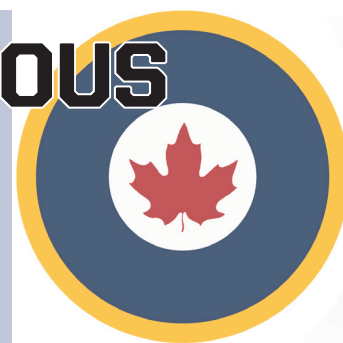




# THE NAVY'S ANOMALOUS SEA FURIES

By Leo F. Pettipas,  
Winnipeg, Manitoba



Long-standing members of IPMS Canada who like Hawker Sea Furies will no doubt recall Volume 6, Nos. 1&2 (1973) of *Random Thoughts*, which featured the "North American Sea Fury Special" written and illustrated by Bob Bowles and Ray Cryderman. From a modeller's standpoint, it was at the time by far and away the best publication available on the topic of Royal Canadian Navy Sea Furies.

The "Sea Fury Special," like many other historical-type articles appearing in modellers' magazines, involved a bit of educated guesswork made necessary in order to fill in gaps in the authors' available information base. As time goes on and as further research is done, new data often come to light that call for updates of and corrections to earlier statements in the older publications. The purpose of this article is to do just that regarding one particular conclusion drawn in the Bowles & Cryderman study, and to add further to the specific topic in question.

## RCN MARKING STANDARDS

Until the latter half of 1952, RCN aircraft appeared in the marking scheme called for under the ICAO system instituted in 1947. Initially, individual a/c carried a three-letter code on both sides of the fuselage and under the port wing. The first two letters identified the squadron to which the airplane belonged, and the third, the particular machine carrying it (**Fig. 1**). Pat Martin (Royal Canadian Navy Aircraft Finish and Markings 1944-1968) refers to this as the "VG Era."

With 1952 came a major change in the way in which the Navy marked its aircraft (the "NAVY+3 Era"). The ICAO call letters were done away with and replaced with the word NAVY and a three-digit radio call number. On most operational aircraft, the first digit equated with the crew structure of the machine. Since the Sea Fury was

Members: To download a free PDF of the original Sea Fury article from 1973, please go to [www.ipmscanada.com/](http://www.ipmscanada.com/)

a single-seater, the first numeral in the series was to be, in theory at least, a "1" (e.g., as shown in **Fig. 2**).

## AN EXCEPTION TO THE RULE

In their RT article, Bob and Ray refer to a set of drawings appearing in the January and February 1963 issues of *Model Airplane News* (MAN). These drawings depict RCN Sea Fury **TF 996** bearing the call number "254." Bob and Ray were well familiar with the new markings system, and since **254** obviously doesn't fall within the 100 series of numbers, they questioned the historical correctness of its appearance in the drawings. Rather, they regarded it as a "long perpetuated error," and went on to write: "*At the risk of putting our heads on the block, we'll go so far as to say, NO R.C.N. SEA FURY EVER CARRIED THE SIDE NUMBER 254!!*"

Bob and Ray were also familiar with an official Navy manual detailing the new (1952) Sea Fury colour scheme and markings. This manual showed the number **254** on general arrangement drawings, but they interpreted this as simply an idealised schematic generated for instructional purposes, rather than as a representation of an actual airplane.

They suggested that the MAN draughtsman may have worked from the contents of this manual, hence the "spurious" number **254** appearing in his drawings.

## CONFIRMING EVIDENCE

Significantly, Sea Fury **TF 996** is shown to have carried the call number **254** in John Griffin's authoritative *Canadian Military Aircraft Serials and Photographs 1920-1968*, the data for which were drawn from official DND files. John's information is confirmed in Alexander Grant's more recent *Tabulated Histories of the Aircraft of the Royal Canadian Navy and the Canadian Armed Forces (Maritime Air Group) June 1945-May 1997*, also compiled from official DND documents. **TF 996** was the actual serial number of a real airplane, and with that in mind I had to wonder why the Navy would have chosen to combine a "bogus" radio call number along with a bona fide serial number in the drawing in its manual.

Today, the weight of evidence leads me to conclude that **TF 996** did indeed carry the radio call number **254** at some point in its career, although I've personally never seen a photograph of it bearing that number. Nor



**Fig. 1.** Sea Fury **TF 996** showing her call sign **BC\*K** of the 'VG Era' (1947-1952). Credit: W.R. Crosby/National Archives of Canada/PA-134183.



can I explain why a front-line single-seat aircraft received a **200**-block side number. But – and this is where things really get interesting – I do have photos of it carrying the call number **294**! **Figure 3** shows this airplane with all port fuselage markings plainly visible. It would thus appear that **TF 996** temporarily

bore **254** before that number was replaced by **294**. Or, it was assigned **254** on paper, but it was never actually painted on the aircraft, **294** being applied instead. Whatever the case, I think we can reasonably conclude that the reasons for such changes are forever lost in antiquity!



**Fig. 2.** Typical markings scheme of the NAVY+3 Era Sea Furies, showing the 100-block radio call number. Credit: Western Canada Aviation Museum 31965.



**Fig. 3.** Sea Fury TF 996 clearly showing the side number 294. Credit: R.E. Quirt, via S. Soward.



**Fig. 4.** Sea Fury WZ 636, showing the atypical 300-block radio call number 354. Also non-standard is the “square” style of the numerals (compare with those shown in Figure 2), suggesting that they were applied at the British factory rather than in Canada. Credit: MAP

#### AN ADDITIONAL DEVIATION

As I say, it's by no means clear to me why these departures from the standard practice of allocating **100**-block call numbers to single-seat operational squadron Sea Furies were deemed appropriate in the case of **TF 996**. But to add to the puzzle, it happened twice; only on the second occasion, the number in question was drawn from the **300** block: the Sea Fury bearing serial number **WZ 636** received the call number **354** (**Fig. 4**).

Pursuant to the standard radio call number system applied to operational squadron aircraft, numbers in the **300** range were, logically enough, usually allotted to the Navy's three-seat TBM Avengers. And indeed, number **354** was carried by one of the Avengers (serial number **69425**), as we might expect. What it was also doing on a single-seat Sea Fury is anyone's guess.

#### CONCLUDING REMARKS

While atypical markings do raise “why” questions which, after all these years, are pretty well impossible to answer, they do offer opportunities to the modeller who wants to replicate something that's different and unusual and yet a genuine piece of our aviation history and heritage.



