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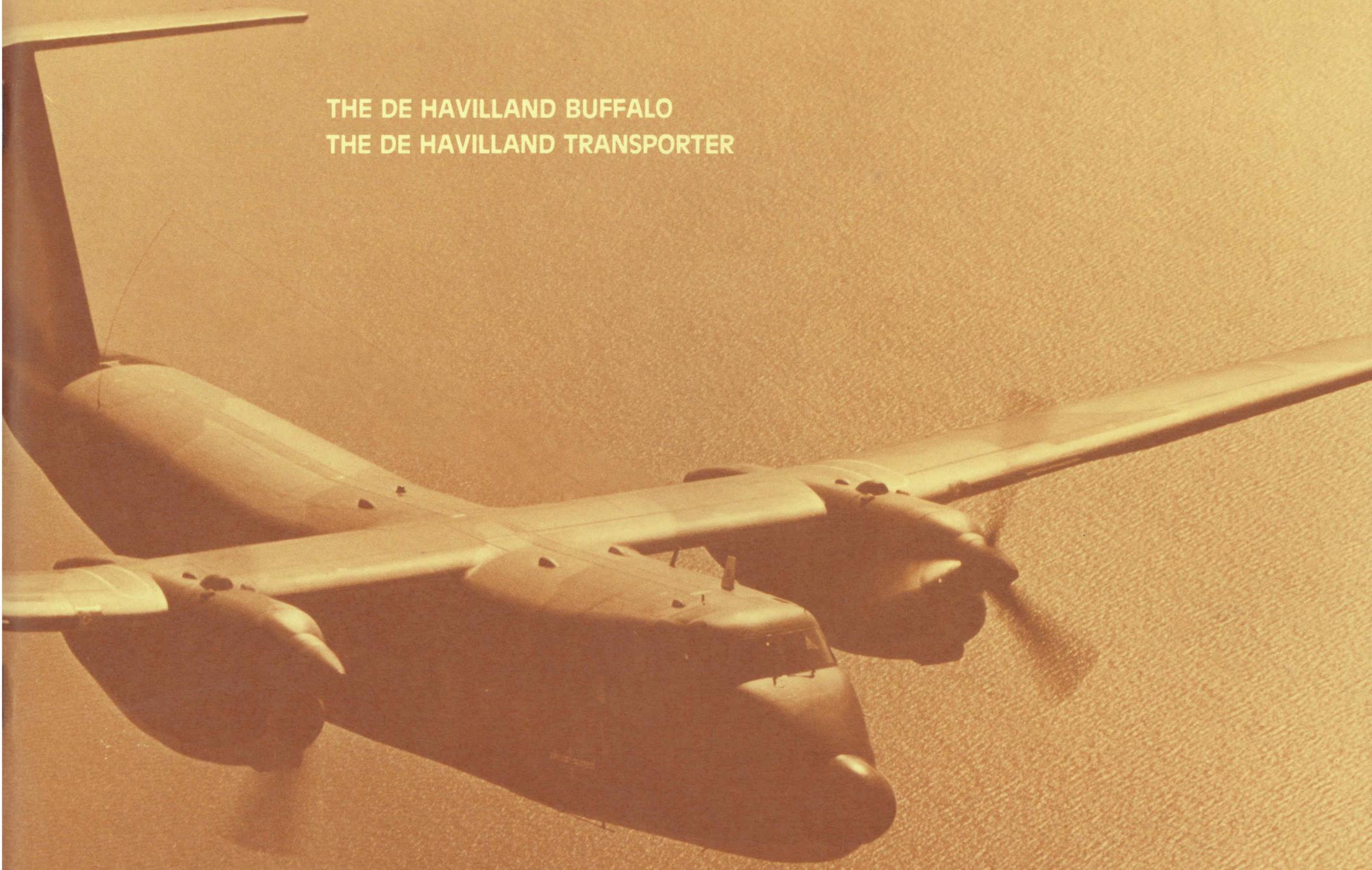
Wellington

New Zealand

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THE DE HAVILLAND BUFFALO
THE DE HAVILLAND TRANSPORTER



TRANSPORTER & BUFFALO

Introduction

This brochure describes the features and varied application of the de Havilland Canada DHC-5 Buffalo.

Current production includes the highly successful DHC-5D military Buffalo STOL transport aircraft

plus:

The new civil freight/passenger derivative called the DHC-5E Transporter.

the BUFFALO



the Multi-Purpose STOL Transport

The de Havilland Aircraft of Canada has been designing and building aircraft for over 50 years, and has earned a world-wide reputation as producer of safe, rugged, efficient equipment that can operate in all extremes of operational environments with maximum reliability and a minimum of support services and equipment. A major factor in this success story has been the versatility of DHC designs, which features rapid adaptability to a variety of mission profiles, with the resultant economic efficiencies associated with high fleet utilization.

In contrast, the typical heavy transport aircraft, optimized for long range high altitude cruise with large payloads, is uneconomical in short/medium range, partial payload missions. The suitability of the heavy transport for operation in off-optimum missions is limited by high fuel consumption, availability of long, hard surface runways, and dependence on sophisticated maintenance support.

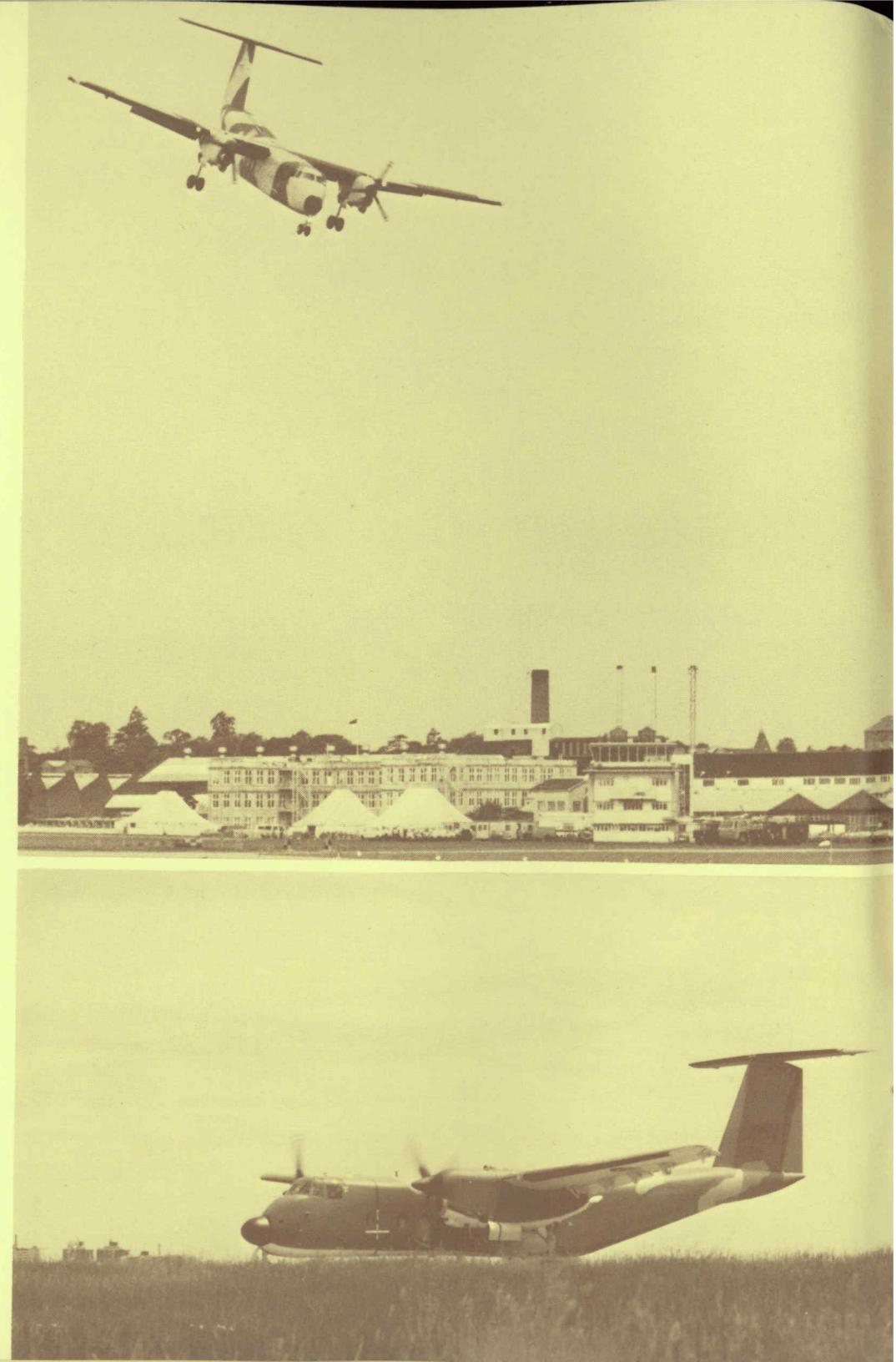
The most practical means of meeting the large variety of air transport tasks normally required is the well-proven, simple, sturdy, dependable STOL short-to-medium range transport aircraft. These aircraft have the ability to carry relatively large payloads in and out of very short semi-prepared airstrips, and even larger payloads when operated from prepared runways.

The latest, improved version of the Buffalo, and the civilian version, the Transporter, are just such aircraft.

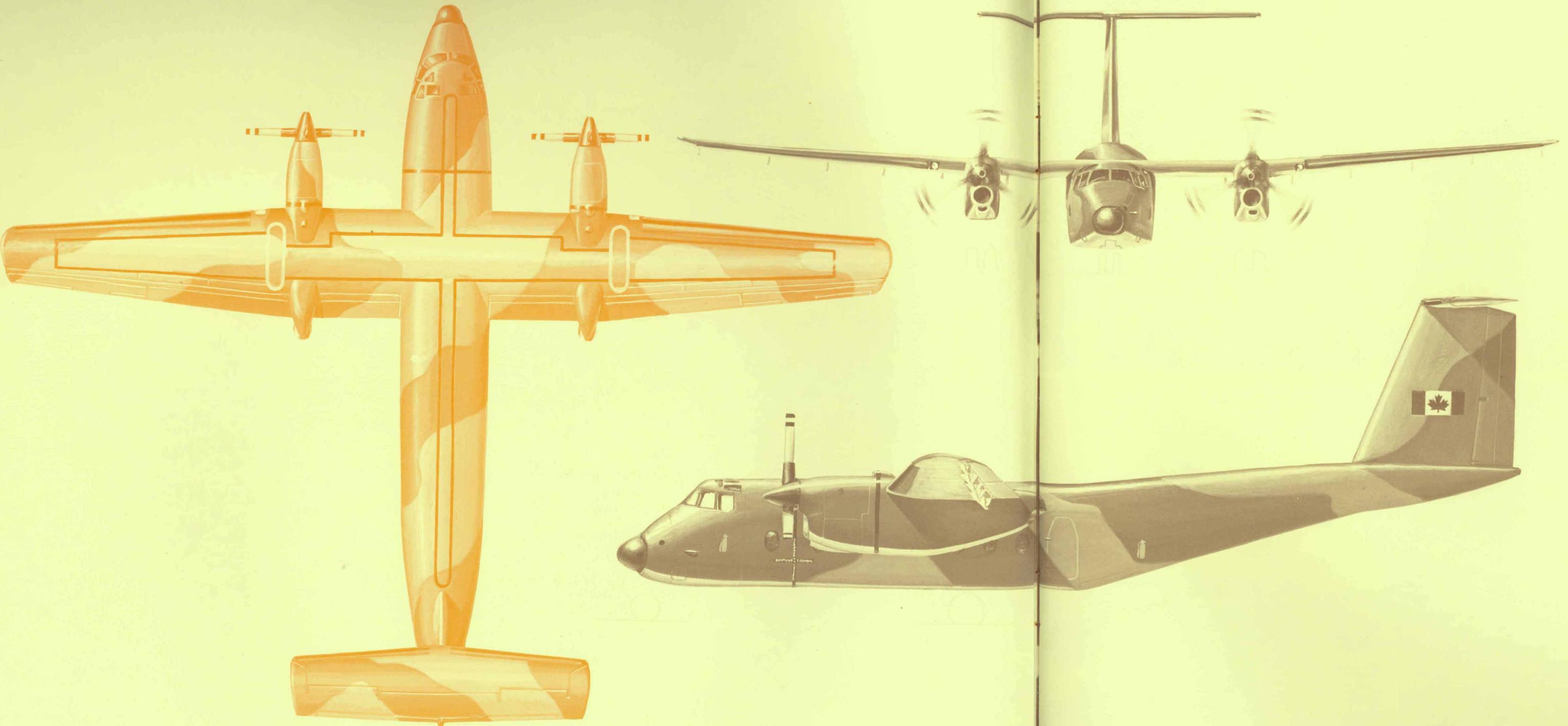
The Buffalo is moderately priced, easy to operate and maintain, and can be deployed rapidly to wherever required. It's fuselage has a rectangular cross-section and full width cargo floor which offers maximum usable volume for bulk cargo and vehicles.

The aircraft's versatility and reliability in meeting the wide ranging requirements of modern military air transport, is well-proven by over 100 Buffalos operating in environments ranging from the jungles of the Amazon to the deserts of Africa and the Arctic region of Canada.

Operators remain particularly impressed by the aircraft's capability to carry FULL PAYLOADS in HOT temperatures and from HIGH altitude airfields and, in addition, the Buffalo continues to win favour as a result of its' outstanding fuel economy - an invaluable asset in these times of rapidly rising costs.







