TECHNICAL: DEFENC E

Radar delays stall NATO defence upgrade
BY DOUGLAS BARRIE

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NATO programme to im-
prove its southern-region
air-defence ground environment
is running at least two years late
because of long delays in radar
deliveries.
Under a NATO requirement,
US defence electronics company
Hughes was awarded a contract
for ten D-band HR-3000 radars.
Three radars were ordered for
Portugal and Turkey with a
further two for Greece and Italy.
The Portuguese radars form
part of Portuguese Air Com-
man d and Control System
(POACCS) programme to im-
prove its air-defence capability,
the first phase of which is now
being implemented.

According to officials close to
the programme, delivery of the
HR-3000s is now around three
years behind schedule, and
"...there is still no real sign of
the radars being delivered".
The Hughes radars are under-
stood originally to have been
due for delivery in 1988, but
this is now not likely to occur
until next year.
The radar delay has effec-
tively pushed back the whole
POACCS project. Although the
stand-alone control facility
(SACF), being developed by
Siemens Plessey Radar, will be
delivered early next year, it will
not have any radar feeds. One
official says: "Portugal has got
half a system".
The SACF is designed to use

the data from the Hughes radars
to produce a recognised air/sea
picture (RASP), allowing the
Portuguese Air Force to moni-
tor its airspace and effectively
deploy its own forces.
Producing the desired RASP
will not be possible, however,
until the arrival of the Hughes
ground radars.
According to one official, the
difficulty with the radar is based
on "...transmitter problems. Ba-
sically, they keep on going
bang." Difficulties may focus on
meeting what some suggest is a
particularly stringent require-
ment for the NATO radars.

According to one official in
Brussels, neither Greece nor
Turkey have received their HR-
3000s. He adds that the delay is

causing considerable concern.
The Turkish radars form part
of an overal l air-defence
ground-environment upgrade
for that country. Along with the
three Hughes radars, the coun-
try's command, control and
communications network is
being improved.
The two radars on order for
Italy are intended to improve
what many consider to be one
of the weakest areas of NATO
air-defence coverage.
In attempting to refocus
NATO's overall Air Command
and Control System pro-
gramme, now under pressure
because of the collapse of the
Warsaw Pact, NATO planners
are concentrating increasingly
on the southern region. •

ARES prototype prepares

for armament flight tests

BY JOHN BAILEY
IN MOJAVE

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he prototype ARES low-cost
attack aircraft, designed and
built by Burt Rutan's Scaled
Composites, has completed its
initial programme of envelope-
expansion and performance-
evaluation flights, and is being
prepared to start armaments
trials with a 25mm cannon.
The General Electric GAU-12
cannon was installed earlier this
month and flight testing will
resume early in January.
Douglas Shane, Scaled Com-
posites director of flight opera-
tions and ARES chief test pilot,
says that the gun trials should
require between 15-20 flights,
and will concentrate on "...the
structural implications of the
gun installation, and the han-
dling qualities of the aircraft as
the gun is being fired".
The ARES prototype has com-
pleted 102h of testing in 72
flights since February this year,
and Shane says that "...in all
areas, it has exceeded our pre-
dictions or hopes".
The all-composite ARES is to
demonstrate the feasibility of

building a low-cost, agile multi-
role fighter for close-air support
or anti-helicopter missions.
Armament will include the
cannon, two AIM-9L Side-
winders and' four Stinger mis-
siles. A two-seat trainer is on
the drawing board.
The unconventional, asym-
metric ARES planform is de-
signed to shield the engine inlet
from gun gases throughout the
flight envelope, and uses blast
pressure loads along the star-
board side of the fuselage to
offset the yaw moment pro-
duced by the gun recoil.
The forward fuselage is posi-
tioned 7cm to the left of the
aircraft's centreline and the
port-mounted engine is offset
by 8°, although the exhaust
tailpipe is on the centreline.
Shane says that some minor
modifications to the tail area
have been necessary to align
engine thrust with the centre-
line, in addition to the larger-
chord elevators and modified
ailerons which have helped to
reduce stick forces during high-
g manoeuvres.
The one remaining problem
has been reducing the residual

ARES is about to start cannon trials (Picture by Craig Schmitman)

engine thrust after landing, and
Shane says: "We are touching
down at low speeds, but we are
using up a lot of runway to get
it stopped".
Scaled Composites is not yet
marketing the privately funded
ARES, although several poten-
tial customers have flown the
prototype, including the deputy
commander of the US Navy's
Air Systems Command. The Air
Force is interested in evaluating
ARES early next year.
Rutan's prime market is'over-
seas governments which hjave a
requirement for a high-perform-
ance multirole fighter, but may
not be able to afford F-16s or
their equivalent. ARES would
sell for about SI million a copy,

depending on the configuration,
with the airframe and avionics
costing "about the same as the
engine", according to Rutan.
Rutan is proposing a low-cost
evaluation programme for a
mission-specific ARES version,
under which Scaled Composites
would build two prototypes for
operational testing, at a total
cost of about $5 million.
If a foreign government
wished to acquire ARES, Rutan
says the aircraft could be built
abroad under licence. Scaled
Composites would participate
in the development, and there
would probabl y be some
manufacturing workshare for its
sister company, Wyman Gordon
Composites. •

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