#### About the author:

Leo Pettipas is a native of Halifax, now living in Winnipeg. A former Honorary Historian with Winnipeg Chapter, Canadian Naval Air

Group (CNAG), he authored seven books and was recognised nationally as CNAG's 1986 Member of the Year. He has published over 50 articles on Canadian military aviation in Canada and the USA. He was Editor Emeritus of *Certified Serviceable: Swordfish to Sea King* (1994), covering the support elements of Canadian Naval Aviation, and technical advisor in the preparation of Patrick Martin's book, *Royal Canadian Navy Aircraft Finish and Markings 1944-1968* (2007). In 1999 he was appointed an Associate Air Force Historian at 1 Cdn Air Division, Winnipeg. In this capacity he co-authored the 2007 book, *402 “City of Winnipeg Squadron History: On Guard for 75 Years*.



HAWKER TYPE FB-11  
THIS AIRPLANE IS A REFINEMENT OF THE  
HAWKER TEMPEST OF WORLD WAR II.  
THE SEA FURY WAS USED IN THE KOWAR.  
THESE PLAYS WERE FLOWN OFF THE  
FLEET AIR ARM CARRIERS THESE US,  
OCEAN AND GLORY OF THE ROYAL NAVY  
AND SONEY OF THE AUSTRALIAN NAVY.  
THE TACTICAL AND GROUND SUPPORT  
DUTIES WERE CARRIED OUT TO SUPPORT  
UN TROOPS.

LEADING PARTICULARS

WINGS

AIRFOIL SECTION AT ROOT HAWKER HIGH  
SPEED SECTION H/14/375  
AT TIP H/410/375  
MEAN CHORD 88"  
INCIDENCE 2.5°  
DIHEDRAL 3°30'

TAIL PLANE

SPAN 168"  
CHORD INCLUDING ELEVATOR 45.99"  
INCIDENCE 1.5°

AREAS

WINGS (GROSS) 280 SQ. FT.  
AILERONS (2) 24.57 SQ. FT.  
AILERON 81AS TABS (2) 0.15 SQ. FT.  
AILERON SPRING TABS (2) 0.70 SQ. FT.  
WING FLAPS (2) 31.45 SQ. FT.

TAIL PLANE (GROSS) 51.23 SQ. FT.  
ELEVATORS WITH TABS (2) 16.88 SQ. FT.  
ELEVATOR TRIM TABS 0.65 SQ. FT.

FIN WITH RUDDER 260 SQ. FT.  
RUDDER WITH TAB 13.29 SQ. FT.  
RUDDER SPRING TAB 0.97 SQ. FT.

RANGES OF MOVEMENTS

TAIL PLANE FIXED  
NIL OFFSET  
AILERONS 45° UP 175° DOWN  
AILERON DROP NIL  
ELEVATORS 215° UP 115° DOWN  
ELEVATOR TRIM TABS 11° UP AND DOWN  
RUDDER 27° PORT AND STARBOARD  
RUDDER SPRING TAB 4° EITHER WAY  
WING FLAPS 80° DOWN  
CONTROL COLUMN (NEUTRAL) 5°30' AFT  
ELEVATORS UP 28°30' AFT  
ELEVATORS DOWN 2°30' FORWARD

ENGINE INSTALLATION

BRISTOL CENTAURUS 18, TWIN ROW, RADIAL  
AIR COOLED, SUPERCHARGED, SLAVE VALVE  
CARTRIDGE TYPE ENGINE STARTER, THE EN-  
GINE DEVELOPS ITS MAXIMUM POWER IN  
MEDIUM SUPERCHARGER GEAR AT 2560  
R.P.M. AT 9.5 L.B. BOOST. AT MAXIMUM ENGINE  
POWER ALTITUDE IN FULL SUPERCHARGE-  
R GEAR, IT DEVELOPS 2,300 B.H.P.

PROPELLER

A ROTOL CONSTANT SPEED, LEFT HAND,  
TRACTOR TYPE PROPELLER IS FITTED OF  
12-9" DIAMETER. FIVE DURALUMIN BLADES  
WITH VARIABLE PITCH RANGING FROM 29°15'  
TO 64°15' COMPRISE THE ASSEMBLY. THE  
PITCH CONTROL AND FEATHERING OPERA-  
TIONS ARE PERFORMED HYDRAULICALLY.

