

# ***COBRA***

**TANK KILLER SUPREME**





# Osprey Colour Series





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**TANK KILLER SUPREME**

***Mike Verier***





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### **Front cover**

Marine Corps' AH-1 Cobra of HMLA-367 accelerates towards the author's camera during his visit to Camp Pendleton, California, in the summer of 1988

### **Title pages**

One of HMT-303's J models flares to land

### **Right**

The author strikes a pose (and looks suitably embarrassed)

### **Back cover**

Finally, a truly beautiful example of Cobra longevity. 66-15248 was the third true production AH-1G built. (There was one prototype and two pre-production airframes.) Following service with the US Army, it was transferred to NASA in December 1972. During its time with them it took part in many research projects as well as acting as chase planes for others. It had two identities (NASA 541 and NASA 736) and was only returned to Army control in 1985. Following service with the California Air National Guard, it was returned to Bell for re-working to S standard. This means that it is entirely likely that 'somewhere in Europe' there flies a most remarkable machine, fully able to cope with front-line service in the 1980s, nearly a quarter century after she was built. Old Cobras . . . (NASA/Robert J Huston)

### **Acknowledgments**

There are, of course, many people and agencies who gave generously of their time in making this book possible. Particular mention must, however, be made of the following: Dick Jarrett and Jim Gooch at Bell Helicopter, Captain Peyton DeHart (Camp Pendleton) and Sergeant Cheryl North (New River) of the USMC, and Betty Goodson and Tom Greene of the PAO at Fort Rucker, all of whom displayed considerable patience in assisting the author's photographic efforts. To all of these and their parent agencies my grateful thanks.

Photos obtained or contributed by others are credited individually, my heartfelt thanks to all those people as well.

Finally, no acknowledgment would be complete without mention of Dennis 'how's it going' Baldry, editor, sounding board, and occasional tester of fine beer. For making it possible in the first place, thank you Dennis.



## Introduction

This book is for *Cobra Cognoscenti* everywhere and shows, I hope, some of the many faces of what they know to be the quintessential attack helicopter—Bell's remarkable AH-1.

Helicopters, especially military ones, are not noted for their elegance. This fact serves only to emphasise the *élan* and beauty of the Cobra, its sleek lines undisguised by nearly two and a half decades of continuous evolution.

That it can be considered a classic design is further evidenced by the fact that all dedicated attack types since (including several that have yet to fly) have followed the formula perfected at Bell after so much painstaking research. This formula resulted in the first ever 'A for Attack' helicopter designation.

If the reader detects a bias towards the USMC in the following pictures, the author pleads guilty. It is, I should hasten to add, no reflection on the US Army for whom the Cobra was designed and built, and which remains the largest single user of the type—rather it reflects the dearth of previously published material on twin-engine members of the family, and, just possibly, the fact that their new colour schemes are quite photogenic.

A further consideration is historical: despite the small numbers involved, attack helicopter development in general, and the evolution of the Cobra in particular, owes a great deal to the Marine Corps. The tenacity of this force in striving to obtain the best support for the 'grunts' despite almost permanent budgetary strictures has resulted in their fielding what is currently the most capable of Cobra variants, the awesome AH-1W.

This book should also be regarded as both primer and 'super' colour section for the forthcoming 'Air Combat' volume on the Cobra, in which the reader will find the full history of the Snake to date and, incidentally, details of



the many attractive colour schemes illustrated here, FS 595 numbers *et al.*

I hope you enjoy the book. *Cobra Cognoscenti* may not be as vociferous or well-known as *Phantom Phreaks*—but they know a great aircraft when they see one.







