Above: 'Scrappy' Johnson in the cockpit of his F-104A, May 7, 1958. HOWARD JOHNSON **Below:** The prototype Starfighter, XF-104 53-7786. LOCKHEED

Above
A pair of F-104As from the 337th FIS over the San Francisco Bay Bridge, late 1959. LOCKHEED

Right
Telegram sent from the 'Skunk Works' chief designer, Kelly Johnson after the two records were granted the prestigious Collier Trophy. HOWARD JOHNSON

Below right
Telegram from Robert E Gross, chairman of Lockheed, to the commander of the Western Defense Force at Hamilton, Major General Hugh Parker. HOWARD JOHNSON

Original statistics showed a service ceiling of 50,000ft and a maximum speed of 1,328mph (2,137km/h, the equivalent of Mach 2.01). All of this depended on the power of a single General Electric J79-GE-11A turbojet. The F-104 had a unique format: the powerplant took up half the length of the fuselage. Fuel tanks and the pilot occupied the remainder. Space was so tight there was no room for the wide range of electronic devices that were being installed in other fighters of the era.

The Starfighter was an ideal platform to break performance records; such exercises were a potent way of showing potential foes the USAF's capabilities. Altitude was an obvious record to attempt with the F-104 having such an impressive service ceiling. (The record at that time – May 1958 – was held by a US Navy Grumman F-11F-1F Super Tiger, which had reached 76,932ft on April 18, 1958.)

SHORT NOTICE CALL

Howard C 'Scrappy' Johnson joined the USAAF at the end of World War Two but did not get a chance to go overseas. In mid-1950, he was at Clark in the Philippines flying F-80

"...the engineers had figured that during my climb, the afterburner would blow out from a lack of oxygen at about 63,000ft and my engine would flame out somewhere near 67,000ft"

Shooting Stars when the Korean War broke out. He was one of the first pilots to fly combat in that theatre as part of the newly-formed 51st Provisional Group.

After his stint in Korea, he flew F-94 Starfires in the USA before becoming one of the first to fly the F-104A with 83rd Tactical Fighter Squadron at Hamilton Air Force Base (AFB), California. Johnson remembers the call giving him the nod to try and break the altitude record. "It was early in May 1958 and I was home eating dinner when the telephone rang," he said. "The lieutenant colonel at the other end was excited and told me the air force had just sent an order for the squadron to send a pilot up to Palmdale, California, for the express purpose of breaking the existing world altitude record for an airplane." The next statement shook him up. He would be going to Palmdale the *next* day. He went with Walter W Irwin and Korean War ace James Low in a C-123 Provider. "Walt and Jim were not so lucky in that a SNAFU in the Pentagon prevented them from flying the speed record and time-to-climb. [SNAFU - situation normal, all fouled-up. Although many replace 'fouled' with another word!] For some reason or another, their clearances failed to arrive for the flight to take place with my altitude attempt."

