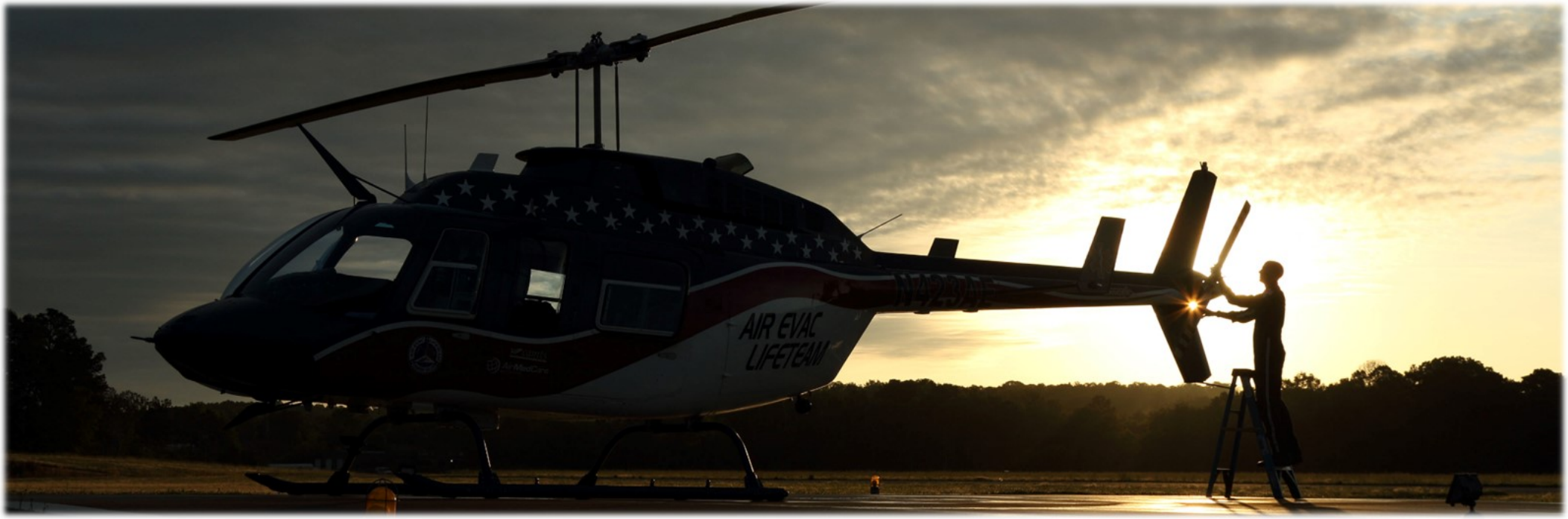
THE *little* Engine THAT *could*

The story of the M250



In the beginning

The Army launched an engine competition in 1957 for the Light Observation Aircraft (LOA) to replace the Cessna O-1A Bird Dog. The Army was unsure whether to specify a fixed- or rotary-wing platform, but, knew they wanted turbine power. In June 1958 General Motors Corporation Detroit Diesel Allison Division was selected over Lycoming and Garrett to begin work on designing a 250 shp engine, to be developed in both turboshaft and turboprop variants. The original design target of designing a 250 shp engine weighing only 98 lbs was soon superseded by a new target of 317 shp and 109 lbs, to ensure sufficient hot and high performance.

Hughes OH-6A - Winner

Hughes was awarded a contract for the first batch of 714 helicopters, deliveries of which commenced at the end of 1965. Follow-on orders would soon boost this requirement to 1,434 aircraft. Production deliveries of the uprated 317 shp T63-A-5A commenced in December 1965, with the OH-6A entering Army service in 1966.

Bell HUL-1M3 – first M250 flight but lost the competition

The first prototype Model 250 engines (military designation T63) were run in April 1959, and first flight of a YT63-A-3 prototype engine in a Bell HUL-1M (a Bell 47 variant) took place in February 1961.

- These two Aircraft, plus a third competitor, the Hiller Fairchild OH-5, all went on to become civil aircraft
- The Hiller Fairchild OH-5 became the first M250 powered aircraft with FAA certification

The beginning continued

For its part, Fairchild Hiller also adapted its losing LOH design, the OH-5, into a successful civil variant, the FH 1100. Powered by the 317 shp Model 250-C18, the FH 1100 became the first M250 A/C to receive Federal Aviation Administration (FAA) certification in May 1964,with deliveries commencing in June 1966. Over 240 FH 1100s were built.

Bell immediately went to work on redesigning its OH-4 design as a commercial product, designated the Model 206A Jet Ranger. First flight of the new five-seat civil helicopter was achieved in January 1966, with deliveries commencing a year later.

Recognizing the potential of the Model 369 design, Hughes soon began developing a commercial version of the aircraft, and by November 1968 the civil Hughes Model 500 had entered production. Based on the OH-6A, but utilizing the more powerful 317 shp Model 250-C18.

57 different FAA Approved models

"Can I tell you about a few items that aren't on the menu?"

