

# Big Charlie, Jolly Greens and Pave Pigs

*The Sikorsky H-3 in US Air Force Service*



FOR an American pilot down in North Vietnam, salvation was often a Sikorsky HH-3E hovering above the treetops. However, the original requirement that brought the naval-inspired S-61 into the US Air Force had nothing to do with combat rescue — the CH-3C *Big Charlies* first sent to the Republic of Vietnam were cargo helicopters. A Pacific Air Forces study in 1964 sketched the need for an extended-range aircrew recovery vehicle in Southeast Asia and as the CH-3C was already serving in Tactical Air Command, wartime pressures gave the Air Rescue Service a dedicated combat rescue version, the HH-3E *Jolly Green Giant*. CH-3Cs and CH-3Es continued to haul freight, recover drones and carry Special Operations Forces during the war in Vietnam and CH-3s and HH-3s served faithfully with US Air Force active duty, Reserve and Air National Guard squadrons long after. The MH-3E *Pave Pigs* of the

Frank Colucci traces the genealogy of the ubiquitous Sikorsky H-3 and describes its many roles, from cargo transport to special operations.

*Above: One of three HH-3Es (67-14717) operated by Det 14 of the 67th ARRS for combat SAR at Keflavik, until being replaced by three Sikorsky MH-60 Black Hawks, the first of which arrived in November 1991. (Photo, Malcolm English)*

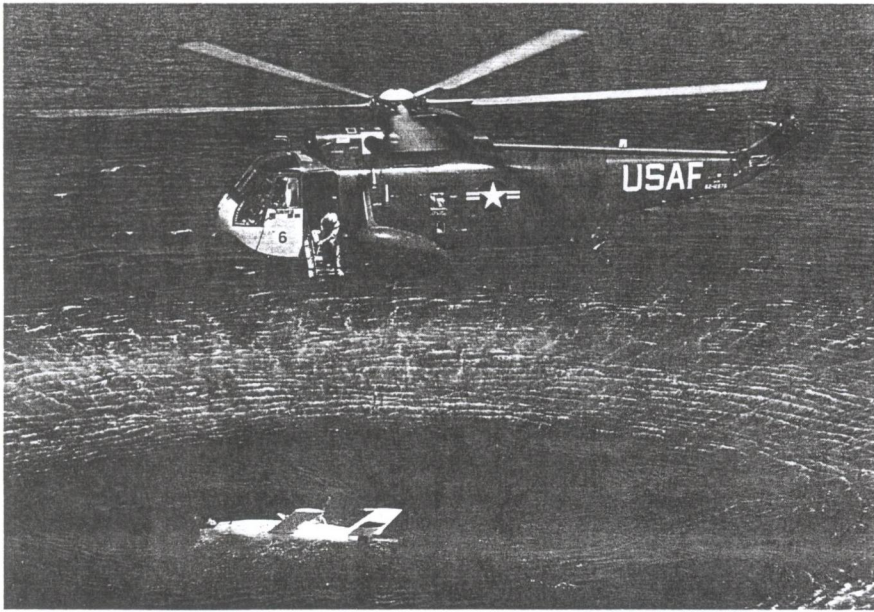
71st Special Operations Squadron were retired only after flying in Operation *Desert Storm*.

#### **C for cargo**

The development chain that brought the long-bodied H-3 to the US Air Force began with the US Navy. The Navy proposed turbine engines as an engineering change proposal for the HSS-1 *Seabat* anti-submarine warfare (ASW) helicopter, but Sikorsky

Aircraft made its own proposal on January 31, 1957 for an 8,165kg (18,000lb) twin-turbine helicopter with a boat hull for overwater operations. Soon after the first HSS-2 *Sea King* flew on March 11, 1959, Sikorsky proposed an HR3S-1 with rear cargo ramp and accommodation for 27 US Marines. The competition for a turbine-engined Marine amphibious assault helicopter was lost to the tandem-rotor Boeing Vertol 107 (BV 107) — today's CH-46. However, a variant of the stretched *Sea King*, with rear ramp, later served the US Air Force and US Coast Guard.