# ***Contents***

Cobra dawn:  
Fog, FOD and flightlines 8

Something old,  
something new 28

Wash pits 58

Coming home:  
HMLA-169 returns  
from the Gulf 64

Top secret:  
The MARHUK missions 74

Shades of green 82

Factory fresh 112



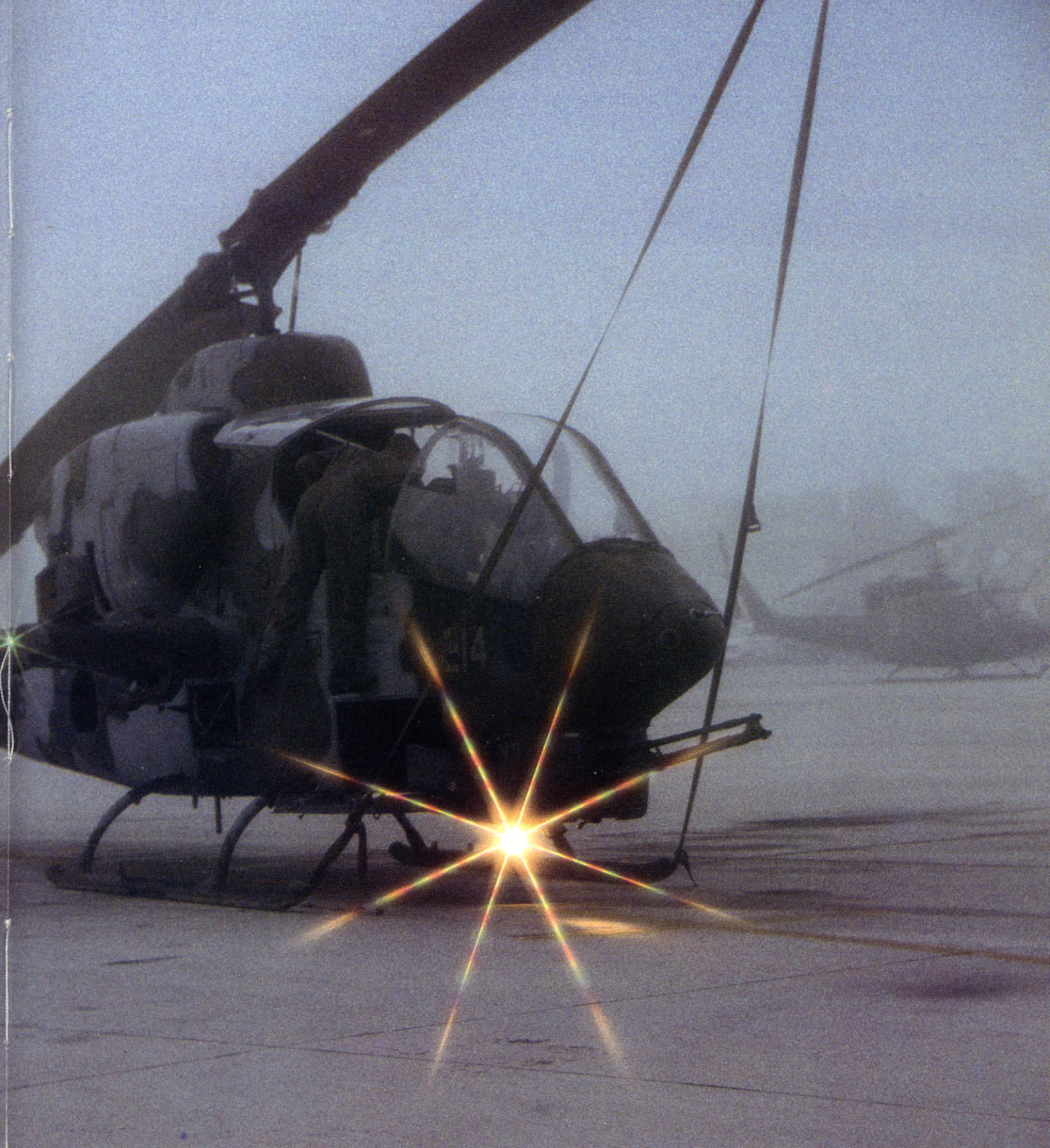


# ***Cobra dawn: fog, FOD and flightlines***

Camp Pendleton is surrounded by hills, consequently early morning fog takes some time to burn off. Nevertheless this J will soon be flying











HMLA-369 is one of Pendleton's resident squadrons and has recently traded its T models for the new W. Powered by two T700 engines and capable of carrying a vast range of ordnance (including TOW and Hellfire simultaneously—the only Cobra variant to do

so) it represents a considerable upgrade on the older type.

Aft of the rotor mast is the ALQ-144 'disco lights' jammer, and just visible in the mist is the 'expeditionary' control tower which would go with the squadron on deployment









**Above**

542 as the sun crests the ridge. On the forward canopy framework can be seen the anti-wire strike strengtheners

**Right**

Cobras fade into the fog







**Right**

As the fog lifts J and W Cobras emerge along with UH-1N 'Hueys' and Pendleton's fixed wing denizens, OV-10 Broncos. The rotor blades of the J Cobras and N Hueys—which share the same engine and transmission—have a very similar 'sit', very different to that of the W Cobra's much bigger and heavier rotor

**Below**

With the sun piercing the murk, the morning FOD walk gets under way . . .

**Below right**

. . . everyone (yes, even pilots) gets to walk the line. A piece of stray debris could spoil your whole day when flying starts











**Above**

'Light Attack' equipped with a mix of Cobras and Hueys, it's what HMLAs do

**Right**

100 gallon ferry tanks give the Cobra longer legs if required. Smaller 'combat' tanks permit the carriage of weapons as well. Another W advance is that the outboard pylons are already plumbed and fitted with pumps as standard







Mean and nimble when it's turnin' and burnin'  
the Snake has to rely on grunt-power when it's  
not. A man on each weapon bay door and one  
on the tail reduce the chances of it tail sitting















The W's massive rotor head receives attention









#### **Above**

Look serious—real pilots find that this impresses bystanders

#### **Left**

The neat engine cowlings double as working platforms—another example of design improvement on the W





**Above**

'... Let's get this show on the road . . .'. Note the 'tactical' helmet covers and pilot's HUD

**Right**

With daylight under the skids, 535 displays the W's distinctive cheek bulges which provide space for the TOW 'black boxes', moved from their former position in the tail boom



