20th INTELLIGENCE SQUADRON

LINEAGE

STATIONS
Offutt AFB, NE

ASSIGNMENTS

COMMANDERS

HONORS
Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

EMBLEM
The patch was approved in 1958.

EMBLEM SIGNIFICANCE
The cloud and sky are symbolic of the squadron's historic flying mission.

"Yosemite Sam" represents squadron personnel carrying on the activities of the unit, map reading, target location and visual reconnaissance. Sam's gun is symbolic of target-making

weapons and devices, and the camera system indicates photographic reconnaissance.

The lightning bolt represents direct destruction from the air, artillery adjustment and fighter strikes.
The 20th IS provides mission planning support primarily to bomber units in support of U.S. Strategic Command. It maintains liaison between NAIC and U.S. Strategic Command on nuclear targeting, weaponeering and battle damage assessment issues.

MOTTO

NICKNAME

OPERATIONS

23 Jul 42	Activated: 20th Photographic Mapping Squadron (20th PMS) at Colorado Springs AAB, Colorado Springs, Colorado Initial strength: two officers and one enlisted man: 2nd Lts. Bernard Smith and Harold Hefflinger, and Pvt. James Ford Activated: 4th Photographic Group (4th PG) at Colorado Springs AAB. (The 20th PMS was subordinate to the 4th PG)
18 Nov 42	Squadron received its first aircraft, a North American B-25C-1 Mitchell, s/n 41-13244, named "Dat's All Brother"
13 Dec 42	Colorado Springs AAB renamed Peterson AAB in honor of 1st. Lt. Edward J. Peterson, Operations Officer of 10th Photo Recon Squadron, who was killed in an F-4 take-off crash on 8 Aug 42
9 Feb 43	Reorganized: from 20th Photographic Mapping Squadron to 20th Photographic Squadron (Heavy) (20th PS (H))
5 Mar 43	Peterson AAB assigned to Third Air Force. New mission: heavy bomber (B-24) combat crew training by the 214th Combat Crew Training School
15 Aug 43	Reorganized: from 20th Photographic Squadron (Heavy) to 20th Combat Mapping Squadron (20th CMS)
1 Sep 43	Squadron strength: 62 officers, 3 flying officers (F/O), 1 Warrant Officer and 383 enlisted men
7 Sep 43	Squadron ground echelon separated from air echelon (which remained at Peterson), in preparation for tranfer overseas
25 Sep 43	Ground echelon departed Camp Stoneman, California for

	Australia aboard USS Westpoint
1 Oct 43	Ground echelon strength: 10 officers, 1 Warrant Officer, and 268 enlisted men
2 Oct 43	Air echelon reassigned from Peterson Field, Colorado Springs, Colorado, to Will Rogers Field, Oklahoma City, Oklahoma, Third Air Force.
10 Oct 43	Ground echelon arrived Sydney, Australia
11 Oct 43	Ground echelon arrived Warwick Farms, Australia
22 Nov 43	Ground echelon departed Warwick Farms, Australia
23 Nov 43	Ground echelon arrived Doomben, Queensland, Australia
1 Dec 43	Ground echelon departed Doomben, Australia for Port Moresby, New Guinea aboard USS White
10 Dec 43	Squadron ground echelon arrived APO 923. Temporarily quartered at Pleasant Valley, Port Moresby, New Guinea
	This date marks the start of the 20th Combat Mapping Squadron's New Guinea Campaign
11 Dec 43	20th Combat Mapping Squadron released from 4th Photographic Group and attached to 6th Photographic Group
15 Dec 43	Ground echelon moved to squadron area at Port Moresby, New Guinea
10 Jan 44	Air echelon ordered to move from Will Rogers Field, Oklahoma City, Oklahoma to Hunter Field, Savannah, Georgia for staging to the Pacific.
13 Feb 44	Ground echelon departed Port Moresby, New Guinea and arrived at Nadzab, New Guinea, APO 713
23 Feb 44	At 2300 hours, this date, first crew and aircraft (Lt. Wooten's in F-7A 42-64047) of the 20th Combat Mapping Squadron air echelon departed Fairfield, California for New Guinea
16 Mar 44	The first crew and aircraft (Lt. Wilson's in F-7A 42-64051) of the 20th Combat Mapping Squadron air echelon arrived Nadzab, New Guinea
5 Apr 44	First combat mission flown by the 20th Combat Mapping Squadron: Hollandia, New Guinea by Rives' crew in F-7A 42-64200 and JH Wooten's crew in F-7A 42-64047