Air Force Standard Operating Requirement (SOR) 190 called for 28 helicopters to service radar warning towers off the Atlantic coast, recover drones at fighter training ranges, and resupply missile sites in America's heartland. A fly-off at Wright Patterson Air Force Base (AFB), Ohio, in 1961 evaluated a BV 107 borrowed from New York Airways and a stripped Navy *Sea King* furnished with a clumsy turntable that enabled cargo to be loaded through the main cabin door and slide



Above: In 1962, the USAF received three HSS-2s from the US Navy (62-12571/2/3) and bought three S-61As from Sikorsky (62-12574/5/6), all under the designation CH-3B, for target drone recovery and to service the Texas towers off the Atlantic Coast. A Ryan BQM-34A Firebee is seen here about to be winched up by 62-12576. (Photo, Sikorsky Aircraft via Author)

into the fuselage. Although the BV 107 won the competition, contractual problems resulted in the Air Force asking Sikorsky for a stretched S-61R with a rear cargo ramp — such as that offered by Boeing.

The USAF first received six CH-3Bs (three of them on a one-year loan from the Navy) and put three into service in March 1962 flying from Otis AFB, Massachusetts, to two Texas towers (oil rigs) 153km (82nm) off the New England coast. The 551st Helicopter Section of the 551st Airborne Warning and Combat Wing used the CH-3Bs to carry up to 2,540kg (5,600lb) of passengers, mail and supplies to landing decks 24m (80ft) above the ocean. They were also tasked with evacuating the tower crews in Atlantic storms. From May 27 to June 5, 1963, a CH-3B, the *Otis Falcon*, flew a transatlantic crossing following the route taken by two Sikorsky H-19s in 1952, with stops at Loring AFB, Maine; Goose Bay, Labrador; Narsarsuaq, Greenland; Keflavik, Iceland; and the Hague in the Netherlands. Flying time for the 6,980km (3,762nm) trip was 35 hours 35 minutes.

CH-3Bs prepared the Air Force for the desired S-61R, or CH-3C, with 0.76m (2ft 6in) fuselage stretch and a new empennage with hydraulically-operated rear ramp and enlarged tailplane. The first CH-3C with 970kW (1,300shp) T58-GE-1 engines was delivered to TAC in 1963 and to save qualification time, the military S-61R got a Federal Aviation Administration civil type certificate that December.

During an icing trial in 1964, flown at 10,000ft (3,048m), the new helicopter experienced no less than three compressor stalls. Descending in an IFR autorotation the

helicopter eventually broke out of solid cloud at 600ft (183m). Finding themselves heading toward a farmer's fence, the pilots retracted the undercarriage, skimmed the fence, and lowered the undercarriage again to touch down facing a large bull ready to charge. The bull chose to ignore the intrusion, the pilots survived unhurt and the aircraft was undamaged. Analysis found ice accretion on the cockpit roof had broken off and been ingested by the engine. Indeed, a similar incident with a Canadian Coast Guard S-61 months earlier had gone unmentioned. The problem was solved by installing an ice and debris shield, still worn by most S-61s in icing environments.

In 1962 the Air Force had used some of its borrowed CH-3Bs to recover target drones and in 1964 the first CH-3C was delivered to Tactical Air Command (TAC) for drone retrieval at Tyndall AFB, Florida. At the same time, the USAF and Army were competing for the short-range intra-theatre delivery mission, taking supplies from Lockheed C-130s to remote units where even a Hercules could not land. The Army wanted to use its fixed wing de Havilland Caribous, while the Air Force promoted the CH-3 with almost the same cargo capacity and in Exercise *Goldfire I* from October 29 to November 11, 1964, Air Force Strike Command tested its tactical support techniques with C-130s and CH-3Cs. The helicopter could carry 25 troops, two Jeeps, or 15 litter patients with two attendants.

With US forces committed to Vietnam, the Air Force re-equipped and trained the 20th Helicopter Squadron at Eglin AFB, Florida and airlifted the helicopters and crews by Douglas C-133 Cargomaster to Tan Son Nhut Airport in late 1965. The 20th had four flights operating out of Tan Son Nhut, Da Nang and Na Trang in South Vietnam, and Udorn in Thailand. The Udorn detachment was pressed into rescue work, but the flights in the Republic of Vietnam were used primarily for battlefield logistics. There, so-called *Pony Express* missions delivered food and ammunition to Special Forces camps and took spare parts to Forward Air Controllers

operating out of remote strips too small for fixed-wing cargo aircraft.

