

Get on Board

TECHNICAL INFORMATION



**S-92**  
**Technical**  
**Information**

## The Sikorsky S-92 Program



The Sikorsky S-92 is designed to meet demanding performance requirements with safety and economy. The first and only helicopter designed to meet the latest FAA/JAA Part 29 regulations, the S-92 is safe, reliable and truly in a class of its own. For owners, operators, flight crews and maintainers, it offers state-of-the-art technology backed by the proud heritage of Sikorsky Aircraft. This technical brochure describes the general specifications of the S-92 for offshore oil, search and rescue, scheduled airline, executive transport, and general utility missions.

### **Performance**

The new-generation S-92 is a high-performance helicopter with an advanced rotor system, and the 5000+ installed horse power of twin General Electric CT7-8A turboshaft engines. It carries 19 passengers in airliner comfort 490 nm (907 km) or searches for a full hour 275 nm (510 km) from base to rescue six survivors and return to base with 30 minutes of reserve fuel. Certified at 26,150 lb. (11,861 kg) design gross weight with internal loads, and 28,300 lb. (12,837kg) with external sling loads, the S-92 has flown at weights to 31,000 lb. (14,065 kg) demonstrating performance. It's a proven robust helicopter.

### **Safety**

The new-generation S-92 is an eminently safe helicopter. Robust structures with redundant load paths provide long component lives and reliable operations. Owing to the flaw tolerant design of the S-92, dynamic components and airframe keep flying despite small, undetectable manufacturing flaws or in-service damage. Category A (Class 1) performance margins give S-92 pilots the choice to keep flying, continue a departure, or return to an elevated helipad with One Engine Inoperative. Integrated lightning, bird-strike, and turbine burst protection safeguard S-92 systems; and a crashworthy fuel system and structures protect lives in an emergency.

### **Maintenance**

The new-generation S-92 is a uniquely economical helicopter. With 80% fewer maintenance tasks than other helicopters and structures and systems designed for on-condition maintenance, the S-92 has significantly lower maintenance costs than competing helicopters\*. Health and Usage Management System (HUMS) is standard on the S-92; it monitors and captures all operational flight data while identifying system health issues. The onboard display of system data enhances safety of flight. Also, it allows preventive maintenance and maintenance planning, thereby minimizing maintenance labor and material cost. Engineered for supportability, the S-92 is easy to inspect and service, with maintenance flexibility built into its design.

*\*Based on data from "The Aircraft Cost Evaluator" by Conklin & de Decker.*

## A Global Partnership

Sikorsky is at the helm of a global partnership working together to design, build and support the S-92 to meet the needs of the worldwide helicopter industry. Sikorsky manufactures the advanced S-92 drivetrain and integrates all other parts and components at final assembly in the USA. Partners in the production of the S-92 include: Mitsubishi Heavy Industries in Japan; Aerospace Industrial Development Corporation in Taiwan; Gamesa in Spain; Jingdezhen Helicopter Group in the People's Republic Of China and Embraer in Brazil. Together, these companies provide sections of the aircraft that are assembled by Sikorsky in the USA. The latest computer-aided design and manufacturing technologies enable Sikorsky Aircraft and its global partners to tailor this new aircraft to specific user requirements. The S-92 is built to order, configured for your specific mission. Those missions include offshore oil transport, VIP transport, airline service, air cargo, utility and search and rescue operations. The S-92 sets new standards for helicopter performance, safety, and economy giving operators a superb way to fly.



**Aerospace Industrial  
Development Corporation (AIDC)**



**EMBRAER**



**Gamesa Aeronáutica**  
S O C I E D A D U N I P E R S O N A L



**MITSUBISHI**  
HEAVY INDUSTRIES, LTD.

**Jingdezhen Helicopter Group**



**GE Aircraft Engines**  
THE WORLD'S LARGEST PRODUCER OF JET ENGINES

**Rockwell  
Collins**

## General Specifications

### PERFORMANCE

*Standard Day, Sea Level at 26,150 lb/11,861 kg gross weight*

■ Maximum speed (Vne)	165 kts	306 km/hr
■ Maximum continuous cruise speed	153 kts	284 km/hr
■ Long range cruise speed	139 kts	258 km/hr
■ Range: offshore configuration (3,000 ft, ISA plus 10°C.)		
- with 19 passengers and 30-minutes reserve plus 10%	444 nm	823 km
- with 19 passengers and no reserve	544 nm	1,008 km
■ Maximum range with internal auxiliary fuel (370 gallons)	726 nm	1,345 km
■ Service ceiling	15,000 ft	4,572 m
■ Hover ceiling out-of-ground effect	7,125 ft	2,172 m
■ Hover ceiling in-ground effect	11,320 ft	3,450 m

### WEIGHTS

■ Maximum takeoff gross weight, civil configuration		
- internal load	26,150 lb	11,861 kg
- external load	28,300 lb	12,837 kg
■ Maximum external load	10,000 lb	4,536 kg
■ Weight empty, offshore oil	15,900 lb	7,212 kg
■ Weight empty, airline	15,600 lb	7,076 kg
■ Weight empty, search and rescue	16,200 lb	7,348 kg
■ Weight empty, 10-place executive transport	17,200 lb	7,801 kg
■ Maximum fuel load, (internal, standard)	5,130 lb	2,327 kg

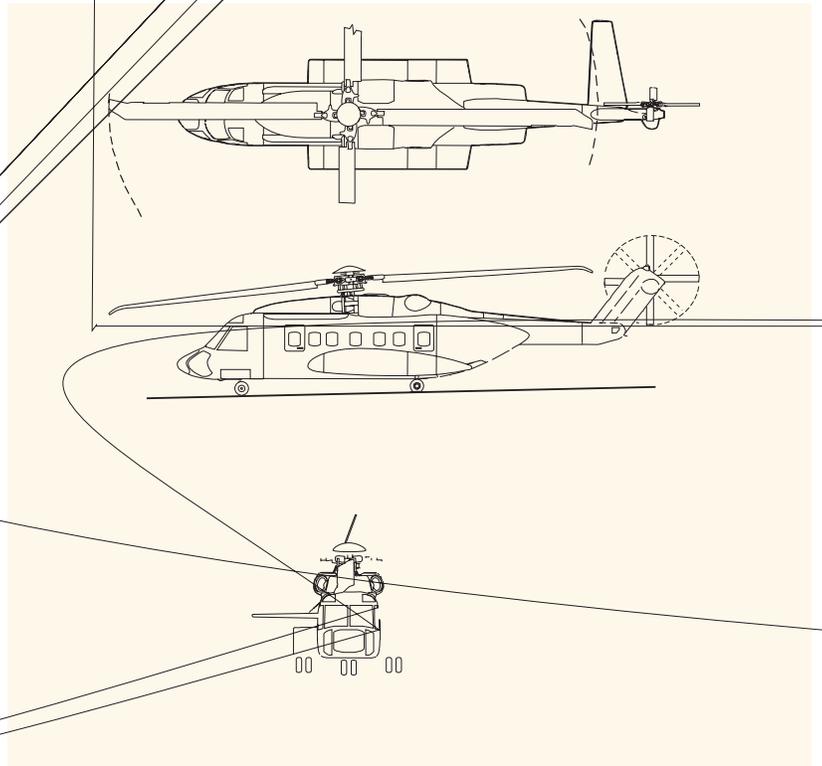
### GENERAL DATA

■ Crew seating capacity	2	
■ Seating capacity, airline-style seating	19-24 passengers	
■ Seating capacity, utility side facing seating	22 passengers	
■ Baggage compartment volume	140 cu ft	4.0 cu m
■ Fuel capacity (internal, standard)	760 US gal	2,877 L

### POWERPLANT RATINGS

*per engine, Standard Day at Sea Level*

■ Engine quantity and type	Two General Electric CT7-8A	
■ Twin engine takeoff	2,520 shp	1,879 kw
■ Twin engine, 30 minute	2,336 shp	1,742 kw
■ Maximum continuous	2,043 shp	1,524 kw
■ OEI, 30 second	2,740 shp	2,043 kw
■ OEI, 2 minute	2,523 shp	1,881 kw
■ OEI, continuous	2,498 shp	1,863 kw



## Safety Features

To ensure your protection, we designed the S-92 to meet the latest harmonized FAA and JAA Part 29 regulations – which have a long list of certification requirements. The S-92 is the first and only helicopter to meet these new standards.