25 Jul 44	First combat mission flown in an F-7B (44-40199) by the 20th Combat Mapping Squadron: to Wewak area, Maj. Davis, pilot
3 Sep 44	Squadron operating from Biak Island
15 Nov 44	Ground echelon at Dulag, Leyte. Air echelon remained at Biak
25 Jan 45	Air echelon, based at Dulag, Leyte, but operating from Tacloban, Leyte
24 Feb 45	Air echelon operating from San Jose, Mindoro
17 May 45	20th Combat Mapping Squadron operating from Clark Field, Luzon
15 June 45	Redesignated: 20th Combat Mapping Squadron as the 20th Reconnaissance Squadron, Long Range, Photographic-RCM (20th RS, LR, P-RCM)
	Redesignated: 6th Photographic Group, Reconnaissance as the 6th Reconnaissance Group
4 Aug 45	Squadron operating from Okinawa
18 Aug 45	Sgt. Anthony J. Marchione, 20th RS aerial gunner, killed by attacking Japanese fighters while flying reconnaissance over Tokyo with the 312th BG, 386th BS in B-32 s/n 42-108578
	S/Sgt. Joseph M. Lacharite, 20th RS aerial photographer, also aboard 42-108578, was wounded
31 Aug 45	Last recorded combat mission for the squadron in WW II: Mission number 243Z-1, 14 hr 10 min to Tokyo area by F-7B 44-42028 (Lt. Eisele), F-7B 44-42031 (Lt. Warren), F-7B 44-42135 (Lt. French), F-7B 44-42239 (Lt. Leeder), #269 (sic) (Lt. Essig), and F-7B 44-42350 (Capt. Gessner)
2 Sep 45	V-J Day. Japanese sign the instrument of surrender aboard USS Missouri anchored in Tokyo bay

Post War</B< TD>

Until Jun 46	Photo-mapped Japan as part of the War Department's Post Hostilities Mapping Project
20 Jun 46	Deactivated: 20th Reconnaissance Squadron, Long Range,

	Photographic-RCM
11 Mar 47	Redesignated: 20th Reconnaissance Squadron (Night Photographic)
25 Jul 47	Activated in the reserve
27 Jun 49	Redesignated: 20th Strategic Reconnaissance Squadron (Photographic Mapping)
1 May 51	Ordered to active service
16 May 51	Inactivated: 20th Strategic Reconnaissance Squadron (Photographic Mapping).
14 Jan 54	Redesignated: 20th Tactical Reconnaissance Squadron (Photographic)
18 Mar 54	Activated: 20th Tactical Reconnaissance Squadron (Photographic)
	Flew RF-101C's over Cuba during Cuban Missile Crisis in the fall of 1962
	Flew RF-101C's over North Vietnam, 1965-1967
1967	Inactivated: 20th Tactical Reconnaissance Squadron (Photographic)
1992	Reactivated and Redesignated: 20th Air Intelligence Squadron
1993-	Redesignated: 20th Intelligence Squadron

The 20th Intelligence Squadron was originally constituted as the 20th Photographic Mapping Squadron on 14 July 1942 and activated at Colorado Springs, Colorado on 23 July 1942. The 20th held several designations during its existence: it was redesignated as the 20th Photographic Squadron (Heavy) on 6 February 1943; as the 20th Combat Mapping Squadron on 11 August 1943; and as the 20th Reconnaissance Squadron (Long Range, Photographic-RCM) (20 RS) on 10 May 1945.

In these early years, the unit served in the United States, Australia and Japan. The 20 RS was inactivated on 20 June 1946. The 20 RS was redesignated the 20th Reconnaissance Squadron (Night Photographic) on 11 March 1947 and activated in the reserve at Newark AAB, New Jersey on 25 July 1947. After being redesignated the 20th Strategic Reconnaissance Squadron (Photographic Mapping) (20 SRS) on 27 June 1949, the 20 SRS was order to active service on 1 May 1951. The 20 SRS was inactivated on 16 May 1951. On 14 January 1954, the 20 SRS was redesignated the 20th Tactical Reconnaissance Squadron (Photographic) (20 TRS) and was activated on 18 March 1954 at Shaw AFB, South Carolina. In the following years, the unit

served in the United States and Korea. On 18 May 1959, the 20 TRS was reassigned to the 363d Tactical Reconnaissance Wing, (363 TRW) Langley AFB, Virginia. The 20 TRS was temporarily stationed at MacDill Field, Florida between 21 October and 30 November 1962 and was deployed to California, Texas, Panama and Vietnam. On 1 November 1967, the 20 TRS was inactivated.

On 2 June 1992, the 20 TRS was activated and redesignated as the 20th Air Intelligence Squadron (20 AIS). The 20 AIS was assigned to the 480th Intelligence Group and stationed at Offutt AFB, Nebraska. The 20th Air Intelligence Squadron was redesignated at the 20th Intelligence Squadron on 1 October 1993, and realigned under the 480th Intelligence Group. In 2001, the 480th Intelligence group was realigned under Air Combat Command.