Series I turboshaft:
250-C10 (T63-A-5)
250-C10B (T63-A-5A)
250-C10D (T63-A-700)
250-C18
250-C18A
250-C18B
250-C18C
250-C19
225-C10
225-C10A

Series I turboprop:
250-B15A
250-B15E
250-B15G
250-B17
250-B17B

Series II turboshaft:
250-C20
250-C20B
250-C20C (T63-A-720)
250-C20F
250-C20J
250-C20S
250-C20R
250-C20R/1
250-C20R/2
250-C20R/4
250-C20W
250-C300/A1
250-C300/B1

Series II turboprop:
250-B17C
250-B17D
250-B17E
250-B17F
250-B17F/1
250-B17F/2

Series III turboshaft:
250-C28
250-C28B
250-C28C

Series IV turboshaft:
250-C30
250-C30G
250-C30G/2
250-C30M
250-C30P
250-C30R (T703-AD-700)
250-C30R/1 (T703-AD-700B)
250-C30R/3
250-C30R/3D
250-C30R/3M
250-C30R/3M7
250-C30S
250-C30U
250-C40B
250-C47B
250-C47B/8
250-C47E
250-C47E/1
250-C47M
250-C47E/4

M250 & RR300 Production facts

- More than 33,000 engines have been built
- Peak production in the 1970s & 80s saw `200/month
- Engine type has passed 260 million service hours
- >4,000 civil helicopter users flying M250-powered aircraft in over 130 countries
- 155 military and paramilitary operators in 105 countries
- In all, over 17,000 engines are still flying all around the world today

as of 31-Dec-2020				
	Designation	Type	Total Production	Total Flight Hours
Series I	B15/B15G	turboprop	95	384147
	T63-A-5/A	turboshaft	2515	9330870
	C18/T63-A-700	turboshaft	3895	26467660
Series II	B17/B17F (all)	turboprop	1585	11418848
	C20/T63-A-720 (all)	turboshaft	15814	152602603
	C20R (all)	turboshaft	1107	7671272
Series III	C28 (all)	turboshaft	879	9113534
Series IV	C30 (all)	turboshaft	3781	31598552
	C40B	turboshaft	305	2198148
	C47 (all)	turboshaft	2052	14127850
			32028	264913484

as of 31-Dec-2020				
	Designation	Type	Total Production	Total Flight Hours
Initial	250-300A1	turboshaft	1236	1275384

Local Helicopters Working

Trivia Question: What is the significance of the three local news helicopters?