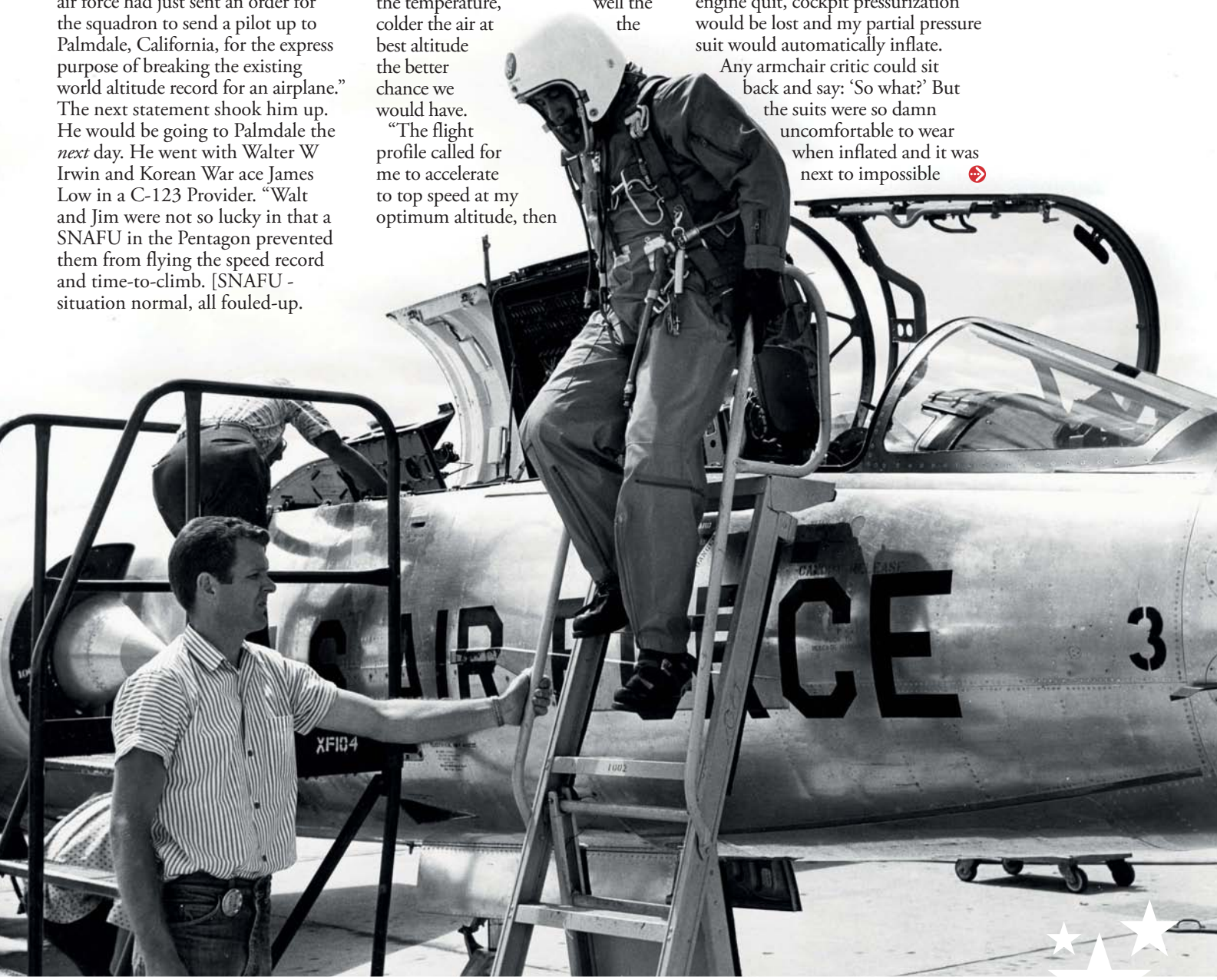
LAWS OF PHYSICS

Scrappy Johnson said: "To set altitude records in a supersonic jet, Kelly Johnson [the F-104's designer] had suggested building up as much speed as possible in level flight at the optimum altitude for the F-104A and at best temperature. That would put the Starfighter at about 40,000ft. His thinking being that I would simply 'zoom' the aircraft and see just how high it would go. As for the temperature, well the colder the air at the best altitude the better chance we would have.

"The flight profile called for me to accelerate to top speed at my optimum altitude, then pull back on the stick and climb at a 52-degree angle as high as it would go. The Lockheed engineers had drawn the angle on the canopy with a grease pencil to show exactly what a 52-degree climb looked like. Cripes, it looked as though it was *straight* up!

"Furthermore, the engineers had figured that during my climb, the afterburner would blow out from a lack of oxygen at about 63,000ft and my engine would flame out somewhere near 67,000ft. The laws of physics said the aircraft would fly the rest of the way without any additional thrust. That was the up-side of the equation.