The mission of the 20th is to provide prompt, precise intelligence enabling warfighters to safely engage and achieve global objectives.

The 20th processes and analyzes raw electronic intelligence data, and prepares both operational and technical ELINT reports and studies.

The 20th is organized into three flights:

Target Materials Combat Applications Operations

The Target Material Flight produces precise coordinated measurements and mission-support materials for Air Force bomber, fighter and other airborne platforms engaged in exercise, training or actual combat operations. It provides graphics, coordinated measurements and aim point selection assistance supporting nuclear, conventional and humanitarian relief operations. It also performs distribution of maps and charts supporting short-notice mission planning and flying requirements Air Force wide.

The Combat Applications Flight activities entail providing direct application support for specified combat customers. This includes an AIA node for operational dissemination of near-real time imagery to Air Force and Department of Defense users worldwide; and is Air Combat Command's point of contact for pre-mission survivability and threat assessments, target analysis, weaponeering support and post-mission combat assessments for the Conventional Air Launched Cruise Missile program. Additionally, it performs modeling and simulation survivability analysis studies for requesting customers and is the executive manager for the Integrated Air Defense systems efforts.

The Operations Flight provides the day-to-day operating support to the other flights within the 20th. These activities are dispersed through branches who perform the activities of planning, requirements management, systems maintenance, logistics support and resource management.

The 20th IS began its origins as the 20th Photographic Mapping Squadron in 1942. In these early years, the unit worked under many different names and was stationed all over the world from Sydney, Australia, to Newark, N.J., to Yokota, Japan. They participated in the Pacific air offensive and the occupation of Japan until inactivation in 1946.

Offices of the 20th IS are located in the Martin Bomber Building, the same building that manufactured B-26 Marauders and B-29 Superfortressess.

Both the "Enola Gay" and "Bock's Car," the B-29s which dropped atomic bombs on Hiroshima and Nagasaki were built here. The Martin Bomber Building, or Building D, is one-third the size of the Pentagon.

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F-7A
The dozen aircraft delivered to the squadron for initial overseas deployment were type "F", model "7", series "A": F-7A. These were photographic conversions of B-24J's made at the Northwest Airlines Modification Center, St. Paul, Minnesota in the fall of 1943, and delivered to the squadron at Will Rogers Field, Oklahoma City, Oklahoma in January 1944. Features of the F-7A are listed below.

In the navigator/bombardier area:

Windows and mounts for a tri-camera arrangement of one vertical and two oblique mapping cameras (this setup was called a trimetrogon, or a trimet, as it used three cameras, each with Bausch & Lomb's Metrogon lens)
A modified bombardier's panel, serving as a local control point for the trimetrogon cameras
An intervalometer to simultaneously trigger the trimetrogon shutters at a dialed-in interval
In the forward bomb bay:
Auxiliary fuel tanks, port and starboard, for increased range
Bomb bay lights
Aft bomb bay converted to camera bay:
Bomb racks removed
Bomb bay doors fixed shut
Level floor installed
Windows and mounts for reconnaissance cameras at a vertical station (starboard) and a split vertical station (port) in the forward end of the bay
Aerial photographer's viewfinder and chair aft of the starboard camera station
Main camera control panel to the right of the photographer's seat
Intervalometers for the two camera bay stations
A work table and racks for camera magazines and film rolls in the aft corners of the bay
Camera vacuum circuit, bay heaters, overhead lighting, and intercomm connections
In side views, F-7A's can be identified by the oblique camera windows below the navigator compartment side windows.

An F-7A. This is 42-64051, "T.S.", with the blue reconnaissance camouflage paint half removed, late May or early June 1944. Note the prominent left oblique camera window and its surrounding patch in the nose area (vertically below the navigator's window and to the left of the nose art).

F-7B

In May 1944, after barely seven weeks of combat operations, the squadron wrote a three-page report titled: Analysis and Recommendations regarding the F-7A type aircraft assigned to the 20th Combat Mapping Squadron, 6th Photo Group, Rcn. It included these two sentences:

"...The Tri-Metrogon set-up is inadequately protected. No provision has been made to protect the vertical camera from jarring or inadvertently stepping on it while entering the nose turret. The camera as a result, has to be realigned before each flight, also the extremely crowded conditions in the nose makes changing magazines exceedingly difficult...", and "...[The] F-7A type aircraft is inadequate in its present camera arrangement...".

These shortcomings were rectified with delivery of the first of the squadron's F-7B's in July 1944. In these, the three nose-mounted cameras of the F-7A were relocated to the aft end of the camera bay, thus consolidating all the camera equipment in one space.

In side views, F-7B's can be identified by the oblique camera windows near the rear edge of the aft bomb bay doors, one each side--and no camera windows in the nose.

