AOD48024

Aviaeology

RCAF Canso A (PBY-5A) collection 1
The sub-killers of 162 (BR) Squadron

Includes the Hornell Victoria Cross action aircraft

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6 photo-documented subjects plus the markings to model 4 other significant-action aircraft based on carefully interpreted graphic reconstructions..


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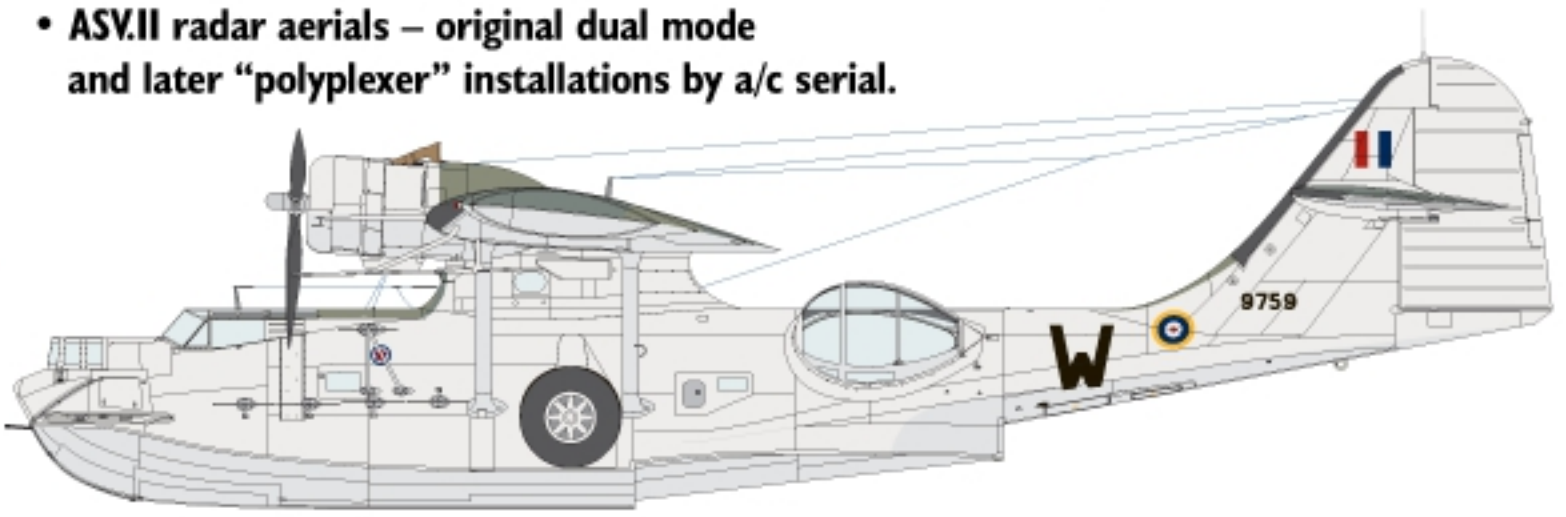
Docs feature articles (notes with photos and/or scale illustrations) on:

- **Canso A offensive armament variations;**
- **Canso A factory & RCAF Repair Depot Camouflage & Markings Schemes (covers the original Temperate Sea Scheme (TSS), the modified TSS, and late-production overall white);**
- **Defensive armament, including Eastern Air Command flak supression mods;**
- **ASV.II radar aerials – original dual mode and later "polyplexer" installations by a/c serial.**



Canso A 9750 / DZ•A
Yarmouth, Nova Scotia
1942-43

Canso A 9754 / P
"MARY K", Wick, Scotland
Hornell's VC action aircraft,
U-1225 , 24 Jun. 1944

Canso A 9759 / W
Reykjavík, Iceland
Marshall, U-300, 4 Aug. '44

Canso A 9808 / O
Wick & Reykjavík
Hornell & others throughout '44

Canso A 9840 / J
"HAIRLESS JOE", Reykjavík
Attrition replacement example

Canso A 11090 / X
Reykjavík
late 1944 / early 1945 example

Bonus Options

Canso A 9767 / S
Reykjavík
Cooke, U-342, 17 Apr. 44

Canso A 9816 / T
Wick
MacBride , U-477, 3 Jun. 44
Chapman , U-715, 13 Jun. 44

Canso A 9841 / A
Reykjavík & Wick
1st Ubat, Cunningham, 22 Feb. 44
MacBride, U-478, 30 Jun. 44

Canso A 9842 / B
Wick
Sherman, U-980, 11 Jun. 44
Sherman, U-480, 13 Jun. 44

1/48 scale

Canso A aircraft of 162 (Bomber Reconnaissance) Squadron, RCAF

Consolidated Model 28-5 and 28-5A Aircraft Built for the RAF & RCAF

Parsing Notes

The Consolidated Aircraft Corporation (CAC) Model 28-5 was the predominant operational version of what became known as the Catalina, a maritime patrol flying boat widely used by the US Navy and a number of other Allied air arms throughout the Second World War. The Model 28-5A was an amphibious version (flying boat with wheeled landing gear). In USN service, the Model 28-5 was designated as PBY-5 and the 28-5A as PBY-5A. Within the CAC designation system, an "M" appended to each of these baseline model designators indicated aircraft equipped to non-USN military user specifications, while an additional letter indicated contracting entities other than the USN ("A" for Australia, "E" for England, "C" for Canada, "F" for France, and "N" for Netherlands). As examples of this system, Model 28-5ME referred to a military flying boat for England, Model 28-5AMC an amphibious military flying boat for Canada, and Model 28-5A an amphibian to the original US Navy specification. The RCAF, RAF, and USN would all operate both pure flying boat and amphibious versions during the War. While this article focuses on the RAF and RCAF versions flown by Canadians, USN-specification details are referred to where appropriate for feature comparison purposes.

Marques, Sub-variants, & Variations

The RAF name for the first 28-MEs was Catalina Mk.I and a small number of these aircraft (9) were loaned to the RCAF Home War Establishment (HWE) for patrol operations in Eastern Air Command (EAC) while Canada awaited the arrival of its own direct purchase Model 28-5MCs. As production of the latter aircraft got underway in 1941, the RCAF decided to call its version 'Catalina' (and 'Catalina A' for the amphibians yet to come) as well, but this was soon changed to 'Convoy' in response to the administrative need to differentiate the Canadian-spec sub-variant from the 9 borrowed RAF-spec Catalinas that were by then in RCAF service. However, it was soon realized that the new name had the potential to cause radio communication confusion (especially in a convoy escort scenario) so the original name was reverted to for a short time as the original 28-5MC airframes came off the CAC production line. By December 1941 – some months after the first of these entered RCAF inventory – the name was changed to 'Canso'. Although all of the initial 50 Canso aircraft were ordered as pure flying boats, the last 14 were ultimately converted to Model 28-AMC configuration on the production line. This amphibious variant, designated Canso A in RCAF service, would become the dominant Model 28-5 version in the HWE on both coasts for the remainder of the Second World War, with a relatively small number of pure flying boats – the Catalina Mk.Is and Cansos received early on, plus US-built Catalina Mk.IBs and Mk.IVs delivered later – bolstered their number. On the British side, 40 Model 28-5MF aircraft originally contracted for France were taken over as Catalina Mk.Is while a number of the Cansos were transferred directly to the RAF as Catalina Mk.IIAs.

RCAF Canso & Canso A – Main Operational Versions Quick Reference

Version	Serials (Qty)	Mfr	Notes
Canso	9701 - 9736 (36)	Consolidated Aircraft Corporation (CAC)	Only 9701, 9702, 9704, 9705, 9706, 9707, & 9709 were retained by the RCAF, most of the balance to the RAF and 9 to the RAAF
Canso A	9737 - 9750 (14)	CAC	similar to early-production USN PBY-5A
Canso A	9751 - 9805 (55)	Boeing Aircraft of Canada (BAC)	The first Canadian-built Canso As
Canso A	9806 - 9844 (39)	Canadian Vickers (CV)	1st Canadian Vickers contract
Canso A	11001 - 11100 (100)	CV	2nd CV contract*
** 230 PBV-1s were also built to this standard (initially a USN contract but all were destined for USAAF service as OA-10A search & rescue aircraft)*			

As outlined in the table on page 2 (also illustrated and described other Aviaeology Docs), the British Catalina Mk.I was more than just a renamed PBY-5. This was especially true as far as the completely reconfigured wing centre-section was concerned, but there were also numerous less immediately visible differences. Canadian versions also embodied a number of RAF-spec features in addition to exclusively RCAF mods, but retained the original USN PBY-5 wing. In addition to any progressive production line mods, both RAF and RCAF lineages would also be subject to ongoing changes – some common to both, some not – in service. For a scale modelling subject so rich in technical variation, it is surprising that a rigorous drill-down seems, for the most part, to have been overlooked in the model-hobby press. While the Canso As flown by 162 (BR) Sqn are given particular graphic attention within this Aviaeology Doc, the comparitive information tabulated on page 2 is provided in the interest of reducing the potential for conflating versions. This little publication does not pretend to be definitive or complete; it is more a primer for fairly accurate modelling of the individual subject aircraft. In addition to these ,and the Catalina Mk.Is, IB,s, & IVBs flown by ther Model 28-5 variants may be covered in future Avaieology Decals 'n Docs sets. Our study of the broader Model 28-5 / 5A family is ongoing. To that end, we'd be interested in hearing from anyone who has done any sort of in-depth original research on the subect (editor@aviaeology.com)

Consolidated Model 28-5ME, 28-5MC, & 28-5AMC Sub-variants & Variations – Detail Notes for Model Makers