"The down-side was that when my engine quit, cockpit pressurization would be lost and my partial pressure suit would automatically inflate. Any armchair critic could sit back and say: 'So what?' But the suits were so damn uncomfortable to wear when inflated and it was next to impossible



Below
Howard Johnson climbing down after his record-breaking run. HOWARD JOHNSON

Above
Charles S Lodgsdon (left), representing the US National Aeronautic Association watching as Major Johnson is congratulated by Tony LeVier (right), Lockheed's legendary test pilot. USAF VIA HOWARD JOHNSON

Right
Congratulatory letter was from Major Gen Hugh Parker to Scrappy Johnson. HOWARD JOHNSON

to move around and function when they expanded.

"Then there were other issues to consider. I knew I was going to exceed the engine's temperature red line, I just didn't know by how much and therein lay the rub. Exceed it by too much and the engine would stall and sustain major, possibly fatal, damage. The engineers would not make a decision on that subject, so I knew I would have to use my own judgment if I ran into trouble."

At the time of Johnson's record flight, he had only 33 hours in the F-104.

CRUCIAL ZOOM

The Fédération Aéronautique Internationale (FAI), the record governing body, would only confirm an altitude record if it was recorded on a sealed barograph, a fancy recording altimeter, in the aircraft. Aerodynamicists advised the record might be ratified at 5,000ft below the actual height reached because there is a lag in a recording altimeter at high altitude and the aircraft would be at the peak for a short time.

The big day was May 7, 1958 and all personnel at Palmdale kept their eyes on the flight line. Scrappy Johnson said he was not anxious as he strapped in to the cockpit of F-104A 55-2957 probably due to all he had going through his mind in such a short time.

He said: "I finished strapping in and started going through my engine start. Minutes later, I taxied

OFFICE OF THE COMMANDER
WESTERN AIR DEFENSE FORCE
HAMILTON AIR FORCE BASE
CALIFORNIA

13 MAY 1958

Major Howard C. Johnson
83d Fighter-Interceptor Squadron
Hamilton Air Force Base
California

Dear Scrappy:

I am both pleased and proud to forward to you the inclosed telegram from Mr. Robert E. Gross, Chairman of the Board for Lockheed Aviation Corporation.

You can be assured that I share his sentiments with regard to your outstanding accomplishment. You can also be assured that the entire United States Air Force is as proud of you as we in Western Air Defense Force.

My heartiest congratulations again on a superb job!

Sincerely,

Hugh A. Parker

HUGH A. PARKER
Major General, USAF
Commander

1 Incl
a/s

"As I peeked out, the sky became a dark purplish blue and I could make out the curvature of the earth"

ARMED FORCES DAY CELEBRATION

Major Howard Johnson (left) talking with Lt General Jimmy Doolittle about his record achievement with Captain Walt Irwin (right) listening in.
USAF VIA HOWARD JOHNSON

Walt Irwin's turn for a try at the speed record came on May 16, just a few days after Scrappy Johnson made his mark on the altitude run. This was timed so the two F-104 records could be announced to the nation on Armed Forces Day - the 17th. Irwin had a few hours in the Starfighter, yet was up against one of the most demanding piloting jobs in the flying business.

A record run at F-104 speeds required piloting accuracy bordering on the limits of human ability. Irwin had to fly a hairline course in three dimensions. Having no time to make practice runs, he was working against the clock. In the preceding days he was able to try half a dozen runs to get the feel of the course.

On the 16th he managed to get airborne at 7.58am and let it go for a downwind run set at 1,465.41mph. As he reversed his course and while inching back on the throttle to keep the temperature down, he notched up a speed of 1,342.97mph. A 60-70 knot wind blowing at altitude slowed him down. When the two totals were averaged, Irwin had logged a 1,404.19mph for a world record. (The previous record was 1,207.66mph, set only six months earlier at the same venue by Major Adrian Drew in a McDonnell Douglas F-101A Voodoo.)

out onto Runway 4, positioned myself on the centreline and blasted off. My track had been carefully designed so that I would reach zoom apogee directly over Edwards AFB. This was where all the official radar antennae and cameras had been installed, ready to photograph and record my exact altitude the moment I went over the top.