An F-7B. This is 44-42031 over Japan after the war. (Mt. Fuji is in the background.) Note the left oblique trimetrogon window at the rear of the camera bay and the window for the split vertical station forward of it, in the belly.

F-7B H2X

In April and May 1945, five F-7B's equipped with H2X radar were delivered to the squadron. H2X, in production as AN/APS-15, was an X-band (3 cm) radar designed to implement through-the-clouds bombing. In its F-7B embodiment, H2X was a navigation radar; that is, its radar screen displayed a picture of the ground. The retractable H2X scanning antenna was installed in place of the ball turret.

In the 20th's F-7B/H2X aircraft, a radar repeater scope was installed in the camera bay and photographed with a K-24 5" x 5" format camera. The idea was to provide bomber crews with radar screen photos which they could use in conjunction with aerial photos to identify their targets. In practice, the majority of missions flown by the squadron's H2X-equipped F-7B's were for conventional aerial photography and carried no H2X operator (Radar Observer, Bombardment).

An F-7B with H2X. This is 44-42097, photographed on Okinawa, 20 September 1945. It has just landed without the nose gear locked down. The retracted H2X scanner dome is visible in the position normally occupied by the ventral ball turret. (See also 44-42031 above for a retracted H2X dome.) Forward of it is the right oblique camera window for the trimetrogon (below the trailing edge of the flap).

F-7 Aircraft Data
This table lists all the squadron's F-7A's and F-7B's, their serial numbers, and the B-24 series and block they were converted from. The table accounts for all combat zone sorties (1132 total) recorded in the squadron Mission Reports and/or Final Mission Reports.

F-7 Crews
From late April 1944 until mid-February 1945, F-7A's and -B's were operated with 11-man crews. After that, 10-man crews, using four instead of five gunners, were used.

In the crew list below, the common Military Occupational Specialty code and title for each crew position is given in parentheses.

Pilot (1024 Pilot, Four-engine Aircraft)
Copilot (1024 Pilot, Four-engine Aircraft)
Navigator (1034 Navigator)
Flight Engineer (748 Army Airplane Mechanic-Gunner, Flight Engineer)
Radio Operator (757 Radio Operator-Mechanic-Gunner)
Photographer (939 Aerial Photographer-Gunner)
Nose Turret Gunner (611 Aerial Gunner or 612 Airplane Armorer-Gunner)
Ball Turret Gunner (611 Aerial Gunner or 612 Airplane Armorer-Gunner)
Two Waist Gunners (611 Aerial Gunner or 612 Airplane Armorer-Gunner)
Tail Turret Gunner (611 Aerial Gunner or 612 Airplane Armorer-Gunner)
All enlisted crewmembers were trained as aerial gunners.

Ferrets
In mid-June 1945 the squadron primary mission was changed from combat mapping to photographic and radar reconnaissance. As a result, the 20th Combat Mapping Squadron was redesignated as the 20th Reconnaissance Squadron, Long Range, Photo-RCM. To execute the RCM (Radar Countermeasures) mission the squadron received four B-24J ferret aircraft: Ferrets #10, #11, #12, and #13. Ferret #13 came from prior service with the 308th BG, Fourteenth Air Force, in China. Ferret #12 previously served with the 7th BG, Tenth Air Force, in India. Ferrets #10 and #11 operated in the SWPA before being assigned to the 20th.

The 20th's ferret missions were flown to detect Japanese radar installations, pinpoint locations and determine intercepted radar characterisitcs (transmitter frequency, pulse repetition frequency, and pulse width). This intelligence could then be used to find and destroy, or to jam, those same sites.

Ferret modifications to B-24's were similar to those of F-7's in that bombing equipment was removed, auxiliary fuel tanks were installed in the front bomb bay, and the rear bomb bay was converted into equipment space. Entries in the ferret flight Final Mission Reports indicate these aircraft carried sufficient gear to scan the radio spectrum from .55-6000 Mc/s (MHz). Specific equipment identified, due to failure of it, included: AN/APR-5A (Radar Search Receiver, 1000-6000 Mc/s), AN/APA-11 (Radar Pulse Analyzer), and SCR-717C (10-cm Air-to-Surface Vessel radar, used for navigation). D/F (direction finding) is mentioned in each mission report, but no

specific type of equipment is mentioned.