In support of Marines during Operation *Double Eagle*, CH-3Cs airlifted 105mm howitzers between battle zones. The 2,268kg (5,000lb) guns were normally disassembled for transport, but the helicopter delivered weapons and crews ready for action. In Operation *Birmingham*, CH-3Cs worked with Army Hueys while early Chinooks were grounded by hydraulic problems.

Although the CH-3C had no armour, self-sealing fuel tanks, or armament, it was, nevertheless, used to evacuate the wounded under fire from a mountain camp near Ashau and it was often shot at in the relatively benign air defence environment of South Vietnam. The Air Rescue service borrowed two CH-3Cs from TAC in July 1965 and assigned them to Detachment 1 of the 38th Air Rescue Squadron (ARS) at Nakhon Phanom. Initially unpainted, they were quickly camouflaged in water-soluble green paint that won them the title *Jolly Green Giants*.

### H to the rescue

In November 1965, Det 5 of the 38th ARS received two HH-3Es with 1,119kW (1,500shp) T58-GE-5 engines, 454kg (1,000lb) of titanium armour and self-sealing tanks with 30% more fuel than the CH-3C. The early HH-3E had drop tanks taken from North American F-100 Super Sabres but no refuelling probe. The 757 lit (200 US gal) sponson tanks were usually jettisoned as the helicopter approached the pick-up to reduce weight in the hover. Rescue helicopter crews were trained at Stead AFB,



Above: The CH-3C, first flown in 1963, introduced a fuselage stretch and rear cargo ramp to give the USAF a cargo-utility capability. This Air Rescue Service CH-3C (63-9688) was used at Cape Kennedy to support the space programme. (Photo, USAF via Author)

Nevada, and sent to Thailand to provide combat search-and-rescue (SAR) for air strikes on North Vietnam and Laos. Det 5 was based at Udorn and routinely used Nakhon Phanom as a forward operating location. It also operated out of risky Lima Sites 36 and 59 in Laos to extend its reach into North Vietnam, effectively living with one war while fighting another.

A CH-3C was shot down on November 7, 1965, in North Vietnam trying to rescue the pilot of a Douglas AD-1 Skyraider itself



Above: With tactical air losses increasing in North Vietnam, air-to-air refuelling provided a means to stretch the reach and endurance of rescue helicopters. A CH-3C was equipped with a dummy refuelling probe in December 1965 to test the interaction of a helicopter flying close to a C-130 tanker. (Photo, Sikorsky Aircraft via Author)

shot down during the search for an Republic F-105 Thunderchief pilot. The remaining CH-3 at Nakon Phanom relocated to Udorn and by the end of 1965 Det 5 had six HH-3Es and one CH-3C — the latter was returned to TAC in January 1966. That same month, the ARS became the Aerospace Rescue and Recovery Service to acknowledge its support for the US space programme.

HH-3Es were far more capable than the Kaman Huskies but were still tied to Lima Sites threatened by the Vietcong. Rescue missions were always flown with two *Jolly Greens*, one playing *Low Bird* to make the pick-up and the other *High Bird* to stand by should the situation deteriorate and another helicopter be needed. A flight of two *Jolly Greens* would typically work with four A-1 Skyraiders. The *Sandy High* pair escorted the helicopters while *Sandy Low* included the on-scene commander who decided when to make the pick-up. Skyraiders from the 1st Special Operations Wing flew as *Sandies* in Rescue Combat Air Patrols (RESCAPs) or *Hobos* on armed reconnaissance missions but would rarely land at Lima Sites unless battle damaged.

As the pace of the air war accelerated, so did combat rescue. The Joint Search and Rescue Center at Tan Son Nhut had overall control of SAR efforts in theatre. HH-3E pilots in Southeast Asia served one-year tours shortened by one month for every 20 trips into North Vietnam. They also flew hazardous missions in the undeclared war in Laos.

The Aerospace Rescue and Recovery Service formed the 3rd Aerospace Rescue and Recovery Group (ARRG) at Tan Son Nhut and gave rescue responsibility for North Vietnam, Laos and the Gulf of Tonkin to the 37th Aerospace Rescue and Recovery Squadron (ARRS) with HH-3E detachments at Da Nang in South Vietnam and Udorn in Thailand. The 38th ARRS was responsible for base

rescue detachments flying the HH-43 and by January 1967, the ARRS had ten HH-3Es in Southeast Asia. *Jolly Greens* operated with a crew of four: pilot, co-pilot, flight engineer and parajumper (PJ). SAR task forces were menaced by MiGs on several occasions, but the *Jolly Greens* were most vulnerable when hovering for a pick-up.