"Success hinged upon having several things happen and each at the proper moment. I needed to obtain optimum speed, then burn off just the right amount of fuel at the right location at the beginning of my climb. The magic formula for setting the record was deceptively simple: the less fuel I had left on board, the lighter the plane, the higher I'd go. But with one very important caveat remaining – I had to have enough fuel left in my tanks to make it back to Palmdale.

"I was climbing and the clear, cobalt blue skies gave Palmdale no cover. As I headed for the coast and Santa Barbara, I gently coaxed the aircraft up to 43,000ft, turned over Santa Barbara and made a beeline for Edwards. Nailing the course, I moved the throttle lever into afterburner. The bird took a huge leap forward. The airspeed indicator moved up rapidly until it showed I was ripping through the air at Mach 2.23. The only sound I heard was my own breathing.

"I carefully eased back on the stick, pointing the little plane's nose to the recommended 52 degrees. It hammered the air from 50,000 to 60,000ft. Then just as predicted, at 63,000ft the afterburner cut out and at 67,000ft the engine quit – not enough oxygen.

GLIDER SOARING SKYWARD

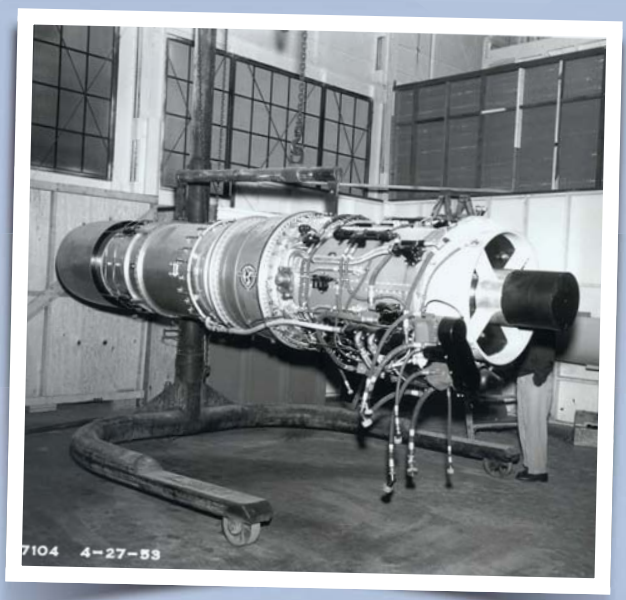
"My plane had just become a glider as my pressure suit inflated. The sleek Starfighter kept climbing; a rocket whose fuel had been exhausted yet continued to spiral upwards." As Johnson blasted through 70,000 and then 80,000ft, the ailerons were losing effectiveness. He said: "As I soared even higher, I was having trouble keeping my wings level. The moment I went over the top I glanced down at my airspeed indicator – it said 30 knots. As I peeked out, the sky became a dark purplish blue and I could make out the curvature of the earth.

"On the way down the radar operator at Edwards told me over the radio that I had reached 91,243ft. At that time it dawned on me that I had broken the world's altitude record by over 14,000ft. [This figure subsequently confirmed by the FAI - ED.]

"I continued my gliding descent and turned back toward Palmdale, anticipating getting to a low enough altitude to air-start the engine and get the pressure suit deflating. At 47,000ft I was able to start the J79 with no problems and I raced toward Palmdale where a large contingent of Lockheed executives anxiously awaited the results.

"I entered the traffic pattern at Palmdale with less than 400lb of fuel and had barely enough to taxi to the parking area. Tony LeVier, Lockheed's chief engineering test pilot, climbed up to the cockpit, reached in and shook my hand. I was mentally and physically drained. Such an opportunity as this does not come often into anyone's life, and if had I muffed it, I would have surely regretted it for the rest of my life."

That was not the end of Johnson's contribution to the USAF. He went on to fly 100-plus missions over North Vietnam in F-105 Thunderchiefs.



Below
The Starfighter's powerplant, a General Electric J79. LOCKHEED

Bottom
Scrappy Johnson climbing into his Starfighter for a practice mission in 1965. HOWARD JOHNSON