Leading Particulars

LENGTH (Overall)

96 ft 0 in./29.26 m

HEIGHT

28 ft 9 in./8.76 m

FUEL CAPACITY

79 ft 0 in./24.08 m

2107 gal(US)/7976l

13,696 lb/6212 kg

ENGINES:

General Electric CT64-820-4

Propeller Turbines;

3133 SHP for takeoff, flat rated
to 30°C (86°F)

14.5 ft/4.4 m

PROPELLERS:

Hamilton Standard 63E60-25;

3-blade, feathering, reversing

Beta controlled blade angle,
diameter —

AUXILIARY POWER UNIT:

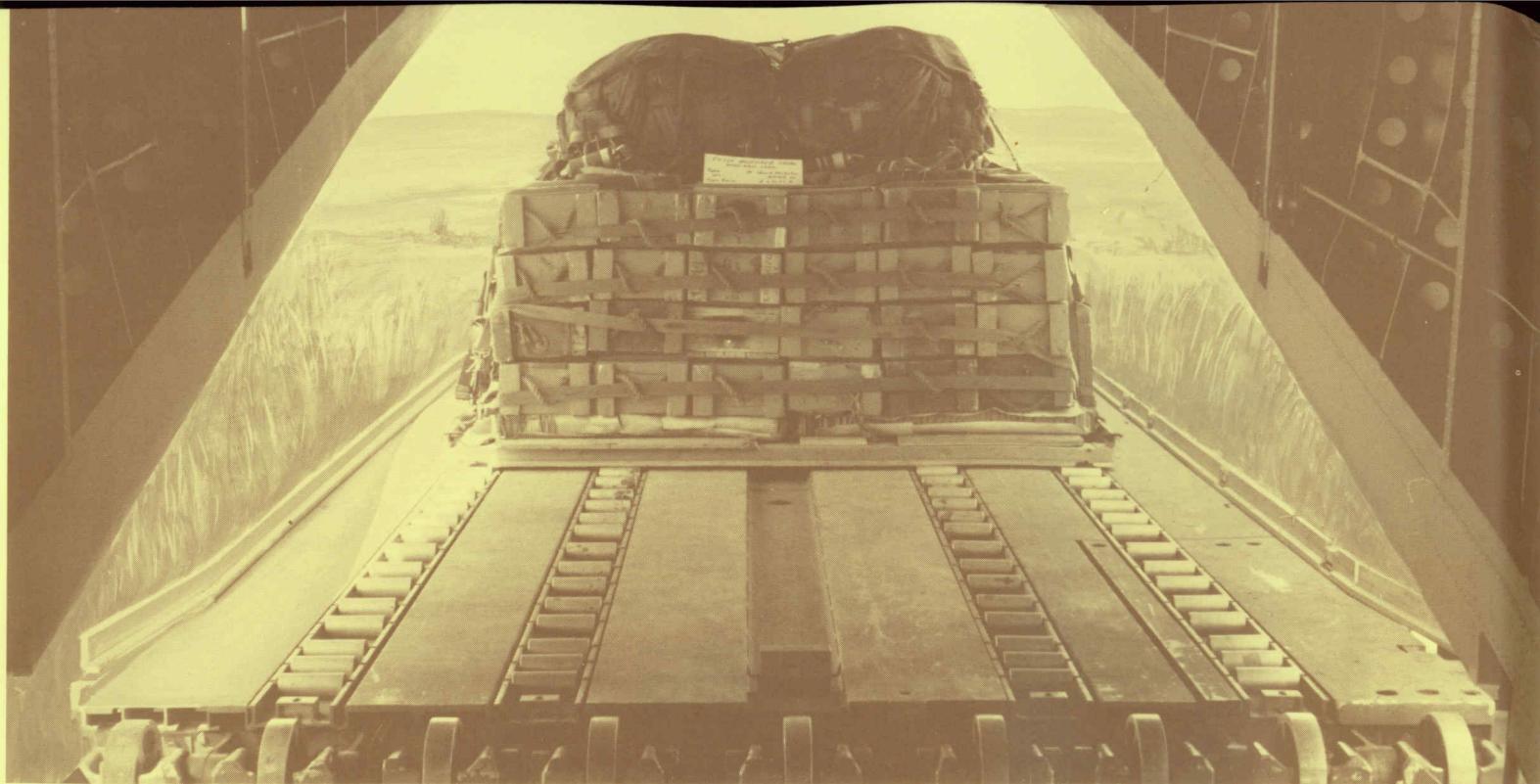
Solar T-62T-40 - 5;

Gas Turbine providing bleed air for
ground heating/air conditioning and starting
main engines, also electrical and hydraulic
power.

Functional Layout/ Design Highlights

The Buffalo incorporates many features which enable it to excel as a truly versatile, STOL transport aircraft with both civil and military application:

- simplicity of operation and ease of maintenance
- sturdiness and dependability
- excellent low-speed handling qualities
- convenience for loading/unloading
- high ground clearance for safe off-runway, rough terrain operation
- high visibility windscreens and side windows for crew – essential in confined areas and on rough ground



Aerodynamics

The impressive short field takeoff and landing performance of the Buffalo is achieved by a combination of:

- a simple, effective high lift flap system
- powerful flight controls for good low speed maneuverability
- high capacity brakes and effective HYDRO AIRE MARK III anti-skid system
- Beta controlled propellers for precise glide path control and full propeller reverse
- automatic lift-dumping spoilers
- responsive free turbine engines, flat rated to enhance Buffalo performance at high altitudes and/or high temperatures

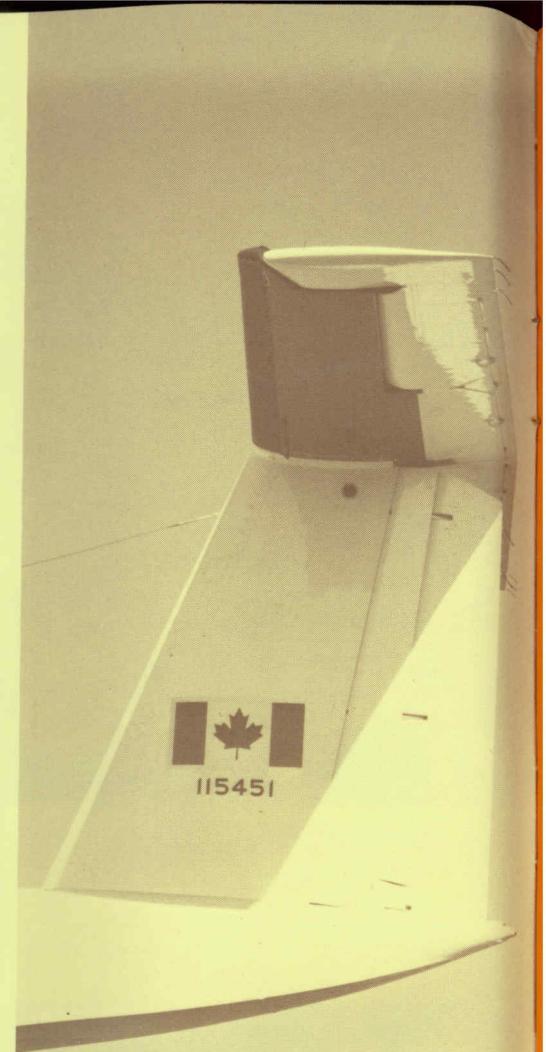




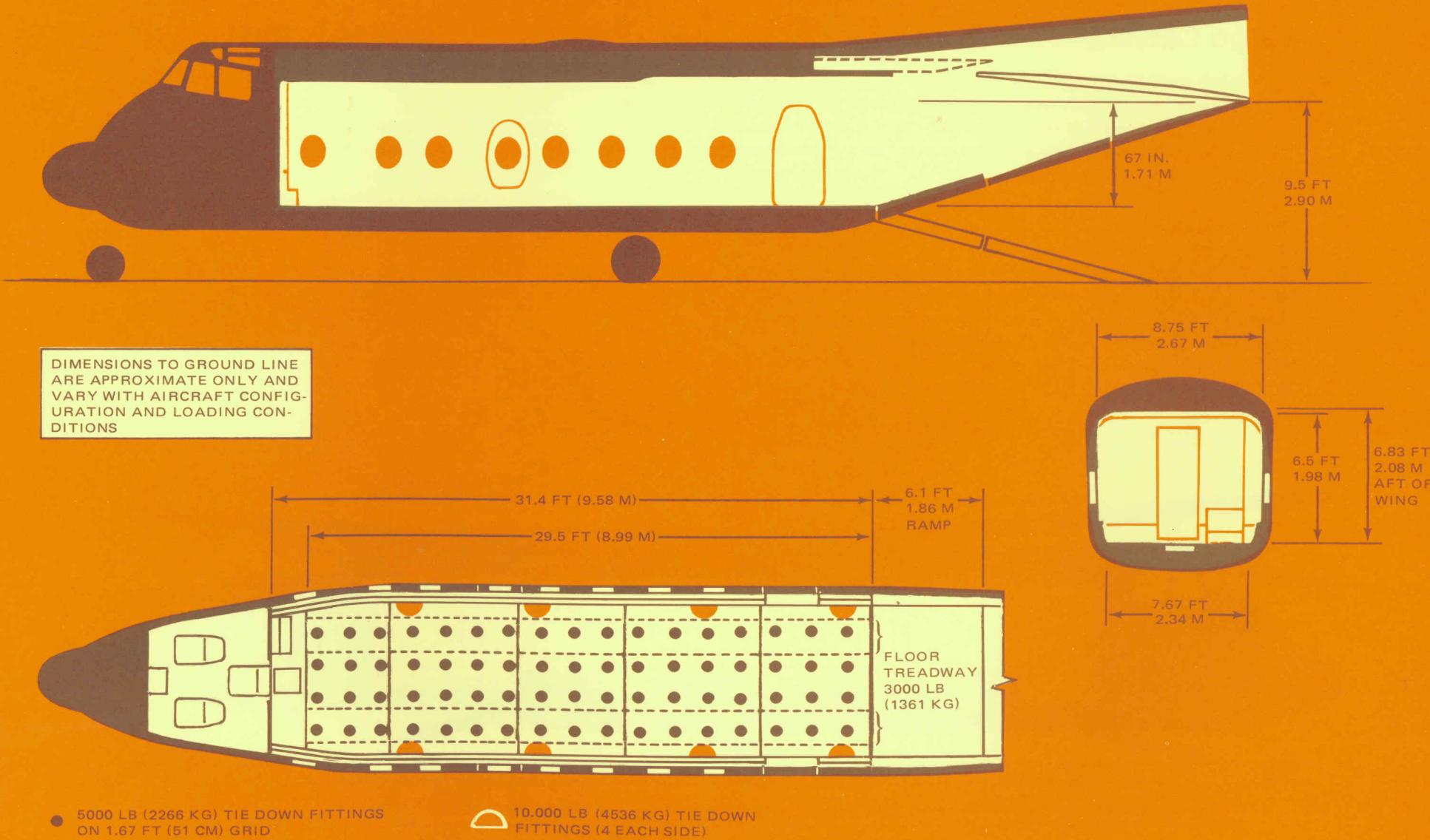
Controls

. . . maximum control under all flying conditions is a feature of the Buffalo and is a result of:

- a high lift wing
- full span, double slotted flaps
- hydraulically operated spoilers for effective lateral control and superior lift-dumping
- T-tail which provides excellent longitudinal control at low speeds and improves the efficiency of the fin and rudder
- segmented rudder for powerful directional control and low 73 knot V_{MC}
- excellent single engine performance and controllability



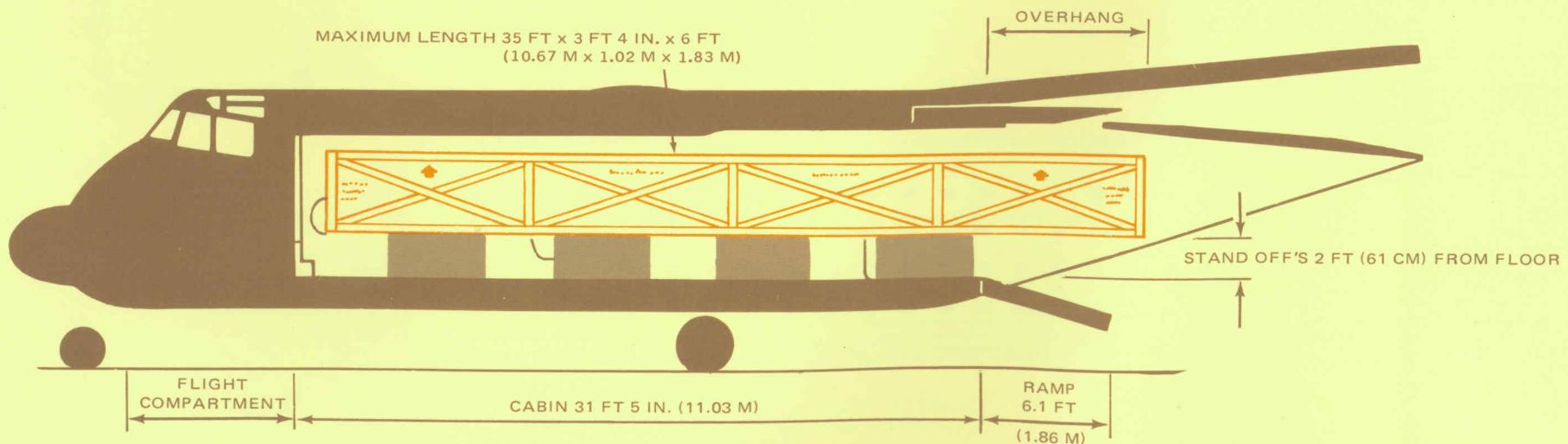
Basic Cargo Interior



Cargo Capacity

...efficient payload delivery is a prime purpose of the multi-purpose Buffalo transport aircraft — placing personnel, supplies, equipment where they are really needed — to assist in the development of remote communities or supply relief and/or military aid to disabled or disaster stricken areas anywhere in the world. The spacious cargo/troop compartment can accommodate:

- 41 equipped troops — 35 paratroops
- 24 litter patients plus 6 seats
- 48 passengers in forward facing airline type seats
- 18,000 lb (8165 kg) of cargo; three 88 x 108 inch (2.23 m x 2.74 m) pallets
- loads up to 35 ft (10.67 m) in length — example: two 40 ft x 60 ft (12.19 m x 18.29 m) complete pre-fab structures
- vehicles — example: 3 jeeps
- multiple aerial delivery loads up to 10,000 lb (4536 kg)