## Equipment and Features

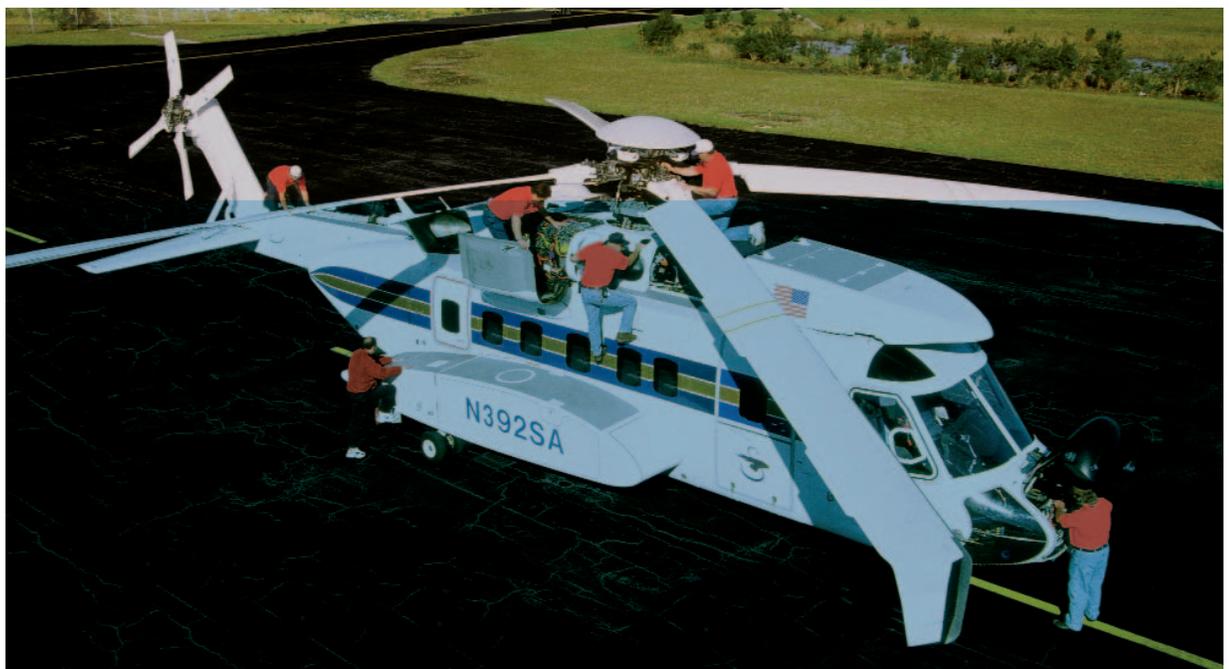
### Standard Configuration

#### AIRFRAME

- Active vibration control system
- Nose electronics bay with hinged door
- Heated windshields
- Windshield wipers (2) washer system
- Cockpit with openable clear view windows
- Jettisonable cockpit windows (2)
- Crashworthy pilot and co-pilot seats
- Crashworthy passenger seats
- 75 psf cabin floor (minimum)
- Four cabin emergency exits
- Ten double pane windows
- Upward-hinged upper/Airstair lower door
- Bleed air heat system (two zone)
- Chin and side window defogging system
- Ventilation system (two zone)
- Two exterior fuel sponsons
- Hydraulic-powered rear ramp
- Retractable tri-cycle landing gear
- Exterior aircraft tiedowns (6)
- Mixer work platform



*Built-in work platforms, hand- and footholds and walkways.*



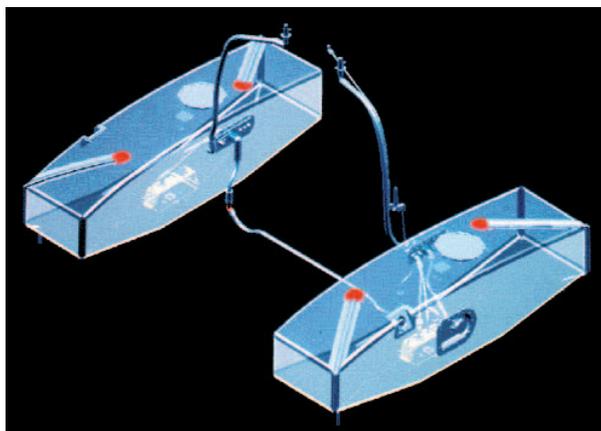
*Ideal for congested or remote airports, the S-92's built-in work platforms mean minimal ground support equipment for excellent maintainability.*

# Equipment and Features

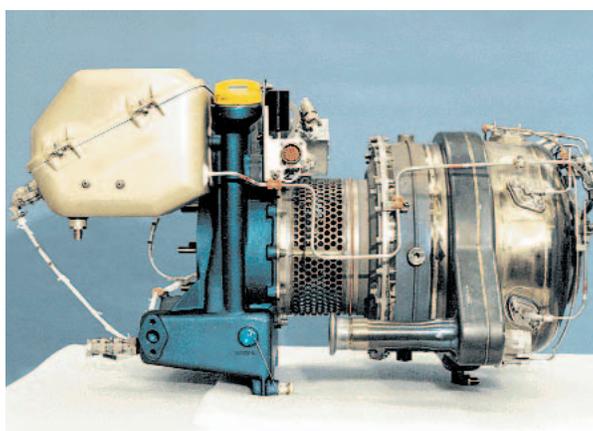
## Standard Configuration

### POWERPLANT AND FUEL SYSTEM

- Two General Electric CT7-8 engines with integral particle separators
- APU for engine start, ground power, heating, and in-flight emergency power
- Dual channel FADEC with autostart, power assurance and OEI training mode
- Dual suction fuel feed system with self-sealing breakaway valves and crossfeed capability
- Two crashworthy fuel tanks with a combined capacity of 760 gallons
- Engine and APU fire detection and dual extinguishing systems
- Single-point pressure fueling and defueling
- Dual point gravity refueling
- Low level fuel warning system
- Engine inlet anti-ice system
- External pneumatic ground start capability



*Isolated sponsons, suction feed and self-sealing breakaway valves enhance fuel system crashworthiness and passenger safety.*



*APU provides ground power and engine start, and is flight rated for emergency/supplemental power.*



*The GE CT7-8 engine, which is derived from the proven CT7/T700 family, has accumulated over 33 million hours of operation.*

## Equipment and Features

### Standard Configuration

#### TRANSMISSION

- Main transmission with two input/accessory modules
- Intermediate and tail gearboxes with interconnecting shafts
- Chip detectors with fuzz burn-off
- Low maintenance drive shafts
- Rotor brake
- Diaphragm-type tail drive couplings
- Vibration monitoring

#### ROTORS AND CONTROLS

- Four-bladed, articulated main rotor system with flaw-tolerant design and elastomeric bearings
- Composite construction main rotor blades
- Four-bladed flexbeam tail rotor
- Elastomeric main and tail rotor rod end bearings
- Rotor-mounted bifilar vibration suppression system
- Manual blade fold (two blades forward, two blades aft)
- Dual, redundant isolated pilot flight controls
- Dual, redundant, primary and tail rotor servos
- Tail rotor centering quadrant
- Dual, independent transmission-powered 4000 psi hydraulic systems
- Back-up, independent 4000 psi hydraulic system
- Redundant stability augmentation system with airspeed, attitude, and heading hold functions



*The S-92 main transmission features a unique planetary gear system, and utilizes advanced materials for long life.*



*The flaw-tolerant hub and yoke design provides unlimited life and improved safety, and the main gearbox incorporates advanced corrosion-resistant materials and coatings.*



*Unlimited life main rotor blades incorporate composite spar technology and utilize a swept, tapered anhedral tip. This design provides improved lift and maneuverability.*



*Anti-torque control is provided by unlimited life tail rotor blades with bearingless composite flexbeam. Pitch control links use elastomeric bearings.*

# Equipment and Features

## Standard Configuration

### AVIONICS

- Rockwell Collins glass cockpit with four multi-function displays
  - Primary flight instruments
  - Multi-purpose navigation display
  - Graphic engine instrument and caution/advisory (EICAS) display
  - Dual data concentrator units
  - Maintenance data computer
  - Diagnostics and health display
- Proline IV communications/navigation suite
  - Dual VHF communications
  - Dual VOR
  - DME
  - ADF
  - Transponder (Mode S)
  - Dual radio management Units
  - Dual audio control units
  - Dual air data computers
- ARINC-429 data-bus
- Dual AHRS
- HUMS
- Page/chime feature
- CVR/FDR
- Independent standby instruments — Attitude, Altitude, Airspeed, Heading, and Clock

### AUTOMATIC FLIGHT CONTROL SYSTEM

- Dual, digital AFCS with fully-coupled flight director

### ELECTRICAL SYSTEMS

- Two 75 KVA, 115V, 400 hz 3-phase, transmission-driven oil cooled main generators
- Two 400 amp AC/28VDC convertors
- 35 KVA air-cooled APU-driven backup generator
- 100 amp AC/DC backup convertor
- 28VDC, 15 amp-hour battery
- Upper anti-collision strobe light
- Landing lights
- Cargo loading light
- Controllable searchlight
- AC/DC cabin power receptacles
- Integral cockpit lighting
- Wide-area cabin lighting
- Emergency lights