ENGINE FUEL SYSTEM

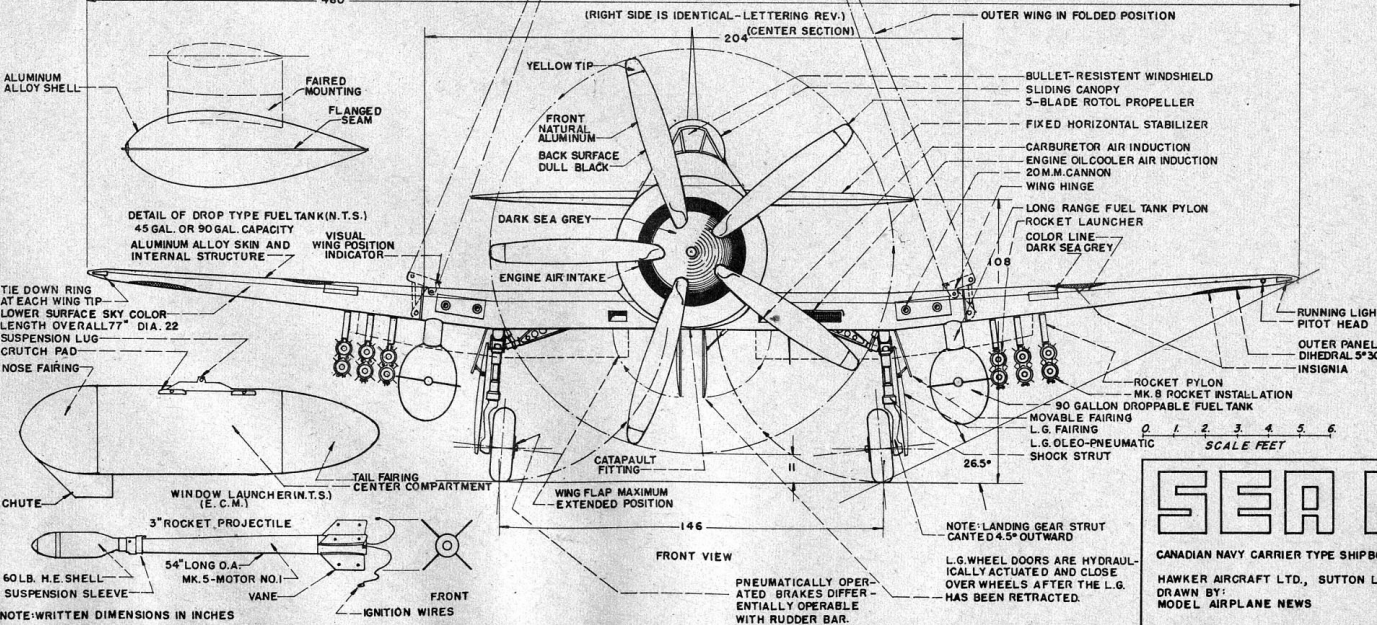
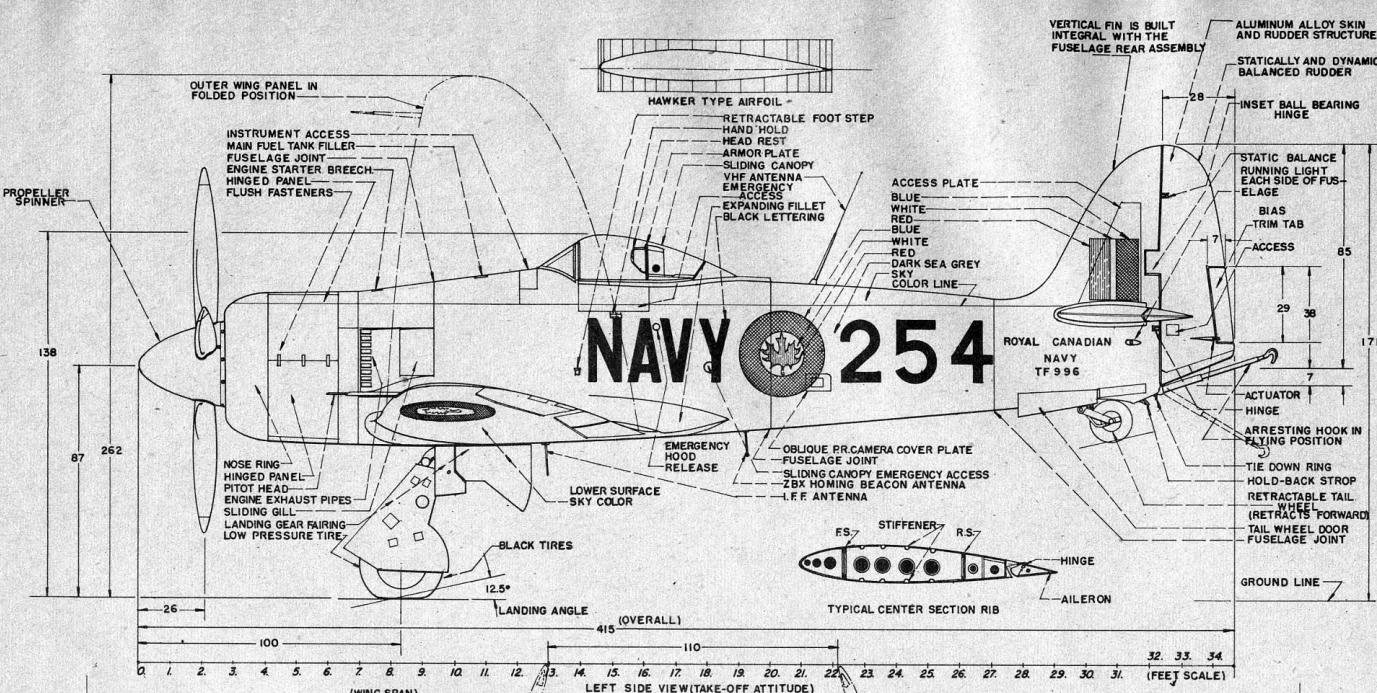
FUEL IS CONSTANTLY SUPPLIED TO THE  
ENGINE FROM THE MAIN FUEL TANK. FUEL  
IS CARRIED IN 5 SELF-SEALING FUEL  
CELLS. FUEL IS SUPPLIED TO THE MAIN  
FUEL TANK FROM THE AUXILIARY TANKS  
BY MEANS OF AIR PRESSURE. BY MEANS OF  
AN ENGINE-DRIVEN AIR PUMP AND ELECTRIC  
BOOSTER PUMP.

ENGINE OIL SYSTEM

THE ENGINE OIL TANK HAS AN EFFECTIVE  
CAPACITY OF 14 GALLONS. THE SYSTEM IN-  
CLUDES A FILTER, A THERMOSTATIC VALVE  
AN ANTI-SURGE VALVE, AND AN ENGINE  
OIL COOLER. THE FLAP CONTROLLING THE  
VOLUME OF THE AIR INDUCTED THROUGH  
THE COOLER IS ACTUATED BY THE THER-  
MOSTATIC VALVE ACTUATING AN ELECTRIC  
SWITCH, WHICH IN TURN, OPERATES AN EL-  
ECTRIC JACK LINKAGE.

ENGINE EXHAUST

THE EXHAUST SYSTEM HAS BACKSWEEP  
PIPES. EIGHTEEN SEPARATE PIPES ARE US-  
ED EACH CONNECTING TO ONE PORT IN THE  
FRONT AND REAR ROW OF CYLINDERS.  
THE PIPES ARE EQUALLY DIVIDED TO COM-  
PRISE TWO SETS OF OUTLETS. EACH SET  
OF PIPES TERMINATE FORWARD OF THE  
MANUALLY CONTROLLABLE SLIDING  
GILL. NO COLLECTOR RING IS USED. THE  
CONFIGURATION OF THE EXHAUST PIPES  
PROVIDES THRUST AUGMENTATION.



CARBURETOR AIR SYSTEM

AIR IS INDUCTED TO THE INJECTOR THRU DUCTS. COLD, WARM OR FILTERED AIR MAY BE SUPPLIED AS REQUIRED. FILTER AIR IS INDUCTED THRU LOUVERS LOCATED ON THE UNDERSIDE OF THE ENGINE REAR PANEL AND FLOWS THRU YOKES FILTERS OVER THE LOUVERS INTO THE SHUTTER BOX. THE PILOT CAN SELECT COLD OR FILTERED AIR BY ELECTRIC OPERATION. WARM AIR IS OBTAINED BY MANUAL OPERATION.

ENGINE COOLING

THE COOLING AIR INDUCTION THRU THE LOW VELOCITY ENGINE COWL IS CONTROLLED BY SLIDING SHUTTERS AT THE EXIT. A MANUALLY CONTROLLED ELECTRIC MOTOR ACTUATES THE SHUTTER MECHANISM TO PROVIDE AN ADEQUATE VOLUME OF COOLING AIR TO ALL CYLINDERS. THE INDUCTION AREA IS VARIED BY A SLIDING MOVEMENT OF THE SHUTTERS IN A FORE AND AFT DIRECTION SO THAT THE SHUTTERS DO NOT PROJECT INTO THE EXTERNAL AIRSTREAM. THE ENGINE ACCESSORY COMPARTMENT IS ALSO COOLED BY THE INDUCED AIR.

