the threat, the system will provide an audio and visual sector warning to the pilot. For IR missile threats, the system can automatically initiate countermeasures by sending a command signal to the CMDS.

Having previously installed SPS on numerous C-130 aircraft and specifically removed the CMDS and MAWS from the RAF C-130J aircraft on previous resale aircraft, Marshall is well positioned to offer a low risk solution to re-install the SPS capabilities onto other C-130J aircraft. The selected systems will be installed using Lockheed Martin SB under our HMC approval, giving our customers the confidence that the modification is backed by the OEM. The system will be positioned in previous structural locations utilising our knowledge of the existing wiring on the aircraft and tested using the Line Replaceable Units supplied as Government Furnished Equipment (GFE) by the Customer.

Value and Benefits

- Low risk solution utilising existing knowledge of the system architecture, the installation requires an intimate understanding the C-130J aircraft
- Provides lifesaving protection of the aircrew and the aircraft
- Provides an increased probability of mission success
- Increases crew confidence for operations conducted in combat/hostile environments
- Backed by Lockheed Martin and supported by more than 50 years of C-130 maintenance, repair, overhaul and modification experience

Sustainment

Having supported the C-130 for over 59 years, Marshall has extensive in-depth knowledge in the support and sustainment of this platform. In particular, Marshall has provided total sustainment for the RAF's fleet of C-130J aircraft since 2006. Marshall stands by ready to support all customers with the future sustainment of their C-130J aircraft to suit their specific operational needs.

Centre Wing Box Replacement

The life of an aircraft is predominantly limited by the combination of the hours flown and the severity of the operational loads applied to the aircraft structure during service. These continuous operational loads applied to the aircraft structure will fatigue the structural components, ultimately resulting in failure. With the Centre Wing Box (CWB) attracting the highest operational loads, the CWB is a fatigue lifed item that will require replacement at some point to ensure the continued airworthiness of the aircraft.

The Enhanced Service Life (ESL) CWB extends the fatigue life of the aircraft, with an unlikely future replacement of the CWB required. The ESL CWB is the latest CWB produced by Lockheed Martin with significant structural enhancements, giving an increased fatigue life of approximately 2 to 3 times the original C-130J CWB fatigue life. As part of the CWB replacement, Marshall will replace the existing riveted (permanently installed) centre wing-to-fuselage fairings with removable fairings to facilitate the ease of future inspections of critical structure. The plumbing (along with the auxiliary fuel tank cells) and wiring within the CWB will also be replaced. Furthermore, Marshall will thoroughly inspect the interfacing structure with the fuselage and will replace major attaching highly loaded structural components recommended by the OEM, effectively re-lifing the C-130J aircraft. This will ensure the prolonged airworthiness and through-life structural sustainment of the customer's C-130J aircraft.

Marshall is the only MRO outside of the United States and the first Lockheed Martin approved HMC to have replaced the CWB on a C-130J aircraft. Marshall bespoke facility has the infrastructure and tooling ready to carry out this complex structural replacement programme. To date, Marshall has replaced the CWB on more than 70 Legacy C-130 aircraft and more recently eight RAF C-130J. This provides our customers with a low risk, cost effective solution that will minimise aircraft downtime while maximising fleet availability.

Marshall will work closely with the end user to understand the remaining CWB life of their aircraft. Marshall, in conjunction with Lockheed Martin can help the customer determine the best time to replace the CWB if required. The CWB can be replaced as part of the Entry into Service process.

Marshall is the only Maintenance, Repair and Overhaul organisation outside of the USA capable of replacing the Centre Wing Box (CWB) on both legacy C-130 and C-130J, providing valuable aircraft life extension.


LOCKHEED MARTIN

Lockheed Martin Heavy Maintenance Center
Center Wing Box Center of Excellence

MARSHALL OF CAMBRIDGE AEROSPACE, LTD.

The Airport
Cambridge CB5 8RX, United Kingdom

Value and Benefits

- Replacing the CWB will effectively re-life the C-130J aircraft
- The proposed ESL CWB is unlikely to require future replacement, maximising the life of the C-130J aircraft
- Marshall will apply learning from the RAF C-130J CWB replacement programme, providing a low risk, cost effective solution
- Rarely inspected interfacing structure will be inspected. Highly loaded major structural components on the fuselage will be replaced, saving future replacement costs
- Marshall will replace the centre wing-to-fuselage fairings with removable fairings to aid future maintenance and inspections, reducing future maintenance duration
- The existing 20-year-old plumbing (including the auxiliary fuel tank cells) and wiring within the CWB will be replaced – removed hardware/components could be serviced and kept as spare stock

Structural Modernisation

Marshall holds an in-depth understanding of the C-130 structure and has replaced almost every major structural component on the C-130 without Original Equipment Manufacturer (Lockheed Martin) involvement.