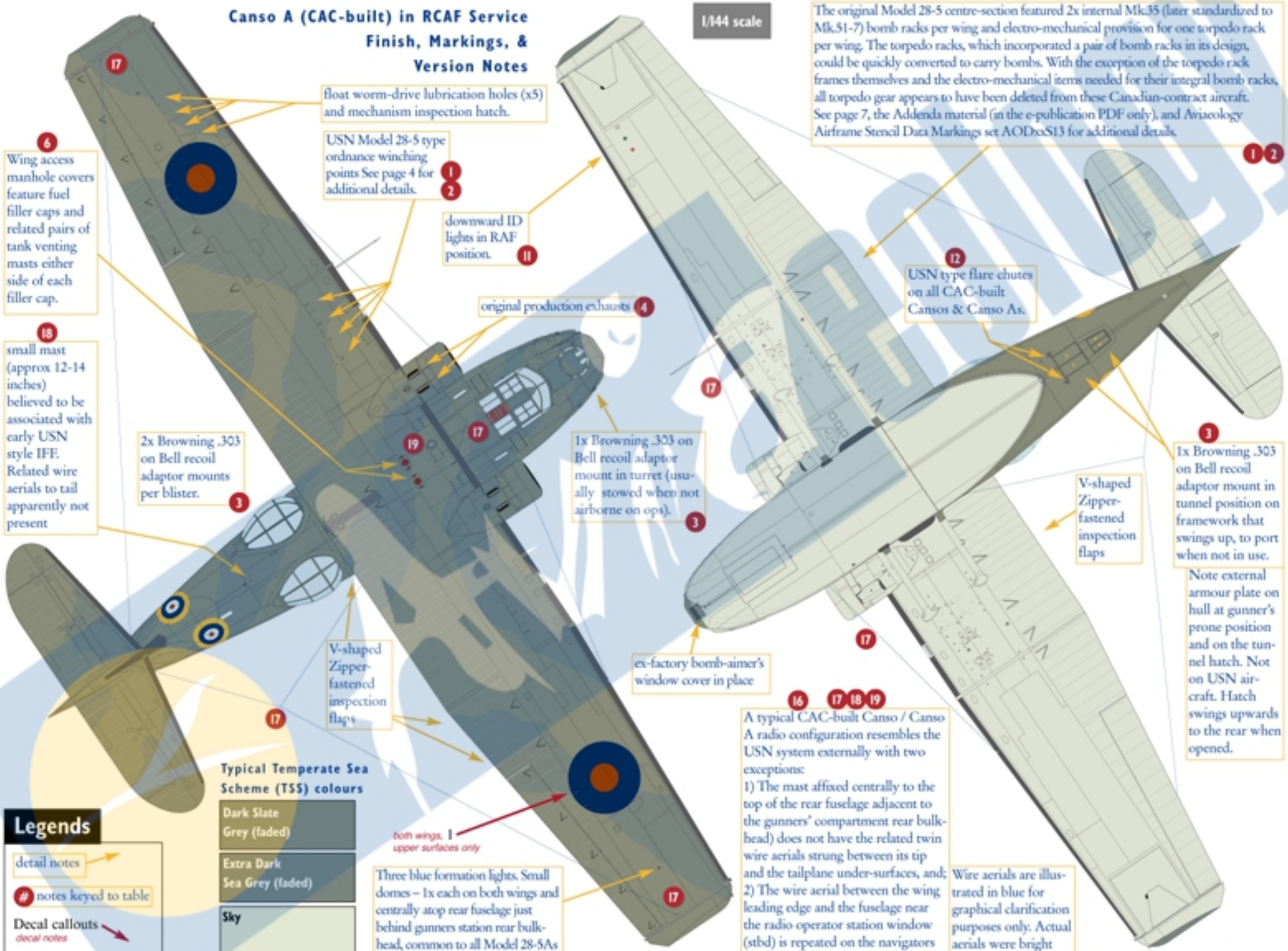
Key	Ex Factory and / or Typical Service Period Particulars	Catalina Mk.I	Catalina Mk.IB	Catalina Mk.II[1]	Catalina Mk.IIA[1] (Canso in RAF)	Catalina Mk.IV[2]	Catalina Mk.IVB	Canso (CAC)[2]	Canso A (CAC)[2]	Canso A (BAC)[2]	Canso A (Early CV)[2]	Canso A (Late CV)[2]
1	Wing Centre-Section Structure[3]	British	British	USN	USN	USN	USN	USN	USN	USN	USN	USN
2	Wing Ordnance Load Configuration[3]	early UBC	early UBC	Mk 51-7 racks direct	RCAF adapter later UBC conversion	late UBC, adapted	late UBC, adapted	RCAF adapter / later Mk 51-7 racks direct	Mk 51-7 racks direct	Mk 51-7 racks direct	Mk 51-7 racks direct	Mk 51-7 racks direct
3	Gun Armament	6x Vickers "K" Gas Operated, Drum Fed	2ea. Browning .30 & .50	6x Vickers "K" Gas Operated, Drum Fed	6x Browning .303	1x Browning .30 & 2x Browning .50	1x Browning or .303 & 2x Browning .50	6x Browning .303 (tunnel gun later removed?)	6x Browning .303 (tunnel gun later removed?)	6x Browning .303 (tunnel gun later removed)	6x Browning .303 (tunnel gun later removed)	6x Browning .303 (tunnel gun later removed)
4	Engine Exhausts	Original (some fish-tail mod, late service)	Original (some fish-tail mod, late service)	Original (some fish-tail mod, late service)	Original (some fish-tail mod, late service)	fishtail (all ex-factory or some modified?)	fishtail ex-factory	Original (some fish-tail mod, late service)	Original	Original (some fish-tail mod, late service)	Original (some fish-tail mod)	fishtail introduced ex-factory at some point
5	Underwing Fuel Dump Pipes	no	no (may have been retrofitted - late war)	no	no	yes	yes	no	no	yes, maybe a few a/c starting s/n 9802?	yes (sometimes one or both removed)	yes (sometimes one or both removed)
6	Fuel Filler Manhole Vent Masts	small – 2x on W & AH serials, 4x thereafter	2x small + 2x large	2x small	4x small	2x small + 2x large	2x small + 2x large	4x small	4x small	4x small	4x small	4x small
7	Oil Cooler Fairing type	plain	1 set aux side intakes	plain	plain	1 set aux side intakes	2 sets aux side intakes	plain	plain	plain	plain	plain
8	Pitot Head type	inverted "T"	inverted "T"	Aero "shark fin"	inverted "T"	Aero "shark fin"	some of each	inverted "T"	inverted "T"	inverted "T"	inverted "T"	some of each
9	Fl.Eng Cmpt lower window	high position	high position	high position	high position	low position	low position	high position	N/A	N/A	N/A	N/A
10	Radio Compartment Window	large	large	small	large	small	small	large	large	large	large	large
11	Downward ID lights	British type, port wing, span-wise array	USN type, starboard wing, chord-wise array	USN type, starboard wing, chord-wise array	British type, port wing, span-wise array	Unknown (likely USN starboard, chord-wise)	British type, port wing, span-wise array	British type, port wing, span-wise array	British type, port wing, span-wise array	British type, port wing, span-wise array	British type, port wing, span-wise array	British type, port wing, span-wise array
12	Flare Chute Configuration	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	USN type, 2x 4.75" angled	per USN but later, 2x 6" fleet-wide mod	RCAF 2x 6"	RCAF 3x 6", from circa s/n 11060 or later
13	Windscreen Wipers	no	no	no	no	yes – but frequently removed	yes – but frequently removed	no	no	not ex-factory – later service retrofits noted	not ex-factory – later service retrofits noted	not ex-factory – later service retrofits noted
14	Typical mainwheel tires (Amphibians only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	smooth, no tread pattern, later, 'herringbone'	'knobby' square tread for Reykjavik-based	'knobby' square tread for Reykjavik-based	'knobby' square tread for Reykjavik-based
15	Drift Recorder position	N/A	N/A	N/A	N/A	N/A	N/A	oblique camera port	oblique camera port	oblique camera port	oblique camera port some retrofit nav cmpt	oblique camera port some retrofit nav cmpt
16	**Typical Radio Aerial Scheme** • The array of radio aerials used on most RAF Catalinas was basically identical to that for USN aircraft of the same production 'vintage', modified slightly with: a) the DF Loop mounting on the upper wing centre-section leading edge moved approximately 13.5 inches to port of dead centre and; b) lead-out fixtures installed on the rear fuselage for the twin wire aerials of British IFF Mk.II equipment. Interestingly, he USN ZA homing (mounted on the pitot mast) and side-looking search radar Sterba array (rigged between the wing trailing edge and tailplanes above the fuselage) aerials were present on a small number of CAC Mk.IVs.											
17	• Wire Aerial Variations	basic USN	basic USN	basic USN	basic USN	basic USN	basic USN	mod USN (2x LE wires)	mod USN (2x LE wires)	per RAF + RCAF mods	per RAF + RCAF mods	per RAF + RCAF mods
18	• IFF	Mk.II (R3003)	Mk.II (R3003)	Mk.II (R3003)	Mk.II (R3003)	Mk.II provisioned but usually Mk.III (ABK)	Mk.II provisioned but usually Mk.III	none - Mk.III (ABK) retrofit if EAC late war	USN Mk II equiv., later removed)	Mk.II provisioned but Mk.III (ABK) in EAC	Mk.II provisioned but Mk.III (ABK) in EAC	Mk.III (ABK) – by service or late prod'n.
19	• DF Loop Aerial	large	large (small as retrofits)	large	large	small	small	large	large	in football fairing	in football fairing	in football fairing
20	Air-To-Surface Vessel Radar (ASV)	Early ASV (Mk.I or II?) homing-only on some a/c but later service ASV II - full LRASV	ASV II - full LRASV (Long Range Air-to-Surface Vessel)	Early ASV (Mk.I or II?) homing-only on some a/c but later service ASV II - full LRASV	ASV II - full LRASV	ASV II - some full early on, but mostly homing-only Duplex rigs. ASG on later A/C	ASV II - homing-only Duplex rigs initially. Podded ASG on later A/C	ASV II - full LRASV	ASV II - full LRASV	ASV II - full LRASV	ASV II - some full homing and search arrays, some later converted to polyplex	ASV II - some full homing and search arrays, after s/n 11020 most were polyplex-only

1 & 2. Please note that the direct transfer USN Model 28-5As (Catalina Mk.III) and BAC-built PB2B-2s (Catalina VI) are not covered in this table due to the fact that they were not as operationally active as all of the other sub-variants represented. However, the other more frequently photographed Catalina marques not represented in this set are covered in the interest of reducing confusion between variants by direct comparison of detail features. The main RAF Catalina variants (Mk.I, IB, and IVB are represented, complete with illustrated finish, markings, and configuration details, in Aviaeology Decals n° Docs AOD72013 and AOD48013.