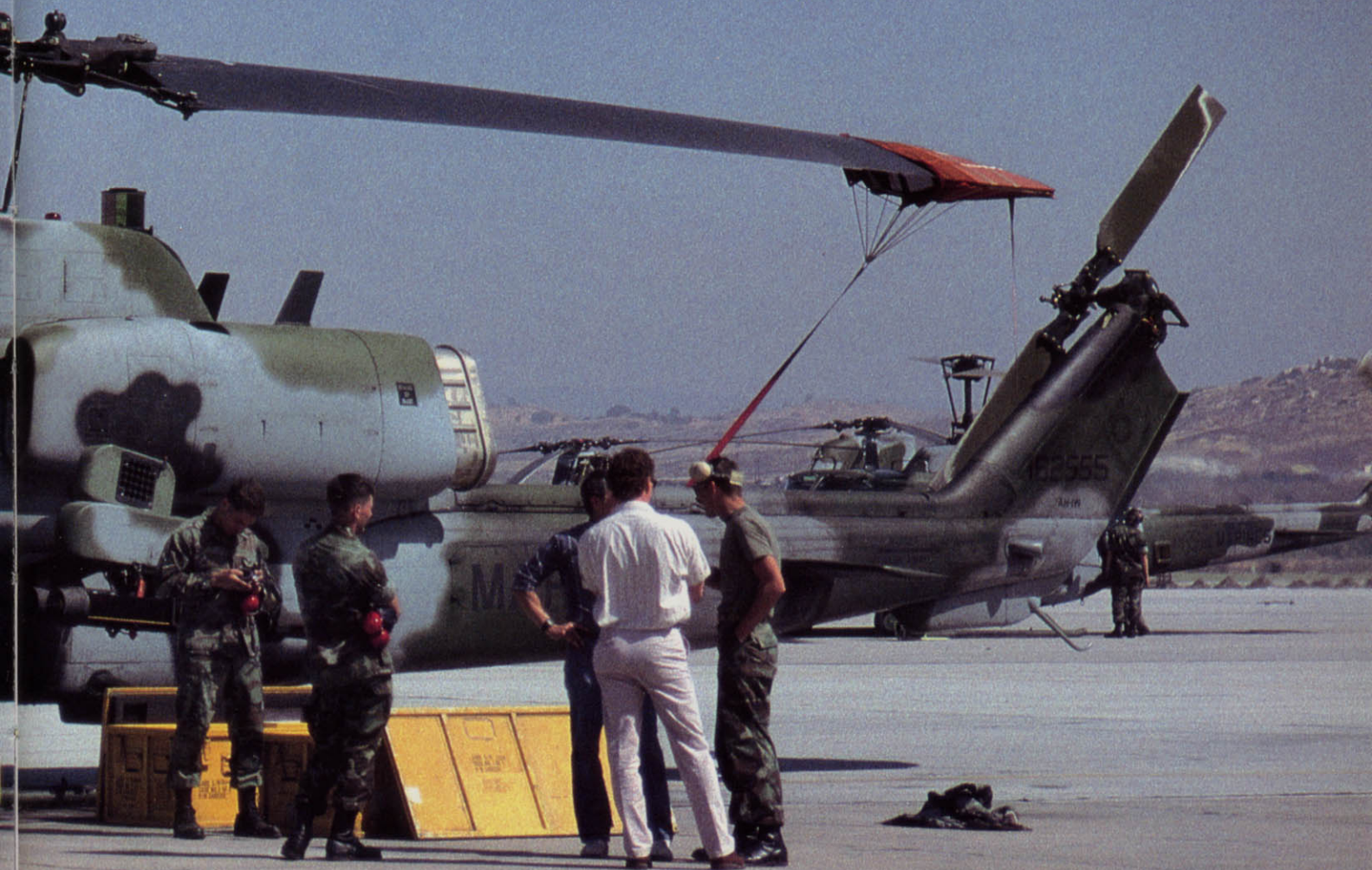






TOW rounds are guided through the M-65 turreted sight. To ensure maximum accuracy the whole system, including the launch rails, is boresighted hence the yellow gantry and huddled technicians









# ***Something old, something new***

## **Above**

White 12 of HMLA-269 represents the east coast squadrons at MCAS New River in North Carolina. This airframe (157768) was one of the first to try the three-colour camouflage













#### **Preceding page and these pages**

Boarding the Cobra is something of an art. The fuselage is only three feet wide on the *outside*, so it's more a case of putting it on than getting in. The Marine Corps have elected to retain the original canopy rather than the 'flat plate' adopted by the Army. It gives better view and top speed anyway and the problem of glint is considered of marginal importance—there are, after all, very few trees to hide in between the boat and the beach.

The eagle-eyed will detect that this pilot, in anticipation of his squadron's forthcoming switch to the W has already acquired his HSS helmet, as can be seen from the monacle sight folded on the brow of the helmet. In S, T, and W models this enables the guns to point wherever he's looking—nasty if you're a bad guy











#### **Left**

Scarface runs up. 214 of HMLA-367 displays the classic lines of the J Cobra, unchanged from the original G airframe save for the engine pack

#### **Above**

Now standard equipment in the USMC, the Oshkosh AS-32 P-19A fire truck is a four wheel drive vehicle capable of 65 mph that will climb a 60% gradient. This one stands rapid response at the runway's edge complete with female fire-person. The USMC is an equal opportunity employer





With its cavernous exhausts adding to the Californian heat haze the W shows its distinctive rear view. Compare the tail boom and fin with the J

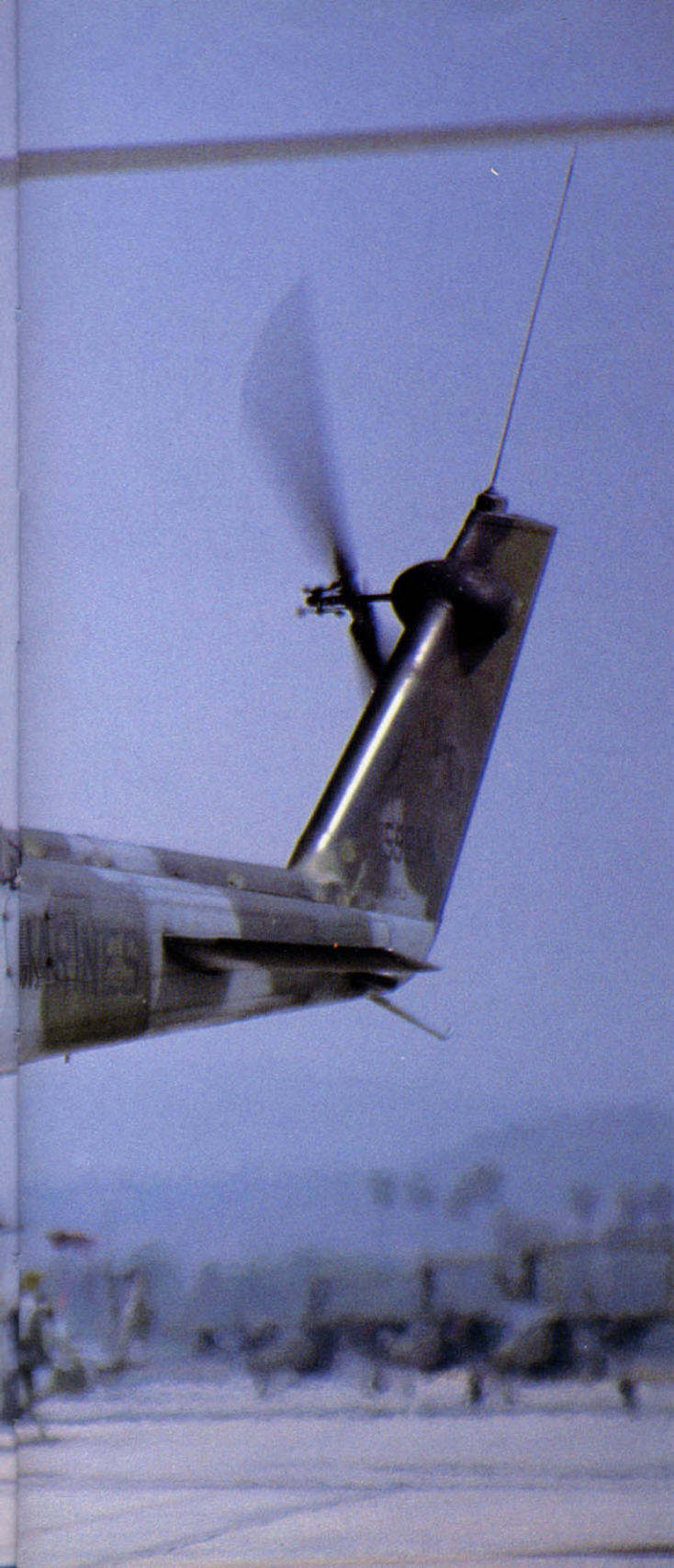












Meanwhile 214 (full BU No 159214) gets airborne









Old and new (1) 214 of HMLA-367. J models were the first twin-engine Cobras and date back to 1969. Behind are the latest 'whisky' models—nearly half as heavy again and twice as powerful





### Right

Flashback: included on the basis that this is one of the most attractive photos ever of a Cobra 57788 in company with a Huey, this shows the 'desert' scheme applied during efforts to sell the two types to the Iranians. The Shah bought 202 Cobras, the biggest single export order for helicopters ever. A handful are reportedly still flyable and would

be formidable opponents as they feature the uprated engine and transmission adopted for the T models. As for 88, she still serves and like many other famous birds can be found on Pendleton's flight line (Bell)

### Above

214 waits her turn . . .