Ferret Aircraft Data
This table lists the ferret serial numbers, the B-24 series they were converted from, the ferret numbers, and number of sorties flown.
20th Reconnaissance Squadron Ferret Aircraft Serial Number Converted Aircraft Name Combat Sorties
From To First Last Total
44-40815 B-24J-180-CO Ferret #12 Alec Tronix 10 Jul 45 24 Jul 45 4
44-40817 B-24J-180-CO Ferret #13 Rovin' Lady 2 Aug 45 5 Aug 45 2
44-40943 B-25J-185-CO Ferret # 11 - - - 3 Jul 45 4 Jul 45 2
44-41076 B-24J-195-CO Ferret #10 - - - 11 Jul 45 6 Aug 45 4
Of the 12 ferret sorties flown before war's end, two were the squadron's longest: 15 hours 45 minutes, and 15 hours 20 minutes (to Formosa and Hong Kong). Ten of the 12 sorties were flown directly from Clark Field, Luzon. The remaining two, to islands between Okinawa and Kyushu, were staged from Yontan Strip, Okinawa, to maximize available time over target.

The 20th's Aircraft Losses

This table summarizes the 20th Combat Mapping Squadron's aircraft losses. Source is monthly Squadron History reports unless otherwise noted.

20th Combat Mapping Squadron F-7, F-7A, and F-7B Aircraft Losses Date Aircraft Location / Casualties
4 Dec 1943 42-40494 (F-7) Crashed near Elverson, Pennsylvania while on a night cross-country training mission. Ten (10) casualties and one (1) survivor:
7 Mar 1944 42-73053 (F-7A) Aircraft destroyed at Nandi, Fiji, en-route to Nadzab, New Guinea. No casualties.
29 Mar 1944 42-64056 (F-7A) Crashed over Pacific one hour after departing Fairfield, California, en-route to Hawaii. Eight casualties: four (4) ATC and four (4) 20CMS ground crew personnel. Two (2) parachuted to safety.
16 Apr 1944 42-73042 (F-7A) Destroyed landing at Saidor, New Guinea. No casualties.
22 May 1944 42-73052 (F-7A) In early morning darkness, crashed near the peak of Mt. Wilhelm on the way to a mission. Eleven (11) casualties.
9 Jun 1944 42-73044 (F-7A) Destroyed landing at Saidor, New Guinea. Blew a tire, slid into embankment and burned. Eight (8) casualties and two (2) survivors:
After 17 Jun 1944 42-64048 (F-7A) Last combat mission was flown to Wewak on 18 June 1944. This is unsubstantiated: destroyed landing at Nadzab, New Guinea on ferry mission.
30 Sep 1944 44-40422 (F-7B) Lost returning from mission to Philippines. Eleven (11) casualties
4 Oct 1944 44-40423 (F-7B) Destroyed landing Biak, after damaging nose gear taking off. Pilot, Rives. No casualties. [Source: 20CMS Mission Reports]
25 Nov 1944 44-40895 (F-7B) Destroyed on ground by air raid, Morotai. [Source: 20CMS Mission Reports]
11 Jan 1945 44-40961 (F-7B) Lost on mission. Last heard over Mindanao. Eleven (11) casualties.
29 Jan 1945 42-64249 (F-7B) Destroyed on ground Tacloban, Leyte. A C-46, taking off, crashed

into 44-40659 and another C-46. The three exploded, causing 42-64249 to catch fire and explode. No casualties (unoccupied).
29 Jan 1945 44-40659 (F-7B) Destroyed on ground at Tacloban, Leyte. A C-46, taking off, crashed into 44-40659 and another C-46. The three exploded. Three (3) casualties.
2 Apr 1945 44-40199 (F-7B) Destroyed while taxiing at McGuire Strip, Mindoro. Ran into a ditch while avoiding another aircraft. No injuries.
21 Apr 1945 44-40198 (F-7B) Crashed on test flight over water, N.W. of San Theresa Village, Mindoro. Number 2 engine caught fire. The three (3) crewmembers parachuted to safety. Picked up in water (no life vests or rafts) one hour later.
8 May 1945 44-42026 (F-7B) Destroyed taking off from McGuire Strip, Mindoro. Nose gear collapsed. No casualties.
10 May 1945 42-64180 (F-7A) Destroyed on ground by 44-41322 of the 319BS landing at McGuire Strip, Mindoro. No casualties.
13 May 1945 44-40847 (F-7B) Severely damaged landing McGuire Strip, Mindoro. No casualties.
25 May 1945 42-73047 (F-7A) Destroyed at Boroke Strip, Biak. No accident details. One (1) casualty.

AERIAL CAMERA TYPES K-17, K-18, K-19B, AND K-22

The 20th did nearly all its aerial photography with two camera types: the K-17 and K-18. The K-17 was a 9" x 9" format (negative size) mapping and reconnaissance camera. It had three major components: a body, containing most of the mechanics and controls; a detachable magazine for 9 1/2" wide roll film; and a lens cone, with 6", 12", or 24" focal length options. The K-17, like the other three cameras in this section, was developed and built by the Fairchild Camera and Instrument Company.