To enable this, Marshall has developed bespoke jacking and trestling instructions and developed equipment to enable significant structural items to be refurbished and replaced. For this reason, Marshall occupies a leading position in the non-standard repair and replacement market. Keeping aircraft airworthy and structurally sound can often extend beyond routine maintenance and sometimes calls for repair or complete refurbishment of major components. Marshall offers the full spectrum of engineering capability to extend aircraft life and ensure crew safety.

The structural life of an aircraft is predominantly limited by the combination of the hours flown and the severity of the operational loads applied to the aircraft structure during service. With the Centre Wing Box attracting the highest level of operational loads, the Centre Wing Box is a fatigue-life item that will require replacement to ensure the continued airworthiness of the aircraft.

Marshall has a bespoke facility with the infrastructure and tooling to carry out this complex structural upgrade programme. This important modification supports the through-life structural sustainment of the C-130 aircraft for many years to come.

Marshall major structural repairs, replacements, refurbishment programmes, include:

- Flight deck window doubler repairs and replacements
- Engine truss mount repair and replacement (including force-mate bushing installation)
- Inner and outer wing attachment (rainbow) fitting replacements
- MLG beams, fuselage beam caps and belly skin replacements
- Sloping longeron (FS737-FS1041), upper BL61 and BL20 longeron repairs and replacements
- Centre wing drag angles, chine angle and chine cap repair and replacement

80+ Centre Wing Box replacements on the Royal Air Force C-130

80+

Marshall has recently completed the 8th of 14 Centre Wing Box replacements for the Royal Air Force C-130J aircraft

8TH

Marshall truly boasts a complete C-130 Centre of Excellence under one roof, ensuring the customer receives a world class service experience from start to completion.

Engineering and Technical Capability

Marshall has decades of experience in developing non-standard structural repairs on the C-130B thru H and J aircraft, having completed over 15,000 repairs. This vast experience enables Marshall to design and substantiate non-standard repairs without the need for reach back to Lockheed Martin on the C-130B thru H aircraft and where not required by the customer, on the C-130J aircraft. All repairs are designed to maintain the airworthiness and structural integrity of the aircraft with all repairs designed with fatigue in mind.

Marshall has a dedicated Repairs Group which supports aircraft during maintenance at its facilities and at customer locations when required. The Repairs Group has extensive knowledge of the Lockheed Martin drawings and document set supplied for the C-130 aircraft. This enables the Repairs Group engineers to resolve any structural issues during maintenance or at the customer's facility as quickly as possible.

As well as having an established engineering capability, Marshall has a dedicated Technical Support Group that provides technical support during in-service operation and maintenance. To help minimise the impact of any unforeseen technical issues that may arise during maintenance, Marshall's Technical Support Group can provide general technical support and advice as well as performing fault analysis and investigation work relating to problems discovered during aircraft maintenance.