3. The Catalina Mk.I wing centre-section was designed to RAF specification. USN Mk.35 (later standardized as Mk.51-7) bomb racks and torpedo racks were deleted from the design and structural provision made for the direct attachment of 16 Universal Bomb Carriers (UBCs). However, in actual practice, only four (every second one) hardpoints per side were made "live". This seems to have been due in part to physical restrictions imparted by larger ordnance types (Mk.VII D/Cs) and in part to complications encountered by UK contractors in mating the electrical aspects of the British bombing gear circuit to the ex-factory wing hardware.

Canso A (CAC-built) in RCAF Service Finish, Markings, & Version Notes

1/144 scale



float worm-drive lubrication holes (x5) and mechanism inspection hatch.

USN Model 28-5 type ordnance winching points See page 4 for additional details. 1 2

downward ID lights in RAF position. 11

original production exhausts 4

6 Wing access manhole covers feature fuel filler caps and related pairs of tank venting masts either side of each filler cap.

18 small mast (approx 12-14 inches) believed to be associated with early USN style IFF. Related wire aerials to tail apparently not present

2x Browning .303 on Bell recoil adaptor mounts per blister. 3

1x Browning .303 on Bell recoil adaptor mount in turret (usually stowed when not airborne on ops). 3

V-shaped Zipper-fastened inspection flaps

ex-factory bomb-aimer's window cover in place

The original Model 28-5 centre-section featured 2x internal Mk.35 (later standardized to Mk.51-7) bomb racks per wing and electro-mechanical provision for one torpedo rack per wing. The torpedo racks, which incorporated a pair of bomb racks in its design, could be quickly converted to carry bombs. With the exception of the torpedo rack frames themselves and the electro-mechanical items needed for their integral bomb racks, all torpedo gear appears to have been deleted from these Canadian-contract aircraft. See page 7, the Addenda material (in the e-publication PDF only), and Aviaeology Airframe Stencil Data Markings set AODocS13 for additional details. 1 2

12 USN type flare chutes on all CAC-built Cansos & Canso As.

3 1x Browning .303 on Bell recoil adaptor mount in tunnel position on framework that swings up, to port when not in use.

Note external armour plate on hull at gunner's prone position and on the tunnel hatch. Not on USN aircraft. Hatch swings upwards to the rear when opened.

V-shaped Zipper-fastened inspection flaps

16 17 18 19 A typical CAC-built Canso / Canso A radio configuration resembles the USN system externally with two exceptions:
1) The mast affixed centrally to the top of the rear fuselage adjacent to the gunners' compartment rear bulkhead) does not have the related twin wire aerials strung between its tip and the tailplane under-surfaces, and;
2) The wire aerial between the wing leading edge and the fuselage near the radio operator station window (stbd) is repeated on the navigators station side (port).

Wire aerials are illustrated in blue for graphical clarification purposes only. Actual aerials were bright natural metal colour.

Three blue formation lights. Small domes – 1x each on both wings and centrally atop rear fuselage just behind gunners station rear bulkhead, common to all Model 28-5As

both wings, 1 upper surfaces only

Typical Temperate Sea Scheme (TSS) colours

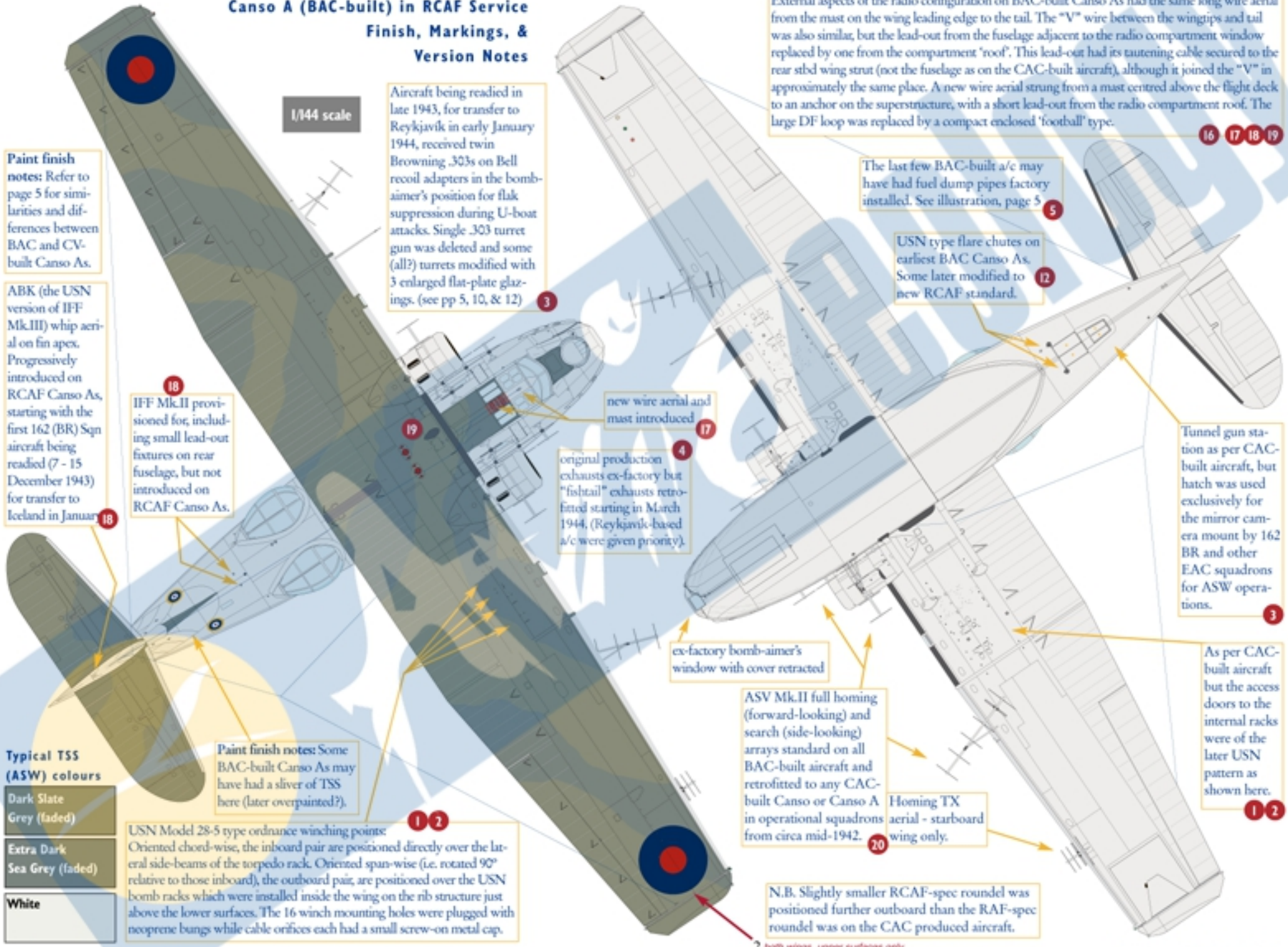
- Dark Slate Grey (faded)
- Extra Dark Sea Grey (faded)
- Sky

Legends

- detail notes
- # notes keyed to table
- Decal callouts *decal notes*

Canso A (BAC-built) in RCAF Service
Finish, Markings, & Version Notes

1/144 scale



Paint finish notes: Refer to page 5 for similarities and differences between BAC and CV-built Canso As.

ABK (the USN version of IFF Mk.III) whip aerial on fin apex. Progressively introduced on RCAF Canso As, starting with the first 162 (BR) Sqn aircraft being readied (7 - 15 December 1943) for transfer to Iceland in January 18

18 IFF Mk.II provisioned for, including small lead-out fixtures on rear fuselage, but not introduced on RCAF Canso As.

Aircraft being readied in late 1943, for transfer to Reykjavik in early January 1944, received twin Browning .303s on Bell recoil adapters in the bomb-aimer's position for flak suppression during U-boat attacks. Single .303 turret gun was deleted and some (all?) turrets modified with 3 enlarged flat-plate glazings. (see pp 5, 10, & 12) 3

19

new wire aerial and mast introduced 17

4 original production exhausts ex-factory but "fishtail" exhausts retrofitted starting in March 1944. (Reykjavik-based a/c were given priority).