... while a W makes a sporty departure ...





**Above**

... and then does a fast run down the runway ...

**Overleaf**

... and around the circuit











**Preceding page**

If you were a tank commander of hostile persuasion, now would be a good time to check your insurance policies—the W comes into the TOW firing envelope

**Right**

'When I say break . . .'















**Left**

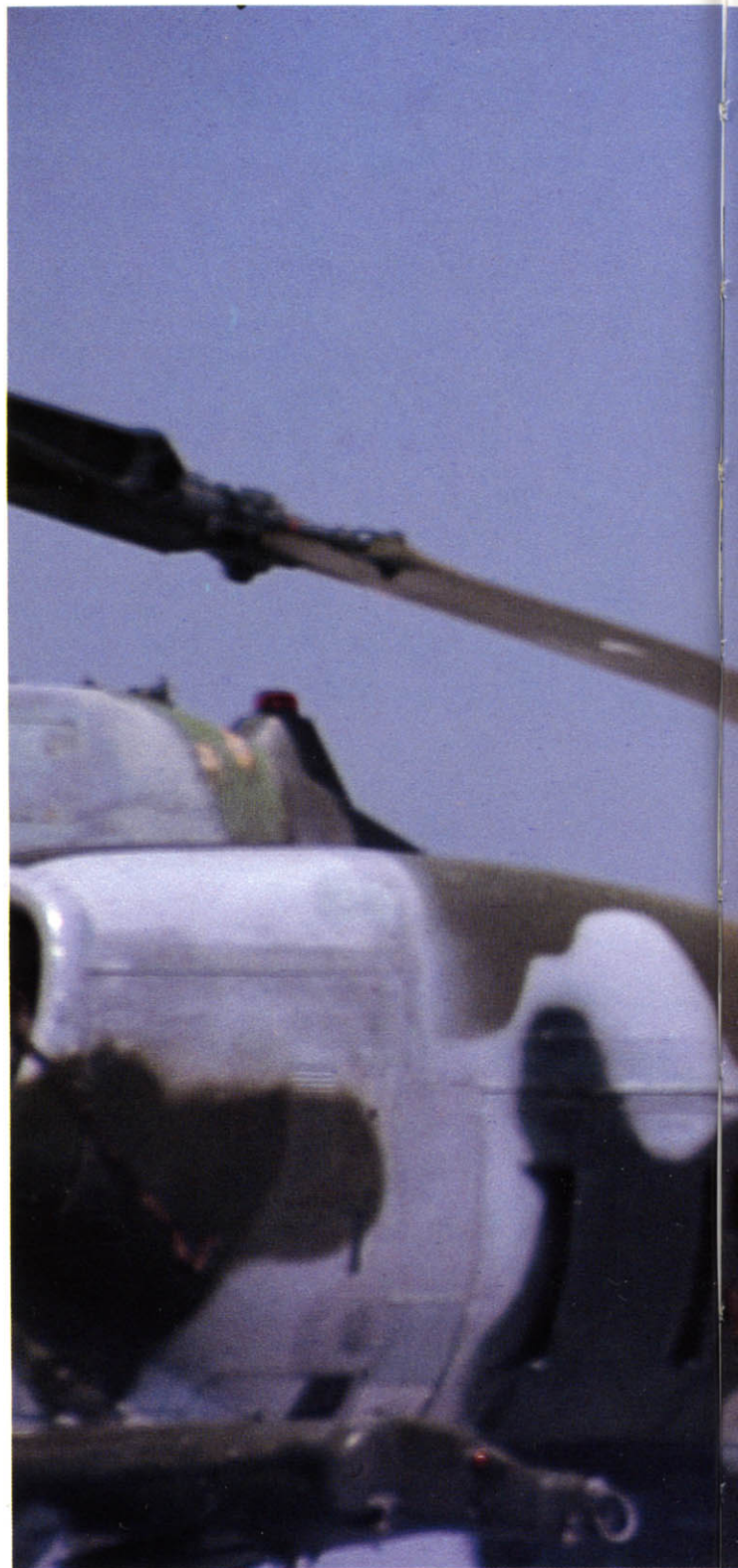
... A pair of Ws on finals

**Above**

214 makes a final pass



Old and new (2)—framed by the tail of a J, a  
whisky throbs into its spot















**Above left**

Safely down. Now for the paperwork

**Below left**

This W has Sidewinder rails (officially the LAU-7 launcher and pylon adaptor). All USMC Cobras can be thus equipped, and are also cleared for the SideArm anti-radar version of this ubiquitous missile

**Above**

An ancient GMC truck trundles by with a brace of AIM-9s, giving weight to the popular belief that the Marine Corps never throws anything away







**Above left**

The 'winder rails close up

**Below left**

The 100 gallon ferry tank. The (empty) ALE-39 chaff/flare dispenser overwing is again a standard piece of kit on Marine Cobras

**Below**

OV-10D of VMO-2 frames a Cobra with its tail. There's an interesting relationship here, both types first flew in 1965, having been conceived as a result of the Vietnam War. VMO-2 was the first USMC unit to operate Cobras (original G models transferred from the Army pending the definitive J version seen here) and both remain in front-line service nearly a quarter of a century later











#### **Above**

"Triple nuts" from the business end. The extended nose mounts the AN/AAS-37 FLIR/laser turret which endows the D model with the ability to perform all of its missions at night or in poor visibility. D models are frequently in demand for detachment to the US Customs Service/Drug Enforcement Agency, where their remarkable abilities enable them to track the boats and aircraft used by drug traffickers from altitude. Often the first the hapless smuggler knows about it is when a Black Hawk full of armed agents lands beside

him. To further increase his discomfort the FLIR record is videoed for evidence at the subsequent trial.