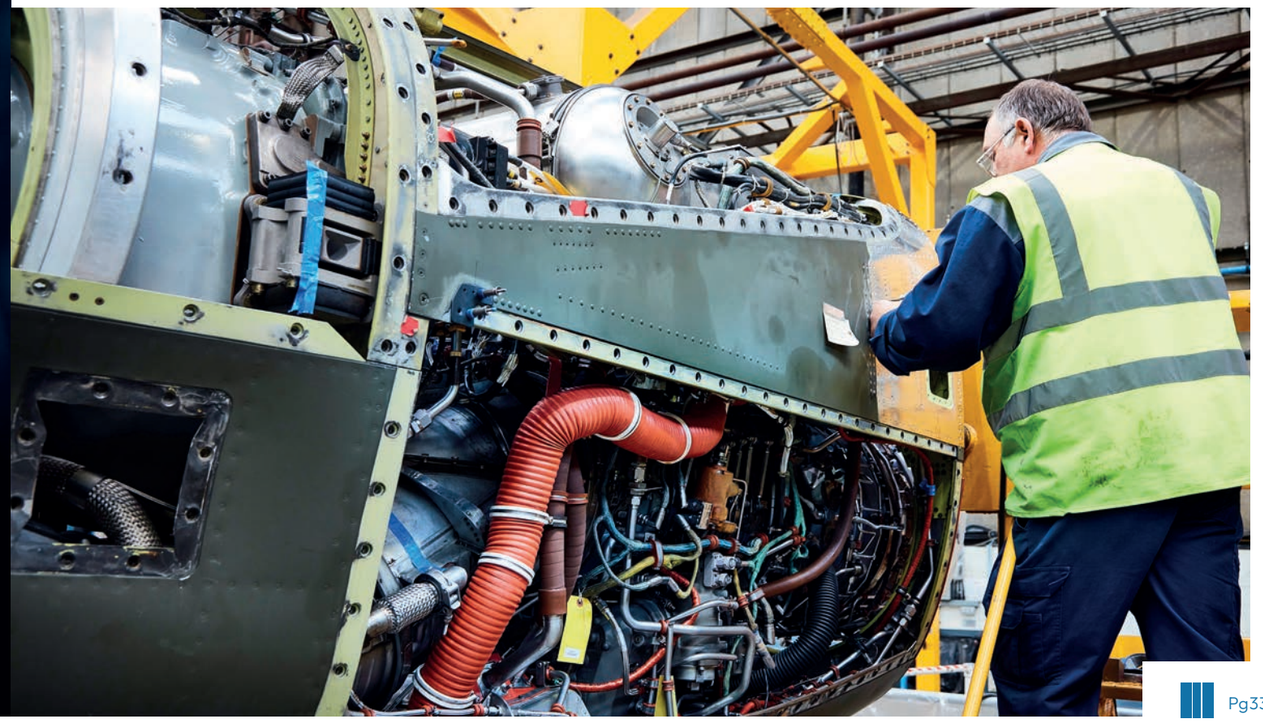
The Technical Support Group can also support structural integrity and fatigue management, provide ageing aircraft studies, conduct repair assessment programmes, conduct structural damage assessments and provide airworthiness advice, provide corrosion control advice, provide obsolescence and reliability management, as well as identifying suitable alternative parts. Through Marshall's Technical Support Group the following services can be offered to customers to support the sustainment and airworthiness of their C-130J aircraft:

- **Continued airworthiness management**
- **24hr technical support hotline**
- **Cost benefit analysis**
- **Reliability centred maintenance**
- **Spares optimisation**
- **Technical publication management**
- **Repair solutions**
- **Obsolescence management**
- **Fleet management**

Marshall supports many of its C-130 customers with engineering and technical support, providing long-term sustainment of their aircraft.

Engine and Propeller Support

Utilising our long term relationships with OEMs and OEM approved service centres, Marshall can effectively manage all levels of scheduled and unscheduled maintenance on engines and propellers both in Cambridge during maintenance and at our customers base of operation.



Quality, Safety and Security

Quality

Key to providing a low-risk, reliable service is reassurance that all operations are reinforced and managed by a robust quality management system accredited by AFNOR AS9100/AS9110, along with a dedicated in-house Quality Assurance team. Quality policies and processes ensure the design, production and maintenance of products (hardware, software or documents) and all services are delivered to meet the contractual requirements to a predetermined quality standard.

The Marshall quality system documentation and methodologies are fully compliant with the following standards:

■ AFAQ	ISO 9001 : 2015	2008/32550.17
■ AFAQ	AS9110:C / SJAC 9110:B / prEN9110:2018	2013/57102.9
■ AFAQ	AS9100:D / JISQ 9100:2016 / EN 9100:2016	2008/32551.17
■ Boeing International Corporation	D1-4426 Manufacturing Process	Process Code No. BE10047515
■ Boeing International Corporation	D6-82479 Develop/Manufacture	
■ Civil Aviation Authority (CAA)	Aerodrome Certificate	UK - EGSC-001
■ Civil Aviation Authority (CAA)	CAA 21G Production Organisation Approval Certificate	UK.21G.2078
■ Civil Aviation Authority (CAA)	CAA 21J Design Organisation Approval	UK.21J.0181
■ Civil Aviation Authority (CAA)	CAA 145 Maintenance Organisation	UK.145.0003
■ Lockheed Martin	Hercules Service Centre	Contract GLX-20-C130-0012
■ Lockheed Martin	Heavy Maintenance Centre	Contract GLX-20-C130-0013
■ Lockheed Martin	Lockheed Martin Special Processes	QCS-001
■ Lockheed Martin	Supplier Engagement and End Item Acceptance	D&B Number 218083210
■ Military Aviation Authority	DAOS	UK.MAA.DAOS.153
■ Military Aviation Authority	MRP Part 145 MAOS	145.1001

Safety and Security

Marshall takes the safety and security of customer's assets and personnel extremely seriously. As a UK Civil Aviation Authority approved international airport, Marshall surpasses the standards set by this authority. Site access is strictly controlled ensuring only authorised personnel have access to Marshall's facilities. Each customer will have accesses to the Customer Service Centre, the main site and only the specific hangar where their aircraft maintenance will be conducted. Access to other areas of the site and other hangars will be prohibited unless escorted by the Customer Service Manager.