ENGINE ACCESSORIES

THE ENGINE-DRIVEN GEAR BOX WITH THE ACCESSORIES, IS MOUNTED ON THE FORWARD SIDE OF THE FIREWALL. IT REMAINS ON THE AIRFRAME WHEN THE ENGINE IS BEING CHANGED. THE 4-DRIVE GEAR BOX OPERATES THE HYDRAULIC FLUID PUMP, VACUUM PUMP, AIR COMPRESSOR AND A 24-VOLT, 1500 GENERATOR.

METHANOL WATER SYSTEM

AN AUTOMATIC WATER INJECTION SYSTEM IS INSTALLED. IT IS SELF-CONTAINED.

MAJOR ASSEMBLY LIST

PROPELLER SPINNER.  
PROPELLER.  
ENGINE INSTALLATION.  
CENTER FUSELAGE.  
REAR FUSELAGE.  
EMPERAGE (VERTICAL STABILIZER).  
HORIZONTAL STABILIZER.  
RUDDER.  
ELEVATORS (2).  
OUTER WING PANELS (2).  
CENTER WING.  
INNER WING FLAPS (2).  
CENTER WING FLAPS (2).  
OUTER WING FLAPS (2).  
AILERONS (2).  
SLIDING CANOPY.

WING FOLDING

THE OUTER WINGS ARE FOLDED BY OPERATION OF A HYDRAULIC PUMP IN THE COCKPIT. A JURY STRUT IS INSERTED AT EACH WING JOINT. WINGS MAY ALSO BE PARTIALLY FOLDED FOR SERVICING. WING LOCKING INDICATORS ARE PROVIDED ON EACH OUTER WING PANEL.

CATAPAULT TAKE-OFF

THE AIRPLANE IS EQUIPPED FOR CATA-  
PAULT TAKE-OFF FROM CARRIERS.

ROCKET ASSISTED TAKE-OFF

PROVISION IS MADE FOR THE INSTALLA-  
TION OF THIS TYPE OF EQUIPMENT. SIX  
ROCKET MOTORS ARE INSTALLED IN A  
FRAME ATTACHED TO THE UNDERSIDE OF  
THE FUSELAGE AFT OF THE WING. WHEEL  
DOORS AND ARE FIRED ELECTRICALLY.

NORMAL WEIGHT

NORMAL WEIGHT LOADED IS 12,316 LBS.

AIRFOIL SECTION

HAWKER TYPE SAME AS USED ON THE  
TEMPEST FIGHTER. MAXIMUM THICKNESS AT  
37.5% OF WING CHORD. THICKNESS CHORD  
RATIO AT WING ROOT 14%; AT WING TIP 10%.  
THE AIRFOIL EXHIBITS GOOD FLYING CHAR-  
ACTERISTICS OVER THE WHO SPEED  
RANGE, INCLUDING THOSE CLOSE TO OR AT  
STALLING SPEED.

ACKNOWLEDGEMENT

HAROLD DE MONTFORD-ROCHESTER, N.Y.  
FOR LOAN OF TECHNICAL DATA.

SEA FURY<sup>TM</sup>

CANADIAN NAVY CARRIER TYPE SHIPBOARD FIGHTING PLANE MODEL FB-11

HAWKER AIRCRAFT LTD., SUTTON LANE, LANGLEY, BUCKS, ENGLAND  
DRAWN BY:  
MODEL AIRPLANE NEWS

WILLIS L. NYE, A.A.H.S.  
NEW YORK CITY, N.Y.  
SHEET NO. 1 OF 4.





EXTERNAL STORES CARRIER  
THE CARRIER UNIT CONSISTS OF A BEAM ASSEMBLY CONTAINING AN ELECTRICAL RELEASE UNIT, A FUSING DEVICE AND FRONT AND REAR CRUTCH ASSEMBLIES. THE CARRIER IS USED TO CARRY AND RELEASE CLASSES OF EXTERNAL STORES RANGING FROM 100 TO 1000 POUNDS. STORES ARE SUSPENDED ON AN ELECTRO-MAGNETIC RELEASE MECHANISM. THE CRUTCHES STABILIZE THE EXTERNAL LOADS. A MECHANICAL RELEASE DEVICE IS ALSO PROVIDED IF ELECTRICAL POWER FAILS. THE CARRIERS ARE ATTACHED TO THE INTERIOR SUPPORTING STRUCTURE OUTBOARD OF THE HINGE LINE OF THE WING. THE CARRIERS ARE FAIRED WITH REMOVABLE FAIRINGS.

PERFORMANCE SUMMARY

200 GALS-FUEL	330 MILES	900 MILES
290 "	570 "	1350 "
380 "	800 "	1800 "

ALTITUDE T.A.S. R.O.F.C.F.M TIME TO H.T.

0	379	4320 FT.	00
7500	408	3850 "	01
14,000	422	3230 "	02
16,500	432	3240 "	03
20,000	450	2800 "	04
30,000	458	1240 "	05

RANGE FIGURES INCLUDE 10 MINUTES OF COMBAT AND 10 MINUTES LOITERING TIME OVER TARGET AREA.  
WEIGHT LOADED 12,350 POUNDS.  
ALL RANGES FOR STILL AIR.  
TAKE-OFF IN 500 YARDS WITH 2000 LBS OF EXTERNAL STORES.

TRIM TAB CONTROLS  
RUDDER AND ELEVATOR TRIM TAB CONTROLS ARE CABLE ACTUATED.

ARMAMENT  
THIS AIRPLANE IS ARMED WITH 4-20MM. HISPANO TYPE NO. 3 MARKS GUNS, 2 IN EACH WING. THE GUNS ARE ATTACHED TO THE FRONT AND REAR SPARS. PROVISION IS MADE TO ADJUST THE GUNS Laterally AND VERTICALLY. AMMO COMPARTMENTS, PROTECTED BY ARMOR PLATE, ARE HOUSED AFT OF THE REAR SPAR. THE GUNS ARE FIRED ELECTRICALLY BY A SWITCH ON THE CONTROL COLUMN. AMMO IS SUPPLIED TO THE GUNS BY FEED TROUGHS TO EACH GUN. THE AMMO CARTRIDGES ARE LINKED TOGETHER. CARTRIDGE CASES AND LINKS ARE EJECTED ON THE LOWER SURFACE OF THE WING. 580 ROUNDS OF AMMO CAN BE CARRIED.

