

Are we fully exploiting the power of communication?

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Verbal & Written Communication

- A unique gift to mankind
 - Diversity of languages
 - Each language, rich in expression
 - Man endowed with the power to communicate
 - appropriate choice of words & phrases
 - gestures
 - body language

Aren't We Responsible?

- Babies are born with powerful communication skills
- Schools do not emphasize its development
- Children slowly lose it in growing up

Communication Skills

- Essential in all spheres of life
- Good communicators learn the hard way
- Others remain status quo

The Indian Scenario: The Awakening of the Sleeping Giant

- Communications skills need to be honed to perfection
- Except for a few business schools, regrettably, our academia do not emphasize on communication skills
- Casualties
 - The brilliant, hardworking young women and men who are outstanding at work, but with noticeably inadequate communication skills

A Personal Voyage

- Scientific paper writing, thesis writing
- Seminars, conferences

A Course in Aircraft Design

- One semester (4 months) course
- Given
 - A set of specifications
- Requirement
 - To design the best aircraft that meets the specifications

Example: Mission Specification for a Jet Transport

payload 150 passengers (175 lb and 30 lb of baggage each)

crew 2 pilots
3 cabin attendants (175 lb and 30 lb of baggage each)

range 1500 n.m.
1 hour loiter
100 n.m. flight to alternate airport

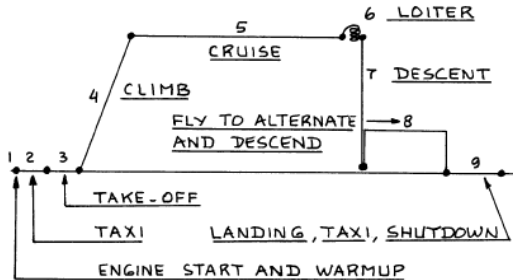
Example: Mission Specification for a Jet Transport (contd..)

altitude	35,000 ft
cruise speed	$M=0.82$ at 35,000 ft
takeoff & landing	FAR field length of 5000 ft at an altitude of 5000 ft, 95°F day Landing performance at $W_L = 0.85W_{TO}$

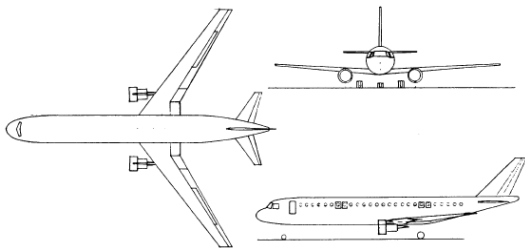
Example: Mission Specification for a Jet Transport (contd..)

powerplants	2 turbofans
pressurization	5000 ft cabin at 35,000 ft
certification base	FAR 25

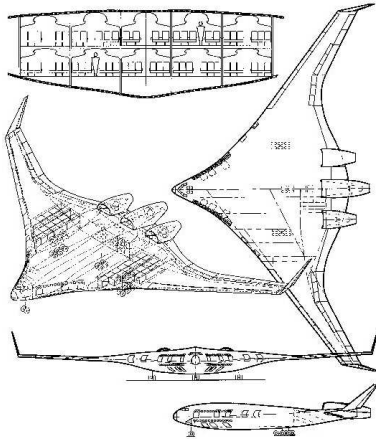
Mission Profile



Three View Drawing



A Revolutionary Design



Example: Mission Specification for a Fighter

payload 2×500 lb of bombs carried externally
 2000 lb of ammunition for a multi-barrel cannon
 cannon weight = 4000 lb

crew 1 pilot (200 lb)

Example: Mission Specification for a Fighter (contd..)

cruise speed 400 knots at sea level with external load
450 knots at sea level, clean
 $M = 0.80$ at 40,000 ft with external load
 $M = 2.2$ at 40,000 ft, clean, afterburner

Example: Mission Specification for a Fighter (contd..)

climb direct climb to 40,000 ft at max W_{TO} in 8 min

takeoff & landing ground run of 2000 ft

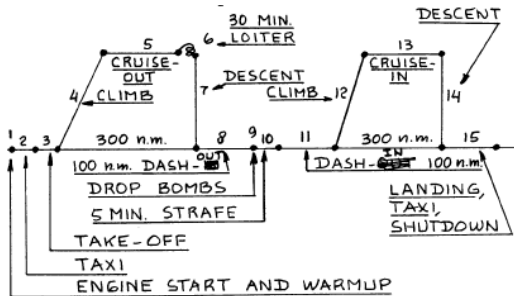
 at sea level & a 95°F day

 Landing performance at $W_L = 0.85 W_{TO}$

Example: Mission Specification for a Fighter (contd..)

powerplants	2 turbojets
pressurization	5000 ft cockpit at 50,000 ft
certification base	military

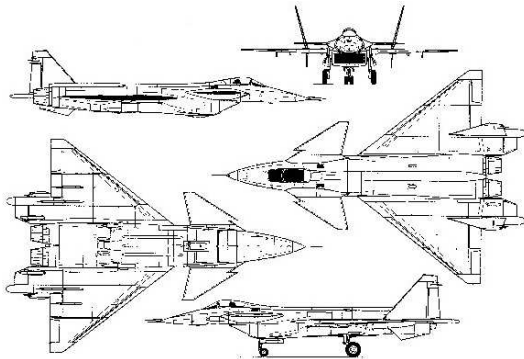
Mission Profile



Front View



A Canard Design



The Need of the Hour

- Presentations for New Contracts
- The Design of a New Configuration
- Filing of Patents