External aspects of the radio configuration on BAC-built Canso As had the same long wire aerial from the mast on the wing leading edge to the tail. The "V" wire between the wingtips and tail was also similar, but the lead-out from the fuselage adjacent to the radio compartment window replaced by one from the compartment 'roof'. This lead-out had its tautening cable secured to the rear stbd wing strut (not the fuselage as on the CAC-built aircraft), although it joined the "V" in approximately the same place. A new wire aerial strung from a mast centred above the flight deck to an anchor on the superstructure, with a short lead-out from the radio compartment roof. The large DF loop was replaced by a compact enclosed 'football' type. 16 17 18 19

The last few BAC-built a/c may have had fuel dump pipes factory installed. See illustration, page 5 5

USN type flare chutes on earliest BAC Canso As. Some later modified to new RCAF standard. 12

Tunnel gun station as per CAC-built aircraft, but hatch was used exclusively for the mirror camera mount by 162 BR and other EAC squadrons for ASW operations. 3

As per CAC-built aircraft but the access doors to the internal racks were of the later USN pattern as shown here. 1 2

ex-factory bomb-aimer's window with cover retracted

ASV Mk.II full homing (forward-looking) and search (side-looking) arrays standard on all BAC-built aircraft and retrofitted to any CAC-built Canso or Canso A in operational squadrons from circa mid-1942. 20

Homing TX aerial - starboard wing only.

Typical TSS (ASW) colours

Dark Slate Grey (faded)
Extra Dark Sea Grey (faded)
White

Paint finish notes: Some BAC-built Canso As may have had a sliver of TSS here (later overpainted?).

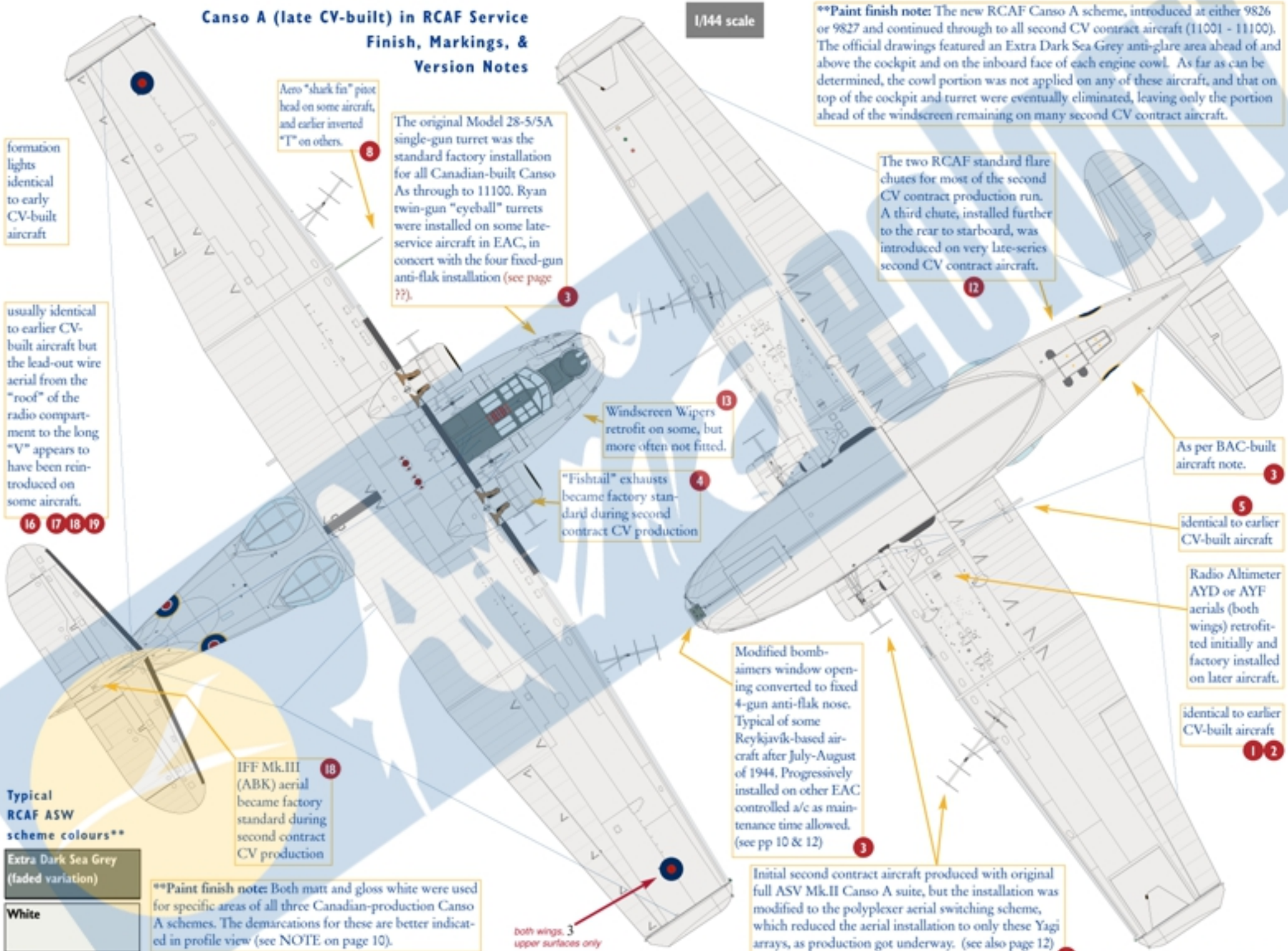
1 2 USN Model 28-5 type ordnance winching points: Oriented chord-wise, the inboard pair are positioned directly over the lateral side-beams of the torpedo rack. Oriented span-wise (i.e. rotated 90° relative to those inboard), the outboard pair, are positioned over the USN bomb racks which were installed inside the wing on the rib structure just above the lower surfaces. The 16 winch mounting holes were plugged with neoprene bungs while cable orifices each had a small screw-on metal cap.

N.B. Slightly smaller RCAF-spec roundel was positioned further outboard than the RAF-spec roundel was on the CAC produced aircraft.

2 *both wings, upper surfaces only*

Canso A (late CV-built) in RCAF Service Finish, Markings, & Version Notes

1/144 scale



**Paint finish note: The new RCAF Canso A scheme, introduced at either 9826 or 9827 and continued through to all second CV contract aircraft (11001 - 11100). The official drawings featured an Extra Dark Sea Grey anti-glare area ahead of and above the cockpit and on the inboard face of each engine cowl. As far as can be determined, the cowl portion was not applied on any of these aircraft, and that on top of the cockpit and turret were eventually eliminated, leaving only the portion ahead of the windscreen remaining on many second CV contract aircraft.

formation lights identical to early CV-built aircraft

Aero "shark fin" pitot head on some aircraft, and earlier inverted "T" on others. 8

The original Model 28-5/5A single-gun turret was the standard factory installation for all Canadian-built Canso As through to 11100. Ryan twin-gun "eyeball" turrets were installed on some late-service aircraft in EAC, in concert with the four fixed-gun anti-flak installation (see page ??). 3

The two RCAF standard flare chutes for most of the second CV contract production run. A third chute, installed further to the rear to starboard, was introduced on very late-series second CV contract aircraft. 12

usually identical to earlier CV-built aircraft but the lead-out wire aerial from the "roof" of the radio compartment to the long "V" appears to have been reintroduced on some aircraft. 16 17 18 19

Windscreen Wipers retrofit on some, but more often not fitted. 13

"Fishtail" exhausts became factory standard during second contract CV production 4

As per BAC-built aircraft note. 3

5 identical to earlier CV-built aircraft

Radio Altimeter AYD or AYF aerials (both wings) retrofitted initially and factory installed on later aircraft.

identical to earlier CV-built aircraft 1 2

Modified bomb-aimers window opening converted to fixed 4-gun anti-flak nose. Typical of some Reykjavík-based aircraft after July-August of 1944. Progressively installed on other EAC controlled a/c as maintenance time allowed. (see pp 10 & 12) 3

IFF Mk.III (ABK) aerial became factory standard during second contract CV production 18

Initial second contract aircraft produced with original full ASV Mk.II Canso A suite, but the installation was modified to the polyplexer aerial switching scheme, which reduced the aerial installation to only these Yagi arrays, as production got underway. (see also page 12) 20

both wings, 3 upper surfaces only

Typical RCAF ASW scheme colours**

Extra Dark Sea Grey (faded variation)

White

**Paint finish note: Both matt and gloss white were used for specific areas of all three Canadian-production Canso A schemes. The demarcations for these are better indicated in profile view (see NOTE on page 10).

Canso A (early CV-built) in RCAF Service Finish, Markings (s/n 9806 - 9825*), & Version Notes

1/144 scale

* For later aircraft of the first CV contract (s/n 9827-9744), the factory-applied finish & markings scheme was the same as that for second CV contract aircraft. Details for s/n 9826 remain unknown.

both wings 2 upper surfaces only

NOTE: The national markings applied in Canada appear to have used a brighter red than the RAF spec Dull Red, but overlays in the latter colour are provided as alternates for all roundels and fin flashs .

as per BAC-built aircraft. 16 17 18 19

Formation lights (see note, bottom of page 3 for wing locations)

Bomb rack access doors as per BAC-built Canso As. Doors are shown here in the opened position as they would be during the winching of ordnance and while ordnance is attached to wings. 1 2

**Paint finish note: The upper surface colours could vary greatly on any individual operational Canso A over time. Depending on the aircraft's operational environment, colours could start to fade within weeks of factory exit, and the fabric-covered surfaces often weathered differently then metal-covered surfaces.