The K-18 reconnaissance camera differed markedly from the K-17 in construction. The K-18 body and lens cone were built as a single unit housing a 24" focal length lens. Film format was 9" x 18".

A handful of night photography missions were flown with K-19B cameras in June and July 1945. The K-19B had a 12" lens, was of 9" x 9" format, and had a shutter that was operated by an attached photocell unit. The K-17, K-18, and K-19B all employed between-the-lens shutters.

The squadron was provided an abundance of K-22 cameras, but never used them for a combat mission, having found them "...unsuitable for mapping and not entirely satisfactory for reconnaissance..." (Interestingly, the F-7A's and B's were designed for a pair of K-22's to be mounted at the camera bay split vertical station.) The K-22 was a 9" x 9" format camera with lens cone options of 6", 12", 24", and 40" focal length. Unlike the others, its shutter was a focal plane type.

All these cameras were normally operated from a 24 VDC electrical source, but could be manually operated by a hand crank and shutter lever (the K-22 was electrical only). Each was fitted with a connector for an intervalometer that fired the camera at an interval set by the aerial photographer.

All used a vacuum applied to the film magazine to flatten the film surface before each exposure.

While these cameras were normally clamped into mounts, a pair of handles and a viewfinder could be fitted to K-17's and K-18's for hand-held operation. What "hand-held" meant is subject to interpretation, as these cameras were not lightweights. With a 200 foot roll of film, the A-5 film magazine used with the K-17 weighed 30 pounds. A complete K-17 with 12" lens cone and a full magazine weighed about 55 pounds. With a 24" lens instead of the 12", the weight climbed to near 75 pounds.

All four of these cameras used 9 1/2" wide Eastman Aerial Safety film. Film emulsions were Class L and Class N. Class L was the "normal" high-speed panchromatic film. Type N was labeled extra high-speed panchromatic, and was used for night photography in the K-19B's. The common lengths of film rolls were 200 feet and 75 feet. (Two hundred feet was the maximum film load for an A-5 or A-5A magazine. The A-7 magazines used with K-18 cameras held a maximum of 75 feet.)

K-17 Reconnaissance and Mapping Camera Data
The K-17 was the most common--and versatile--of the Army Air Force aerial cameras. With the 6" focal length Metrogon lens, it was the standard mapping (also called charting, or cartographic) camera of its day--and its day extended to long after the war. This was the combination used by the 20th in its trimetrogon setups.

The 20th did some reconnaissance photography with the K-17 and 12" lens late in the war, but for the most part the K-17's were used for mapping with the 6" Metrogon lens. (The combination of a 6" lens and 9" x 9" negative remains the mapping standard in the U.S. to this day.)

K-17 with 12" lens cone and A-5 or A-5A film magazine.

Format: 9" x 9"

Lenses: 6" f.l. - f/6.3 - 73.74° x 73.74° view angle
12" f.l. - f/5.0 - 41.11° x 41.11° view angle
24" f.l. - f/6.0 - 21.24° x 21.24° view angle

Shutter: Between the lens
6" - 1/50, 1/100, 1/200, 1/300 second
12" - 1/75, 1/150, 1/225 second
24" - 1/50, 1/100, 1/150 second

Control: Manual or intervalometer

Cycle time: 3 seconds, frame-to-frame

Magazine: A-5 or A-5A - 200 feet - 250 exposures

K-18 Medium to High Altitude Reconnaissance Camera Data

The K-18 was one of the two workhorses of the 20th CMS--and of the Army Air Forces in general. (The other was the K-17.)

The 20th generally installed two K-18's in the camera bay; one each at the vertical and split vertical stations. Orientation was with the 18" image dimension transverse to the flight path.

The description is of a K-18, but the photo is actually of the K-18's manual-operation-only predecessor, the K-7C.

Format: 9" x 18"

Lens: 24" f.l. - f/6.0 - 21.24° x 41.11° view angle

Shutter: Between the lens
1/50, 1/100, 1/150 second

Control: Manual or intervalometer

Cycle time: 8 seconds, frame-to-frame
K-18A (late-war): 3 seconds, frame-to-frame

Magazine: A-7 - 75 feet - 45 exposures
A-8 - 390 feet - 245 exposures

K-19B Night Reconnaissance Camera Data

A few night photography missions were successfully flown using the K-19B in 1945. The June 1945 Squadron History report cites success at 12,000 feet with the flash bombs (used to illuminate ground targets) set for 3,000 feet. Shutter speed was 1/50 second. The shutter in K-19's was triggered by a photocell which detected the flash bomb ignition.

K-19B with A-5A film magazine. Photocell unit is attached.