Cargo Loading

. . . ease of handling a variety of cargo configurations is facilitated by:

- the large, air operable cargo door and ramp
- a truckbed height floor with a dead weight limit of 200 lb/sq ft (977 kg/m^2) and two treadways, each of which has a 3000 lb (1361 kg) roll on/roll off load capacity
- ramp extensions for easy vehicle loading
- tie down points on a 20" grid for rapid mission turn around
- anchor lines, jump lights and optional pendulum ejector for aerial delivery of paratroops and freight
- integral winch, roller conveyors and side restraint rails which provide fast loading/unloading of palletized cargo
- a wide C of G range for safe, easy loading

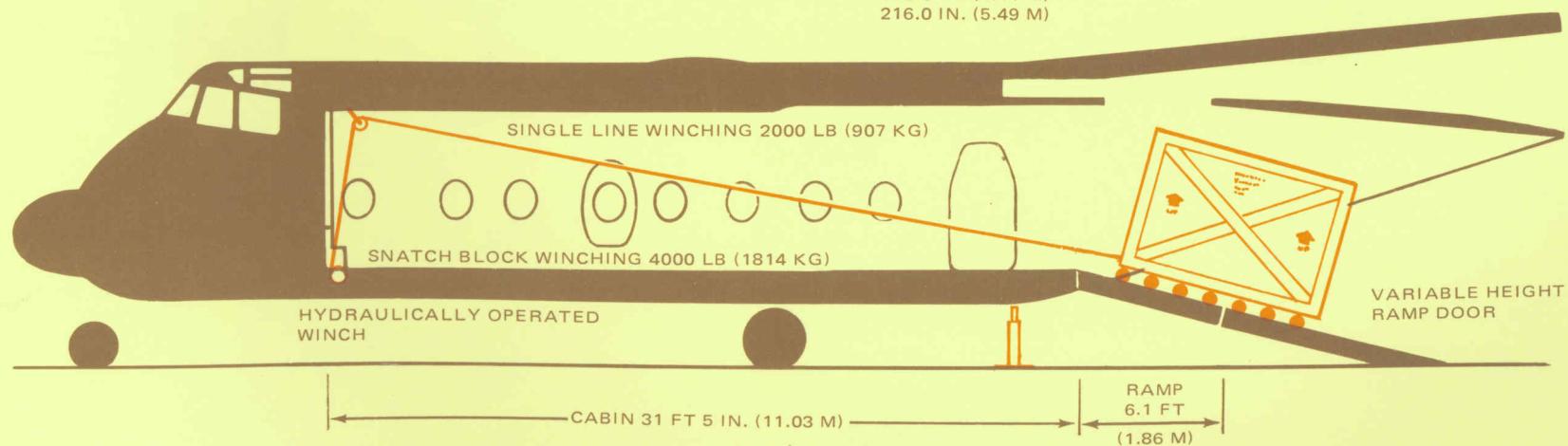
STANDARD PALLETS: 88.0 IN. (2.24 M) WIDE

STANDARD LENGTHS: 54.0 IN. (1.37 M)

108.0 IN. (2.74 M)

162.0 IN. (4.11 M)

216.0 IN. (5.49 M)





Maritime Reconnaissance /Search & Rescue

...among countries sharing a concern for their coastal boundaries, most have additional requirements for emergency search and rescue. The similarity of these commitments allows a practical interface with reconnaissance operations. The Buffalo meets the needs:

The Buffalo:

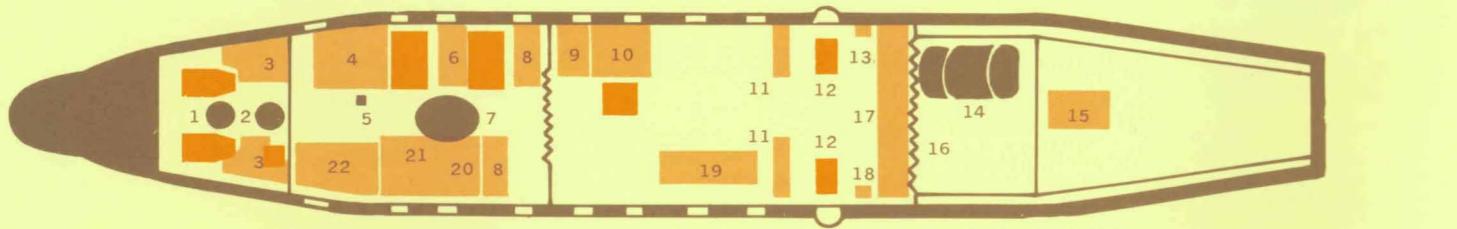
- can be rapidly configured for MR duties while retaining capability for normal transport of passengers and freight
- has over eleven and one-half hours of endurance with standard tanks for substantial "on station" surveillance
- is designed and built for maximum flight safety including engine out performance which is unmatched by any other twin engine aircraft of comparable size
- has outstanding short field performance, useful for remote coastal operations
- provides excellent stability and control at slow patrol speeds
- is cost effective because of its flexibility in the use of equipment and special installations including photographic



the Reconnaissance Requirement

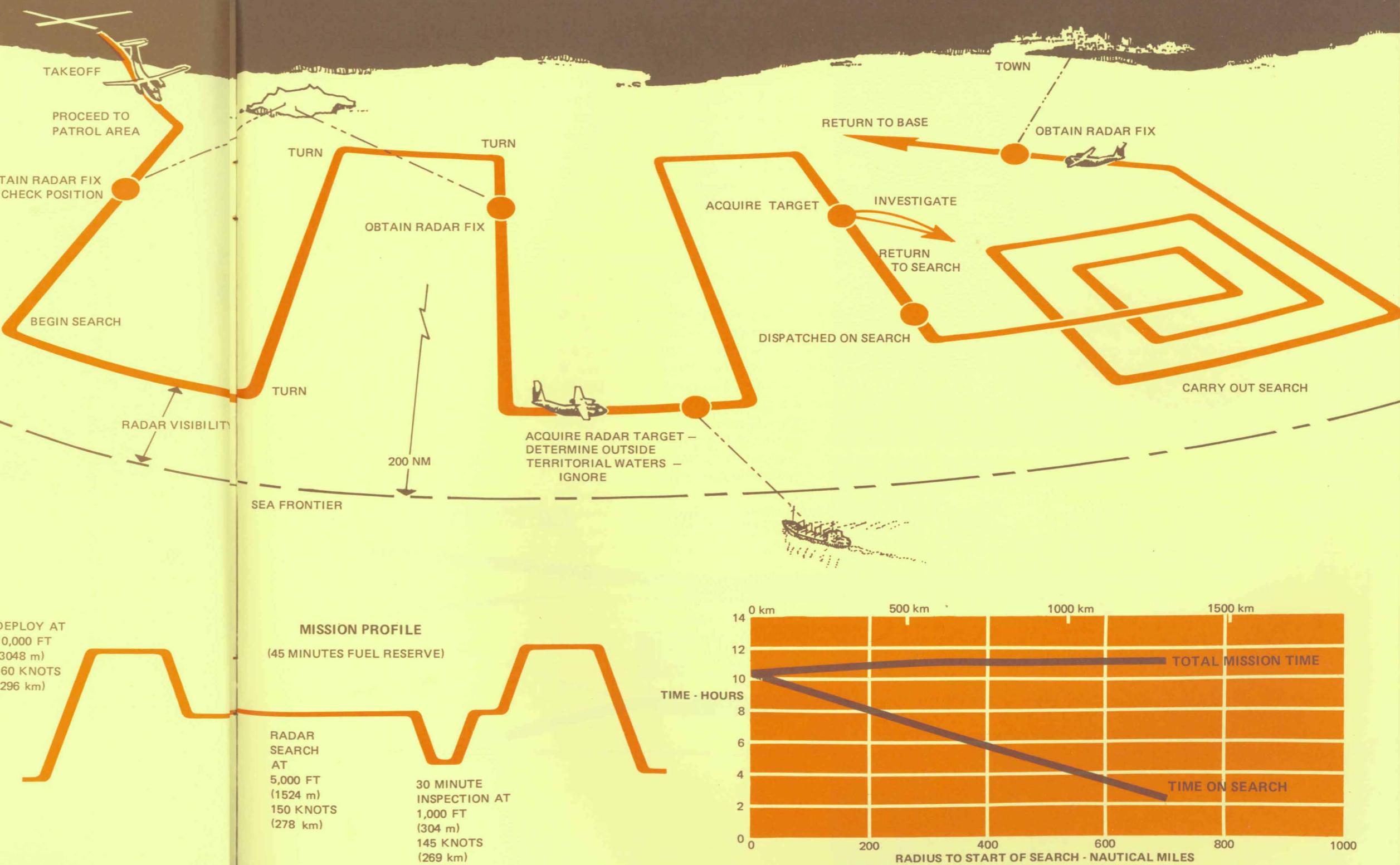
...system requirements for Buffalo surveillance capability are simple and straightforward, and can be satisfied from readily available production equipment. These requirements include:

- PRECISE NAVIGATION AIDS
 - VLF/Omega navigation systems
 - Inertial navigation systems
 - Doppler navigation systems
 - DETECTION
 - Surveillance Radar
 - all-round visibility with bubble windows
 - LOCATION
 - Based in accuracy of navigation aids
 - IDENTIFICATION
 - Visual, aided by high wing Electronic, with IFF
 - DOCUMENTATION
 - Based on navigation equipment, and hand-held/camera/data annotation system
 - COMMUNICATION
 - Including HF, VHF, AM & FM, marine band



- | | |
|-------------------------------------|--|
| 1. RC10 CAMERA | 12. SPOTTER'S BUBBLE WINDOW & BENCH |
| 2. VINTEN CAMERA* | 13. 70 mm CAMERA STOWAGE |
| 3. AVIONICS RACKS | 14. DROPPABLE SURVIVAL KIT |
| 4. TOILET WITH PORTABLE W.C. | 15. NIGHT FLASH UNIT* |
| 5. DOPPLER ANTENNA* | 16. DRAFT-PROOF DIVIDER (STOWABLE) |
| 6. FOLDING LEAF TABLE | 17. STOWAGE BOX |
| 7. APS 504 (V) 2 SURVEILLANCE RADAR | 18. MONOCULAR STOWAGE |
| 8. 10-MAN DINGHY | 19. 'A' SIZE STORES' FLARES' SMOKE & DYE MARKERS |
| 9. AVIONICS RACK | 20. ACOUSTIC SYSTEM RACKS (UNDER BUNKS) |
| 10. OPERATOR'S CONSOLE | 21. TWO 75 IN. x 34 IN. BUNKS (2.9 m x 1.3 m) |
| 11. LAUNCHERS | 22. GALLEY |

* OPTIONAL



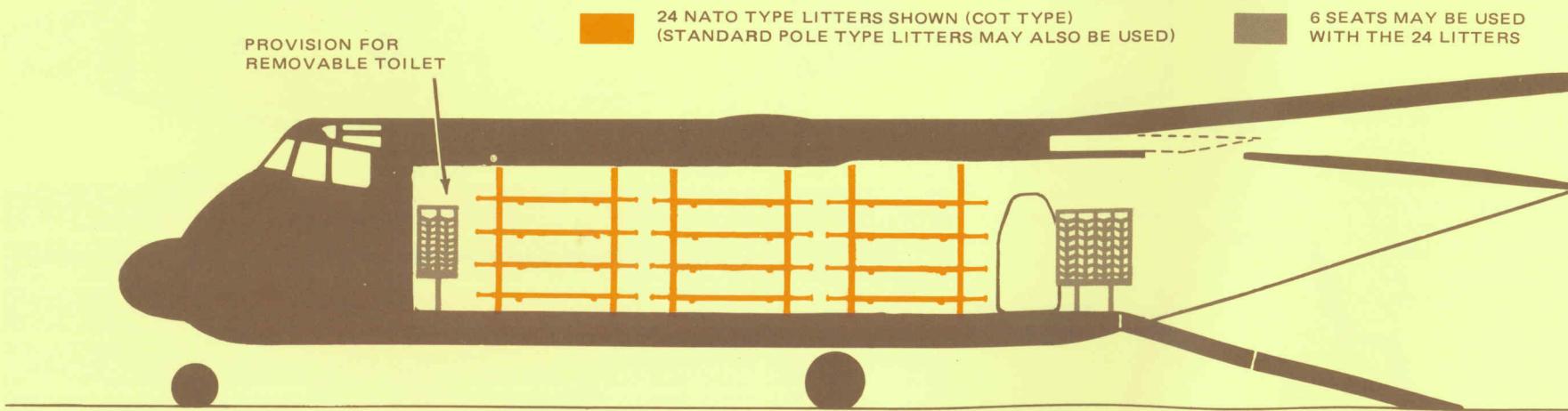
Emergency Medical Aid/Evacuation

...for medical evacuation:

- 24 standard military litters can be quickly and easily installed
- 6 seats in the cabin for attendants or ambulatory patients
- a removable toilet

...alternately, the Buffalo can provide an 'on location' hospital facility to a number of remote locations on a rotating basis, thus serving many hundreds more people than can be reasonably or economically transported to main hospital facilities:

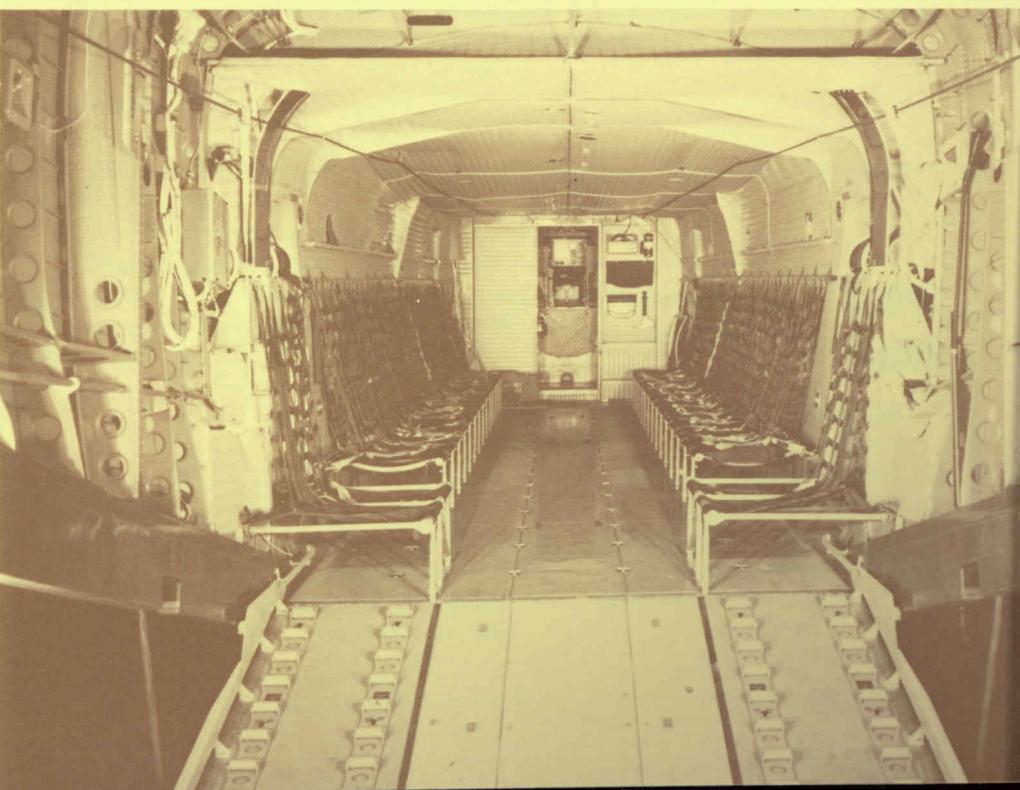
- a mobile clinic and limited care operating theatre has been designed and is available



Structure

. . . the Buffalo's multi-purpose STOL transport role has led de Havilland to incorporate structural design standards in excess of those specified by civil transport requirements, enabling the Buffalo to meet the demands of severe environmental and remote airfield conditions. The Buffalo's enviable record of safety and durability is a result of:

- over 30 years of STOL experience by de Havilland and over 3,500 STOL aircraft built
- a crack-free life for fail-safe structure of 20-30,000 hours. Such cracks as eventually may occur are repairable
- a landing gear crack-free life of 10-16,000 landings for combined light/heavy weight operations
- thorough anti-corrosion treatments using the latest techniques and materials
- all detail parts alodined or anodized then primed with zinc chromate before assembly
- parts below the cabin floor, in the engine nacelles and wheel wells plus machined primary structure coated with epoxy primer
- steel landing gear components plated with titanium-cadmium or coated with aluminum metal spray and aluminum parts anodized with the complete structure epoxy primed and covered with a durable urethane paint finish
- a tough primer plus an acrylic lacquer or polyurethane external finish



Systems

... maximum reliability, fault safety and maintainability is of prime importance for an aircraft that constantly operates under extreme and often severe conditions of environment, weather and lack of ground support. These problems are easily handled by the various systems in the Buffalo.

Fuel:

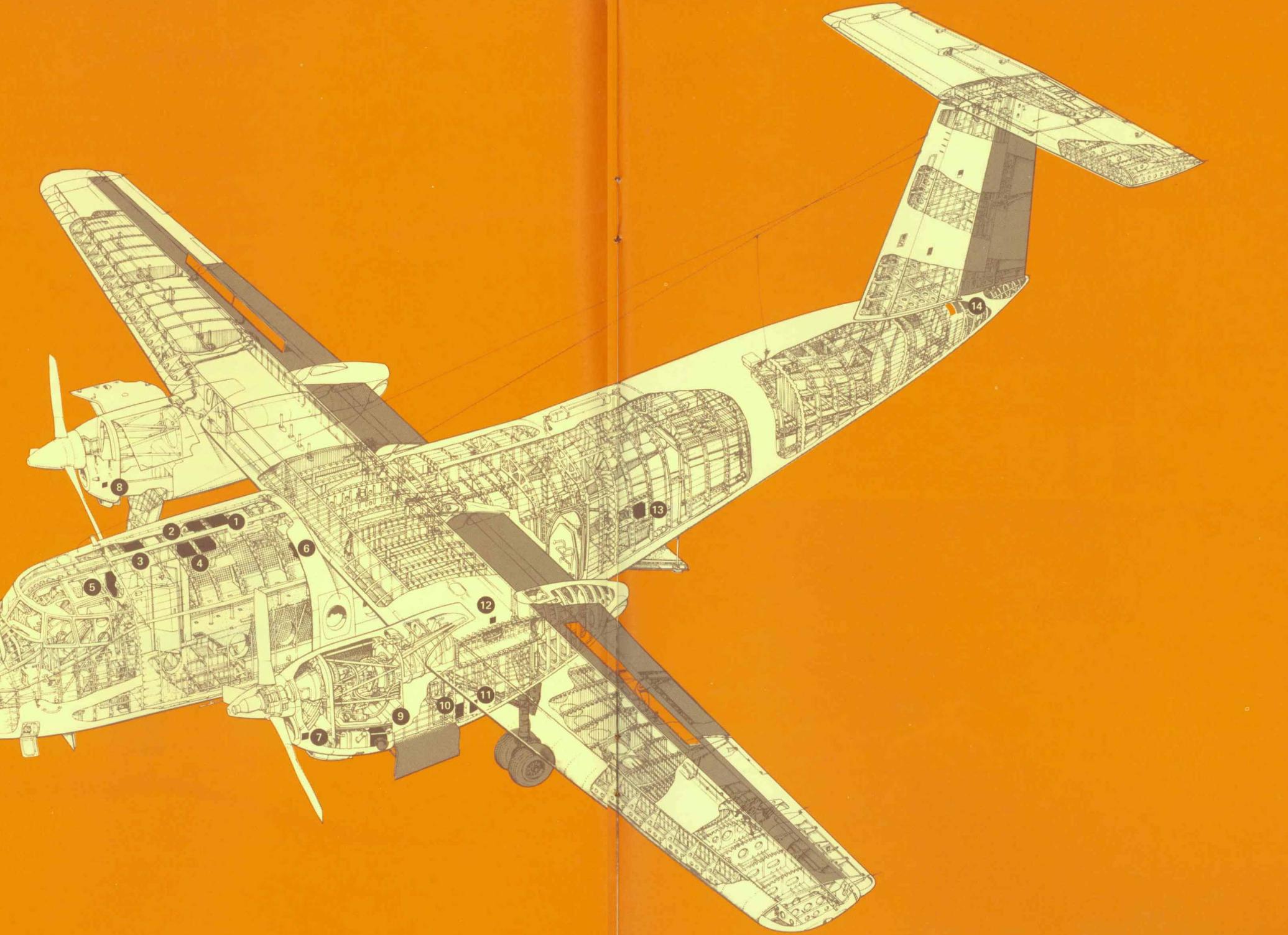
- comprising four tanks, two in each wing, with no fuel housed over the fuselage or undercarriage
- can be filled by gravity or by a single point pressure receptacle
- provision for installation of long range tanks in the fuselage for ferry purposes over 1800 miles (2897 km)

Electrical:

- power supplied by two AC generators, each one feeding separate distribution systems
- APU standby power
- includes a nickel-cadmium battery in a 28 volt DC system to supply power for the APU, fuel system and engine controls plus fire detection and extinguishing
- contains a variable frequency 110 volt AC system for propeller and spinner deicing, windscreen and miscellaneous heating, fuel booster pump and landing lamps
- duplication of all AC, 400 cycle and DC systems for safety

Hydraulic:

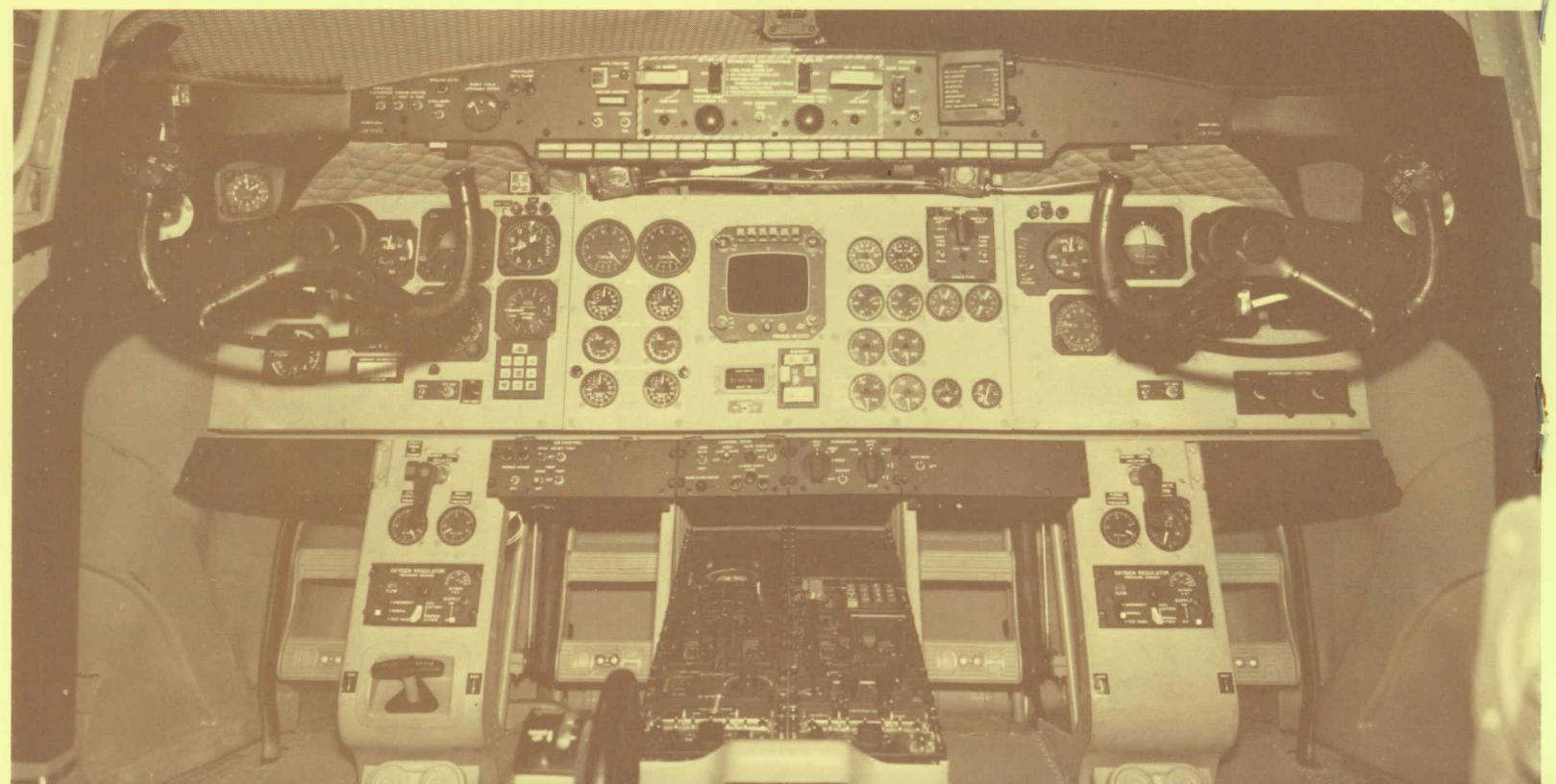
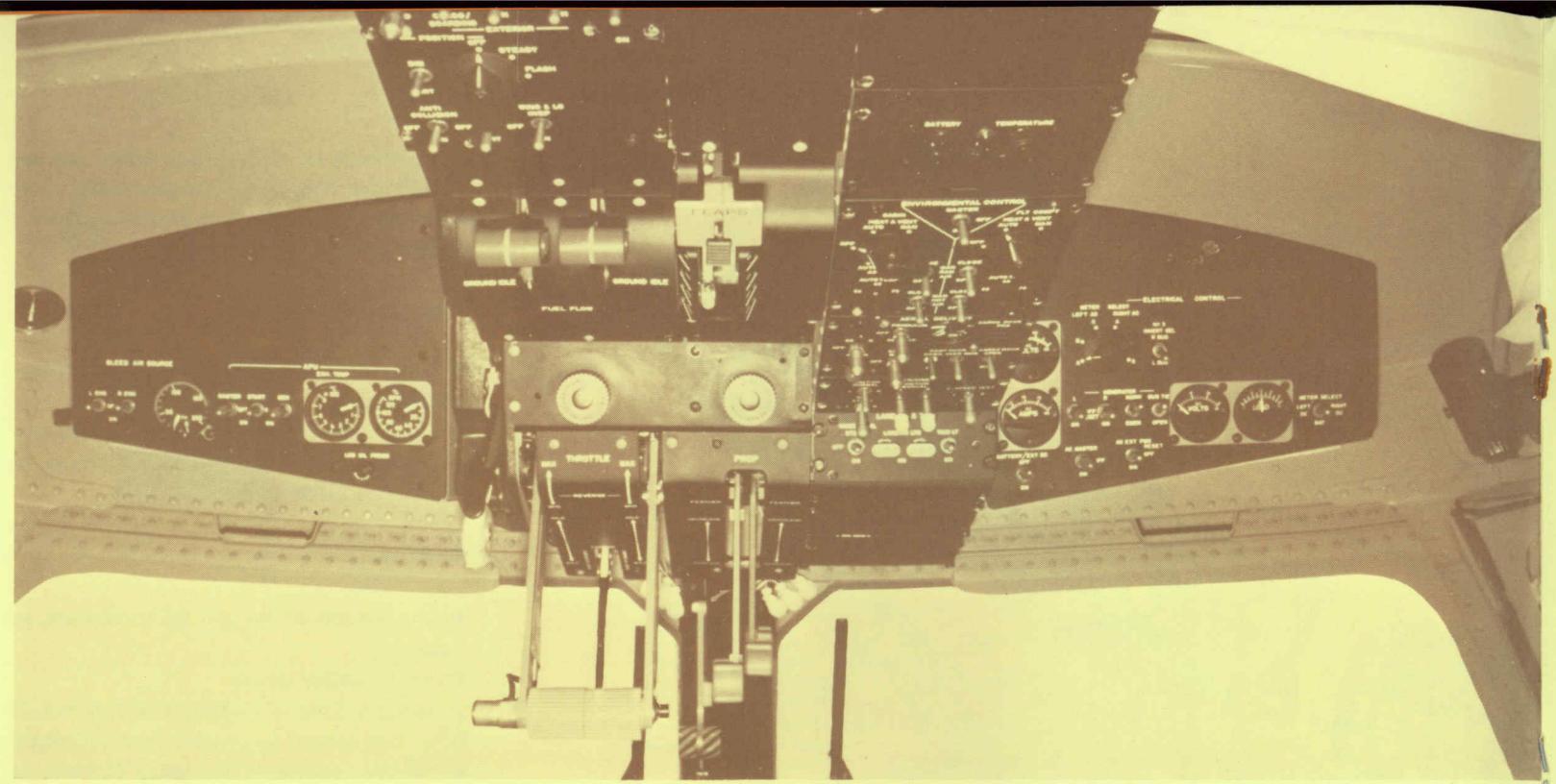
- made up of a utility and secondary system each one independent with conventional 3000 psi
- serviceable from five access areas
- emergency landing gear release system
- allows for operation of the utility system by an APU-mounted pump for cargo handling and independent ground servicing