Turret and nose guns mods as per BAC-built aircraft. The modified turret is depicted here, with the new glazings facing completely forward as it typically would be on operational missions (see also pp 4, 10, & 12). 3

larger RCAF standard flare chutes. 12

Windscreen Wipers retrofit on some, but more often not fitted. 13

"fishtail" exhausts retrofitted from March-April 1944. 162 (BR) aircraft had priority. 4

As per BAC-built aircraft note. 3

Fuel dump pipes standard on CV-built aircraft, but sometimes seen installed on only one wing(?!) 5

Modified bomb-aimers window with smaller glazing above and twin ball sockets panel below. Typical of all Reykjavík-based aircraft January – July 1944. Progressively installed on other EAC a/c as maintenance time allowed (see also pp 4, 10, & 12). 3

Radio Altimeter AYD or AYF aerials (both wings) retrofitted to active Canadian-built Canso As from circa July 1944.

as per BAC-built aircraft 20

**Paint finish note: Aside from the usual variations between individual aircraft, the scheme demarcation patterns were virtually the same for both BAC- and CV- built aircraft with the exception of the forward demarcation on the engine nacelles and extent on cockpit and turret "roof" areas.

Typical TSS (ASW) colours**

Dark Slate Grey (faded)	(fresh variation)
Extra Dark Sea Grey (faded)	(fresh variation)
White	

**Paint finish note: On operational aircraft, the finish of the de-icer boot sections could vary from full-on fresh anti-conspicuity white coating to fully exposed black rubber and anything in between.

RCAF Canso A – Wing Centre-section Ordnance Hardware Details 1 2

1/72 scale

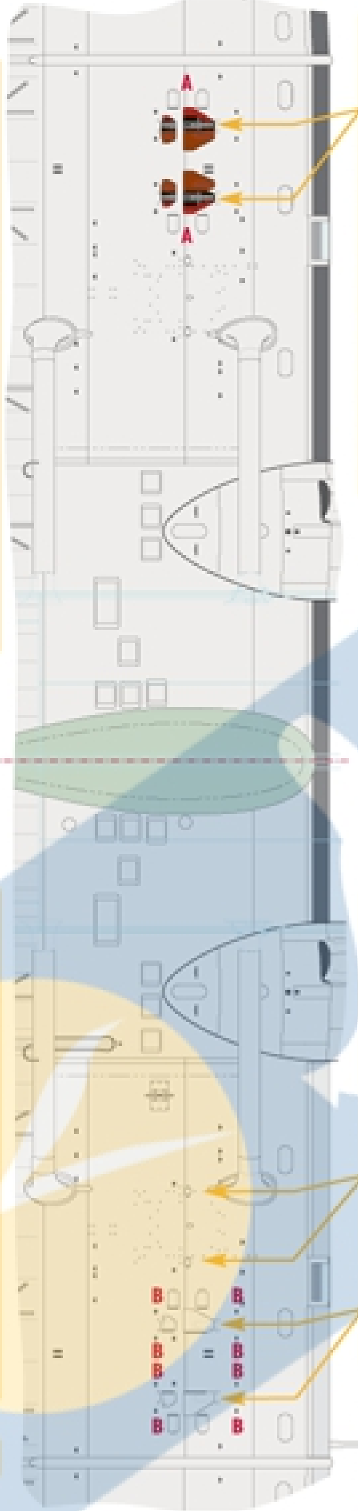
All Cansos and Canso As had the standard USN type wing centre-section structure, built with two integral dual-hook bomb racks and provisioned to mount two additional racks of the same capacity externally if the torpedo rack frame was mounted to the wing. In RCAF service, the problem arose that most main droppable ordnance types used employed single carriage lugs. While this could and was used for winching up, early on, adaptor bands had to be used for attachment to the dual hooks.

rack access doors opened

rack access doors closed

CAC also designed and supplied 'breakback' adaptors for to ease the winching and carriage of single-lung British ordnance, but these saw very little use in the RCAF. Later production batches of select ordnance types, such as the Mk.XI D/C were produced with dual lugs on one side and singles on the other. Both adaptor band-equipped and dual-lugged Mk.XI D/Cs were used were used over the course of 162 Sqn operations.

B integral sway braces



The bomb rack access doors are shown here in the opened position. This would be the state for winching up any of the main droppable ordnance types and while the ordnance was being carried on the wing. Some photos also seem to suggest that these doors would remain open even after the ordnance was released (one would have thought the doors would be spring-loaded). The auxillary access doors were typically opened only during the loading procedure. The layout shown here was typical of wartime aircraft, while early-production Model 28-5/5A aircraft had a slightly different arrangement as shown on page 3. On later aircraft, the forward-most auxillary doors were either rivetted shut or not present at all.

A aux access doors

Please Note

If you have the regular use of a computer, tablet, or smartphone, please register your ownership of this Aviaeology Decals 'n Docs set (see the little chit inserted in each retail set for email registration details) to receive the full-colour PDF of this publication. In addition to being home-printable and magnifiable on-screen so that you can more clearly see detail in the drawings, the e-publication version of this Doc includes additional graphical material on Catalina armament that could not included in the B&W hardcopy due to space restrictions.

The Model 28-5MC and 28-5AMC aircraft produced for the RCAF did not come equipped to use the basic design's integral torpedo system, but the external racks were supplied as they could be converted for bomb riveted. However, with the exception of limited use in Western Air Command (perhaps for training purposes only), this additional ordnance capability does not appear ot have been used operationally in the RCAF.

Nonetheless, latent features remain visible on the wings: These are the winching hole cover plates corresponding to the span-wise position of the external Mk.51-7 bomb racks which would be bolted to the outside of the lateral members of the torpedo rack if installed, and an array of over-painted screws occupy the holes where steel bolts would be used to mount the torpedo racks to the structure.

Small "bump" fairings on the front and rear access doors cover the ordnance hooks of the internal Mk.51-7 bomb racks when these stores hardpoints are not in use.

the Carl Vincent collection

Canso A 11094 looms over an RAF Auster III liaison aircraft that is having its prop swung, circa early 1945. 11094 appears to be the Reykjavík 'ready ship' (Duty Aircraft), loaded for quick departure should the call come. Three of the aircraft's underwing hardpoints mount Torpex-filled Mk.XI depth charges (D/Cs) and, if it was to sortie, the inboard port station would be loaded with an acoustic torpedo (see photo page 10 and Addenda material). Due in part to the weapon's temperature-sensitive power supply, and in part to its top secret nature, the torpedo was to be loaded only by a special crew at the last minute. Nicknamed variously as 'Oscar', 'Proctor', or 'Project Z', the American-made torpedo was thus – from late March 1944 – part of one of two standard 162 Sqn operational load-outs at Reykjavík. The other, comprised of four depth charges plus a larger fuel load, was mounted for maximum endurance missions and was the only one used on the Temporary Duty machines operating from Wick, Scotland, throughout the summer of 1944.

DND photo PSG-216 via the Carl Vincent collection

The two large cylinders in this close-up are the lethal Torpex-filled Mk.XI 250 lb depth charges. In the RCAF they were either fitted with adaptor bands (as here) or manufactured with additional lugs for engaging the dual hooks, spaced 14 inches apart on the USN Mk. 51-7 bomb racks (see this Doc's Addenda material for additional details). A British Light Series Stores Carrier (LSSC) mounted on rails bolted to the wing totes two smoke type sea markers – these were a common addition to the war load for some mission profiles. They were also used for practice bombs.

the Carl Vincent collection

An early-service CAC-built Canso on convoy escort: The 450 lb Mk.VII naval depth charge, fitted with nose and tail fairings and a hoisting band when adapted for aircraft use, was a primary ASW weapon in EAC in the period when the Cansos and Canso As were coming on strength (see this Doc's Addenda material for additional details).

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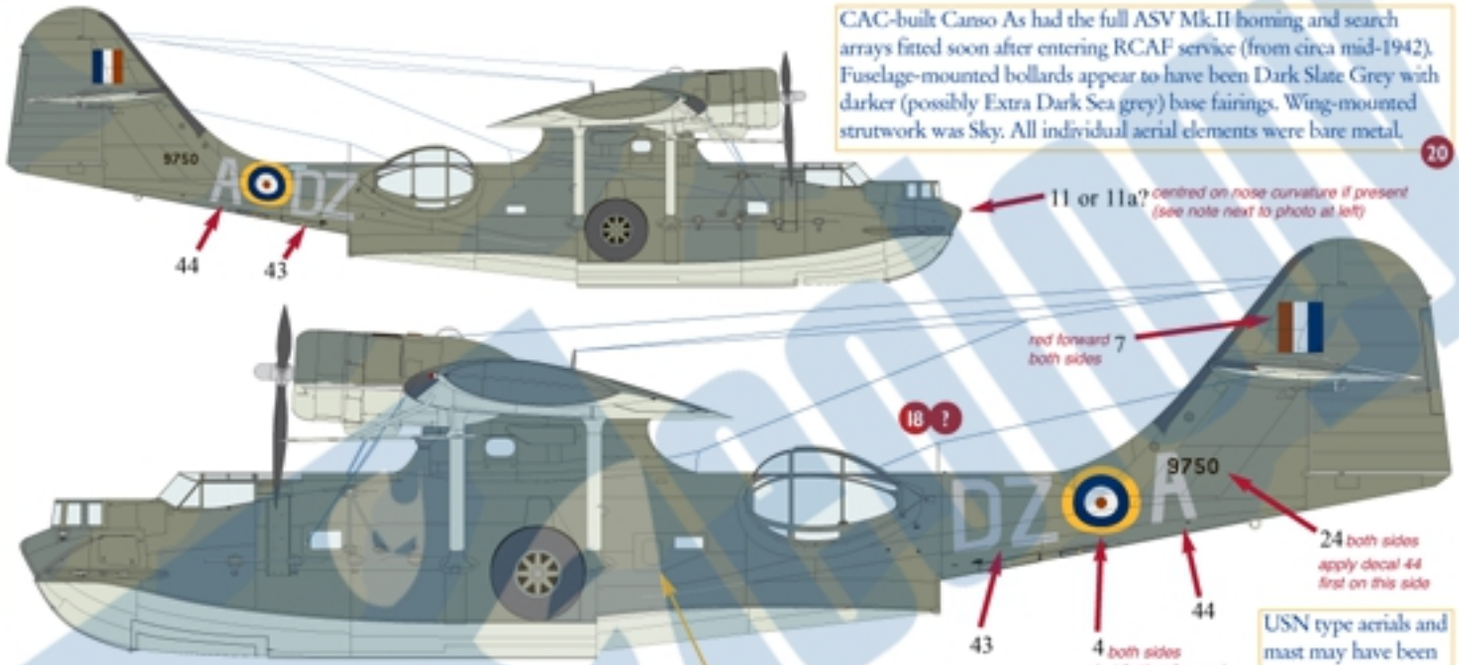
Special thanks are also due to Major Bill March of CFAWC and DHH, RCAF, Harvey Newman (RCAF veteran and ex EAC Canso A flight engineer), and Jeff Noakes (author of a detailed Operational History of 162 Sqn) for their assistance.