Format: 9" x 9"

Lens: 12" f.l. - f/2.5 - 41.11° x 41.11° view angle

Shutter: Between the lens
1/25, 1/50, 1/100 second

Control: Light-activated via photocell

Cycle time: 3 seconds, frame-to-frame

Magazine: A-5 or A-5A - 200 feet - 250 exposures

K-22 Reconnaissance and Charting Camera Data

The K-22 with 24" lens cones were the cameras delivered in the split vertical mounts of all F-7A's and B's the 20th received new--but the squadron never used them for a combat mission.

K-22 with 12" lens cone and A-5A film magazine.

Format: 9" x 9"

Lens: 6" f.l. - f/6.3 - 73.74° x 73.74° view angle
12" f.l. - f/5.0 - 41.11° x 41.11° view angle
24" f.l. - f/6.5 - 21.24° x 21.24° view angle
40" f.l. - f/5.0 - 12.84° x 12.84° view angle
40" f.l. - f/5.6 - 12.84° x 12.84° view angle
40" f.l. - f/8.0 - 12.84° x 12.84° view angle

Shutter: Focal plane
A curtain: 1/135, 1/300 second
B curtain: 1/400, 1/800 second

Control: Manual or intervalometer

Cycle time: 3 seconds, frame-to-frame

Magazine: A-5 or A-5A - 200 feet - 250 exposures

OTHER FAIRCHILD AERIAL CAMERAS: K-20 and F-56

K-20 Low Altitude Oblique, Hand-held Camera Data

There is no mention of the K-20 being used in any of the 20th's monthly reports, but they were probably carried and occasionally used for hand-held oblique shots.

K-20 hand-held aerial camera.

Format: 4" x 5"

Lens: 6.375" f.l. - f/4.5 - 34.84° x 42.83° angle of view

Shutter: Between the lens
1/125, 1/250, 1/500 second

Control: Manual

Magazine: Part of camera, 20 feet - 50 exposures

F-56 Reconnaissance Camera Data

The Navy's F-56 series was not generally used by the Army Air Forces, but is included here to round out the stable of large aerial frame cameras that Fairchild built during WW II.

F-56 with 40" lens. Both the 20" and 40" versions used telephoto lenses. (Telephoto lens designs are generally shorter in physical length than the focal length.)

Format: 6 5/8" x 7" (roll film)

Lens: 5.25" f.l. - f/6.3 - 64.50° x 67.38° view angle
8.25" f.l. - f/4.0 - 43.75° x 45.98° view angle
20" f.l. - f/5.0 - 18.81° x 19.85° view angle
40" f.l. - f/8.0 - 9.47° x 10.00° view angle

Shutter: Between the lens
1/35, 1/50, 1/100, 1/150 second

Control: Manual or intervalometer

Magazine: A-1A - 120 feet - 200 exposures
IN MEMORY OF 62 AIR CREW MEMBERS OF THE 20TH WHO DIDN'T RETURN
4 December 1943
F-7 42-40494, on a night cross-country flight to Reading, Pennsylvania, crashed near Elverson, Pennsylvania. Sgt. John F. Gillespie, AM gunner, was thrown clear and survived.

2nd Lt. George W. Wimsatt, pilot
2nd Lt. Allan B. Hamilton, copilot
2nd Lt. Martin Queenth, navigator
T/Sgt. Walter G. Kellbach, crew chief
T/Sgt. Rufus Mobley, engineer
S/Sgt. Vincent B. McNally, AM gunner
S/Sgt. Joseph R. Guay, radio operator
Sgt. Robert E. Hawkins, gunner
Sgt. Vern A. Vandelin, gunner
2nd Lt. George E. O'Brien, passenger on leave
29 March 1944
Reserve aircraft F-7A 42-64056, ferried by an Air Transport Command (ATC) crew, crashed into the Pacific an hour after departing Fairfield-Suisun, California for Hickam Field, Hawaii en route to New Guinea. Two members of the squadron--Sgt. Joseph J. Kuchinski, sheet metal worker, and 1st Lt. Willard F. Tidyman, assistant lab commander--parachuted to safety. There were no other survivors.

Four (4) unidentified ATC personnel

Four (4) 20th CMS ground personnel:

Sgt. Jack B. Bierman, draftsman
Sgt. Arnold I. Bernstein, administrative NCO
Sgt. Warren V. Burns, draftsman
S/Sgt. Guy C. Turner, photo lab technician
22 May 1944

F-7A 42-73052 crashed near the peak of Mt. Wilhelm, New Guinea, in early morning darkness. It was en-route to a mission over Padaidori Island. There were no survivors.