Crew Compartment

. . . the many outstanding and varied capabilities of the Buffalo extend into the flight compartment, which is equipped to handle any type of flying mission. Proper layout and functional design are the basis for this crew compartment:

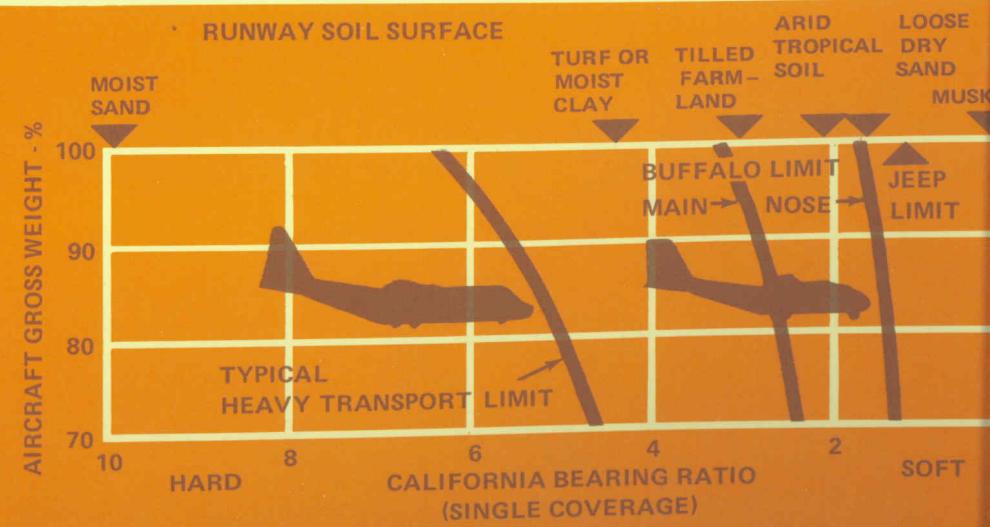
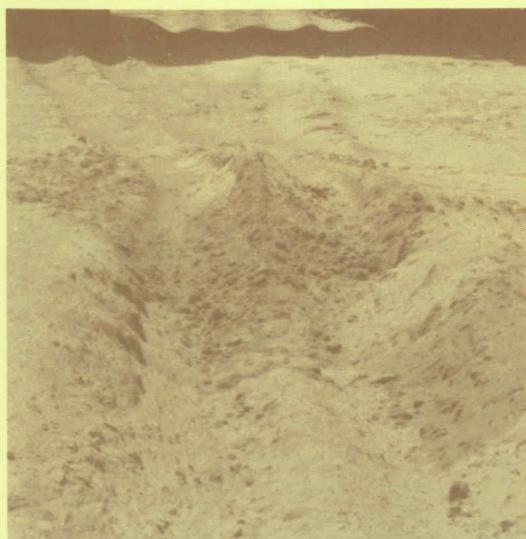
- it is wide and spacious
- it accommodates two pilots but has been designed so that STOL maneuvers can be easily performed by one
- the instrument panels are in shock-mounted frames and are easily accessible for servicing, removal and installation
- a jump seat for a third crew member is provided
- compartment entry is through the cabin doorway or the hatch in the flight compartment floor
- it has an overhead hatch in the canopy above and behind the pilot's position to give easy access to upper surfaces
- a comprehensive selection of electronics can be accommodated to suit customers' requirement



Soft Fields

. . . if a jeep can drive at 40 miles (64 km) per hour over a selected tract of land, a Buffalo can safely land and take off from that same area. De Havilland Canada has shown that:

- an undercarriage designed to operate at a CBR of 3.5 or less will permit considerable latitude in choosing unprepared or semi-prepared ground
- the Buffalo, unlike conventional transport aircraft, is not likely to damage natural soil surfaces because it is designed for this purpose
- a field with CBR-8 may be used for several hundred landing and takeoff cycles
- a Buffalo in STOL mode (41,000 lb, 18,597 kg), 45 psi (311 Kpa) tires can operate on single pass where a jeep can just get traction in 4-wheel drive (CBR-1.5)

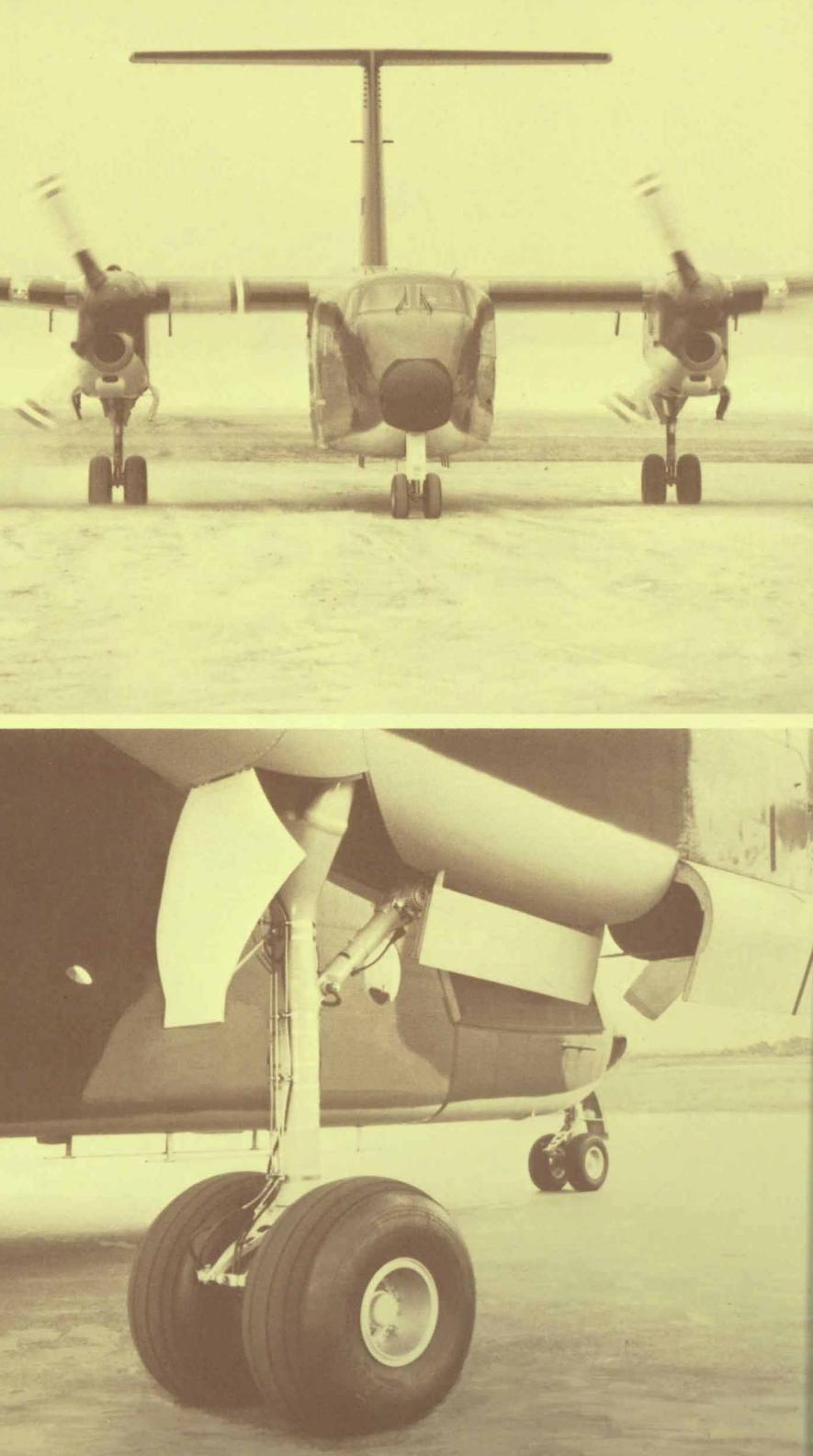


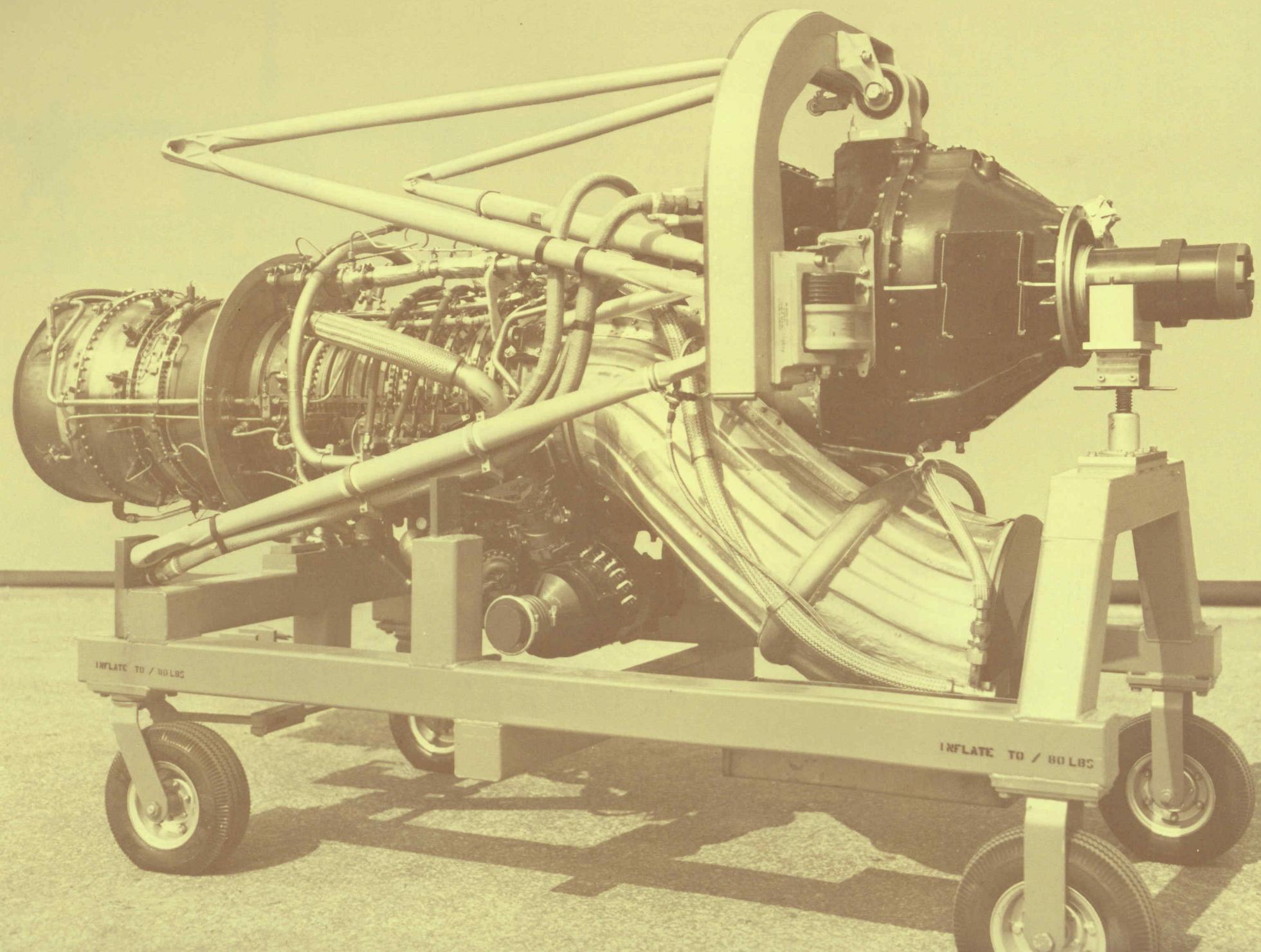


Landing Gear

. . . a multi-purpose transport aircraft operating in remote areas and under STOL conditions must have a unique landing gear design to accommodate firm touch-downs following steep precise approaches into selected unprepared short air-strips. It must also have unique characteristics for taxiing over rough or soft or slippery ground, in adverse winds, whether the aircraft is empty or fully loaded. The Buffalo landing gear combines all of these features:

- long stroke, two stage air/oil shock struts that provide high energy absorption for touch-down, and firm response for taxiing and loading
- wide track and long wheel-base provide stability during ground manoeuvring
- two large, low pressure tires on each leg which absorb airstrip surface irregularities beyond the capabilities of conventional transports
- hydraulically operated nose-wheel steering
- anti-skid brakes plus an independent emergency back-up braking system to ensure consistent short landing distances and maximum safety





Powerplants

. . . the Buffalo's safety, outstanding airfield performance under all conditions plus its ability to successfully maintain the role of multi-purpose STOL transport is a result of the following combination of powerplant components:

The engine:

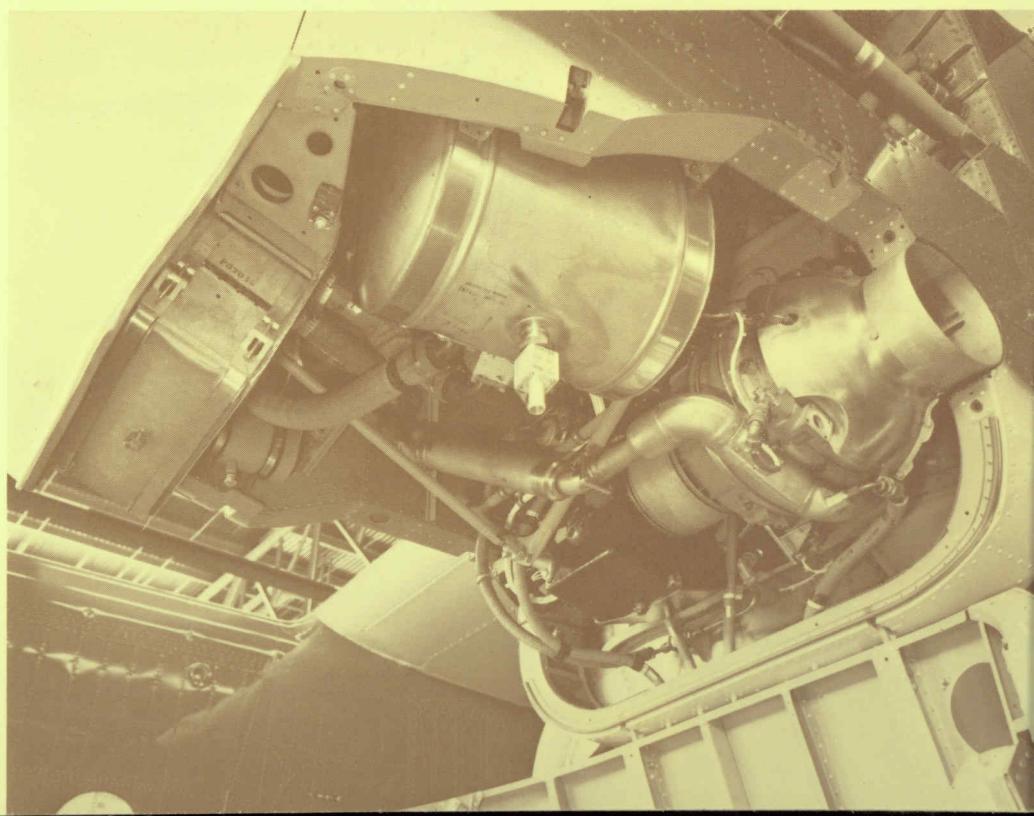
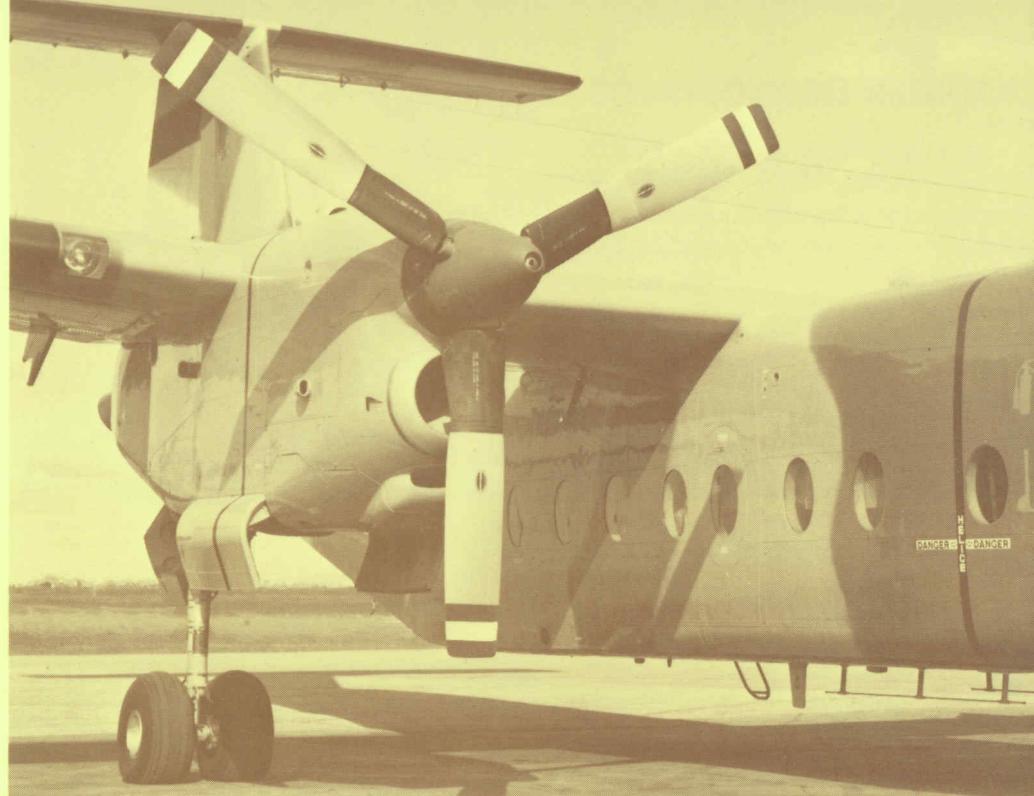
- highly successful, modern General Electric CT64-820-4, free turbine turboprop
- 3133 SHP for takeoff
- low weight plus outstanding specific fuel consumption
- flat rated to 30°C (86°F) provides unexcelled hot and high altitude performance
- reduced temperature operation to provide great reliability, increased TBO and lower maintenance costs
- no dependance on water/methanol

The propeller:

- reliable Hamilton Standard 63E60-25 constant speed, full feathering
- Beta control which provides consistent and improved steep approaches and shorter landing distances in STOL operations
- proportional pilot controlled reversing to assure excellent deceleration and control on the ground
- deicing on the spinners, cuffs and blades
- duplicate mechanical and electrical feathering systems that provide auto feather or manual selection in the event of a failed engine

The APU:

- well proven Solar T-62T-40-5 gas turbine
- provides power for main engine starting, ground operation, on board environmental control and other utility functions including the hydraulic cargo winch operation
- operates on the same fuels as main engines
- has high reliability and reduced costs which combine to further enhance the self-contained feature of the Buffalo



National Development

. . . primary tasks for the Buffalo exist in countries where major national development programs are underway, and generally in regions well beyond existing transportation systems. For example, the de Havilland Buffalo:

- assisted earthquake victims in Guatemala by transporting grain supplies into a remote gravel airstrip with a usable length of 1,350 feet (411m)
- provided emergency relief to a flood stricken area in Sudan with 2 to 3 flights on each of 11 days into and out of a 1300 ft (396 m) long airstrip carrying 14,000 lb (6350 kg) of supplies on each trip
- enables the air forces of other South American and African countries to assist in development of remote areas especially in the area of road construction
- performs an important role in such difficult operations as oil pipeline construction, and remote base resupply



Summary

The de Havilland Buffalo:

MULTI-PURPOSE STOL TRANSPORT:

- Simple, Sturdy, Dependable
- Large cabin; rear loading; airdrop
- World deployment capability
- 250 kt/463 km per hour high cruise speed
- Fuel efficient General Electric CT64-820-4 turboprop engines
- Unexcelled HOT and HIGH Performance

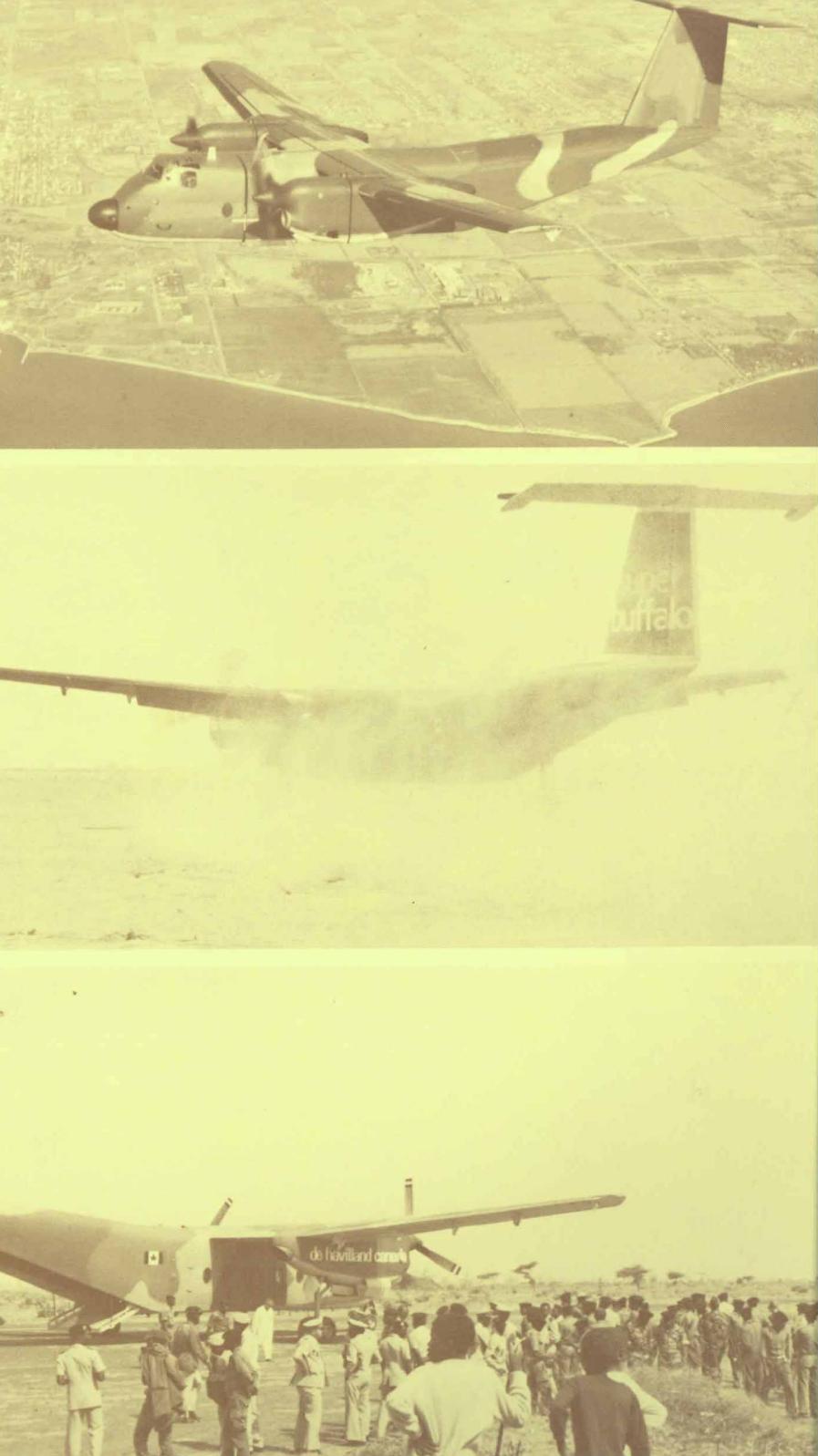
STOL MISSION PERFORMANCE

- Payload - 12,000 lb/5443 kg
- Range with full payload - 350 nm/648 km
- 1300 ft/396 m-airstrips; selected unprepared surfaces
- Steep approach and climb out; maneuverable at low flight speeds

TRANSPORT MISSION PERFORMANCE

- Payload - 18,000 lb/8165 kg
- Range with full payload - 600 nm/1113 km
- 3000 ft/914 m-airstrips, firm, smooth surfaces

THE BUFFALO — MOST CERTAINLY THE ANSWER FOR A RUGGED, MEDIUM RANGE, MILITARY OR CIVIL TRANSPORT AIRCRAFT





the TRANSPORTER



the New Civil Transport Aircraft

Based on the world-wide success of the Buffalo, which has accumulated hundreds of thousands of flying hours under widely varying conditions, de Havilland Canada decided to develop, certificate and produce a commercial variant of the basic Buffalo. This civil version of the Buffalo is most suited for application to world-wide, non-military national development programs. It can operate with full payload in all climates and environments including hot and/or high altitude plus Arctic/Antarctic conditions. It is called the Transporter.

This aircraft is a rugged cargo transport rapidly convertible to a passenger role or to carry combinations of freight and passenger traffic. It incorporates all of the improvements and excellent features of the Buffalo including bulk cargo handling, rear loading and air drop. In areas of performance, maneuverability, maintainability, safety and economy the Transporter, like the Buffalo, remains in a class by itself.

In addition to civil certification by the Canadian Department of Transport in accordance with CAR 4B and SR 422b for commercial operations, the Transporter differs from the Buffalo only in that all provisions for military support operations have been deleted.

The Transporter aircraft brings to national development programs and difficult commercial operations all of the Buffalo capabilities, within transport certification standards, which are not available in any other aircraft of comparable size.