Canso A 9750 | Yarmouth, Nova Scotia | 1942 - 1943

• Late March 1942: Originally on strength with 10 (BR) Sqn Detachment Yarmouth, but effectively as an unarmed trainer and airborne search & rescue (ASR) aircraft. Actual ASW work began in early April.
• 19 May 1942: Det became 162 (BR) Sqn (F/L N.E. "Molly" Small, Acting OC) with 9750 as aircraft "A".
• 28 May: F/L Turner (future CO) performed 10 hr anti-submarine search mission on 28 May.
• 22 June: Acting S/L Small on test flight from Norfolk, Virginia, "to test radio equipment" and returned to Yarmouth the next day "with SE [special equipment referring to ASV Mk.II] installed." Probably the first of the squadron's a/c with ASV radar.
• 25 June: First Op with ASV aboard, F/O Tingle 17.15 hrs airborne. 4x Mk.VII (450 lb) would have been the load-out)
• Active on ops until new Canadian-built aircraft started to fill the Sqn's inventory through February-April 1943.
April-May 1943: Entries resume on 20 May, possible out of the line for major inspection and possible repaint to ASW scheme. Used mostly for training and hack duties thereafter.
December 1943: transferred to 161 (BR) at Dartmouth as 162 prepares for move to Iceland.



CAC-built Cansos As had the full ASV Mk.II homing and search arrays fitted soon after entering RCAF service (from circa mid-1942). Fuselage-mounted bollards appear to have been Dark Slate Grey with darker (possibly Extra Dark Sea grey) base fairings. Wing-mounted strutwork was Sky. All individual aerial elements were bare metal. 20

The photo at left shows no evidence of a serial number "last two" on the upper nose. However, since other photos of operational CAC-built Cansos As do show them in either black or white, decals 11 and 11a are provided just in case.

USN type aerials and mast may have been present when delivered, but may not have been retained on all CAC-built Cansos As 18 ?


the Carl Vincent collection

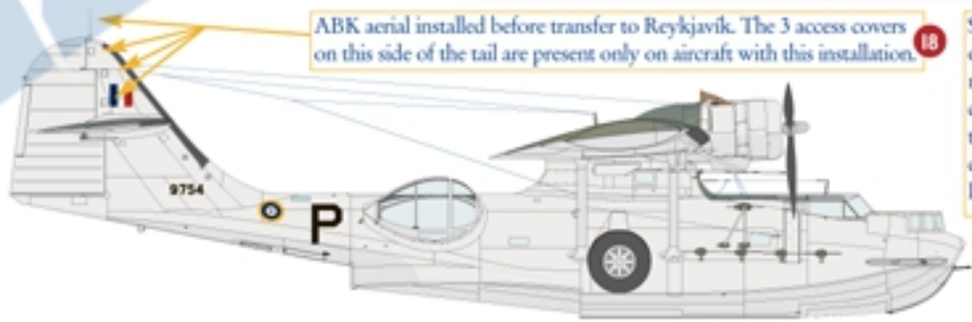
This view of CAC-built Canso A s/n 9750 emphasizes the aircraft's signature design traits – an impressive wingspan with the boat-hulled fuselage hanging below it on a streamlined superstructure. The squadron markings were added while at Yarmouth. The ASV Mk.II radar aerial arrays were most probably installed in late June 1942. The box-like structures under the wings to the rear of the main bomb rack access doors are USN Mk.42 bomb racks. Designed for US 100lb bombs, they were not standard equipment for the Model 28-5AMCs, but do nonetheless show up in photos from time to time.

This view of Canso A 9754 was taken in the winter of 1943 somewhere in Eastern Air Command. The paintwork is showing the signs of wear and tear typical of the BAC-built aircraft, including large patches where the white topcoat has flaked off the fuselage. The wheel wells were finished in dark colour (probably Interior Green or Bronze Green?) on the BAC Cansos As. This photo was taken later than the one on the cover page where the nickname "Mary K" is more easily seen.

the Mark Peapell collection

Canso A 9754 | Wick, Scotland | 24 June 1944

• 13 March 1943: 4th Canadian-built Canso A delivered to 162 Sqn at Yarmouth.
• Regular aircraft of A Flight commander, S/L W.H. Poag throughout late 1943.
• 5 - 15 January 1944: Ferried to new station, Dartmouth-Goose Bay-BW1(Greenland)-Reykjavik by S/L Poag and crew plus 4 groundcrew passengers. (all 162 Sqn ferry flights followed variations of this route).
continued on page 9



ABK aerial installed before transfer to Reykjavik. The 3 access covers on this side of the tail are present only on aircraft with this installation. 18

See page 9 for additional specific decal elements to use on this subject, and for additional modelling detail notes applicable to the Reykjavik / Wick era Canso A configuration. Note also that the individual code letters were most probably applied in December 1943, during the maintenance and modification activity at Dartmouth, preparatory to the move to Iceland.

RCAF-specific wire aerial and stub mast (all aircraft except 9750). 17

twin anti-flak guns installed before transfer to Reykjavik, all relevant subject aircraft (unless conversion to 4-gun nose noted) 3

"fishtail" exhausts retrofitted from March-April 1944. 4

red forward both sides 8

further forward both sides 5 on opposite side

both sides 33

9754

25 both sides

15

10

36

Mirror camera mounted on swing up (to starboard) frame was installed on all 162 Sqn aircraft transferred to Reykjavik.

Round hole for optics indicates that a Drift Recorder Mk.II is installed in oblique camera hatch. 15

National markings (decals 5 and 8) for aircraft 9759 (below) are in the same positions as for this aircraft. Overseas roundel (decal 36) position may vary slightly between aircraft.

NOTE: All finish, common markings, and configuration details noted here and bottom of page 8 are applicable to the subjects on subsequent pages unless indicated otherwise.

Canso A 9754 | Wick, Scotland | 24 June 1944

continued from page 8

- 24 Jan 1944: Flew Sqn's 1st op from Reykjavik - a 14 hr a/s sweep by F/O Leech and crew.
- S/L Poag's usual aircraft for much of its time in Reykjavik.
- 24 June 1944: F/L Hornell and crew sink *U-1225*. Aircraft heavily damaged by accurate flak on run in, but Hornell pressed on to a perfect attack with 4x D/Cs before a successful ditching. He was awarded the Victoria Cross posthumously for this action.

N.B. This aircraft may have been shot down before the AYD / AYF radio altimeter system was retrofitted to the RCAF Canso A fleet.

the Carl Vincent collection

RCAF Cansos As sharing Reykjavik hangar space with an RAF Liberator sometime in the summer of 1944. Close inspection of the original photo reveals a number of 9759/W's modifications including the twin nose gun ball sockets, fishtail exhausts, and radio altimeter aerials. The last two of the serial number on the nose and a patchwork of white-on-white spot refinishing was typical of the Squadron's aircraft while based here and on Temporary Duty at Wick. The modified turret seen in the photo at right appears to have been replaced with a factory-standard one.

Canso A 9759 arrived at Yarmouth on 12 April 1943. It is seen here after 162 Sqn moved to West Camp in May. It would be months before the Iceland-era mods are embodied, but the anti-conspicuity coating on the wing and tail de-icer boots and the general condition of the paintwork, especially on the forward fuselage.

the Carl Vincent collection

13 centred on nose curvature

9759

26 both sides

Turret modified with 3 flat plate glazings may have been installed at some point (i.e.) during a major inspection. See Canso A 9840 for additional details. 3 ?

35 both sides

9759

Canso A 9759 | Reykjavik, Iceland | 4 August 1944

- 16 April 1944: Delivered to 162 Sqn, Yarmouth.
- 4-7 Jan 1944: ferried to Reykjavik, F/L. R.E. MacBride and crew.
- 4 Aug 1944: F/O Marshall and crew attacked and damaged *U-300* which escaped in fog after shootout, but extensively damaged, forced to return to Norway for repairs. The 3x D/Cs dropped first had caused the damage, while the acoustic torpedo released later in the battle did not make contact with its target.
- 30 Sept 1944, one of the last of the original Reykjavik transfers to return to Canada.