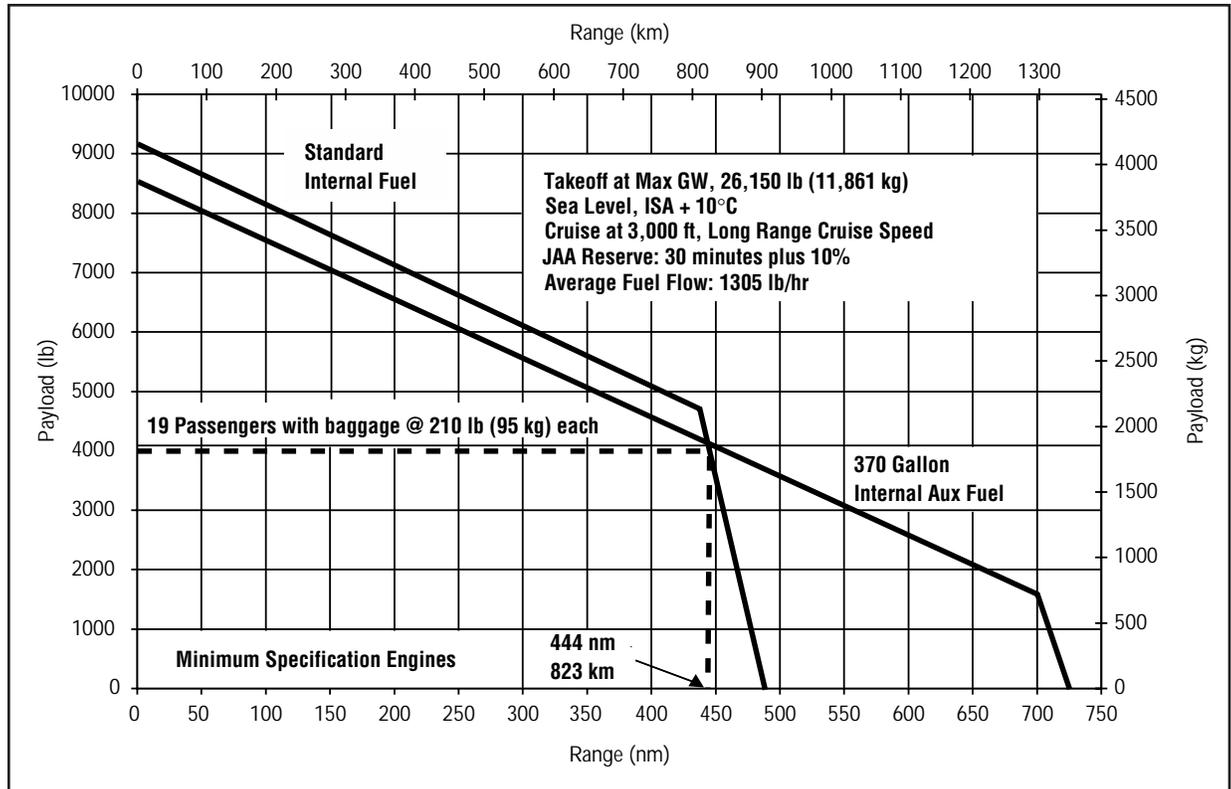


*The S-92 cockpit and display panel, shown here with an optional fifth liquid crystal multi-function display.*



## Mission Performance

### Offshore Oil Configuration

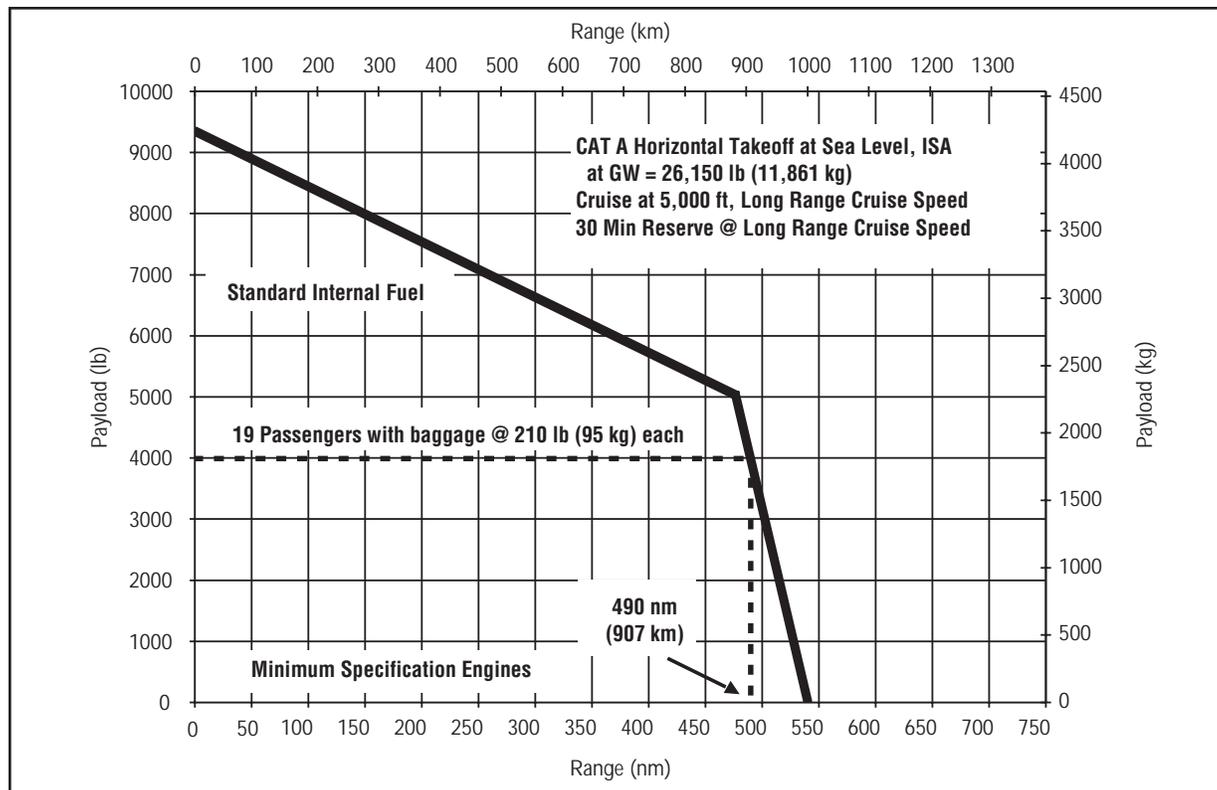


#### WEIGHTS

■ Standard offshore configuration weight	<b>15,900 lb</b>
■ Crew (2)	400 lb
■ Engine oil/washer fluid	37 lb
■ Tiedown kit/manuals	10 lb
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<b>Operating weight</b>	<b>16,347 lb</b>

# Mission Performance

## Airline Configuration

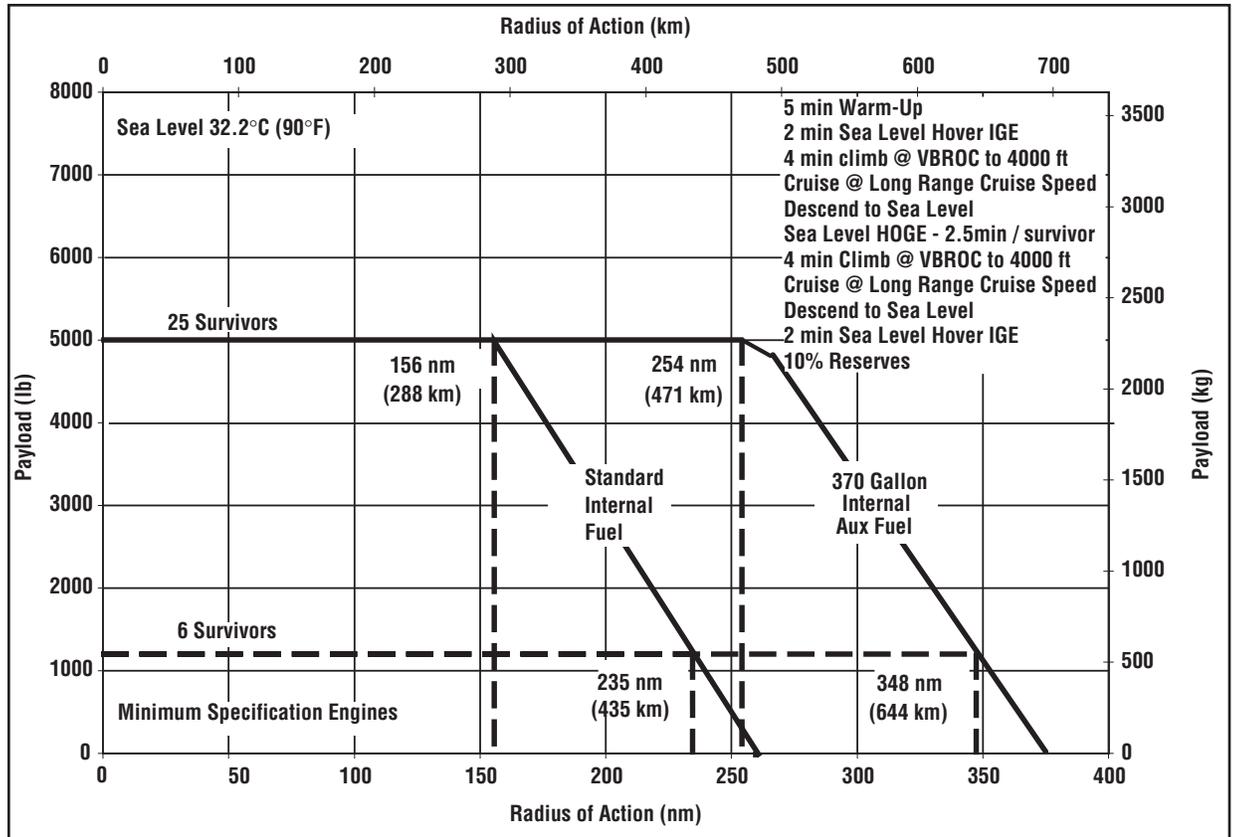


### WEIGHTS

■ Standard airline configuration weight	<b>15,600 lb</b>
■ Crew (2)	400 lb
■ Engine oil/washer fluid	37 lb
■ Tiedown kit/manuals	10 lb
<b>Operating weight</b>	<b>16,047 lb</b>