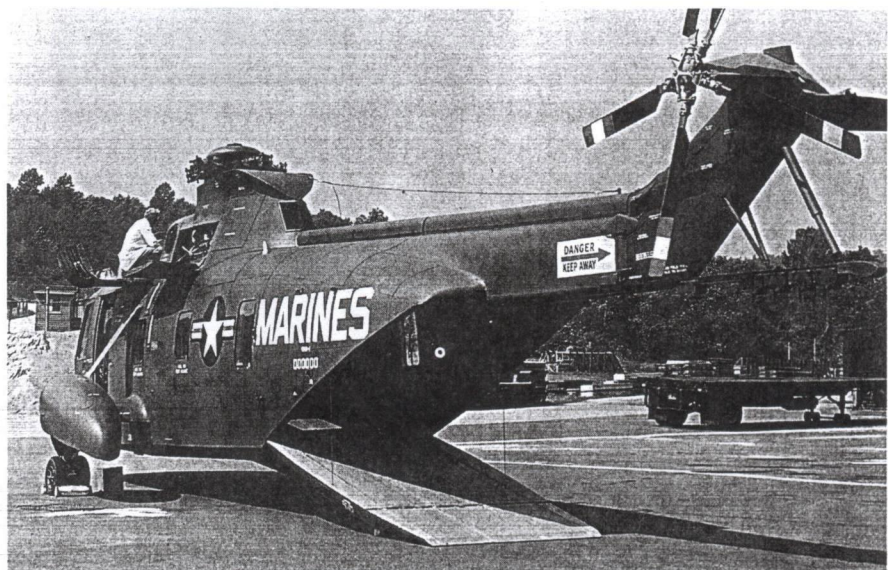
### Taking gas

Good as the HH-3E was, the armoured, twin-engined rescue helicopter was unable to cover all of North Vietnam, even from forward operating locations. Consequently, the ARS formulated an aerial refuelling requirement for helicopters in August 1964. A CH-3C with fixed dummy refuelling probe centred on the nose made ten hook-ups with a Marine KC-130F Hercules in December 1965 and the first fuel transfer between an HH-3E with extendible



Above: USAF CH-3B 62-12574/Otis Falcon taking part in Exercise Swift Strike III in July/August 1963, at the time the largest US military exercise since World War Two. The same helicopter had earlier made a transatlantic crossing on the same route flown by two H-19s in 1952. (Photo, USAF via Author)

Below: Mock-up of the HR3S-1 showing the tail ramp and cargo monorail unsuccessfully proposed to the US Marine Corps. (Photo, Sikorsky Aircraft via Author)





Above: Four of the 71st SOS's MH-3Es were sent to Saudi Arabia during Operations Desert Shield and Desert Storm in 1990 and 1991. They were recamouflaged in this desert tan-and-brown scheme in theatre. (Photo, USAF via Author)

probe and the new Air Force HC-130P Hercules tanker with low-speed helicopter drogues took place in December 1966. A graphic demonstration of what aerial refuelling could achieve was provided at the 1967 Paris Air Show — two HH-3Es of the 49th ARRS took off from Floyd Bennett Naval Air Station in Brooklyn, New York on May 31 and crossed the Atlantic in 31 hours with nine refuellings from three HC-130s of the same squadron and another Hercules from the 54th ARRS at Goose Bay Labrador.

Air refuelling was first used in combat by *Jolly Greens* in June 1967. To cut response time to SAR calls, the 37th ARRS set up four refuelling zones — two over the border of Laos and North Vietnam, one over central Laos and one over the Gulf of Tonkin. Lacking night vision goggles and thermal imagers, rescues were attempted almost exclusively in daylight. The Marconi Doppler navigation system of the HH-3E was not very accurate, but the rescue crew could use the standard ADF to home in on survival radios. Rescue forces established an

identification system to prevent the enemy from drawing helicopters into ambushes using captured radios.