#### **Above left**

A rare bird of passage, this visiting D bears the XF tail code of VX-4—a test and evaluation squadron. The ALQ-144 jammer is mounted on a 'hump' above the cargo bay door

#### **Below left**

55499/000—the boss's machine—models the new colours that the 10s will be wearing this year



# ***Wash pits***

## **Below**

The wash pits are visited regularly by all aircraft. While this certainly satisfies the Marine instinct for polishing inanimate objects, it does have a serious purpose. Camp Pendleton is near the sea, over which the aircraft regularly operate—salt eats aeroplanes and has to come off

## **Right**

'Right lads, first we wet it . . .'











'... then add plenty of soap ...'









'... and pile in'

**Below right**

Next to the wash pit is a 'bagged' Cobra. Aircraft that will not fly for a period of thirty days or more are sealed up like this pending the arrival of whatever spare part they may be waiting for. Behind it is the faithful CH-46 'Frog', soon to be replaced by the V-22 Osprey tilt-rotor, the first examples of which will be deployed to Pendleton







***Coming home:  
HMLA-169 returns  
from the Gulf***





**Below**

169 comes home. After a six month deployment in the Gulf and a two hour delay occasioned by early morning fog, the anxiously waiting families are finally rewarded. The mission has been a 'for real' one, and the emotion generated combines with the thudding roar of engines and rotors to produce an atmosphere tangible even from the photos

**Right**

Resident squadrons like to leave no one in any doubt of the fact while they're away—169 is no exception











#### **Left**

On the crowded deck of the USS *Guadalcanal* (LPH-7) an AH-1T is armed. The date is August 1987, the place 'somewhere in the Persian Gulf'. Until HMLA-169's deployment (the first with the W), the Ts had the point, just as they had done in Grenada and the Lebanon.

Both types are generally flown in the Gulf with TOW on one outer station and Sidewinder opposite. Combined with a brace of seven-shot rocket pods inboard, and the

formidable 20mm M 197 turret gun, the Snake can cope with any threat, surface or air, that might emerge from the haze.

The T models will soon disappear—but only because they're going to become Ws . . . old Cobras never die . . . (US Navy/PH3 *Cleveland*)

#### **Above and following pages**

Further comment is probably superfluous as 169's Cobras are marshalled to their spots and shut down before the crews are finally reunited with their families



























# ***Top Secret: the MARHUK missions***



The J model Cobra won its spurs and proved in combat that the type was entirely suitable for seaborne operations during a hitherto secret operation conducted *inside* North Vietnamese waters during 1972. Known as MARHUK (MARine Hunter/Killer), it lasted for nearly six months, and despite intensive anti-aircraft fire resulted in no casualties for the squadron (HMA-369) and only one aircraft sufficiently damaged that it could not be repaired on the ship.

The five shots that follow are via Bryan Wilburn and were taken by Colonel (then Lieutenant) David C Corbett

## **Above**

September 1972. The USS *Cleveland* (LPD-7) loads in Subic Bay prior to the squadron's return to the combat area. One of the stores loaded during this stop was the formidable Zuni rocket, used operationally for the first time on a Cobra during MARHUK





### Top

Hon La anchorage looking north—looks peaceful doesn't it? As one of only three deep water ports available in North Vietnam, it was very heavily defended. All the Cobras had to do was stop anyone unloading there . . .

### Above

October 1972. A 'no kidding' mission. The aircraft markings are toned down, and those are live rounds in the pod



Back to August. En route with the aircraft being prepared—comparison with the pictures taken a decade and a half later (page 66) reveals that working on a crowded deck is still a bitch







The only air to air shot this author has yet uncovered of an operational MARHUK bird showing the original glossy 'Marine green' scheme and toned-down markings. The grey areas around the wing/fuselage are protective 'paint' designed to be burnt off by the powerful efflux of the Zuni in preference to the aircraft skin that would otherwise suffer









'Old Cobras never die . . .'. This shot is one for the historians. This J served on MARHUK. In April 1988, aircraft 157762 is part of HMT-303 through which all Marine Corps Cobra pilots pass. Few will know her distinguished history or recognise her as great-grandparent of the brand new W in the background



Another J basks in the sun on 303's flight line.  
Remarkably, two other (of seven original)  
MARHUK birds survive at Pendleton. 157764  
and 157781 were deployed to Yuma at the time  
this picture was taken









# ***Shades of green***



These three pictures, taken by an unknown front seat student, show the excellent view afforded by the Cobra's big canopy, in this case of the approach at Pendleton. The chap in the back is the dreaded 'X man'—if he doesn't put the requisite 'Xs' in the boxes as training progresses you won't be flying the Snake for a living









#### **Left**

If you fly Cobras, then naturally you drive a macho pick-up with personalised plates. 'SCAR 38' alludes to 367's 'Scarface' callsigns, the sticker on the right, incidentally, is that of HMT-303

#### **Below, right and overleaf**

White knuckles job—417 flares after an autorotational (ie power-off) descent. Helicopters don't glide all that well and the descent can be rather quick



















216 close up. Due for replacement any day by a new W, this old lady may be a little tattered around the edges but there's no mistaking the elegant lines of her youth





Another of the Scarface Js has her engines tweaked while a camouflaged J 'wocks' by in the background









216 being made ready for a test flight  
following some hangar time . . .





... after which comes a thorough pre-flight





Comment unnecessary









**Left**

This J has apparently just received a new tail boom. Interestingly, apart from the fibreglass rotor and tail fairing, the new bit is painted Army dark green

**Overleaf**

Baking in the midday sun, two Js and a Huey display their similarities















### Left

A last look at the J, with its cambered tail fin—even from this end it looks mean and efficient

### Below and overleaf

This T was photographed at New River. Only 57 of them were built, but they served with great distinction, Grenada, the Lebanon and the Gulf being among their honours. Clearly visible here is the lengthened tail boom with its distinctive kink in the previously unbroken lower line, and the cut-down fin.

