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en years from now, barring
further accidents, NASA's
Space Shuttle should gain recog-
nition as representing a step for-
ward in spaceflight. Today,
opinion is mixed. Launch
frustrations vie for headlines
with mission successes and the
1986 Challenger tragedy still
looms in the background.
That the Shuttle is the most
complex and capable manned
spacecraft yet built is, at once, its
weakness and its strength. Post-
Challenger safety strictures effec-
tively rule out a trouble-free
launch, yet once in space Shuttle
performs well.
Even setbacks can be turned to
advantage, illustrating the Shut-
tle's unique ability to "go back
and get it right". That ability
extends to putting right mistakes
relating to expendable boosters
which, in the aftermath of the
Challenger accident, have largely
usurped Shuttle's satellite-
launching role.

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"Shuttle's unique

ability is to go back

and get it right."

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The 1992 mission to reboost
the stranded Intelsat VI-F3
communications satellite, for
which NASA will charge the
international telecommunica-
tions organisation $90 million,
maintains a record of rescue mis-
sions which have burnished
Shuttle's tarnished image.
In 1984 Challenger retrieved,
repaired and reboosted the sci-
ence satellite Solar Max,
launched in 1980. Later that year
Discovery retrieved and returned
to Earth two commercial
communications satellites,
Palapa B-2 and Westar 6,
stranded in orbit when their
boost motors failed for deploy-
ment from Challenger in Feb-
ruary 1984.
In 1985 Discovery retrieved,
repaired and reboosted the mili-
tary communications satellite
Leasat 3 after its boost motor

failed to fire following deploy-
ment earlier that year from the
same Orbiter.
Earlier this year, Columbia re-
trieved and returned to Earth
NASA's long-duration exposure
facility (LDEF) after an un-
expectedly long exposure to
space caused by the post-Chal-
lenger Shuttle grounding. LDEF
was deployed on the Solar Max
repair mission in 1984.
The LDEF retrieval and the
successful deployment of NASA's
Hubble Space Telescope in April
enhanced Shuttle's image, al-
though neither required as-
tronauts to venture into space.

Shuttle prepares for its greatest test—

The Intelsat rescue mission, ten-
tatively scheduled for February
1992, will require extra-vehicu-
lar activity (EVA) and may be
combined with the first in-orbit
refurbishment of Hubble,
brought forward from 1993 be-
cause of problems with the space
telescope.
"The rescue offers us an
opportunity for expanding our
experience base in the planning,
training and performance of
EVA . . . helping preparations
for the Freedom space station,"
says former Shuttle astronaut
Bob Crippen, now director of the
programme.

iembling space station Freedom.

The last Shuttle EVA was per-
formed in November 1985, to
rehearse construction techniques
necessary to assemble a space
station. A spacewalk is planned
for the Gamma Ray Observatory
deployment mission in Novem-
ber, to test "space cart" transport-
ers designed for Freedom.
The Intelsat rescue mission
promises to be eventful, as Or-
biter Endeavour (the Challenger
replacement) is currently sched-
uled to deploy a Geostar
commuications satellite and re-
trieve the Eureca free-flier on the
same flight.
Ironically, Intelsat IV-F3 is
stranded in low Earth orbit by
the malfunction of the Titan
booster that has superseded
Shuttle as the launch vehicle for
large satellites. Intelsat VI is now
safely separated from its Titan
upper stage, but is minus its
boost motor. Endeavour will
therefore carry into orbit a lOt
solid-rocket motor which two
astronauts will attach to the
stranded satellite.

The rescue mission may be
cancelled, however. Although
Intelsat VI's altitude has been
increased to minimise the risks,
the satellite may be too badly
damaged after its two-year stay in
low Earth orbit for the mission to
go ahead. To assess the damage
caused by exposure to space, the
November Shuttle mission to
deploy the Ulysses solar polar
orbiter will carry sections of
Intelsat VI solar array into orbit.
Although Crippen is to have
an opportunity ' to once again
demonstrate the versatility of the
Space Shuttle", NASA apparently
had to be persuaded to take on
the mission. The space agency's
concerns may include the
mounting pressure on its Shuttle
flight schedule caused by re-
peated launch delays.
An over-ambitious flight
schedule was identified as one of
the factors contributing to the
Challenger explosion and it is
ironic that the safety measures
introduced to prevent further ac-
cidents cause launch delays
which make it impossible for
NASA to adhere to its flight
schedule. •

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