## Mission Performance

### Search and Rescue Configuration

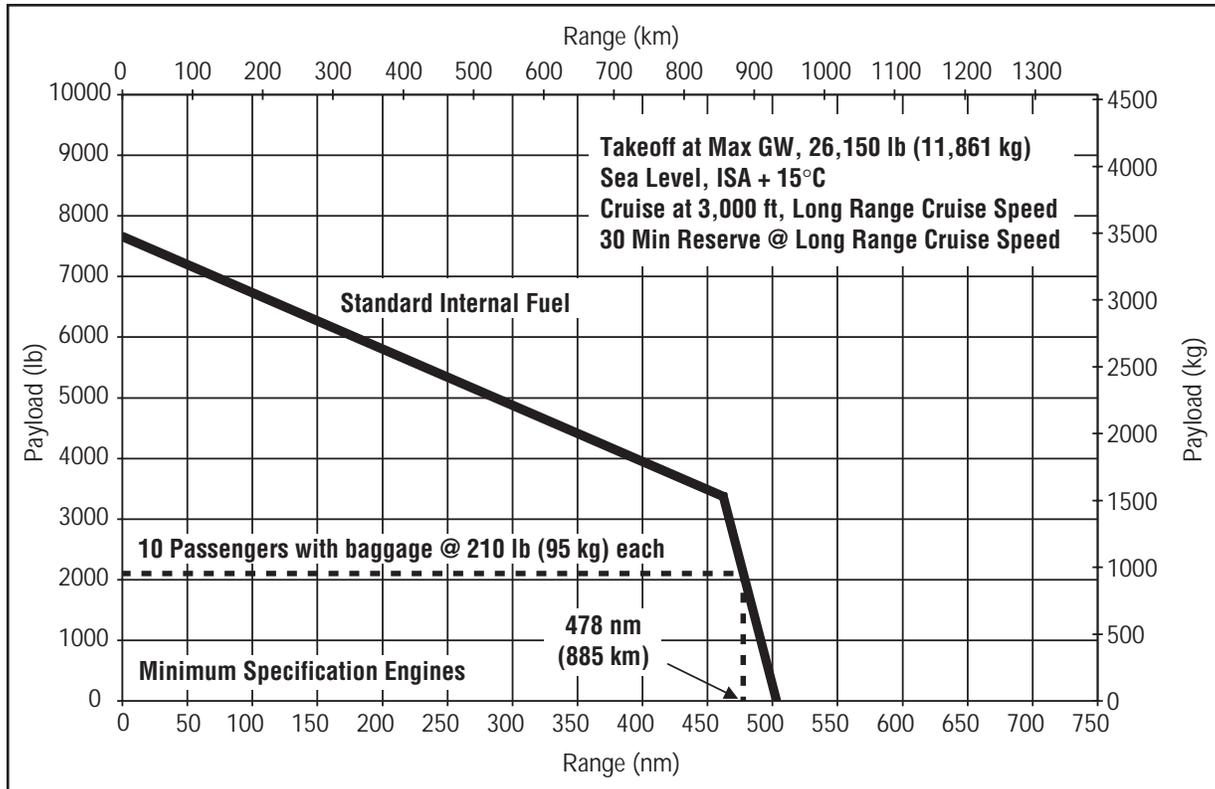


#### WEIGHTS

■ Standard search & rescue configuration weight	16,200 lb
■ Crew (3)	600 lb
■ Engine oil/washer fluid	37 lb
■ Tiedown kit/manuals	10 lb
<b>Operating weight</b>	<b>16,847 lb</b>

# Mission Performance

## Executive Transport Configuration



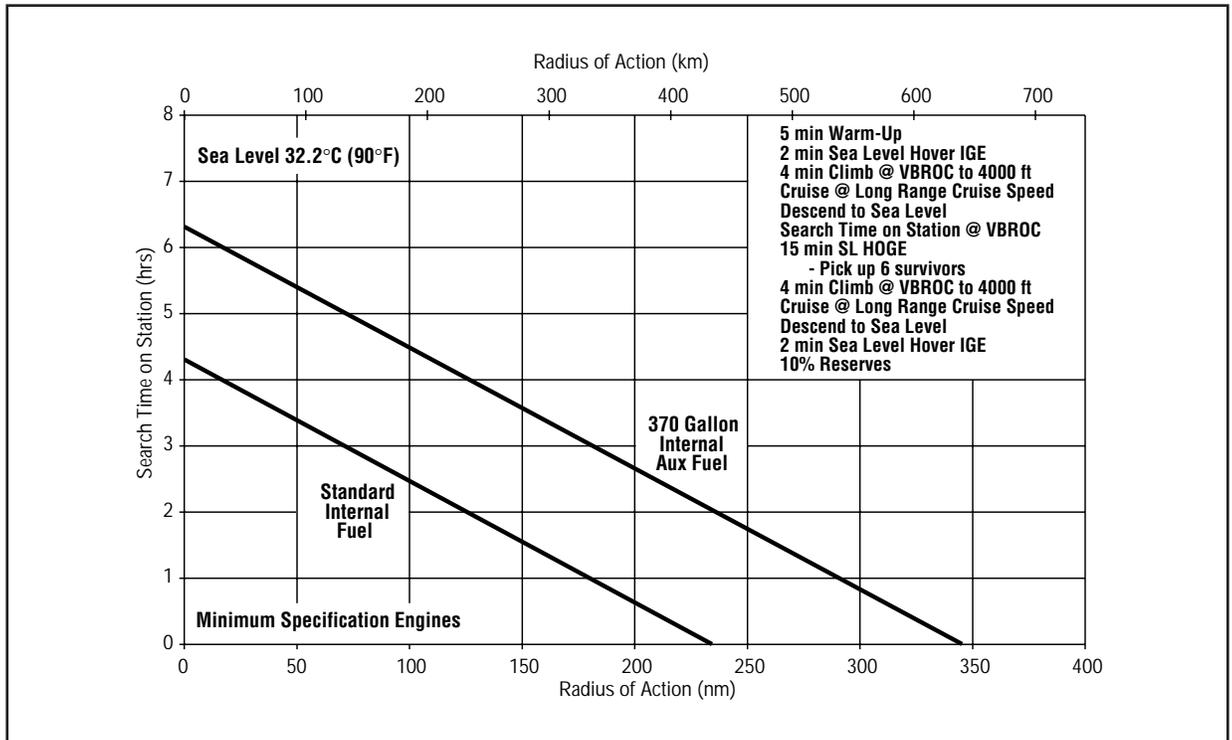
### WEIGHTS

■ Standard 10-place executive configuration weight	17,200 lb
■ Crew (2)	400 lb
■ Engine oil/washer fluid	37 lb
■ Tiedown kit/manuals	10 lb
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<b>Operating weight</b>	<b>17,647 lb</b>