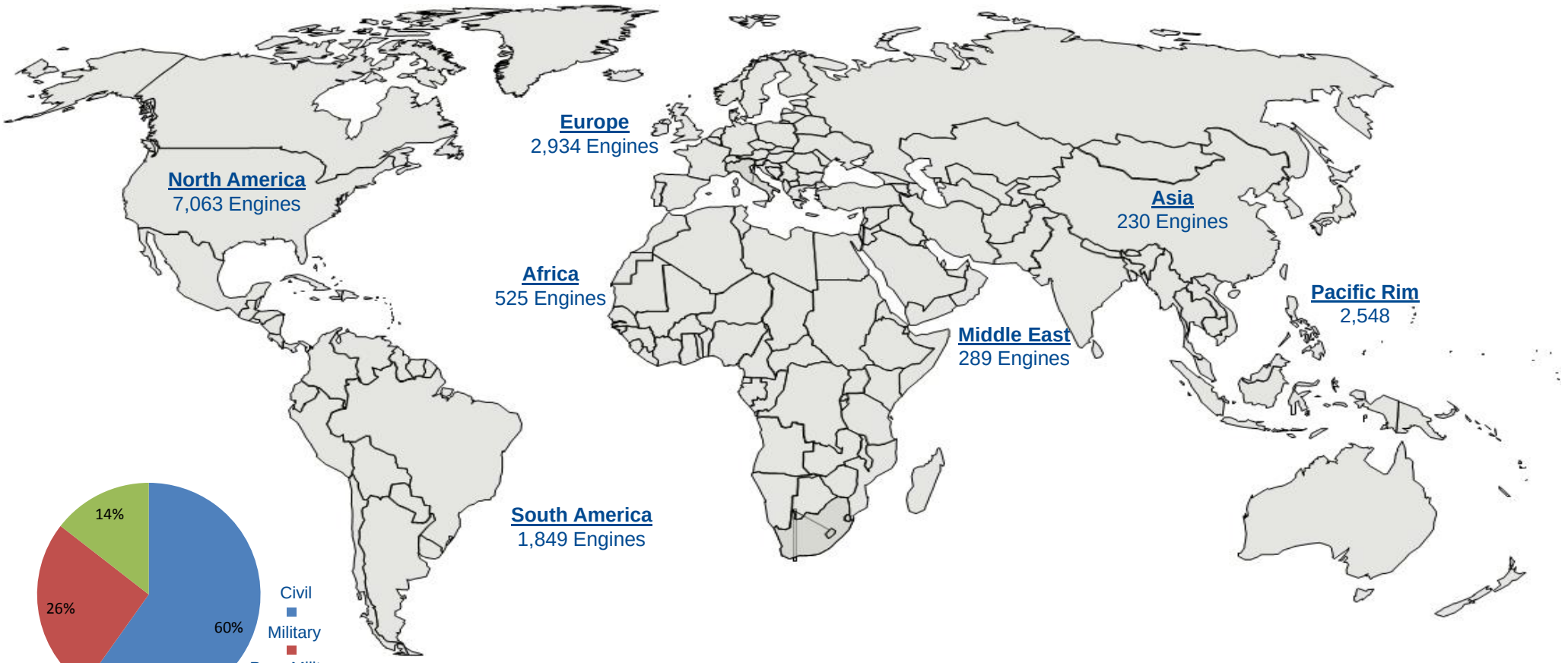
Indiana State Police – law enforcement

Lucas Oil – TV coverage / race communications / PR

PHI - EMS

Ch. 13
Ch. 6
Ch. 8
-ENG

Registered Fleets
M50 & RR300 all models



Rolls-Royce

The work we do matters

Here are some of the ways our engines support the communities we live in

What our engines do:

- **Military**
- **Fire Fighting**

What our engines do:

- **Law Enforcement**
- **EMS**

What our engines do:

- Heli Skiing
- Tourism
- Corporate Transportation
- Power line surveillance

What our engines do:

- Agriculture
- Airshows
- Right of way maintenance

What our engines do:

- **Training**

What our engines do:

- TV Coverage
- Wildlife management
- Border Patrol
- Christmas tree harvest

What our engines do:

- Deliver Santa Clause
- Drop Easter Eggs
- Oil Rig Crew transfer
- Cargo / Transportation

What our engines do:

- ...save lives

Never underestimate the importance of our work

Aerial oddities

Loral GZ-22
- **Crew:** 1
- **Capacity:** 10 passengers
- **Length:** 205 ft 6 in (62.64 m)
- **Width:** 47 ft 0 in (14.33 m)
- **Height:** 60 ft 2 in (18.34 m)
- **Volume:** 247,800 cu ft (7,017 m^3)
- **Gross weight:** 15,000 lb (6,804 kg)
- **Powerplant:** 2 × Allison 250-B17C turboprops , 420 hp (312.2 kW) each

Performance :
- **Maximum speed:** 65 mph (105 km/h, 56 kn)
- **Service ceiling:** 10,000 ft (3,050 m)

NORD 500
- **Crew:** 1
- **Length:** 6.58 m (21 ft 7 in)
- **Wingspan:** 6.14 m (20 ft 2 in)
- **Max takeoff weight:** 1,250 kg (2,756 lb)
- **Powerplant:** 1 × Allison T63 turboshaft, 236 kW (316 hp)

Performance
- **Maximum speed:** 350 km/h (220 mph, 190 kn)

Mississippi State University XV-11 Marvel
- **Crew:** 2
- **Capacity:** 2 passengers
- **Length:** 23 ft 3.75 in (7.1057 m)
- **Wingspan:** 26 ft 2.5 in (7.988 m)
- **Empty weight:** 1,958 lb (888 kg)
- **Max takeoff weight:** 2,620 lb (1,188 kg)
- **Powerplant:** 1 × Allison T63-A-5A turboprop, 316 shp (236 kW)
- **Propellers:** 2-bladed Aeroproducts Model 272 ducted fan, 5 ft 6 in (1.68 m) diameter

Performance :
- **Maximum speed:** 225 mph (362 km/h, 196 kn) at 15,000 feet (4,600 m)
- **Cruise speed:** 184 mph (296 km/h, 160 kn) range cruise at 15,000 feet (4,600 m)
- **Stall speed:** 60 mph (97 km/h, 52 kn)

A few unusual applications!

Bruce Linsmeyer collection – Avon Aero

- Lotus 56 STP #60
- Howmet Turbine McKee, Lemans Car
- Shelby turbine Indy car
- Indy Roadster #72
- Bonneville Streamliner

A few unusual applications!

Rolls-Royce Fixed Wing Experience

Windecker
Eagle

Aermacchi
L-90TP Redigo

Aermacchi
SF260TP

Ahrens
AR404

ASTA N22

GippsAero
Airvan 18

BN Group
BN-2T

BN Group
Defender4000

Brico
O-2ST

Cessna
O-2T

Cirrus
VK-30

Enaer
T-35

Equator
P400

Jingsu A-Star
EA500

FFA AS32T

FUJI
T-5

FUJI
T-7

General Avia
F20TP Condor

Glasair III

Goodyear
GZ22

Grob
G120TP

Rolls-Royce

Rolls-Royce Fixed Wing Experience


HAL HTT-34

Helio H370 Courier


Ruschmeyer
R90


Lo Presti
Swiftfire


Maule
MX-7-420

Gipps Air
Air Van 10


Cessna P210
Silver Eagle


Pacific Aerospace
CT-4C

Cessna 185


Cessna 206


Cessna 207


Tradewind Turbines
Bonanza A36


Tradewind Turbines
T-34


Vulcanair
AP-68


Vulcanair
SF600


AASI
Jetcruizer


Seawind


Aerostar Piper


RFB Fantrainer 400


Switzer Aircraft
RU38

Rolls-Royce

M250…
Creating power for air, sea, and land applications for over 60 years

Questions?