1st Lt. Loren G. Barstow, pilot
2nd Lt. Jack S. Connor, copilot
2nd Lt. Douglas E. Puck, navigator
S/Sgt. Harold M. Valentine, radio operator
S/Sgt. Edwin R. Maille, engineer
S/Sgt. Leonard Diamond, photographer
Sgt. John W. Schmitt, gunner
Sgt. George M. Harvey, gunner
Sgt. Stephen J. Boudreaux, gunner
S/Sgt. Luis Degallado, gunner
S/Sgt. George Dick, gunner
9 June 1944
F-7A 42-73044 blew the right tire landing at Saidor, New Guinea. This crew was one of three scheduled to stage from Saidor the next day for a mission to the Geelvink Bay area. Two crew members survived.

1st Lt. Roy A. Hunt, pilot
2nd Lt. Barry C. Conway, copilot
Sgt. Ernest Rushing, engineer
S/Sgt. William S. Willison, photographer
S/Sgt. Lawrence J. Winkel, radio operator
S/Sgt. Cecil Pearson, gunner
Sgt. James F. Whitmore, gunner
S/Sgt. Francis J. Reilly, gunner
30 September 1944
F-7B 44-40422 lost returning from mission 274Z-3 to Leyte, Philippine Islands.

1st Lt. Royce E. Harms, pilot
2nd Lt. Thomas Rafael, copilot
1st Lt. Gerald P. Smith, navigator
T/Sgt. Stephen H. Laichak, engineer
T/Sgt. James R. Reynolds, Jr., radio operator
S/Sgt. Melvin J. West, photographer
Sgt. Harold E. Amos, gunner
Sgt. Herbert G. Julian, gunner
Sgt. Boyd D. Berg, gunner
Sgt. Samuel T. Catlin, gunner
Sgt. Raymond T. Weld, gunner
11 January 1945
F-7B 44-40961 lost returning from mission 11D-3 to Southeast Luzon.

2nd Lt. Francis N. Riley, pilot
2nd Lt. Charles E. Steinsberger, copilot

2nd Lt. Howard (NMI) Flagg, Jr., navigator
S/Sgt. Ralph O. Schadewald, engineer
S/Sgt. Casimir W. Szczawinski, radio operator
Cpl. Clement A. McHale, photographer
Sgt. James A. Seeley, gunner
Sgt. William S. Sheyon, gunner
Sgt. Joseph F. Phillips, gunner
Sgt. Marvin H. Normington, gunner
T/Sgt. Julian C. Langdon, gunner
29 January 1945
A C-46 taking off from Tacloban, Letye crashed into F-7B 44-40659 and another C-46 parked along side it. The three aircraft exploded.

2nd Lt. Richard I. Tubbs, pilot
2nd Lt. Paul J. Vivian, copilot
T/Sgt. Leland L. Lane, engineer
25 May 1945
F-7A 42-73047, destroyed landing at Boroke Strip, Biak.

2nd Lt. John D. Pelham, copilot
18 August 1945
While flying aboard a B-32 (42-108578) of the 312th Bomb Group, 386th Bomb Squadron, Sgt. Anthony J. Marchione was killed over Honshu in an attack by Japanese fighter aircraft. The attack occurred three days after the Japanese had declared their intention for peace

Sgt. Anthony J. Marchione, aerial gunner
28 August 1945
Two former members of the 20th (September 1944-May 1945) were killed in a takeoff accident at Yontan Airstrip, Okinawa. B-32 42-108544 of the 312th Bomb Group, 386th Bomb Squadron, skidded off the runway while trying to abort a takeoff. All 13 aboard perished.

1st Lt. Glen W. Bowie, copilot
1st Lt. William P. Colley, navigator

480th Intelligence Group
The Air Intelligence Agency gained the Langley AFB, Virginia-based 480th Intelligence Group from Air Combat Command on 1 October 1993.278 Using multisource intelligence—primarily PHOTINT, ELINT and MINT—the 480th group provided operational intelligence and mission planning support for in-garrison training and to deployed combat air forces prior to the mid-1990's. AIA brought a new dimension to air combat operations by making available sanitized signals intelligence (and later information operations) to warfighters in near-real time.
When joining AIA, the 480th IG had three subordinate squadrons:

- 20th Intelligence Squadron, Offutt AFB, Nebraska; deals primarily in electronic intelligence products.
- 27th Intelligence Squadron (later renamed 27th Intelligence Support Squadron), Langley AFB, Virginia; produces and delivers high-quality, time-sensitive, imagery-based intelligence to warfighters.

- 36th Intelligence Squadron, Langley AFB; provides tactical target materials/digital databases (digital maps, charts, elevation data, geo-coded imagery, etc—Air Force's sole producer of multispectral imagery.

Additional resources available to the 480th Intelligence Group during wartime and in national emergencies included intelligence squadrons belonging to state Air National Guard and Air Force Reserve departments.

Air Force Order of Battle
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Sources
Air Force Historical Research Agency. U.S. Air Force. Maxwell AFB, AL.