GUN CAMERA  
A GUN CAMERA IS INSTALLED THAT OPERATES AUTOMATICALLY WHEN THE GUNS ARE FIRED. LOCATED IN WING LEADING EDGE.

GUN HEATER  
WARM AIR FROM THE ENGINE COMPARTMENT IS PIPED TO THE GUNS.

GUN COCKING  
THE GUNS ARE CHARGED BY MEANS OF A MANUAL GUN COCKING DEVICE.

GYRO GUN SIGHT  
A MARK 48 GYRO GUN SIGHT IS INSTALLED WITH PROVISION FOR A MK.2 CAMERA RECORDER. THE SIGHT IS ALSO USED WHEN ROCKETS ARE FIRED.

ROCKET PROJECTILES  
AN MK.8 ROCKET PROJECTILE INSTALLATION IS FITTED TO EACH OUTBOARD WING. THE ROCKET LAUNCHING PYLONS ARE FAIRED. THE PYLONS ARE ATTACHED TO THE INTERIOR WING STRUCTURE. THE ROCKETS ARE FIRED ELECTRICALLY. ROCKETS MAY BE FIRED IN PAIRS OR RIPPLE SALVO.

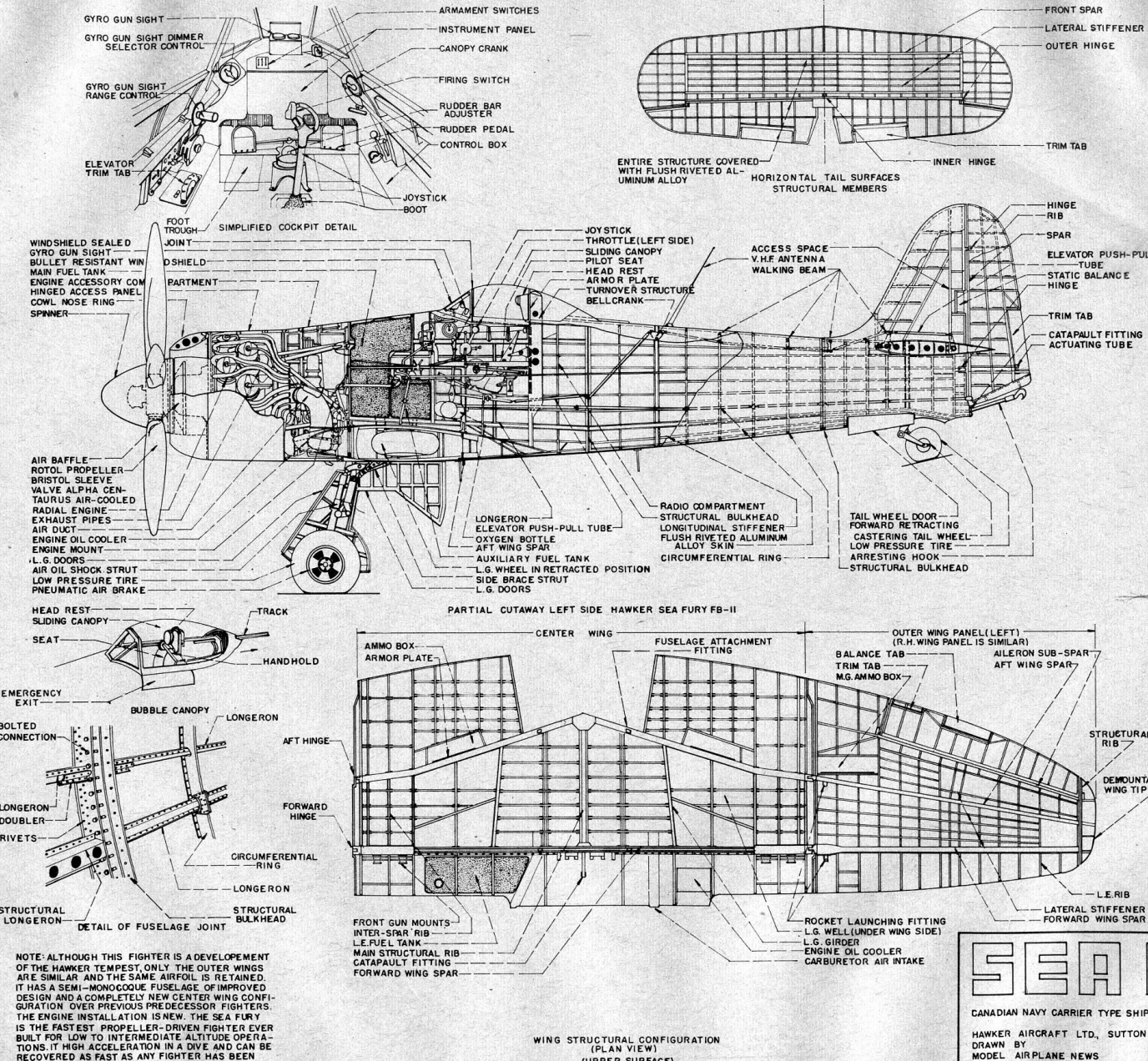
MAXIMUM GROSS WEIGHT  
MAXIMUM GROSS WEIGHT IN THE OVERLOAD CONDITION IS 15,600 POUNDS WITH MORE THAN ONE TON OF EFFECTIVE ARMAMENT THE RANGE IS 660 MILES.

CARRIER DECK TAKE-OFF

T.O. WEIGHT	DECK RUN IN FT.
12,000 LBS.	432
14,000 "	635

27 KNOT HEAD WIND WING FLAP SET AT 20°

OPERATIONAL MISSIONS  
FIGHTER (INTERCEPTOR)  
LONG RANGE FIGHTER BOMBER  
LONG RANGE ROCKET FIGHTER  
ARMED PHOTOGRAPHIC RECONNAISSANCE  
LONG RANGE COASTAL PATROL  
AIR SEA RESCUE  
OPERATIONAL TRAINER  
CARRIER FIGHTER



NOTE: ALTHOUGH THIS FIGHTER IS A DEVELOPMENT OF THE HAWKER TEMPEST, THE OUTER WINGS ARE SIMILAR AND THE SAME AIRFOIL IS RETAINED. IT HAS A SEMI-MONOCOQUE FUSELAGE OF IMPROVED DESIGN AND A COMPLETELY NEW CENTER WING CONFIGURATION OVER PREVIOUS PREDECESSOR FIGHTERS. THE ENGINE INSTALLATION IS NEW. THE SEA FURY IS THE FASTEST PROPELLER-DRIVEN FIGHTER EVER BUILT. LOW TO INTERMEDIATE ALTITUDE OPERATIONS, IT HAS HIGH ACCELERATION IN A DIVE AND CAN BE RECOVERED AS FAST AS ANY FIGHTER HAS BEEN CLEARED TO FLY.