Not so obvious is the extra foot inserted between the cockpit and the leading edge of the wing. At first the Marine Corps couldn't afford to have all its Ts fitted with the TOW/M 65 sight so for some time there were AH-1Ts and AH 1T(TOW)s. The sight unit also makes the 20mm gun more accurate at a greater range.

The AH-1W is essentially a re-engined and updated T airframe. Surviving Ts will ultimately be retrofitted to bring them to W standard and will be distinguishable only by their serial numbers











### Overleaf

The missing link. This is the model 309 King Cobra. Two were built in 1971 as technology demonstrators by Bell in conjunction with a number of equipment suppliers. This model led to the uprated J bought by the Iranians, and ultimately to the T.

Visible here is the nose turret which houses very advanced optics, FLIR and the laser

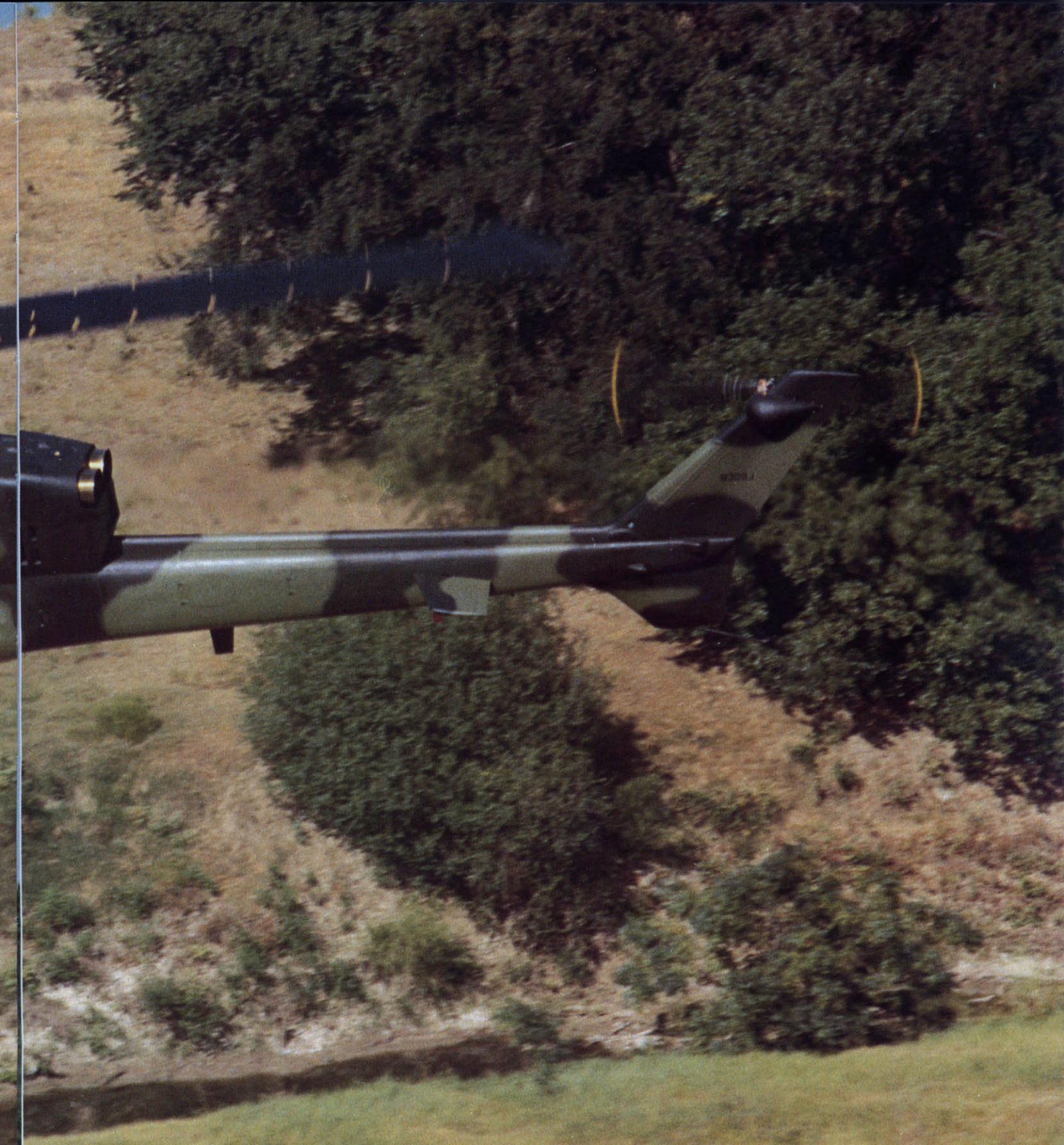
ranger. Also apparent is the rather more elegant tail boom extension than was eventually adopted, and (just) the forward-swept tips of the experimental Wortman rotor blade.

This airframe was eventually rebuilt to single engine configuration and survives to this day (albeit rather incomplete) in Fort Rucker's superb museum (Bell)

















#### **Left and overleaf**

The *other*, single-engined, King Cobra proved many features found on the Army's S models seen here on Rucker's Matteson range during live fire training.

Structurally, the Army machines are little changed from the original G version with the obvious exception of the 'flat plate' canopy and M-65 TSU. These snakes also have the K-747 composite blade, distinguishable by its tapered tips

















### **Left**

Head-on and armed to the teeth—operationally the Snake never gets this high—Cobra crews regard their airspace as extending from the top of the grass to the top of the trees. The cranked arm protruding from the cockpit, incidentally, is the remarkable Air Data Sensor which bestows great accuracy on the ballistic

weapons and is the only British piece of kit to be found on the Cobra

### **Above**

Pilots are changed for the next shoot while contract civilians attend to the ammunition. The results obtained by the departing front-seater can only be guessed at









### **Left**

Off again. Re-armed No 27 heads off down range

### **Below**

Under the hood. Rucker also has a few old (rounded canopy) S models fitted with the Apache's PNVIS system used solely to train pilots in the difficult art of landing in the dark without risking an expensive AH-64 in the process.