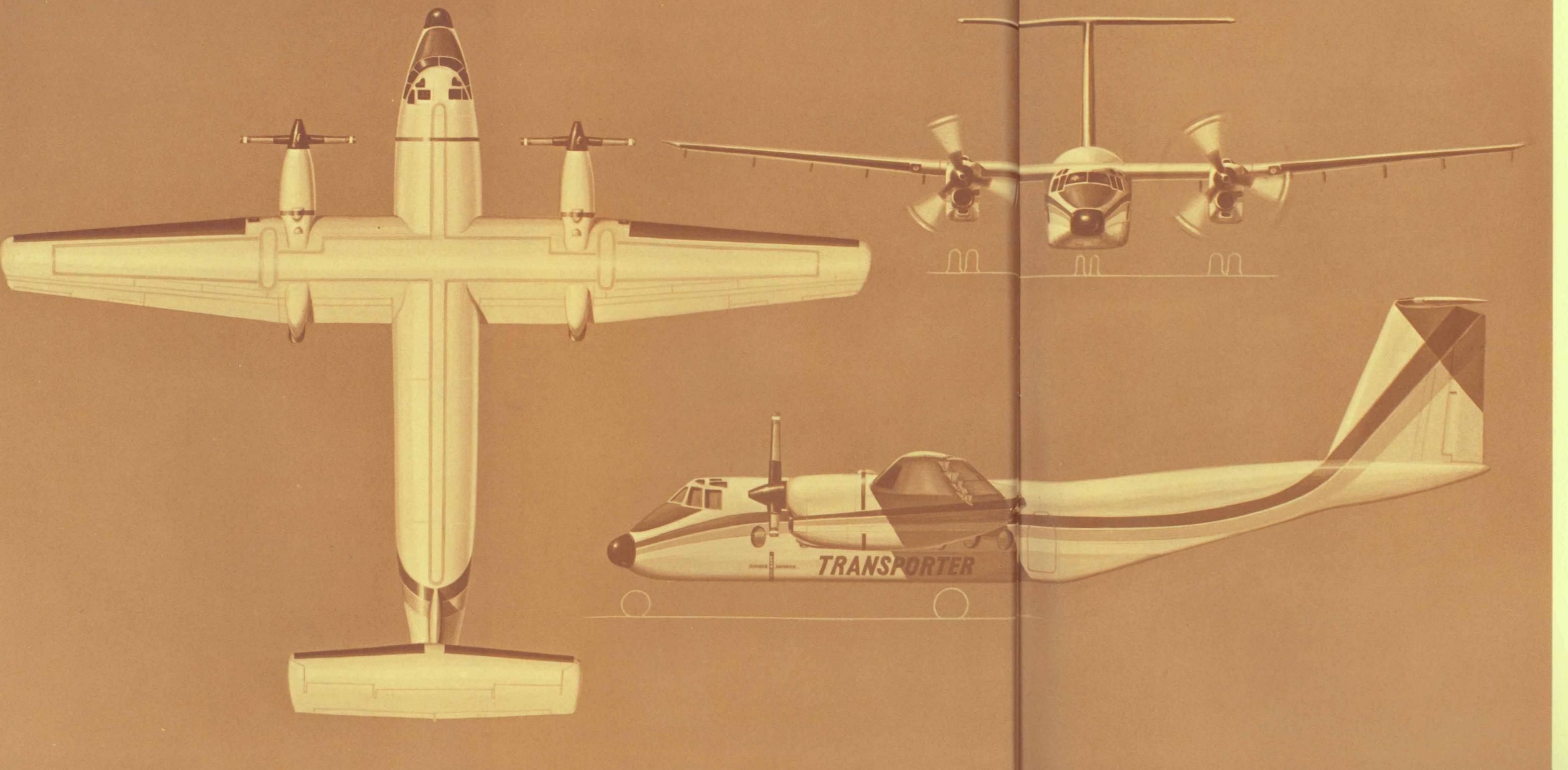
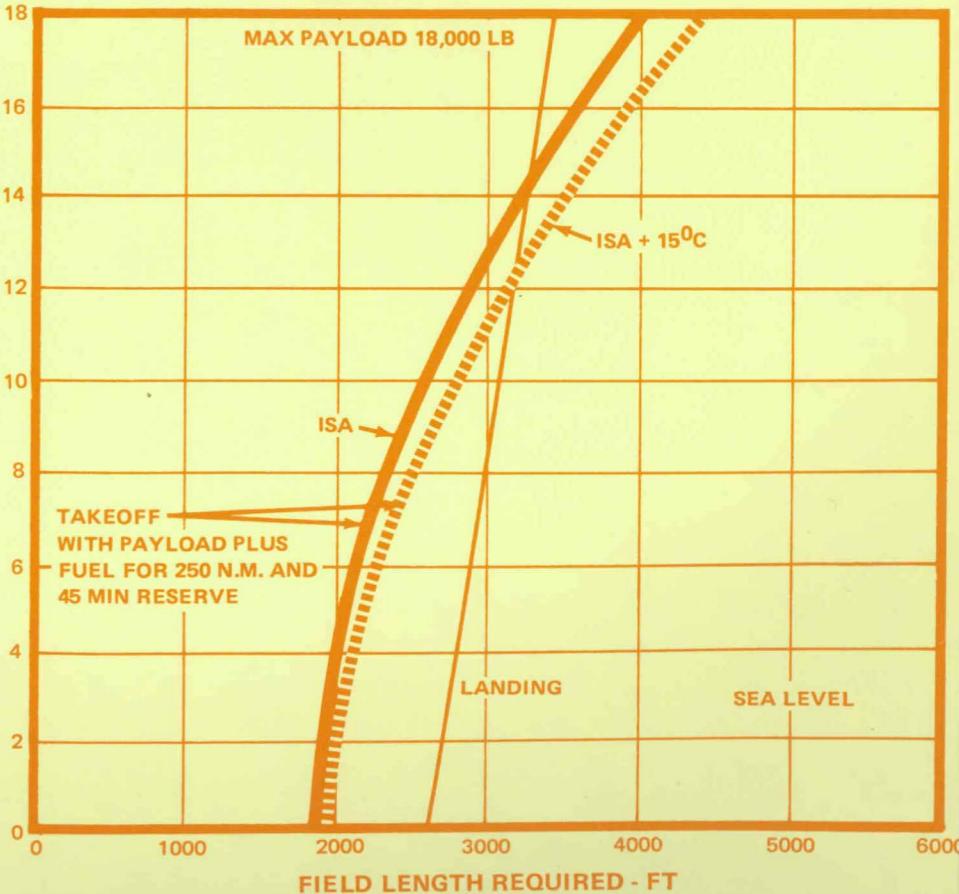


Leading Particulars

Cabin Data	
Length (to ramp hinge)	31 ft 0 in./9.95 m
Width (maximum)	8 ft 9 in./2.67 m
Width at floor	7 ft 8 in./2.34 m
Floor area	238 sq ft/22.12 m ²
Height (at center line)	
-Aft of Wing	6 ft 10 in./2.08 m
-Forward of Rear Spar	6 ft 6 in./1.98 m
Volume (Rectangular)	1580 cu ft/44.8 m ³
Seats-No./Pitch	44/30 in. (76.2 cm)
Door Dimensions	
Rear door - Width	92 in./2.34 m
- Height	82 in./2.08 m
Side doors - Width	33 in./0.89 m
- Height	66 in./1.68 m
Propellers	
Hamilton Standard 63E60-25,	3-blade, feathering, reversing
Auxiliary Power Unit	
Solar T-62-T-40-5	
Gas Turbine providing bleed air,	
electrical and hydraulic power	
for ground operation	

Remote Airfield Performance

U.S. SR422B Regulations for Turbine-powered Transport Category Aircraft





Cargo capability

Heavy cargo loading into the Transporter is facilitated by the large, two-section rear door/ramp which is fully adjustable and allows total access to the rectangular cargo compartment. The basic sill is at truckbed height. The folding seats allow for easy changeover to the cargo configuration and two ramp extensions are provided for easy vehicle loading onto two floor treadways. To add to the overall ease of cargo handling, roller conveyors and an optional integral cargo winch are provided. These cargo features plus the ability of the Transporter to safely use short, unprepared airstrips means a quick, economical, efficient turn around for any flying mission.

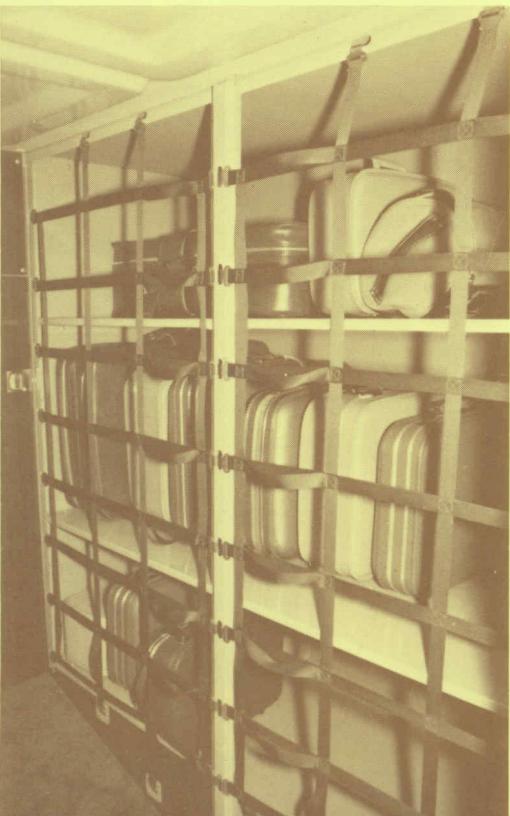




Passenger Appeal

Transporter passengers are comfortable in a wide, spacious, air conditioned interior with 6½ feet of headroom and a generous centre aisle. Seating for forty-four people in a four abreast arrangement is provided in the standard interior with all seats having 30-inch (76.2 cm) pitch. Large windows and the high wing allow for maximum, unobstructed passenger visibility. Optional, roomy, overhead baggage racks are provided which fold up to clear cargo in the alternate role. A quickly removed and stowed draft-proof curtain is provided for use at the rear of the passenger compartment and an optional hardwall toilet can be installed in the forward left-hand corner behind the crew compartment. Easy cabin entry and exit is aided by an airstair door and four emergency exits are provided to add to the overall safety of the Transporter.





Options

A wide range of installations for the Transporter can be provided to comply with customers' special requirements including a well appointed V.I.P. interior, a hardwall passenger interior, and increased cabin air-conditioning. Additional seating can be installed on the ramp door, a baggage stowage area can be provided and alternative language markings can be applied both inside and out. In place of the acrylic paint, a choice of either urethane or epoxy paint is available for the external finish.

The list of standard options includes AC and DC power outlets, winch installation, long range fuel system, alternative type hardwall toilet and a third 400 HZ AC inverter.

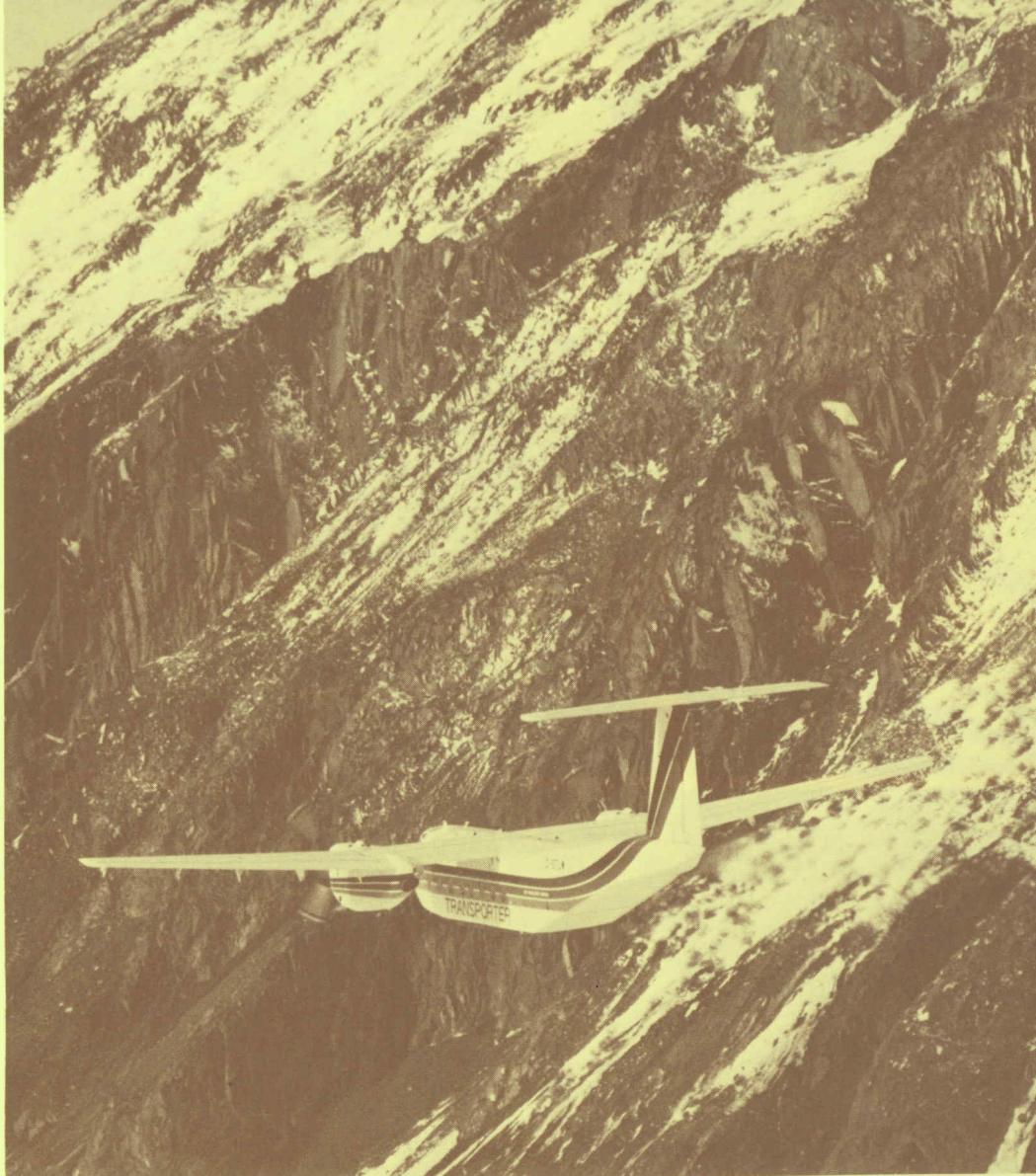
Summary

The de Havilland Canada Transporter:

THE NEW CIVIL TRANSPORT AIRCRAFT

- Convertible, self-contained, high performance in rugged environments
- Large cabin; rear-loading; airdrop
- Superior functional design and layout
 - Passenger and crew
- 44-48 passengers
- Full payload operation in hot and/or high conditions
- Soft-field operation which is unmatched by any competitive aircraft
- 9 Tons of payload
- Fuel efficient General Electric CT64-820-4 turbo-prop engines
- Unexcelled control and maneuverability at low flight speed
- Impressive family heritage
- World-wide national development capability

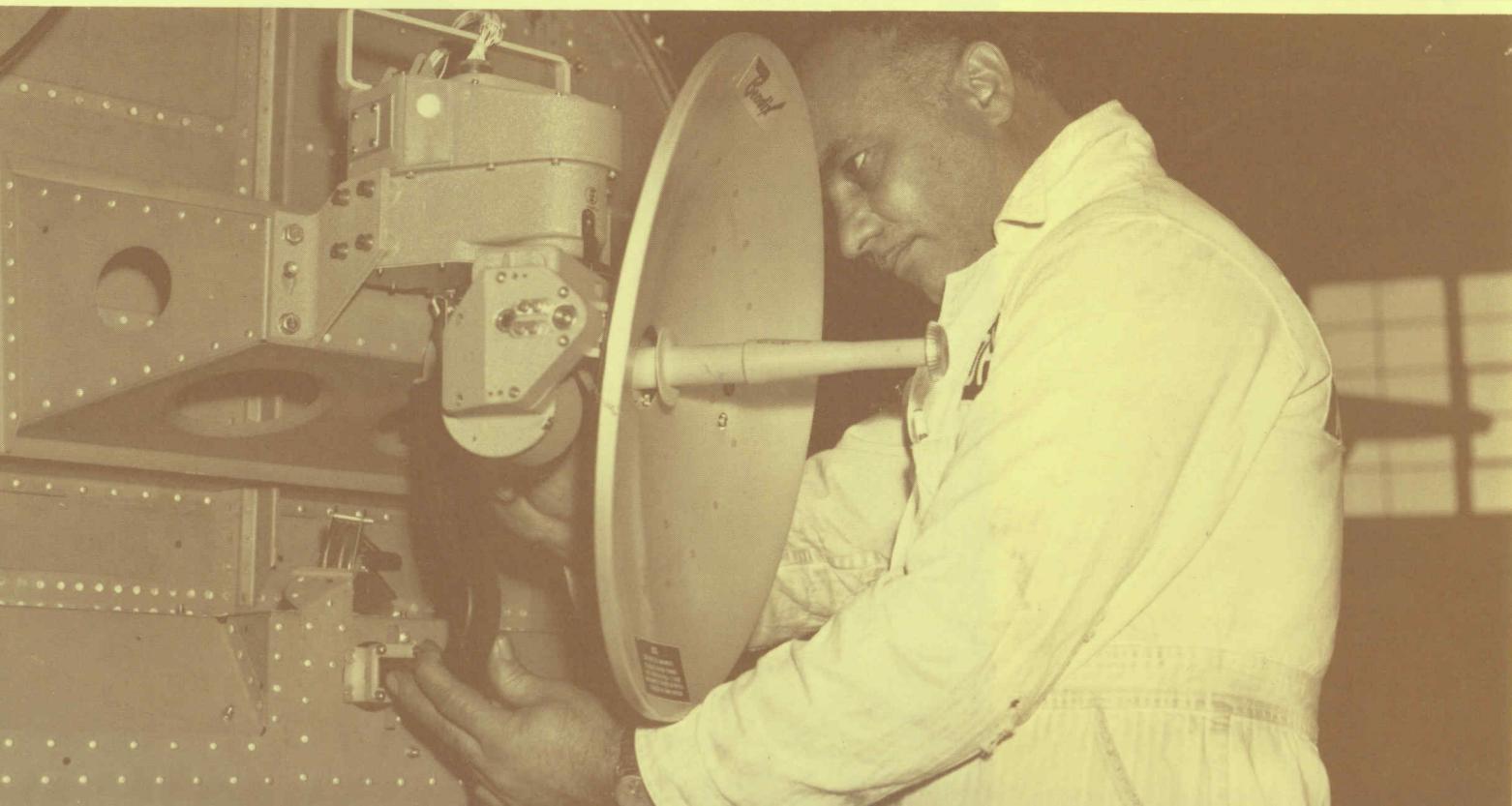
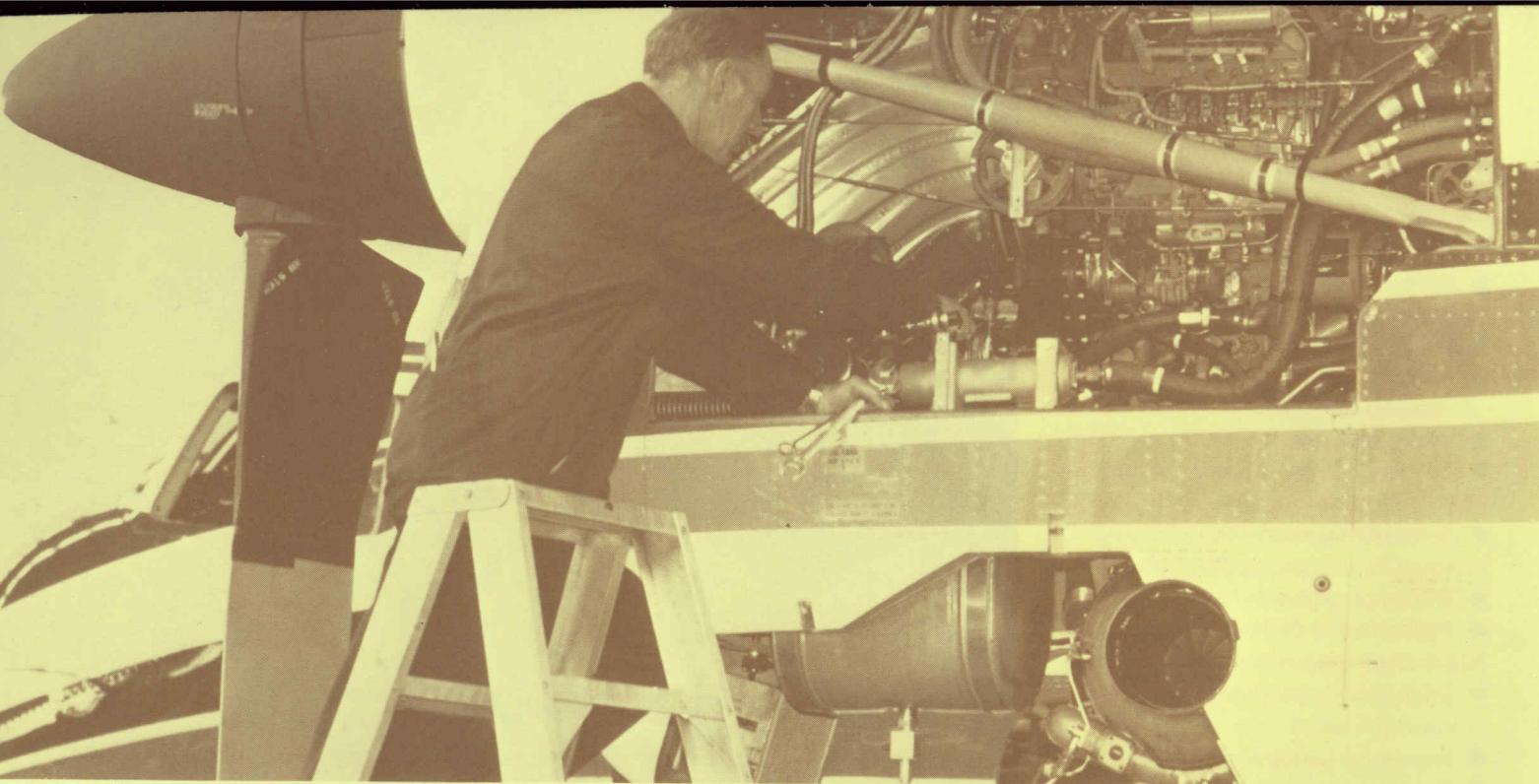
TRANSPORTER – THE LOGICAL CHOICE FOR A CIVIL, MEDIUM WEIGHT, MULTI-PURPOSE TRANSPORT AIRCRAFT



Maintenance

The Buffalo and Transporter are designed to meet the demands of a multi-purpose STOL transport capable of operating from an improvised field under extreme environmental conditions. To this end, de Havilland has incorporated the following in the Buffalo/Transporter design:

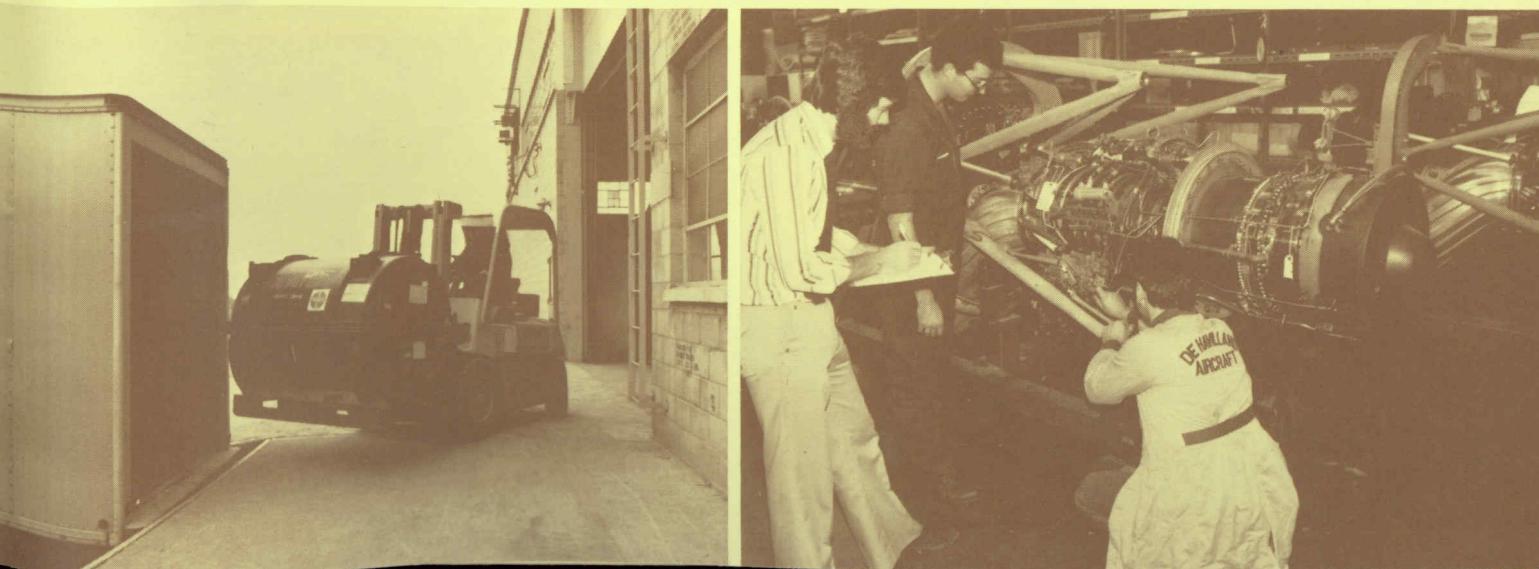
- simplified inspection, maintenance and repair of components
- maximum accessibility to all locations for adjustments, inspection, tests or servicing
- minimal use of special tools and external aids
- the APU which eliminates the need for start carts or ground electrical, hydraulic and bleed air supplies
- turbine engines which greatly reduce maintenance manhours
- much field experience behind present production which means "no risk" for commercial operators



Product Support

It is de Havilland's policy to monitor each aircraft sale from the earliest proposal stage to the integration of the aircraft into its operating environment and to provide total support throughout the service life of the aircraft:

- recommendations for spare parts provision and ground support equipment
- liaison and spares support
- training courses for flight crews and ground personnel
- technical specialist assistance; problem analysis and advice
- supply of training aids, technical publications and information
- warranty administration
- preparation and supply of special repair data
- engineering cognizance and responsibility for continuing maintainability and reliability programs
- twenty-four hours per day spares department





de Havilland's STOL family



The home of de Havilland products since 1929 is DOWNSVIEW Airport in North Toronto. The manufacturing buildings and head offices total over a million square feet of working space. The main facility, on the Southern perimeter of the airport was recently enlarged to include a new production bay and computer centre.

The de Havilland Aircraft of Canada Limited is a name of long standing in the aviation world. Over the past thirty years, the Company has designed, developed and manufactured a unique series of successful STOL transports for general purpose duties. Many of the 3500 units produced during that time have been delivered to military and national development services around the world, where their capabilities have provided the most cost-effective means available of meeting logistic transport requirements in the STOL transport role.

From the single-engined Beavers and Otters, to the larger Caribou and Buffalo /Transporter, the emphasis has been on rugged design and superior handling characteristics. This approach has led to features including self-containment and the ability to operate in all climates and airfield conditions. Building planes for the development of Canada's northland has made de Havilland world leader in STOL. The Transporter/Buffalo is an outgrowth of this vast experience and adds a new short haul carrier to civil, military and national development support arm.





DE HAVILLAND
AIRCRAFT OF CANADA, LTD.
DOWNSVIEW, ONTARIO, CANADA
M3K 1Y5
Telephone (416) 633-7310