TYPES OF BOMBS  
THE FOLLOWING TYPES OF BOMBS CAN BE CARRIED:  
100 LB.  
500 LB.  
1000 LB.  
500 LB. ACRIAL MINE.

BOMB RELEASE  
BOMBS ARE RELEASED ELECTRICALLY.

WING FLARES  
FLARES CAN BE CARRIED ON THE EXTERNAL STORES CARRIER FOR NIGHT OR DAY RECONNAISSANCE MISSIONS. THE FLARES ARE IGNITED AND RELEASED ELECTRICALLY.

MAIN PLANE  
THE MAIN PLANE IS AN ALL-METAL STRESS SKIN STRUCTURE CONSTRUCTED IN 3 MAJOR ASSEMBLIES. THE OUTER WINGS ARE ATTACHED TO THE CENTER WING BY PLUG-ENDS BOLTED TO THE FRONT AND REAR WING SPARS. THE OUTER WINGS FOLD UPWARD BY HYDRAULIC ACTION ABOUT THE POINT OF ATTACHMENT. THE ENTIRE WING IS COVERED WITH LIGHT ALUMINUM ALLOY SHEET STRENGTHENED WITH STIFFENERS. ATTACHMENT TO THE FUSELAGE IS BY MEANS OF HIGH TENSILE STEEL LUGS BOLTED TO THE FITTINGS OF FRONT AND REAR SPARS. HIGH TENSILE STEEL PLUG-ENDS BOLTED TO THE WING SPARS COMPRISE THE WING FOLDING HINGES AND LOCKING FITTINGS. THE HYDRAULIC WING-LOCKING MECHANISM IS HOUSED ON THE OUTBOARD SIDE OF THE END RIB. THE HYDRAULIC WING FOLDING CYLINDER ARE INSTALLED IN THE OUTER WINGS, AND PICK UP LARGE BRACKETS MOUNTED ON THE END RIBS FORWARD OF THE FRONT SPAR. THE OUTER WING PANEL IS OF ORTHODOX CONSTRUCTION, CONSISTING OF A FRONT AND REAR SPAR, RIBS ETC., COVERED WITH LIGHT ALUMINUM ALLOY SHEET, STRENGTHENED WITH STIFFENERS. THE ALERONS ARE BUILT WITH A BOX SPAR AND RIBS. A LINKAGE OF TUBES ACTUATE THE ALERON.

HORIZONTAL STABILIZER  
THIS ASSEMBLY IS A ONE PIECE STRUCTURE ALL METAL CONSISTING OF FRONT AND REAR SPARS, INTER-SPAR RIBS AND NOSE RIBS COVERED WITH LIGHT ALLOY SKIN REINFORCED BY LATERAL STIFFENERS. THE ASSEMBLY IS BOLTED TO THE FUSELAGE AFT END.

ELEVATORS  
EACH ELEVATOR HAS A BASIC STRUCTURE COMPRISED OF A MAIN SPAR, RIBS AND LATERAL STIFFENERS. THE STRUCTURE IS COVERED WITH LIGHT ALLOY SKIN. THE ELEVATORS ARE INTER-CONNECTED BY A TORQUE TUBE ACTUATED BY AN ARM MOTIVATED BY A PUSH-PULL TUBE.

RUDDER  
THE RUDDER IS SIMILAR IN CONSTRUCTION TO THE ELEVATOR AND IS OPERATED BY A PUSH-PULL TUBE.

PROTECHIC PISTOL  
A PYROTECHNIC PISTOL AND A SUPPLY OF CARTRIDGES ARE PROVIDED. THE PISTOL IS INSERTED IN A SOCKET FOR FIRING.

WINDOW LAUNCHER  
THE WINDOW LAUNCHER IS CARRIED AS AN EXTERNAL STORE ON RECCO MISSIONS. THIS IS AN ANTI-ENEMY COUNTER MEASURE DEVICE TO CONFUSE ENEMY RADAR.

ENGINE COOLING SHUTTERS  
THE ENGINE COOLING SHUTTERS ARE ELECTRICALLY OPERATED BY AN ELECTRICAL MOTOR. THE MOTOR DRIVES A LINKAGE WHICH POSITIONS THE SHUTTERS. THE OPERATION OF THE SHUTTERS IS AT THE WILL OF THE PILOT.

CANADIAN NAVY CARRIER TYPE SHIPBOARD FIGHTING PLANE MODEL FB-II  
HAWKER AIRCRAFT LTD., SUTTON LANE, LANGLEY, SURREY, ENGLAND  
DRAWN BY WILLIS L. NYE, A.A.H.S.  
MODEL AIR PLANE NEWS NEW YORK CITY, N.Y.  
SHEET NO. 4 OF 4.

SEA FURY<sup>XL</sup>



**PILOT'S OXYGEN SYSTEM**  
OXYGEN AT HIGH PRESSURE IS CONTAINED IN TWO WIRE WOUND CYLINDERS. THE GAS FLOWS FROM THE CYLINDER THROUGH A FILTER, THEN TO A PRESSURE REGULATOR. FROM THE PRESSURE REGULATOR, IT FLOWS THROUGH THE ECONOMIZER TO THE VALVE ON THE PILOT'S HEADSET.

**PILOT'S SAFETY HARNESS**  
THE PILOT'S SEAT IS PROVIDED WITH A SAFETY HARNESS. A QUICK-RELEASE TYPE SHOULDER HARNESS ALLOWS THE PILOT TO LEAN FORWARD WITHOUT HINDERANCE. WHEN THE TENSION IS RELEASED, THE SHOULDER HARNESS AUTOMATICALLY CAN BE TIGHTENED BY OPERATION OF A CONTROL LEVER.

**VACUUM SYSTEM**  
THE VACUUM SYSTEM TO OPERATE CERTAIN FLIGHT INSTRUMENTS IS ENERGIZED BY AN ENGINE-DRIVEN VACUUM PUMP OPERATING OFF THE ACCESSORY GEAR BOX. EXHAUST AIR FROM THE VACUUM SYSTEM IS USED TO PRESSURIZE THE FUEL CELLS.