This chap has donned his Apache-type IHADSS helmet and clearly looks forward to his impending hop in the 'surrogate' with great enthusiasm. See *Battlefield Helicopters* (another Colour Series book) for pictures of these machines









# ***Factory fresh***



## **Left and overleaf**

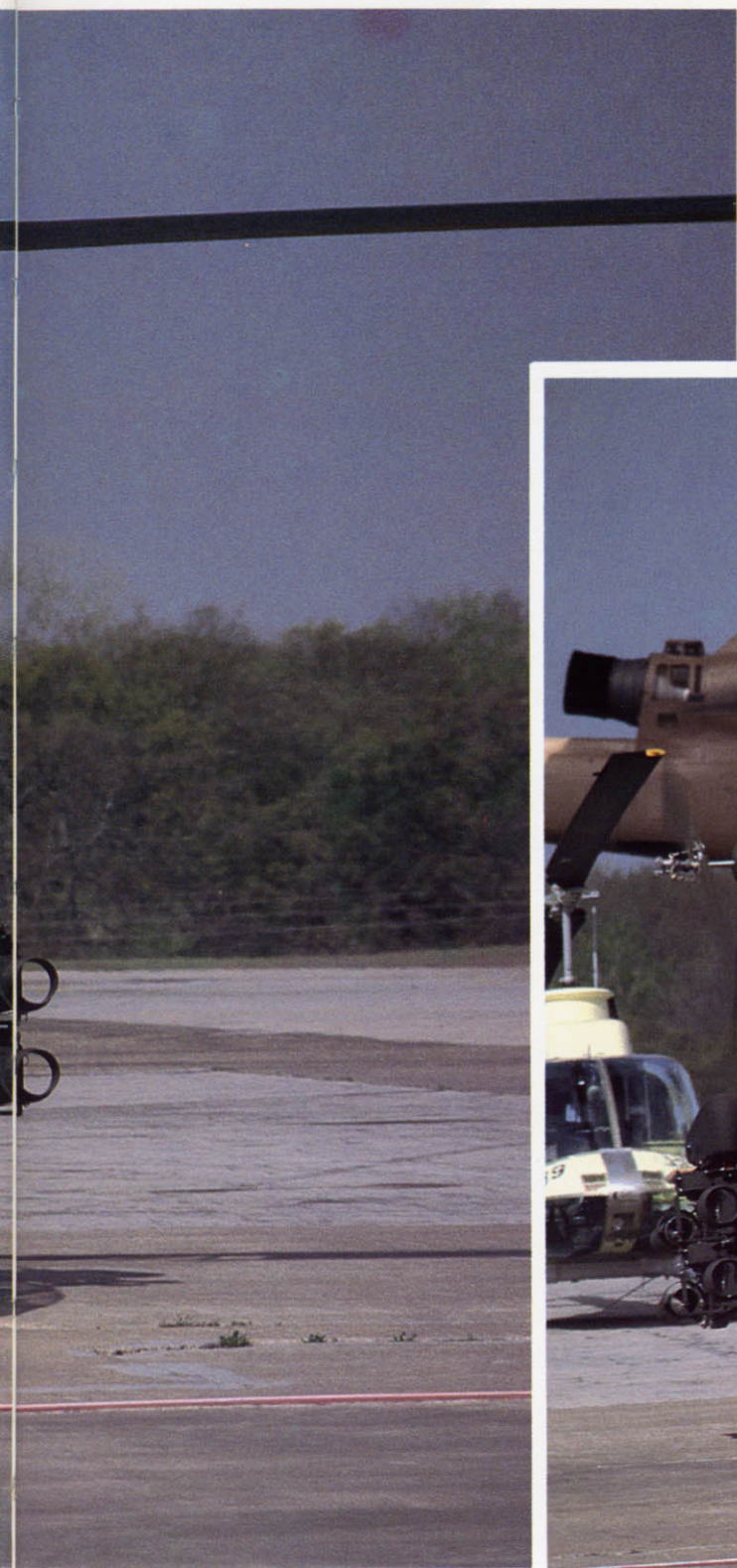
The AH-1S (which the US Army is to redesignate AH-1F, thus throwing future historians into total disarray) is also the current export model.

These Cobras are leaving Bell's Fort Worth factory for shipment to Jordan. Just visible in the intake is the necessary sand filter











**This page and overleaf**

S models are also to be built under licence in Japan. These JGSDF examples are painted the same colour as US Army machines, although recently experiments with multi-colour schemes have been in evidence. (Yasunori Toda)