HH-3Es of the 3rd ARRG rescued 92 aircrew in 1966, 122 in 1967, 163 in 1968, 72 in 1969 and 47 in 1970. To those numbers were added non-aviators wounded in the field or rescued from hazardous situations. The 50 HH-3Es delivered were conversions from 41 CH-3Cs and 42 CH-3Es ordered by the Air Force, all of which were eventually fitted with T58-GE-5 engines. Even with air refuelling, the *Jolly Green Giant* was limited. The HH-3E could not hover at the highest elevations in North Vietnam (for mountain rescues), nor could it withstand the increasing groundfire encountered in North Vietnam. When the Sikorsky HH-53B *Super Jolly Green Giant* arrived in Vietnam in September 1967 it gave rescue forces a faster, longer-ranged helicopter with more armament. The HH-3E was phased out of the Southeast Asia theatre of operations in December 1970, although four were rushed back from the Philippines to Tan Son Nhut during the

Below: Unguided rockets were fired from a 71st SOS HH-3E sponson mount during a feasibility study of air-to-air defensive armament. (Photo, 71st SOS via Author)



Communist invasion of South Vietnam in 1972.

### Special operations

*Jolly Greens* remained in Southeast Asia to fly a number of unique missions. Equipped with a Mid Air Retrieval System (MARS) and flown by Strategic Air Command crews, CH-3s retrieved remotely piloted or unmanned air vehicles (RPVs or UAVs) returning from reconnaissance missions over North Vietnam and China. During the height of the *Buffalo Hunter* RPV/UAV campaign in 1972, a CH-3 crew achieved four MARS 'pick-ups' in one day. The 6514th Test Squadron at Hill AFB, Utah, began using the system in 1974 to retrieve drones, missiles and other payloads.

CH-3Cs and CH-3Es were flown by the 20th Helicopter Squadron throughout the Vietnam conflict for Special Operations, most often infiltrating and 'exfiltrating' teams behind enemy lines. Special operations and rescue organisations today are generally kept separate, but clandestine missions in Southeast Asia were routinely shared with the HH-3Es, depending on time, mission and geography. The most elaborate of such missions was the raid on the Son Tay prison camp in November 1970.

The last Aerospace Rescue and Recovery Service aircraft left Vietnam in 1973, but

H-3s continued serving with active duty Air Force squadrons from Thule in Greenland to Osan in Korea. After Vietnam and until the failure of the Iranian rescue mission in 1980, special operations aviation was afforded a low priority by the US military. However, the Air Force gradually developed the H-53 as a night/adverse weather aircraft for the special operations forces and the Air Force Reserve equipped the 302nd Special Operations Squadron at Luke AFB, Arizona with Super CH-3Es (HH-3Es without refuelling probes), beginning the transition from rescue to special operations in 1974. The Reserve squadron moved to Davis-Monthan AFB outside Tucson to become the 71st Special Operations Squadron, training for low-altitude covert missions at night with night vision goggles.

The CH-3s gave way to MH-3Es, still officially HH-3Es but ultimately modified with a FLIR 2000 thermal imager, global positioning system (GPS) receiver and 1,119kW (1,500shp) T58-GE-100 engines (sustained power). The six MH-3Es of the 71st SOS were modified and while active duty special operations squadrons upgraded to the MH-53J Pave Low Enhanced and MH-60G Pave Hawk, the 71st dubbed its trusted MH-3Es *Pave Pigs*. During Operation *Desert Shield* the Reserve Squadron deployed four MH-3Es to Saudi Arabia and with its amphibious helicopter was tasked with overwater SAR for tactical aircrews in Iraq and with special operations, particularly in support of Navy SEALs. The Squadron transitioned to the Sikorsky MH-60G in 1993 and was given the SAR mission in 1994.

#### On guard

Air National Guard (ANG) units received the HH-3E in 1975. The 102nd ARRS (now simply Rescue Squadrons) of the New York ANG at Suffolk County Airport and the 129th ARRS of the California ANG at Moffet Field were given their own HC-130 tankers to form composite air rescue groups. Guard units flew the HH-3E with a crew of five: pilot, co-pilot, flight engineer and two PJs. They specialised in long-range overwater SAR for which they regularly practised water landings with the HH-3E. Without air refuelling, the HH-3E has a range of up to 322km (173nm). Tankers provide long-range search and radio relay



Above: In July 1976, the 302nd Special Operations Squadron of the USAF Reserve was flying Super CH-3Es, such as 67-14718/'LH' shown here. The unit was relocated from Luke AFB to Davis-Monthan AFB and became the 71st SOS. (Photo, USAF via Author)

functions, as well as fuel, and they can drop additional parajumpers and survival equipment. Both Guard units transitioned from the HH-3E to the HH-60G Pave Hawk in 1990.