**COCKPIT AIR CONDITIONING**  
IN ORDER TO MAINTAIN COMFORTABLE TEMPERATURES FOR THE PILOT, A COMPLETE AIR CONDITIONING SYSTEM IS INSTALLED. WARM OR COLD AIR IS DRAWN FROM EITHER THE OIL COOLER OR THE COLD AIR INDUCTION SCOOP COLD AIR. WHEN USED, IS DRAWN AHEAD OF THE OIL COOLER. THE PILOT, BY OPERATION OF A MIXTURE CONTROL VALVE, CAN CONTROL THE AIR TEMPERATURE INSIDE THE COCKPIT. WARM AIR IS DIRECTED TOWARD THE PILOT'S FEET, WINDSHIELD, AND THE INSTRUMENT PANEL PUNKAH LOVERS.

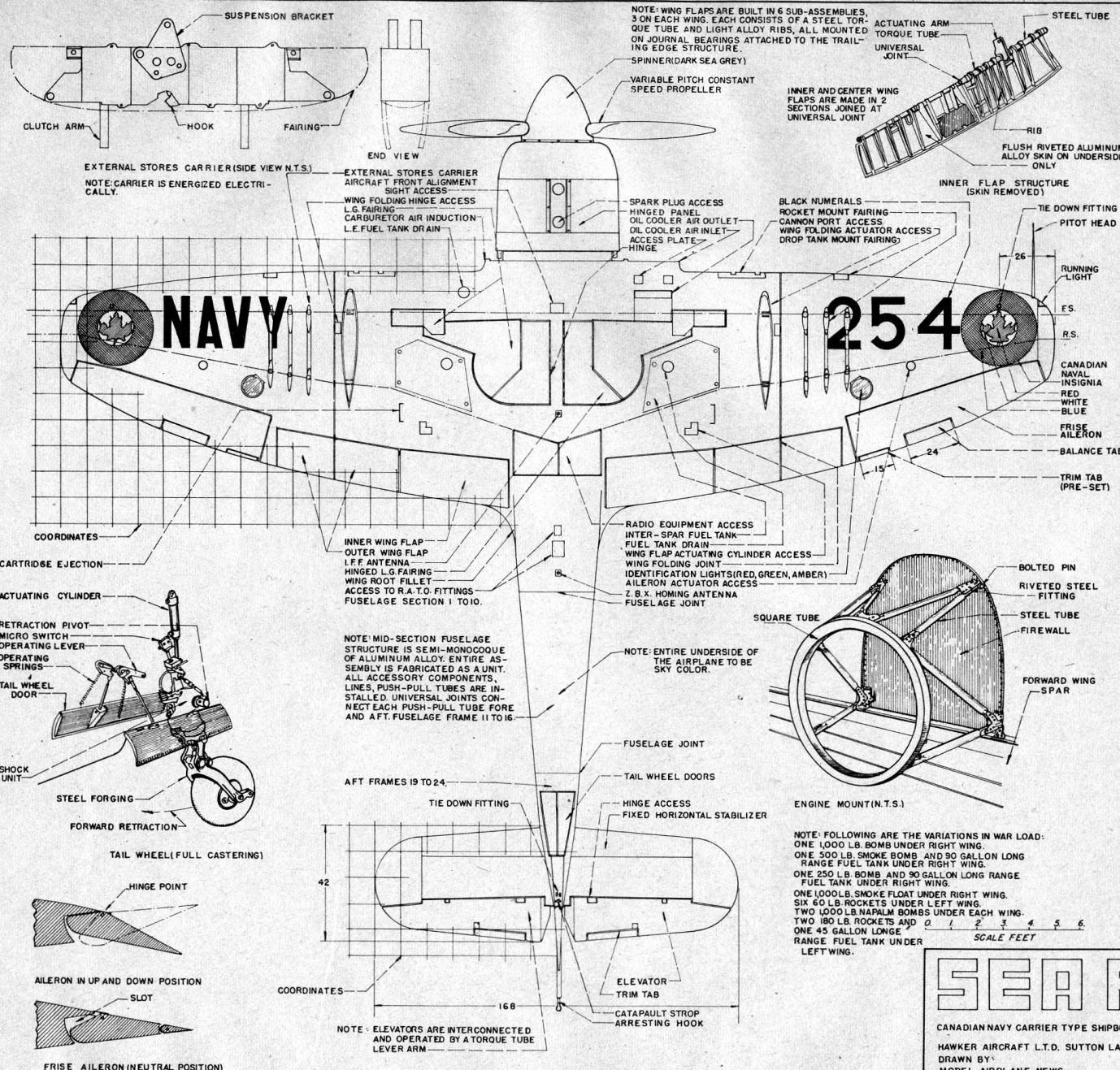
**GUN BAY HEATING**  
WARM AIR FROM THE ENGINE IS PIPED TO THE GUN BAY IN EACH WING. THE WARM AIR ESCAPES THROUGH A COVERED AND FILTERED ORIFICE. THE DUCTS AND GUN BAYS ARE LAGGED WITH INSULATION TO MINIMIZE HEAT DISSIPATION.

**PNEUMATIC SYSTEM**  
AIR, UNDER PRESSURE, OPERATES THE BRAKES ON THE LANDING GEAR. AIR UNDER PRESSURE IS PROVIDED BY AN ENGINE-DRIVEN VACUUM PUMP ATTACHED TO THE ACCESSORY DRIVE BOX. AFTER FLOWING THROUGH AN OIL SEPARATOR, WATER TRAP, AND A PRESSURE REGULATOR, THE AIR IS STORED AT 450 P.S.I. IN THE AIR BOTTLE. A SAFETY VALVE MAINTAINS A CONSTANT PRESSURE. AIR FROM THE AIR BOTTLE FLOWS THROUGH A PRESSURE REDUCER TO THE BRAKES. SUPPLY FOR THE BRAKES IS TAKEN THROUGH A RELAY UNIT WHICH PERMITS DIFFERENTIAL BRAKING ACTION. IN AN EMERGENCY, THE LANDING GEAR AND WING FLAPS CAN BE EXTENDED BY DIVERTING AIR PRESSURE TO THE ACTUATING COMPONENTS. THE AIR BOTTLE IS CHARGEABLE WHEN THE PLANE IS ON THE GROUND.