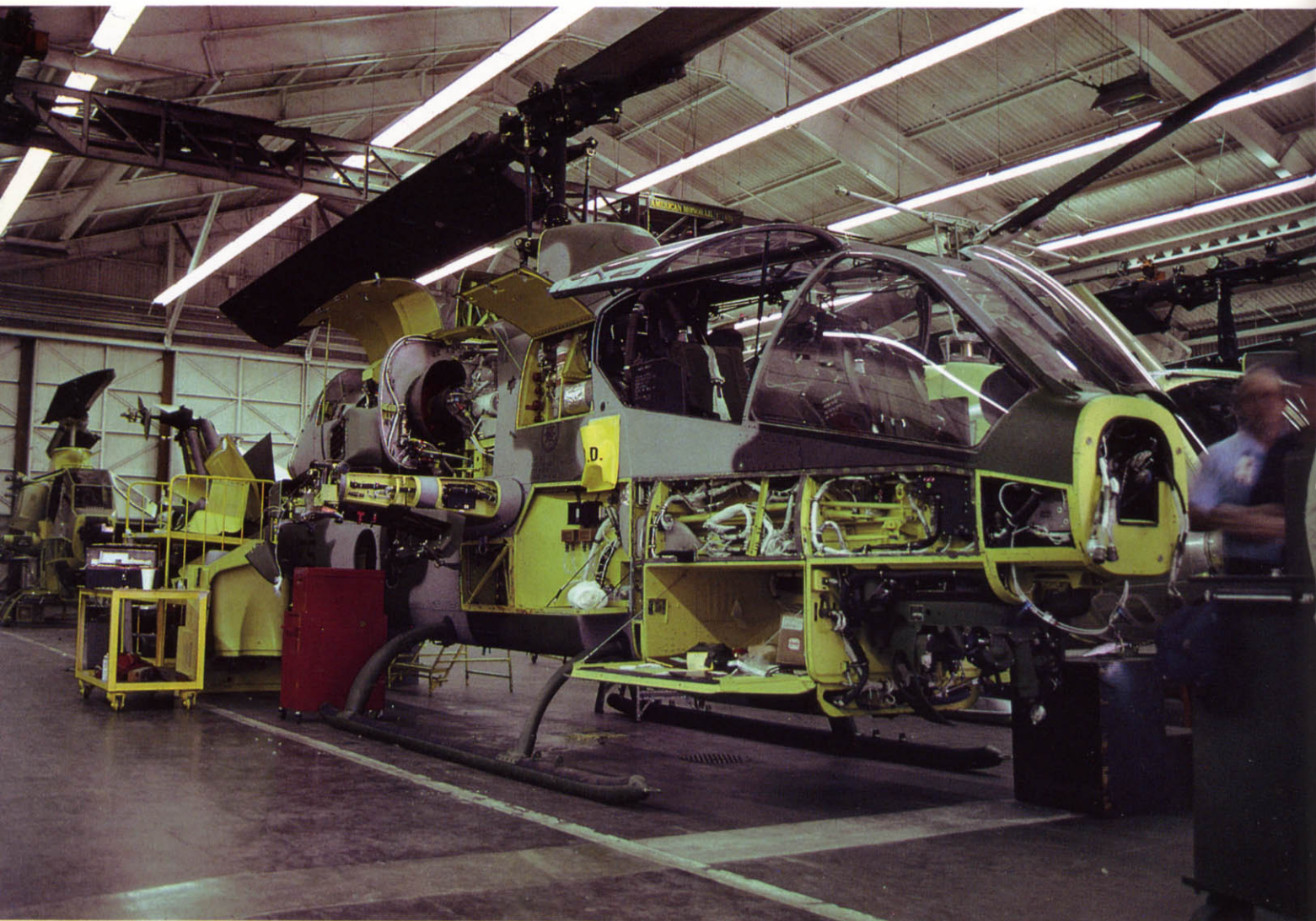




**Above**

Back at Bell's plant six, the second production W (162533) has been used for certification work, as is evidenced by the instrumentation boom and orange (denoting test) panels





This Cobra (162566) is being 'de-bailed', ie, made ready for return to the Marines following test work. The airframe has had a high degree of access built into it





Portrait of a remarkable lady. 161022 was the last production T model. It served as the T-700 demonstrator under the designation 'T+', before becoming 'Super Cobra' (briefly wearing a striking black and gold colour scheme)—in effect the W prototype.

In the process of being stripped down it will now become the '4BW'. Likely to be the next step in Cobra evolution, it will feature an

advanced four bladed rotor (just visible on the 222 behind), a new TSU turret with night-vision capability and may well be called the 'Viper'—presumably because it's now changed its skin so often it's a different Snake.

In this form it would be a serious competitor for the Apache or indeed any other advanced attack type. Old Cobras never die . . .



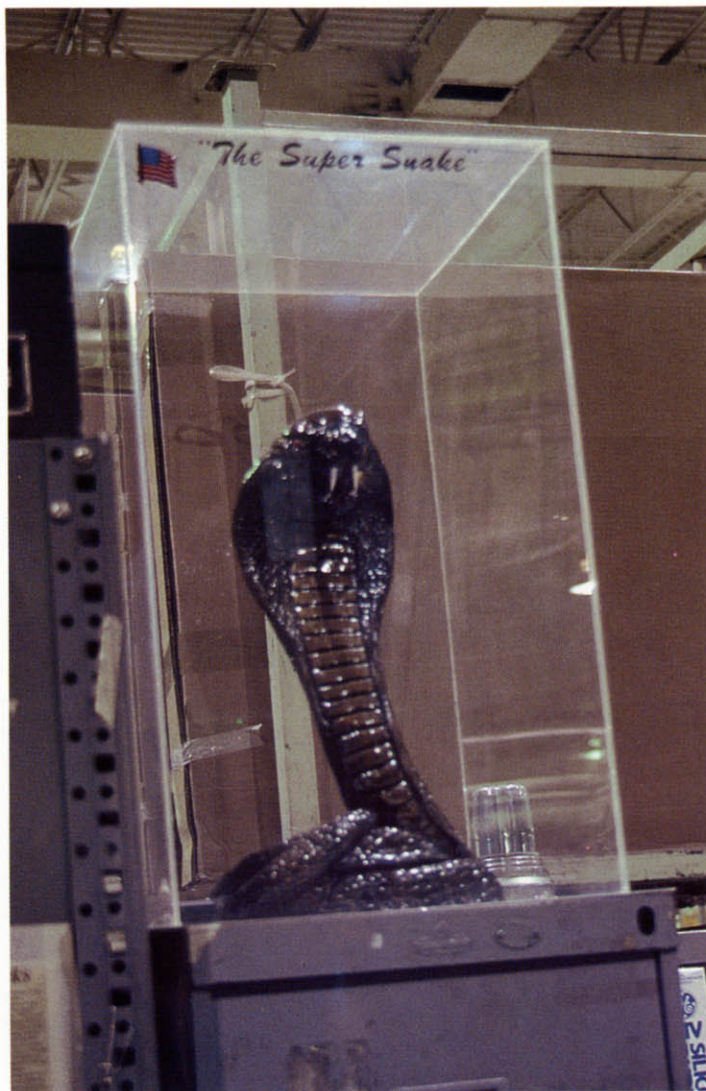


Side by side on the production line at Fort Worth, the two current models, S (foreground) and W





Tool boxes are often decorated—this one and several others noted at plant six sported Imperial Iranian Army decals—it is thought unlikely that the present owners of the Shah's surviving Js will require any spare ones . . .



Bell workers are immensely proud of their product, this splendid fellow inhabits a corner of the production line





#### **Above**

This S, still in primer, is for South Korea. An early export customer, Korea took some 'J International' models—the same variant as the Iranians

#### **Right**

The first production aircraft for the Koreans undergoing EMC testing. Bell, as contractor, has to demonstrate that all systems function correctly before the aircraft is accepted by the customer







**These pages**

The number one and two Korean aircraft being flight tested on a murky Texas afternoon—head-on the primer emphasizes the lean frontal aspect that makes the Cobra such a difficult target

**Overleaf**

This W was will shortly have a new owner—and a 'Scarface' callsign















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