At least one CH-3E joined the US Navy for drone recovery work at the Point Mugu test centre in California and the Air Force HH-3E spawned the US Coast Guard medium-range HH-3F. Ordered in August 1965 and flown in October 1967, 40 were delivered from 1969 to 1973. Named Pelican, the Coast Guard aircraft differed from the Air Force *Jolly Green Giants* in having a weather radar, -5 engines and lacking armour and armament. Nine Air Force CH-3Es were transferred to the Coast Guard to sustain the fleet in 1990 until all were replaced by the HH-60J Jayhawk.

Like the ANG and Reserve units, the USAF has phased out the HH-3E from its rescue squadrons in favour of the Pave Hawk. However, by mid-1993, the US Army Simulation, Training and Instrumentation Command (STRICOM) had received 21 Air Force H-3s for conversion to remotely-piloted targets. A similar programme turned 13 Sikorsky S-55s into visually convincing Mi-24 *Hinds*. The so-called HAVOC-X programme was to modify the five-bladed H-3 to match the infra-red, radar and possibly visual signatures of the Russian Mi-28 *Havoc* or other threat helicopters to test new US air defence systems. Budget cuts apparently halted work on the programme and some HH-3Es have reportedly been transferred to foreign air forces.

There have been few international orders for the long-bodied, ramp-tailed S-61R — although, Argentina operated one S-61R and one S-61NR. Grumman used an S-61R for SAR at its Long Island flight test facilities and Agusta built the long-bodied S-61R/HH-3F for SAR and VIP missions in Italy and elsewhere. The Italian Air Force continued to buy the Agusta version of the S-61R for SAR and special operations. With auxiliary internal fuel tanks, the AS-61R can stay airborne for up to eight hours without refuelling and the large cabin provides space for 25 troops or 15 litters. Agusta at one point proposed building new HH-3Fs for the US Coast Guard to handle jobs too big for the HH-60J Jayhawk. Production of ten AS-61Rs with a classified mission equipment package for Italian Special Operations Forces ran into 1994.

Some HH-3 stories may never be fully told — drug interdiction operations, for example, remain classified, but it is known that an Air Force H-3 crashed in the Atlantic supporting the Drug Enforcement Agency in Operation *Bermuda And Turks* (OPBAT). Like their Navy counterparts, the Air Force H-3s carried out important, specialised jobs never attempted before. They gave the US Air Force a tool with which to snatch aircrew from death or capture and they made air refuelling a routine part of combat SAR and special operations for later generations of helicopters. For the USAF, the H-3 was as much a part of air power as any fast-jet. ■

## RAF Rotors

Covering the story of helicopters in service with the Royal Air Force, **RAF Rotors** is an essential reference source for the subject. From the early beginnings in the late-1940s with the Sikorsky Hoverfly, through the period of helicopter development in the 1950s, when Sycamores were operational, to the Pumas and Chinooks of today.

Information on serials, construction numbers and, where known, contract build numbers are included in helicopter type order. Details of ALL Royal Air Force helicopter squadrons and the aircraft they operate are included along with a comprehensive series of appendices detailing extant helicopters and preserved airframes. **RAF Rotors** fills a major gap among current aviation titles.

The 200 page, A5 sized volume includes more than 100 high quality black and white illustrations. Both historic and current operational views are included, with many photographs being shot specifically for the book.

*"the author has produced an eminently readable reference source. Highly recommended"*—

T. Malcolm English, *Air International*.

*"an informative and useful reference to the subject and one that needed to be done to bring the story up-to-date"*— Barry Wheeler, *Air Pictorial*.

*"well worth buying for the reference shelf"*— Elfan ap Rees, *Helicopter International*.

**RAF Rotors** is available at £9.95 plus £1.50 pp direct from the publishers at **SFB Publications (Dept A), 15 Wheatfield Drive, Ramsey, Huntingdon, Cambridgeshire, PE17 1SH.** (Please make cheques payable to SFB Publications)