> **In my role as liaison for the RNoAF I can without a single doubt in my mind say that our dialogue with Marshall Aerospace has improved extremely the last couple of years. Previously there was a void in which where we did not know where to reach out in regards to information and coordination not directly relating to current inputs. This void has been eliminated, and I feel confident that every time we reach out to you the case will be handled professionally. Information flow has never been better in regards to current inputs either, and your aid in both the pre input planning process, weekly meetings and current affairs is being noticed.**
>
> *Royal Norwegian Air Force*

> **Team performance was excellent. They tried hard to deliver the aircraft on time. The team leader made an excellent job. He guided the team very well achieved reasonable additional work. He presents Marshall very well to the customer!**
>
> *Austrian Air Force*

USMC Demonstrated Performance

Maintenance Event	Aircraft Quantity
	Running Contract Total
PMI	14
O-Level	7
MDI	27
ISR	2
Total Induction	**50**

Total Fleet Size 2023

100+ A/C

Global Leader in C-130 Maintenance and Fleet Support

Marshall's history in aerospace and relationship with the U.S. goes back to the middle of the 20th century.

During World War II we modified and repaired over 5,000 aircraft as part of the U.K. government's Civilian Repair Organisation, including the Douglas Dakota, de Havilland Mosquito, Hawker Typhoon, Armstrong-Whitworth Whitley, and Boeing B-17 Flying Fortress. We also trained over 20,000 aircrew, including pilots, observers and flying instructors. Our training scheme was adopted by the Royal Air Force in 1941, and continues in use to this day.

In the late 1950s we were trusted to service Lockheed Martin's Super Constellation aircraft and a decade later we played an integral role in the development of Concorde, designing and developing its iconic drooping nose – used so effectively to facilitate transatlantic travel.

We are also proud of our 30 year relationship with Boeing, which has seen us manufacture auxiliary fuel tanks for its 747 and 777 aircraft and over 1200 tanks for the military P-8 platform for export around the world. Marshall has also carried out many modifications on 777 and 747 aircraft for different operators.

We have maintained extraordinarily close cooperation and partnership with Lockheed Martin on its much-loved C-130 Hercules platform since first being appointed as the U.K.'s technical center for the Royal Air Force fleet in 1966. Since then we have been honored to be trusted to maintain C-130 fleets for numerous other nations, including Canada, where our Abbotsford, British Columbia based colleagues continue to support the Royal Canadian Air Force.

Other long-term customers include the Swedish and Royal Netherlands Air Forces who have been partnered with us for 45 and 25 years respectively, during which time we have performed major avionics and structural modernization programs, delivering increased capability and fleet sustainment. In addition, we support the majority of C-130J operators in the Middle East. No wonder then that between them our teams have notched up an incredible three million man hours working on the C-130 platform alone.

Marshall's performance on this first aircraft gives me the confidence that we will be able to continue to meet the U.S. military's needs for C-130 maintenance and positively impact readiness and sustainment goals within the Naval Aviation Enterprise.

Commanding Officer Fleet Readiness Center Western Pacific, LtCol Kevin M. Ryan, USMC

Customer Service

Marshall seeks to uphold four values that are at the core of all activities we undertake for customers and are fundamental to Marshall's success.

Customers
Putting our customers above all else

Integrity
Upholding the highest standards of integrity and fairness

People
Recognising that people are the heart of our success

Innovation
Maintaining competitive edge through innovation and creativity

Marshall strives to provide the highest level of service possible and is extremely proud of the excellent reputation it has on the market for the quality of service we provide. After significant growth in Marshall's international C-130 market share in recent years, Marshall looks forward to welcoming new C-130 operators to its facilities. To support this growth, in 2018 we created a dedicated Customer Service Team to assist and guide customers with their day-to-day tasks and ensure consistently high-levels of customer service are maintained at all times.

The Marshall Customer Service Team, which operates 24 hours a day, ensures all customer needs are accommodated for and any queries swiftly resolved.

As a Lockheed Martin approved Heavy Maintenance Centre and Hercules Service Centre, it is our duty to uphold the values and quality of service entrusted to us by the Original Equipment Manufacturer. Below we have included testimonials from customers relating to the quality of service provided by Marshall:

USMC CPARS 2024 Overall Rating

	Previous 2023 Rating	**New 2024 Rating**
Quality	Very Good	Very Good
Schedule	Exceptional	Exceptional
Cost Control	Satisfactory	Satisfactory
Management	Very Good	Very Good
Regulatory	Satisfactory	Satisfactory
Engineering	Very Good	Exceptional
Safety	Satisfactory	Satisfactory
Supply	Very Good	Exceptional