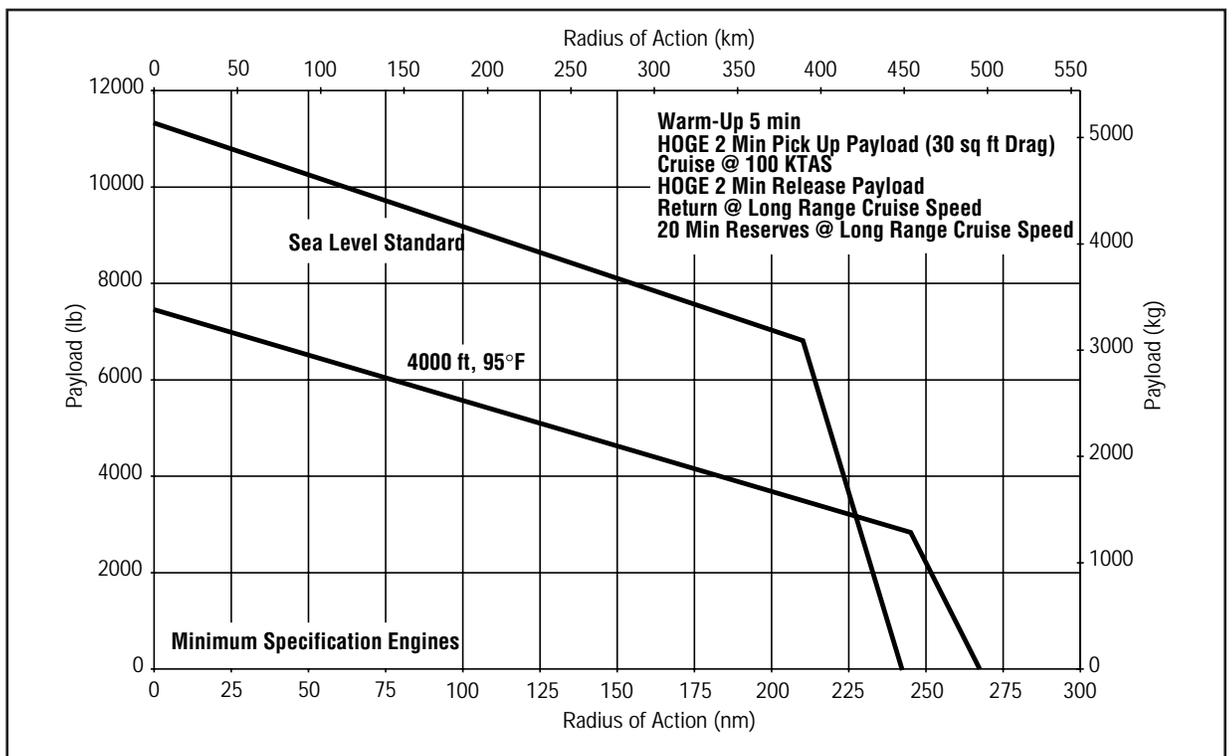


## Mission Performance

### Search and Rescue Time on Station

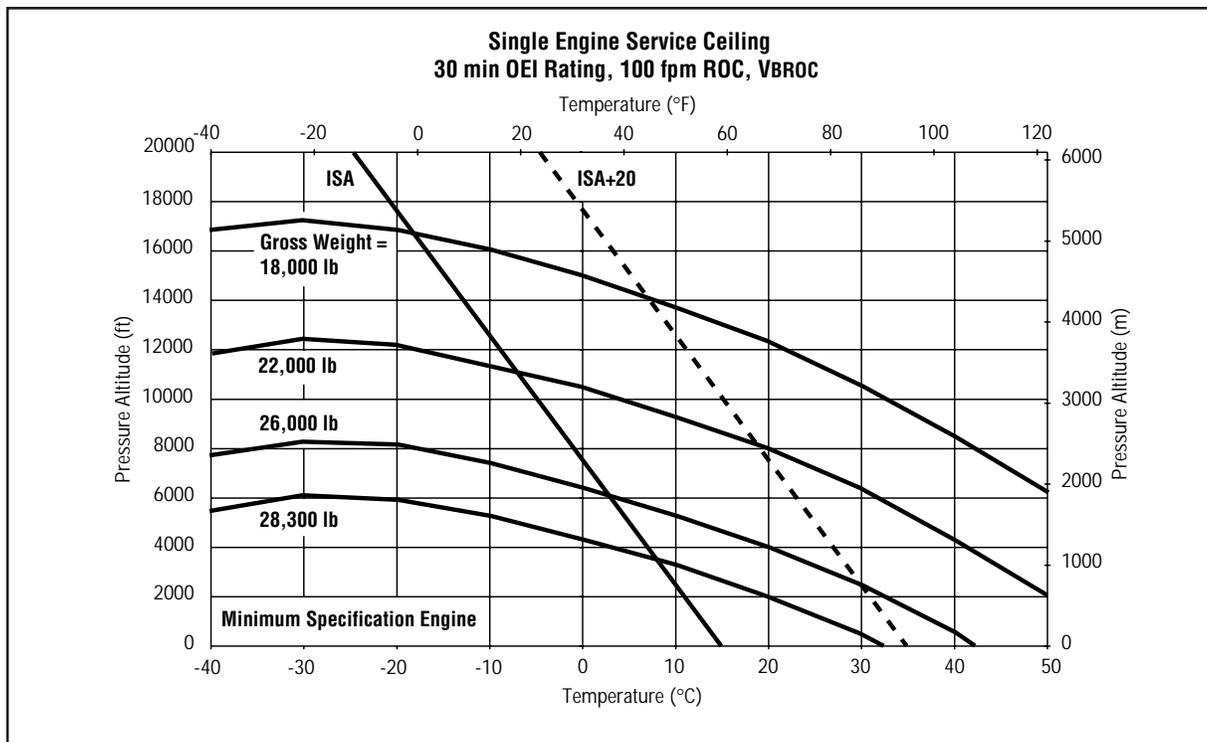


### External Lift

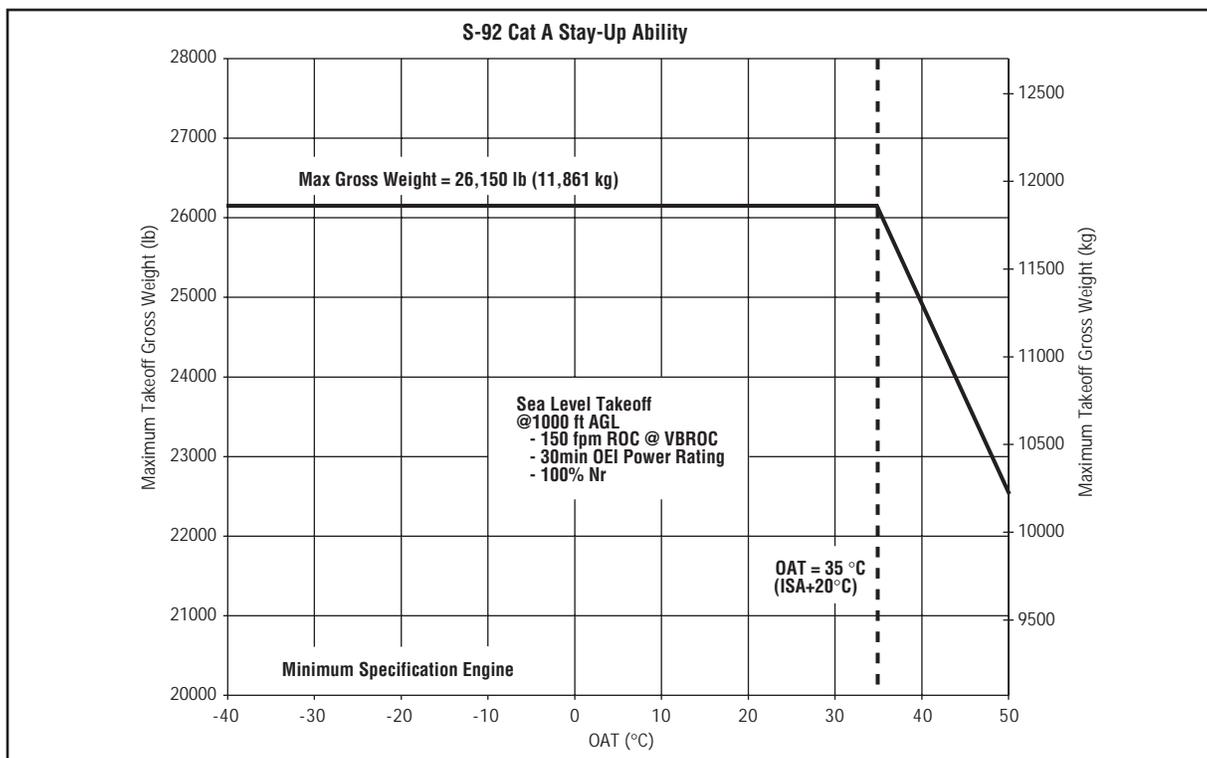


# Mission Performance

## OEI



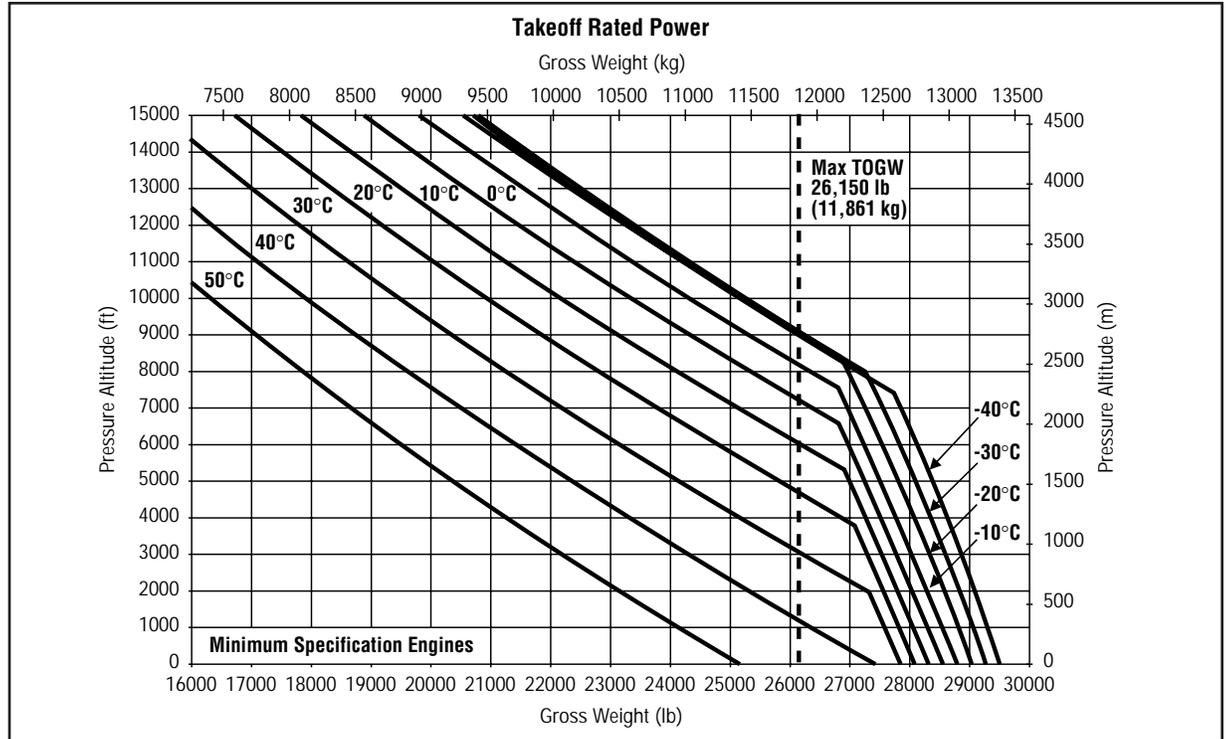
## OEI



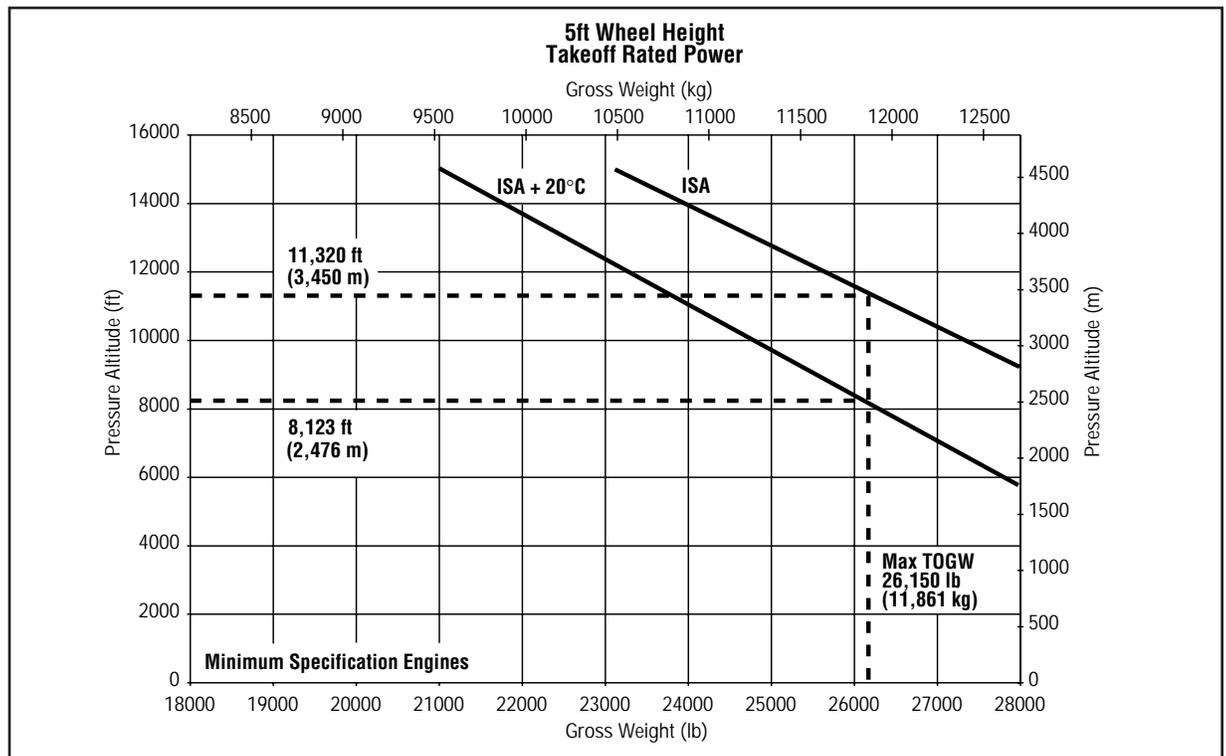


# Mission Performance

## HIGE WAT

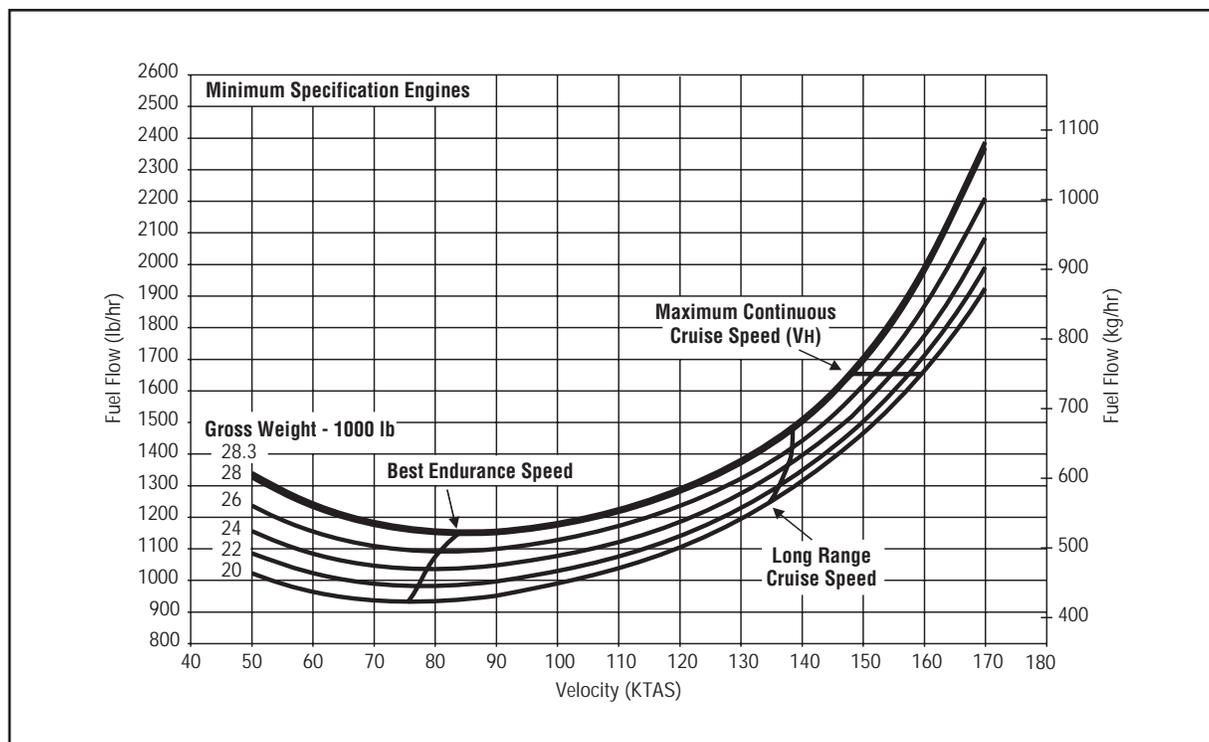


## HIGE Ceiling

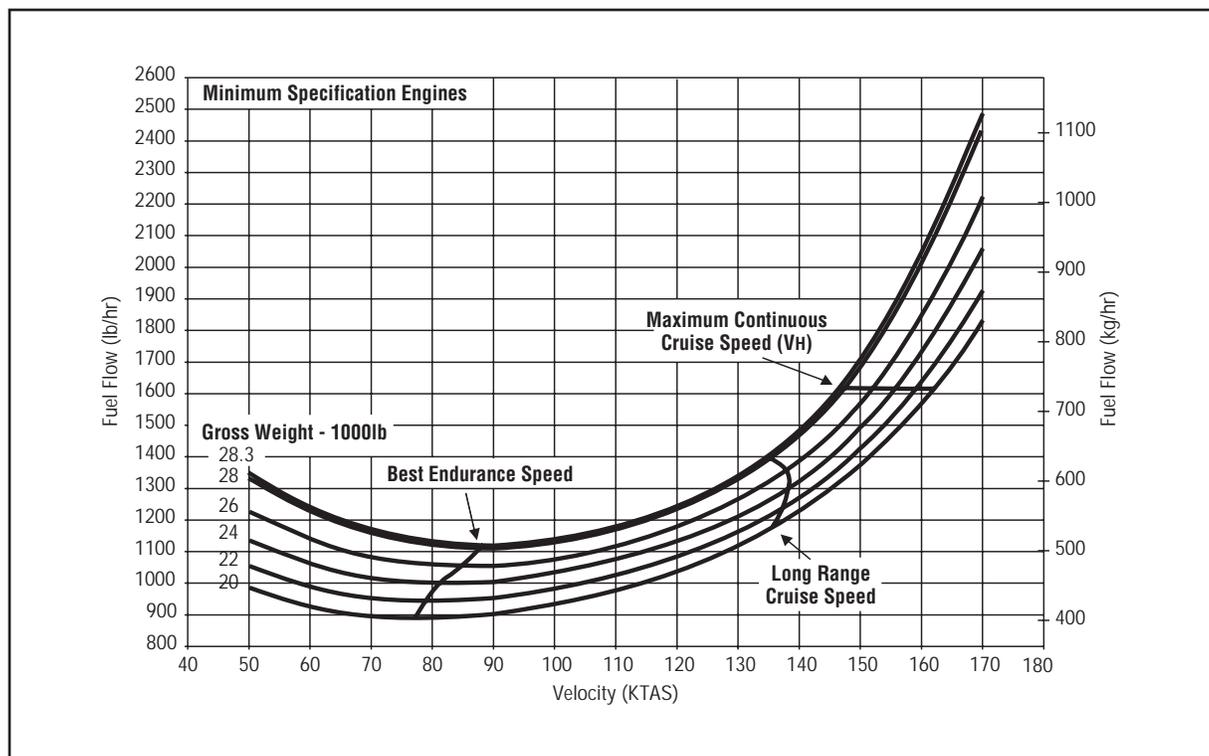


# Fuel Flow

Sea level

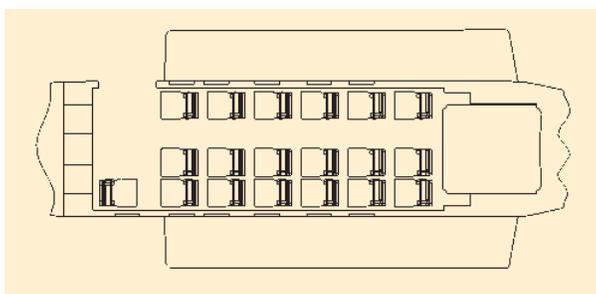


3,000 feet

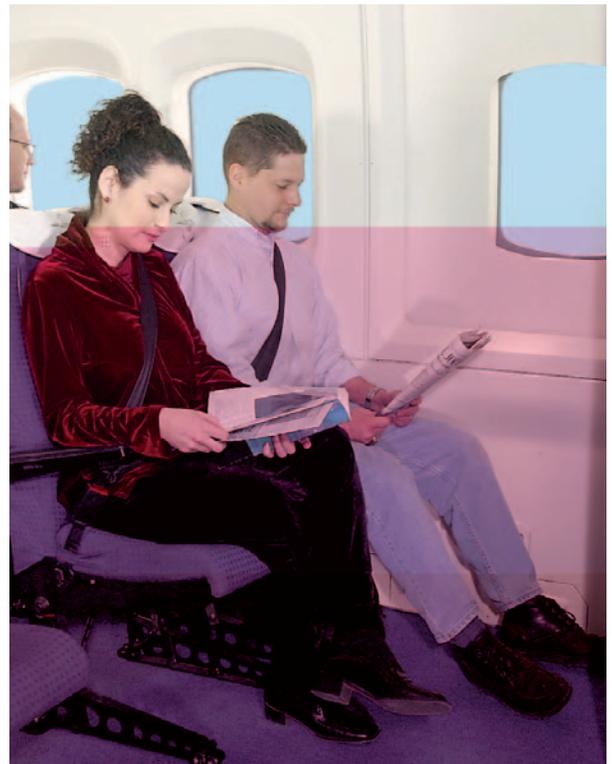
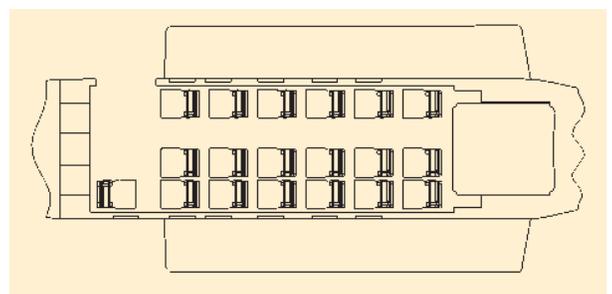