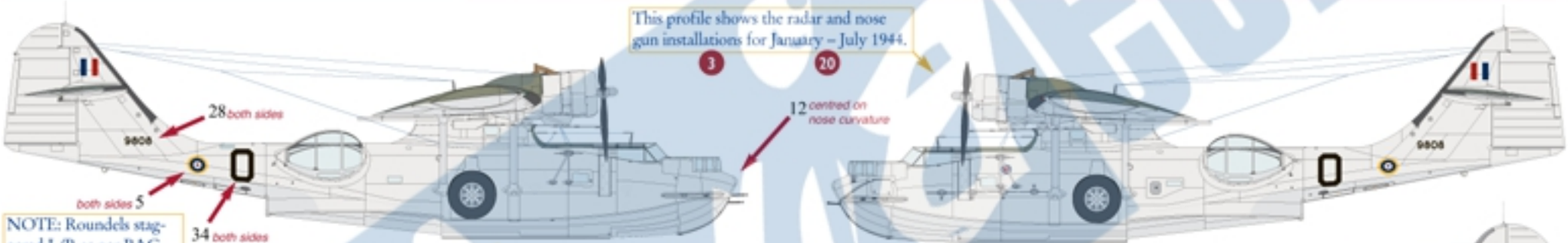
Canso A 9808 | Wick & Reykjavik | early-mid 1944

• 9 March 1943: The 3rd CV-built Canso A, ferried to 162 Sqn from Montreal. The 1st of 2 CV examples on-strength by the end of the month (the other was 9809)..
• 5-15 Jan 1944: ferried to Reykjavik, F/O. McRae and crew.
• 14 March 1944: F/L David Hornell's first training sortie as plane captain (he'd flown as 2nd pilot in other crews since arriving on squadron in October 1943.
• May-Jun 1944: Regular aircraft of F/L David Hornell during his crew's anti-u-boat course at Ballykelly / Maydown through May 1944, subsequent proficiency hops at base, and operational sorties from Wick and Reykjavik through June 1944.
• 23 July 1944: ferried back to Canada, F/O Oakford crew, for major overhaul at Scoudouc – anti-flak and radar modified there.
• subsequently with 116 (BR) Sqn, March-July 1945.

Posted to 162 (BR) Sqn on 9 Oct 1943, F/L David Hornell, VC, was 2nd pilot (co-pilot) with other crews through the move from Canada to Iceland. No doubt a flight commander saw potential and Hornell began training in the left seat from 14 March 1944. The first 3 such sorties were test hops in 9808, with various other aircraft logged from late March into April. When selected to take the Coastal Command anti-submarine course at RAF Ballykelly (RNAS Maydown), Northern Ireland, his crew departed Reykjavik in this aircraft, and used it throughout the flying phase of the course from 9 -21 May 1944. On returning to Iceland, he flew other aircraft, including the now famous 9754 at least once, but 9808 was the frequent mount of his crew for ops from both Reykjavik and Wick. After the 24 June VC action, 9808 was still in regular use by other crews until ferried back to Canada in late July. The later RCAF EAC anti-flak nose conversion – four fixed Browning .303s fired by the pilot – seen in this summer 1945 era photo, was likely embodied during its subsequent major inspection at 4 Repair Depot, Scoudouc. The full ASV.II radar suite that would have been present during its time in Iceland has been converted to the RCAF polyplexer variant, featuring less aerials. The 3x Mk.XI D/Cs plus a single "Proctor" acoustic torpedo was one of two typical ASW patrol load-outs for EAC's Canso As. The men in the photo are likely its 116 (BR) Sqn crew. The windscreen wipers were a rarity on wartime Canso As.

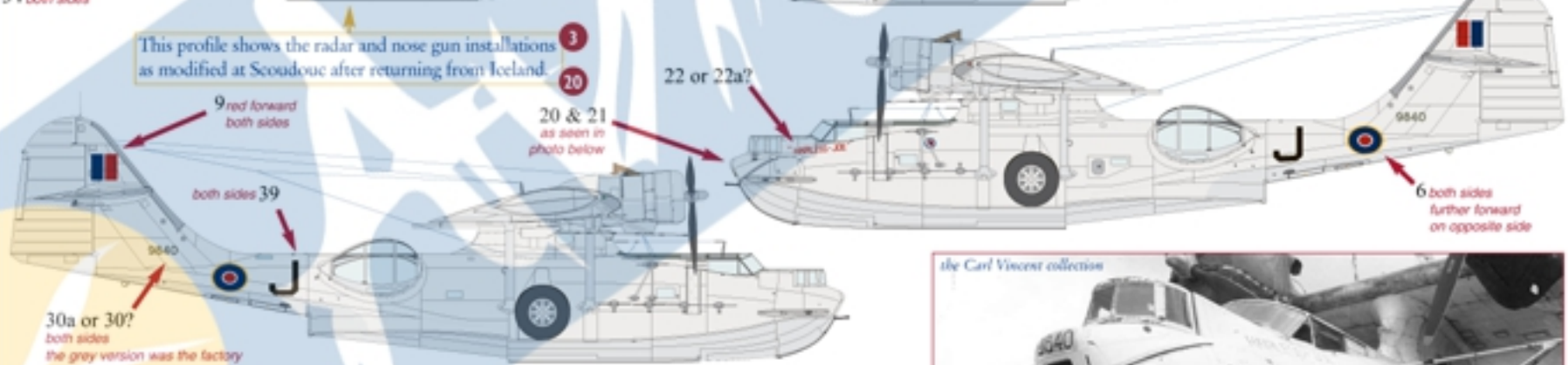
the Carl Vincent collection

This profile shows the radar and nose gun installations for January – July 1944.



NOTE: Roundels staggered L/R as per BAC-built aircraft, but lower position used consistently on early CV-built aircraft s/n 9806 to 9825.

This profile shows the radar and nose gun installations as modified at Scoudouc after returning from Iceland.



NOTE: The slightly darker tone used to represent the white undersurfaces in all profile illustrations indicate the area typically treated with either a gloss white (No. 302A Glossy White) topcoat, or an anti-fouling gloss clear coat over the otherwise matt white camouflage paint finish.

Canso A 9840 | Reykjavik | mid-late 1944

• 1-13 July 1944: ferried to Reykjavik by F/O Van Huyse crew formerly of 161 (BR) Sqn.
• One of the first 162 Sqn a/c equipped with sonobuoy transmitter/receiver equipment, resulting in many related training sorties flown in this a/c from mid-August 1944.

the Carl Vincent collection

F/L Robinson and crew looking smart for the photographer at Reykjavik, circa July-August 1945. This aircraft was one of the attrition replacements ferried in, complete with a new crew, in the first two weeks of July (although then F/O Robinson had arrived as plane captain of s/n 9766 back in January). The aircraft is s/n 9840, as evinced by the nose markings (the style for which is unusual for a 162 Sqn Canso A, so quite likely a hangover from her days with 161 (BR) Sqn). Among the numerous details that show up well in this particular view are the ball socket mounts for the twin anti-flak nose guns and plate glass modified turret with its narrow front frames. The static discharge ground line visible at the step end of the keel (rear apex of the hull planing surfaces) is a rarely noticed detail that may be applicable only to CV-built Canso As and their OA-10A cousins. Higher up, note the engine covers modified to take the fishtail exhausts, and the well-worn anti-conspicuity coating along the wing leading edge de-icer boots.

Canso A 9767 | Reykjavik | 17 April 1944

- 23 Mar 1944: Delivered to 162 Sqn, Yarmouth.
- 7-23 Jan 1944: ferried to Reykjavik, F/O. Cunningham and crew.
- 17 April 1944: F/O Cooke and crew attack and sink *U-342*. 3x D/C used, Mk.24 'Proctor' hung-up on 3 drop attempts but D/Cs were 100% effective. Nose guns used.

Canso A 9816 | Wick | 3 & 13 June 1944

- 11 March 1944: ferried to Reykjavik, F/L Leadbetter and crew as 162 Sqn maintenance rotation replacement aircraft.
- 3 June 1944: F/L. MacBride and crew attack and sink *U-477*. 4x D/Cs used. Nose guns used.
- 13 June 1944: W/C Chapman (co-captain & 1st pilot F/O McRae) and crew attack and sink *U-715*. 4x D/Cs used. Nose guns used. 9816 was shot down (3 killed) in 2nd (guns only) attack as damaged sub was sinking.