**HYDRAULIC SYSTEM**  
THE HYDRAULIC SYSTEM IS A DOWTY TYPE 'LIVE LINE' TYPE AND OPERATES THE FOLLOWING SUPPLY CIRCUIT:  
LANDING GEAR AND WHEEL DOORS.  
WING FLAPS.  
WING FOLDING AND LOCKING GEAR.  
EACH OPERATIONAL COMPONENT FUNCTIONS OFF ITS INDIVIDUAL PIPING CIRCUIT. ENERGY TO POWER THE HYDRAULIC SYSTEM IS OBTAINED FROM AN ENGINE-DRIVEN HYDRAULIC PUMP. A CONSTANT OPERATING PRESSURE OF 1800 P.S.I. IS MAINTAINED. FOR EMERGENCY OPERATION A HAND HYDRAULIC PUMP IS INSTALLED AS PART OF THE SYSTEM. MANUALLY OPERATED SELECTOR VALVES CONTROL THE OPERATION OF EACH SUB-SYSTEM. THE MOTIVATING FORCE TO EACH OPERATIONAL COMPONENT IS BY MEANS OF HYDRAULIC ACTUATING CYLINDERS.

**ENGINE MOUNT**  
THE ENGINE MOUNT IS OF THE DYNAFOCAL TYPE. IT CONSISTS OF 8 TUBULAR STEEL MEMBERS ATTACHED TO A SQUARE STEEL TUBE BY STEEL CHANNEL FITTINGS. THE MOUNT ASSEMBLY IS ATTACHED TO THE FUSELAGE STRUCTURE BY 4 ATTACHMENT BOLTS. THE ENGINE RING IS ATTACHED TO THE ENGINE BY DYNAFOCAL SUSPENSION UNITS TO PROVIDE A FLEXIBLE MOUNTING.

**ENGINE PRIMER**  
THE ENGINE IS PRIMED WITH FUEL BY MEANS OF AN ELECTRICALLY OPERATED PRESSURE TYPE FUEL PUMP.



**ARRESTING HOOK**  
A STING-TYPE NON-TELESCOPIC, NON-RETRACTABLE ARRESTING HOOK IS USED FOR CARRIER OPERATIONS. IT HAS A STANDARD HOOK AT ONE END AND A FORKED PLUG-END AT THE OTHER. BY MEANS OF ITS MECHANICAL INSTALLATION, THE HOOK MAY BE MOVED LATERALLY WITHIN LIMITS OR VERTICALLY ABOUT THE MOUNTING. THE HOOK IS ALSO ATTACHED BY A LINKAGE TO AN OIL-LEO-PNEUMATIC DAMPER. THE HOOK MAY BE RAISED OR LOWERED BY MEANS OF A CABLE CONTROL BY THE PILOT. A MICRO-SWITCH LIGHTS A LAMP IN THE COCKPIT INDICATING THE POSITION.

**FLYING CONTROLS**  
THE FLIGHT CONTROLS, IN ADDITION TO THE CONTROL COLUMN AND RUDDER BAR, CONSIST OF ELEVATOR AND RUDDER BIAS TRIM TAB HANDWHEELS AND A PRE-SELECTOR LEVER FOR HYDRAULICALLY OPERATED WING FLAPS. THE RUDDER AND AILERONS ARE FITTED WITH SPRING TABS.

**CONTROL COLUMN**  
THE CONTROL COLUMN SHADE GRIP HAS 2 ELECTRICAL SWITCHES AND A BRAKE LEVER. THE COLUMN IS SET ON A BEARING PLATE UNDER THE COCKPIT FLOOR AND ACTUATES THE ELEVATOR AND AILERON TORQUE TUBES.

**RUDDER BAR**  
RUDDER BAR IS MOUNTED ON A SPINDLE ON A CASTING ATTACHED TO THE COCKPIT FLOOR. IT CONSISTS OF SEPARATE TUBES WITH A FORK AT EACH END. THE INBOARD FORKS IN INTERLACING TO FIT OVER THE SPINDLE WHICH IS FREE TO ROTATE IN THE PEDestal. THE OUTBOARD FORKS CARRYING THE FOOT PEDALS. BY MEANS OF LEVERS AND LINK RODS, ACTUATED PUSH-PULL TUBES MOVE THE RUDDER.

**ENGINE OIL COOLER**  
THE ENGINE OIL COOLER IS HOUSED WITHIN THE LEADING EDGE OF THE LEFT CENTER WING SECTION. IT CONSISTS OF A RECTANGULAR MATRIX AROUND WHICH THERE IS A JACKET FORMED OF INNER AND OUTER METAL CASES. FLOW OF OIL THROUGH THE COOLER IS CONTROLLED BY A THERMOSTATIC VALVE. THE OIL COOLER SHUTTER CONTROL IS BY THERMOSTAT MEANS OPERATING AN ELECTRIC ACTUATOR.

**ENGINE OIL DILUTION**  
AN ELECTRICALLY CONTROLLED ENGINE OIL DILUTION SYSTEM IS USED TO FACILITATE ENGINE STARTING IN COLD WEATHER.

**ENGINE CONTROLS**  
THE ENGINE OPERATION IS CONTROLLED BY A SINGLE LEVER WHERE THE ENGINE IS CONTROLLED BY THE THROTTLE, AND ALSO CONTROLS THE PROPELLER CONSTANT SPEED UNIT. HOWEVER, A MANUAL OVER-RIDE PROPELLER CONTROL IS ALSO PROVIDED.  
THE CONTROL QUADRANT CONTAINS THE MANUAL PROPELLER OVERRIDE, THROTTLE, SUPERCHARGER AND FUEL CUT-OFF CONTROL. MICRO SWITCHES ENERGIZE WARNING LIGHTS WHEN THE THROTTLE IS SET FOR LANDING TO SHOW THE POSITION OF THE LANDING GEAR AND SETS THE FUEL SYSTEM IN CONDITION FOR RAPID ACCELERATION IF NEEDED BY TELEFLEX TYPE CONTROLS ARE USED.

**ENGINE INSTRUMENTS**  
ENGINE INSTRUMENTS ARE GROUPED ON RIGHT HAND SIDE OF INSTRUMENT PANEL AND CONSIST OF THE FOLLOWING:  
SUPERCHARGER BOOST.  
TACHOMETER.  
CYLINDER TEMPERATURE.  
ENGINE OIL TEMPERATURE.  
ENGINE OIL PRESSURE.

**FUEL TRANSFER**  
THIS AIRPLANE HAS A TRANSFER FUEL SYSTEM. FUEL IS CONSUMED FROM THE INTERSPAR WING FUEL TANKS FIRST.

# SEA FURY<sup>xi</sup>

CANADIAN NAVY CARRIER TYPE SHIPBOARD FIGHTING PLANE MODEL FB-11  
HAWKER AIRCRAFT LTD. SUTTON LANE LANGLEY, BRUNSWICK, ENGLAND  
DRAWN BY: WILLIS L. NYE, A.A.H.S.  
MODEL AIRPLANE NEWS NEW YORK CITY, N.Y.  
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