## Cabin Arrangements

### Offshore Oil Transport



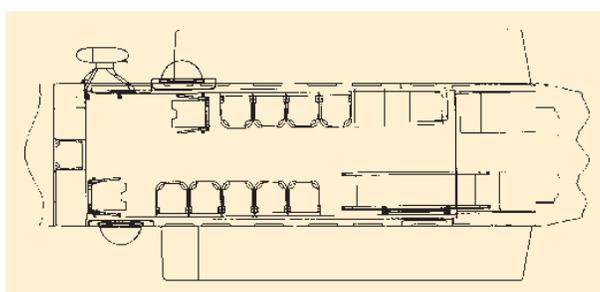
### Airline Service



*The spacious S-92 cabin has a pushout window at every row and true stand-up headroom.*

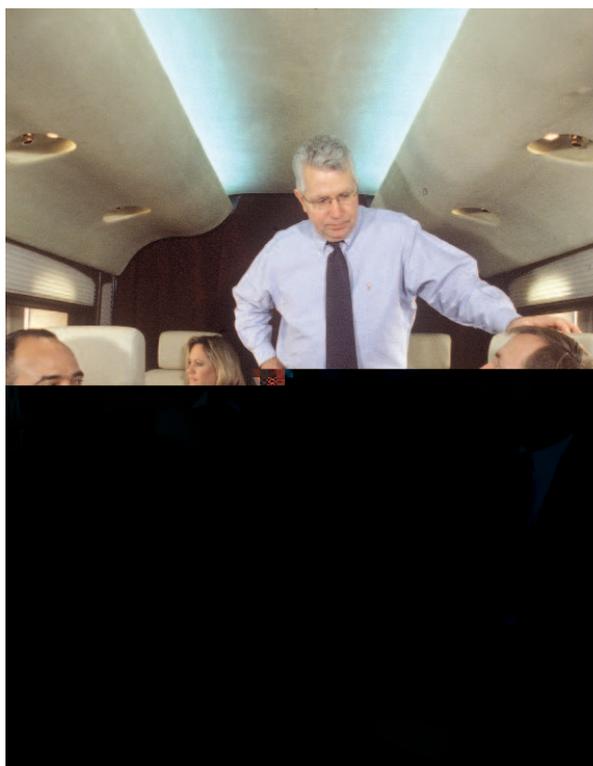
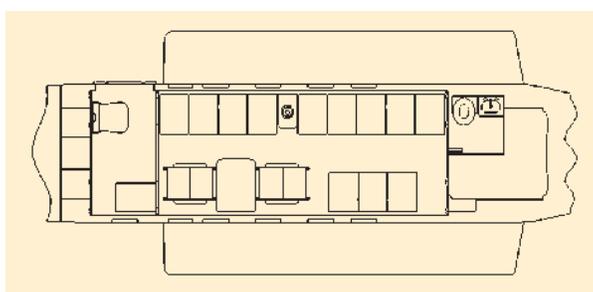
*Comfortable, crashworthy airline-style seating allows plenty of leg and shoulder room.*

### Search and Rescue (SAR)



*S-92 cabin offers ample space for litters, auxiliary fuel and SAR mission equipment.*

### Executive Transport



*Swivel chairs, divans, tables and cabinets are among the many options to choose from in the executive transport configuration.*

## Optional Equipment

### AIRFRAME AND ROTORS

- Overhead cockpit windows
- Full sliding door
- Sliding upper cabin door, right side
- Sliding cabin window, left-side, forward
- Jettisonable cabin windows
- 200 psf cabin floor
- Tail pylon pullout steps
- Air conditioning system
- Cold weather heat system
- Main and tail rotor blade ice protection system

### FURNISHINGS

- Jumpseat (cockpit observer)
- Utility type soft cabin interior
- Crashworthy, side-facing, fold-up utility seats (up to 22)

### PROPULSION/FUEL SYSTEMS

- Internal aux fuel system (185 gallons x 2)