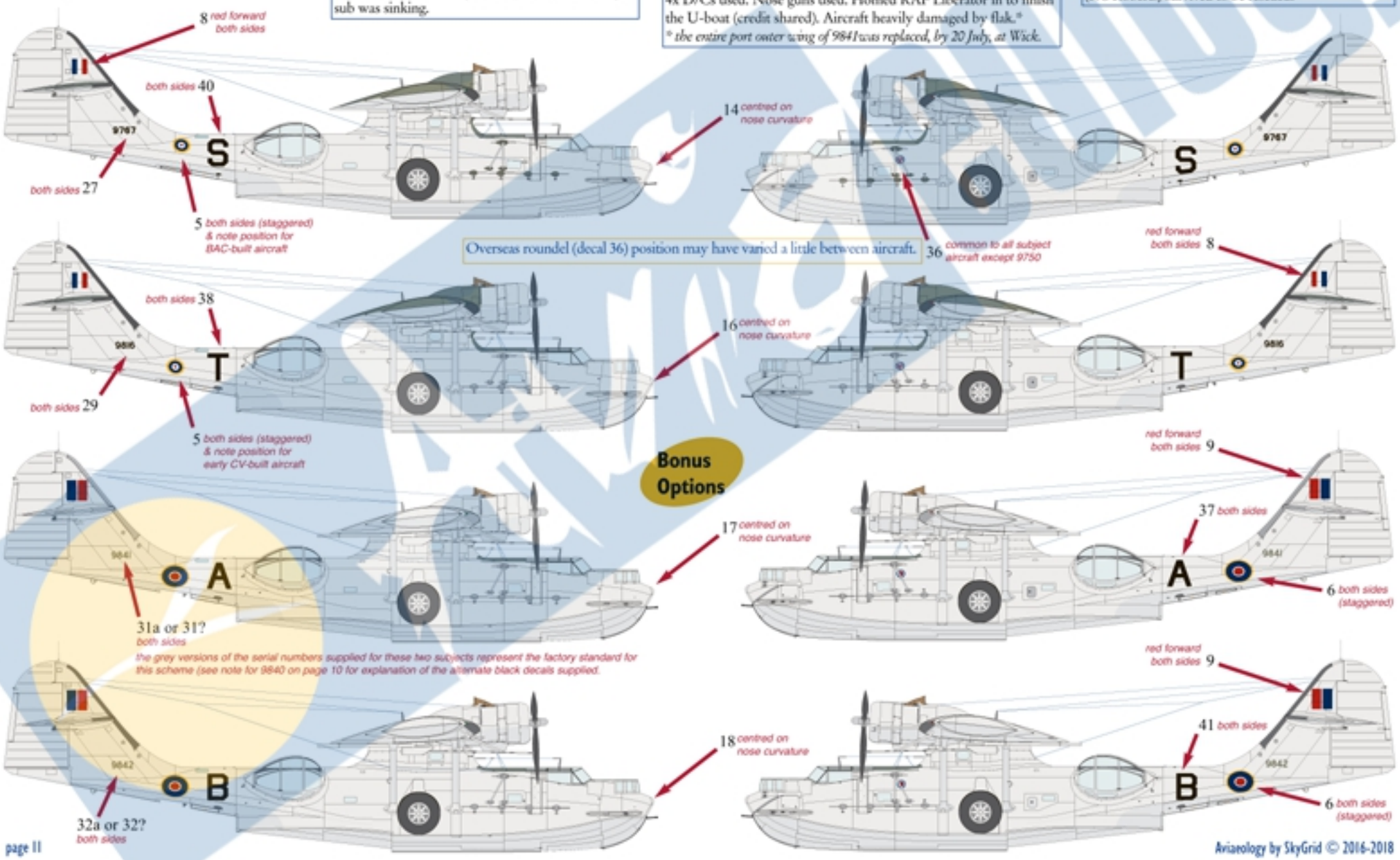
Canso A 9841 | Reykjavik & Wick | 22 February & 30 June 1944

- 19 Dec 1944: Delivered to 162 Sqn, Dartmouth.
- 4-6 Jan 1944: ferried to Reykjavik, F/O. Hildebrand and crew (1st 162 Sqn Canso A to arrive in Iceland).
- 22 Feb 1944: F/O Cunningham and crew attack *U-550* (2 KIA on deck). 4x D/Cs used. Nose guns used.
- 11 Mar 1944: Successful Lindholme Gear drop test.
- 30 June 1944: F/L. MacBride and crew attack and damage *U-478*. 4x D/Cs used. Nose guns used. Homed RAF Liberator in to finish the U-boat (credit shared). Aircraft heavily damaged by flak.*

** the entire port outer wing of 9841was replaced, by 20 July, at Wick.*

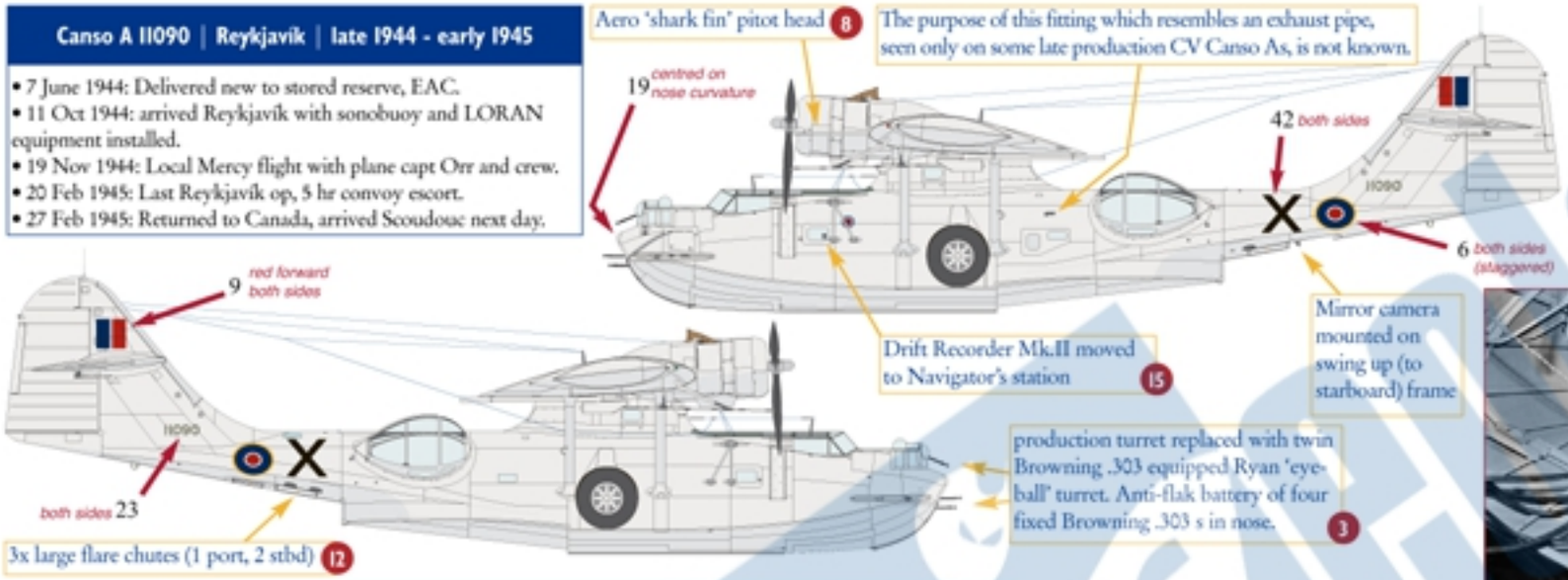
Canso A 9842 | Wick | 11 & 13 June 1944

- 19 Dec 1944: Delivered to 162 Sqn, Dartmouth.
- 5-15 Jan 1944: ferried to Reykjavik, F/O. Wade and crew.
- 11 June 1944: F/O Sherman and crew attack and sink U-980. 4x D/Cs used. Nose guns used. 1st Allied photos of new schnorkel gear were taken during this battle.
- 13 June 1944: F/O Sherman and crew attack U-480. Flak-damaged 9842 ditched but only 1 crewmember (F/S Roberts) survived to be rescued.



Canso A 11090 | Reykjavik | late 1944 - early 1945

- 7 June 1944: Delivered new to stored reserve, EAC.
- 11 Oct 1944: arrived Reykjavik with sonobuoy and LORAN equipment installed.
- 19 Nov 1944: Local Mercy flight with plane capt Orr and crew.
- 20 Feb 1945: Last Reykjavik op, 5 hr convoy escort.
- 27 Feb 1945: Returned to Canada, arrived Scoudouac next day.




DND PL-33838

CV-built 11090 was typical of the second contract Canso As the started to fill out the 162 Sqn inventory at Reykjavik in late 1944. The reduced radar aerial set, underwing radio altimeter aerials, and 'fish tail' flame dampers on the exhausts (all of which were factory standard by then) are all clearly visible here. The RCAF-modified nose panel, part of the provisioning for 4 fixed Browning .303s, was standard equipment for EAC Canso As at the time, while more limited supply of Ryan twin-gun turrets were priority equipment for 162 Sqn, and then other EAC squadrons, as supplies allowed. These turrets were often removed in favour of the tri-plate modified production turrets once the aircraft rotated back to Canada. Note the patchwork nature of the paint, even on this relatively new aircraft.


DND HC-1884-3

This photo shows a swing-up tubular-framed camera mount locked in the deployed position in an early Canso (probably 9706) at RCAF Station Rockcliffe in September 1941. Note the brackets for the external armour plates affixed to the stowed hatch, and a Fairchild vertical camera installed in the rear bay of the mount. While the plate with circular mounting hole closer to the photographer would take the viewfinder, it could also mount the smaller Williamson F.24 or its American equivalent, the Eastman Kodak K-24, with a simple 45° mirror housing mounted underneath for photographing attacked targets to the rear of the aircraft on ASW sorties.

RCAF Canso A Nose Guns & Blister Guns


DND photo RE-481-6

The original Canso A anti-flak installation, shown here in July 1943, was tested at TDE Rockcliffe on Canso A 9783. The installation adopted as standard issue for EAC Canso As by early 1944 was similar, but the early flash-hiders were not used (possibly an aerodynamic consideration?). In the summer of 1944, at Reykjavik, 162 Sqn armament personnel further modified the system for more efficient ammo feed but this did not affect the external details. Additional material, including interior photos are provided in the Addenda section of the colour PDF edition of this Doc publication.


via Carl Vincent collection


DND PL-21836

Modified at 4 RD (Scoudouc, NB) with the new anti-flak armament shown here, Canso A 11066 arrived in Reykjavik on 11 Aug 1944. Related testing and training began on the 20th with W/C Chapman as plane captain. It was determined that the 2 fixed pilot-fired upper guns were useful, but subsequently modified aircraft would have all 4 of the lower guns harmonized in retractable fixed mountings, all pilot-fired, with a simplified nose cover plate tested on Canso A 9791 in September 1944 (see subject aircraft 9808, page 10, and 11090 above). Late-model flash-hider / booster assemblies were used on the fixed guns. Eventually, many Canso As on all operational EAC squadrons received the retractable mod, while others retained the 2-gun system. The Ryan turrets were never entirely popular with the crews and were usually removed on aircraft surviving into the postwar years.

RCAF Deputy Inspector General AVM A. E. Godfrey checks out a Canso A's twin Brownings on a rainy day. This photo shows some of the detail of the twin Bell recoil adapter mount to good advantage. Additional material, including interior photos are provided in the Addenda section of the colour PDF edition of this Doc.