### ELECTRICAL SYSTEMS/LIGHTING

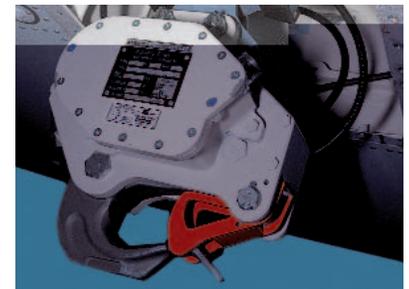
- High intensity search light
- Helicopter Emergency Egress Lighting (HEEL) for emergency exits and optional pushout windows
- Lower anti-collision light
- Logo lights
- Recognition lights
- Rotor head inspection light
- Emergency floor lighting

### AVIONICS

- Fifth color display 6" x 8" LCD (center position on instrument panel)
- SAR AFCS upgrade with coupled search patterns - AFCS Crew Hover
- Universal flight management system - (UNS-1ESP) with GPS
- TCAS I
- Enhanced Ground Proximity Warning System (EGPWS)
- SATCOM
- FLIR
- Loudhailer

### SPECIAL MISSION EQUIPMENT

- Cargo hook (10,000 lb capacity)
- Up to 16 litter medevac kit
- Floor roller system
- Ramp roller system
- Ramp cargo flippers
- Cargo loading winch
- Single rescue hoist (1-full capability 600 lb, 320 fpm)
- Dual rescue hoist (2-full capability, 600 lb, 320 fpm)
- Deployable emergency locator beacon
- Jettisonable forward sponson mounted life rafts (14/21 person)
- Cabin cargo tiedown rings
- Wire strike protection



Available options include: (clockwise from upper left) a 21-person capacity life raft, a 600 pound capacity rescue hoist, a stowable cargo hook, emergency window and door lighting, and multiple litter configurations.

## Component Overhauls and Retirement Times

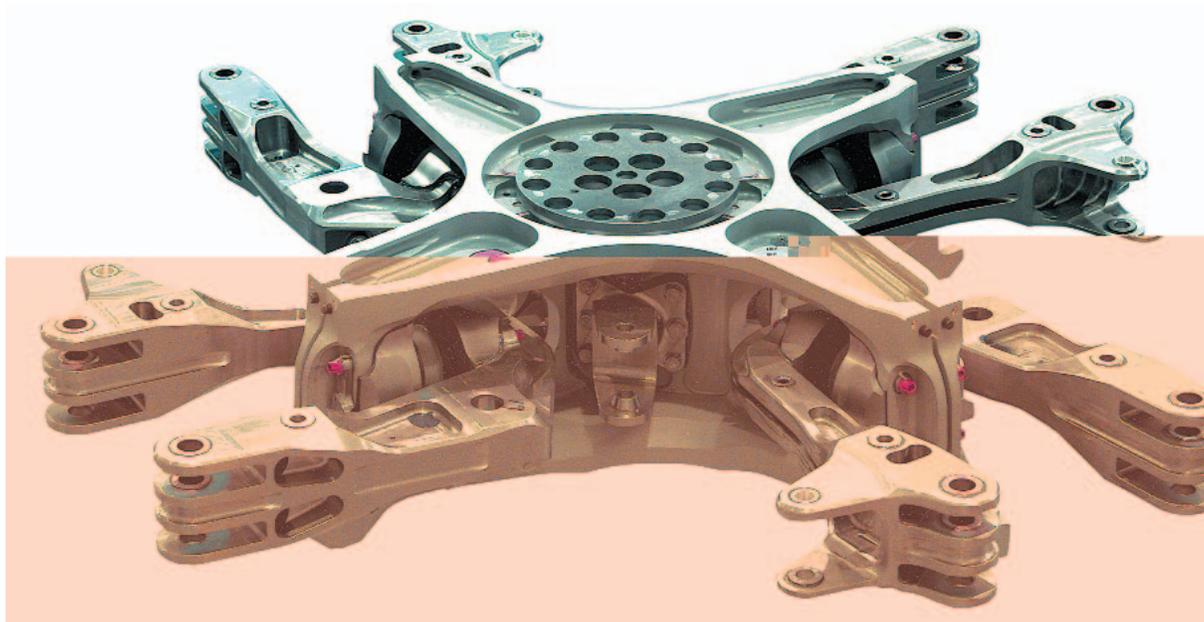
### OVERVIEW

Minimization of direct operating costs has, from the start, been established as a primary design criteria of the S-92 helicopter program. Projected DOCs have been continuously monitored during all phases of development.

The underlying philosophy has been to reduce operator costs through the extension of component lives and minimization of the number of components subject to overhauls. As a result of this philosophy, all components on the S-92, with the exception of the main gearbox, require only on-condition maintenance. The main gearbox itself has a TBO of 6,000 hours, higher than any gearbox previously introduced by Sikorsky into the commercial marketplace.

With the dramatic reduction in overhauls and life-limited components, the S-92 design will provide operators significant savings per flight hour in maintenance costs compared to any other helicopter in its class.

*The S-92 has only one component requiring scheduled overhaul, and only two components with a retirement life of less than ten years or 12,000 hours.*



*Designed to flaw tolerant certification requirements, the S-92 main rotor head has unlimited life and features redundant load paths and elastomeric bearings.*



## Cost of Operation

### Offshore Transport Service

The following information is supplied to aid in the preparation of estimates of the cost of operation for the S-92 helicopter in offshore oil transport service. Costs have been calculated in general accordance with the practices described in the *Guide For Presentation of Helicopter Operating Cost Estimates*, published by the Committee on Helicopter Operations Cost. The estimates presume a mature operation in which there has been opportunity for costs to stabilize and assume no benefit from warranties.

Direct operating costs are calculated for a new S-92 flying 1,000 hours per year using 2003 prices. Reliability and maintainability characteristics are based on Sikorsky's H-60 experience. The H-60 fleet has accumulated in excess of 4 million flight hours since the model's introduction in 1978. The S-92 design incorporates the lessons learned on the H-60 program and therefore provides a significant improvement in cost-effectiveness.

	SIKORSKY ESTIMATE	OPERATOR ESTIMATE
<b>FUEL AND LUBRICANTS</b>		
■ Average fuel consumption (gallons/hour)	193.0	
■ Fuel cost per gallon (\$)	1.50	
■ Cost for fuel (\$/hour)	290.00	
■ Cost for lubricants (3% of fuel)	9.00	
<b>Total cost for fuel and lubricants (\$/hour)</b>	<b>299.00</b>	
<b>LABOR</b>		
■ Labor rate (\$/hour)*	48.51	
■ Direct maintenance (MH/FH)	2.1	
<b>Total labor cost (\$/hour)</b>	<b>101.87</b>	

\* Rotor & Wing, June 2002

## Cost of Operation

### Offshore Transport Service

#### VARIABLE COSTS

RESERVE FOR RETIREMENT ITEMS	LIFE LIMIT	SIKORSKY ESTIMATE	OPERATOR ESTIMATE
■ Squibbs	5 years	0.84	
■ Tail rotor servo coupling bearing	2,000 hours	0.95	
■ Retirement items with lives greater than 12,000 hours		17.05	
<b>Total retirement item cost (\$/hour)</b>		<b>18.84</b>	
<b>OVERHAUL ITEMS</b>			
	TBO		
■ Main gearbox	6,000 hours	43.92	
<b>Total overhaul item cost (\$/hour)</b>		<b>43.92</b>	
<b>RESERVE FOR UNSCHEDULED REPAIRS</b>			
■ Electrical		14.45	
■ Fuel system		2.21	
■ Hydraulic system		37.53	
■ Landing gear		15.19	
■ Lighting		2.54	
■ Airframe		27.68	
■ Rotors		105.94	
■ Power train		66.55	
■ Flight controls		81.03	
■ Avionics		64.83	
■ Propulsion		44.25	
■ Utility systems		1.55	
<b>Total unscheduled repair cost (\$/hour)</b>		<b>463.76</b>	
<b>Total engine repair and replacement parts cost (\$/hour)</b>		<b>247.61</b>	
<b>Total variable cost (Direct maintenance cost plus fuel (\$/hour))</b>		<b>1,175.00</b>	



## Cost of Operation

### Offshore Transport Service

#### FIXED COSTS

#### CREW COSTS

	SIKORSKY ESTIMATE	OPERATOR ESTIMATE
■ Salary (\$/year)*	63,579.00	
■ Salary with benefits (x 1.3)	82,653.00	
■ Pilot hours per year	800	
■ Crew cost per hour	103.00	
<b>Total crew cost for two pilots (\$/hour)</b>	<b>206.00</b>	

#### ANNUAL COSTS

■ Hull insurance, assumed rate (%)	3.6	
■ Hull insurance, annual cost (\$/hour)	221.00	
<b>Total insurance cost (\$/hour)</b>	<b>221.00</b>	
■ Depreciation (\$/hour)	767.00	
<b>Total Depreciation Cost (\$/hour)</b>	<b>767.00</b>	

#### TOTAL OPERATING COST SUMMARY

■ Total variable cost	1,175.00	
■ Total fixed cost	1,194.00	
<b>Total Direct Operating Cost (\$/hour)</b>	<b>2,381.00</b>	

\* Rotor & Wing, June 2002



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