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Air Publication 1598 A.

Revised February 1939

PILOT'S HANDBOOK

(Bomber Command)

AIR MINISTRY

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A.P. 1598A

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FLYING LIMITATIONS OF AIRFRAME AND ENGINES

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ALLOCATION OF FLASHING BEACON
CHARACTERISTICS.

Note.—All RED unless otherwise stated.

Character.	R.A.P.	Civil.
A	Abingdon	
AK	Ackington	
AO	Aldergrove	
AE	Andover	
AS	Abbotsinch	
B	Basingbourn	Bristol
BB	Bicester	
BC	Biggin Hill	
BE	Binbrook	
BN	Bramrook	
BN	Brize Norton	
BL	Burcham Newton	Brooklands
BS	Benson	
BT		Brighton
C	Cadoux	Croydon
CA	Castle Bromwich	
CB	Cranwell	
CC	Church Fenton	
CF	Coltishall	
CL	Cranfield	
CM	Cottismore	
CO	Catterick	
CT		
D	Downside Down	Doncaster
DC	Driffield	
DF	Dunfermline	
DH	Deladen	
DI	Donhead	
DV	Digby	
EC	Eastchurch	
EV	Evanton	

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Character.	R.A.F.	Civil.
F FL FM FN FW	Filton Finningley Feltwell	Belfast Feltham
G GD GK GM GN GP GS	 Grantham Gullane Gosport	Sanburgh Gravesend Gatwick Guernsey
H HA HD HF HH HK HL HM HN HS HU HW	Hawkinge Hendon Hornchurch Hocknall Harwell Horsham St. Faith (Norwich) Homington Hemswell Hullavington Hatfield Woodhouse	Heston Hatfield
I		Inverness
J JY	Jurby (Isle of Man)	Jersey
K KL KS KY	Kirton-in-Lindsey Kinloss Kenley	Kirkwall

Character.	R.A.F.	Civil.
L LC LE LG LH LL LR LS LV	Leuchars Leconfield Leeming Lossiemouth Little Rissington	Lymgne Littlestone Leicester Liverpool
M M (White) M (Red) (White Flashing) MH MN MR MS MW MY	Mildenhall Martlesham Manston Marham Montrose Middle Wallop Manby	Merstham (Civil Airway Beacon) Brenchley (Civil Airway Beacon)
N NC NE NH NO NT NW	North Coates Netheravon Newton Northolt North Weald	Newcastle Norwich
O O (Red) (White Flashing) OM OS P PE PC PH PR	Linton-upon-Ouse Odiham Old Saram Pembrey Portsmouth Peterborough Penrhos	Bethersden (Civil Airway Beacon) Portsmouth
Q		Rentrew
R RC		Manchester (Ringway) Radcliffe

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Character.	R.A.F.	Civil.
S SB SC SD SL SN SP SV SY	Sutton Bridge South Cerney Sealand Stradishall Scampton St. Eval Shawbury	Sollas Southampton
T (Red) (White Flashing)	Topcliffe	Merle (Civil Airway Beacon)
TC TG TH TL TO TY	Tangmere Turnhouse Tern Hill Thorney Island Thornaby	
U UD UP US UW W WF WG WK WL WM WO WE WU White-Red-White	Upper Heyford Upavon Usworth Upwood Waddington West Freugh Wittering Wick Warmwell Wattisham Wotton West Raynham Worthy Down	Hull Tudsfield (Civil Airway Beacon)
X		Exeter
Y YD	Wyton	Yeadon
Z		Dublin

TABLE FOR FINDING THE ERROR IN THE TRACK

The error is taken out from the column headed by the distance from the required track opposite the distance run. Thus, if the distance from the required track is 3 miles and the distance run is 35 miles, the error is 5°.

		Distance from Required Track in miles.									
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Distance run in miles.	5	11°	22°								
	6	9°	18°	27°							
	7	8°	16°	24°	30°						
	8	7°	14°	21°	27°						
	9	6°	13°	18°	24°	29°					
	10	6°	11°	17°	22°	27°	31°				
	12	5°	9°	14°	18°	23°	27°	30°			
	14	4°	8°	12°	16°	20°	24°	27°	30°		
	16	4°	7°	11°	14°	17°	21°	24°	27°	29°	
	18	3°	6°	9°	13°	16°	18°	21°	24°	27°	29°
20	3°	6°	9°	11°	14°	17°	19°	22°	24°	27°	
25	2°	5°	7°	9°	11°	13°	16°	18°	20°	22°	
30	2°	4°	6°	8°	10°	11°	13°	15°	17°	18°	
35	2°	3°	5°	6°	8°	10°	11°	13°	15°	16°	
40	1°	3°	4°	6°	7°	9°	10°	11°	13°	14°	
45	1°	2°	4°	5°	6°	8°	9°	10°	11°	13°	
50	1°	2°	3°	5°	6°	7°	8°	9°	10°	11°	
60	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	
70	1°	2°	2°	3°	4°	5°	6°	7°	7°	8°	
80	1°	1°	2°	3°	4°	4°	5°	6°	6°	7°	
90		1°	2°	3°	3°	4°	4°	5°	6°	6°	
100		1°	2°	2°	3°	3°	4°	5°	5°	6°	
120		1°	1°	2°	2°	3°	3°	4°	4°	5°	
140		1°	1°	2°	2°	2°	3°	3°	4°	4°	
180		1°	1°	1°	2°	2°	2°	3°	3°	4°	

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SUNRISE AND SUNSET

The following table gives the local mean times of sunrise and sunset on certain dates in each month of the year at latitudes between 60° north and 40° south; the times for intermediate dates and latitudes can easily be interpolated.

When "Summer time" is in operation the tabulated values within that period should be increased by one hour.

Latitude.	60° N.		50° N.		40° N.		30° N.		20° N.	
	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.
Jan. 1	08-03	15-04	07-59	16-08	07-22	16-45	06-56	17-11	06-35	17-32
- 15	08-03	15-31	07-53	16-26	07-20	16-59	06-57	17-22	06-38	17-41
Feb. 1	08-17	16-11	07-36	16-52	07-10	17-18	06-51	17-36	06-36	17-51
- 15	07-39	16-31	07-11	17-18	06-53	17-36	06-40	17-49	06-30	17-59
Mar. 1	07-00	17-27	06-44	17-42	06-34	17-52	06-26	17-59	06-20	18-05
- 15	06-15	18-04	06-12	18-06	06-11	18-07	06-09	18-09	06-08	18-10
Apr. 1	05-38	18-43	05-38	18-31	05-45	18-24	05-50	18-19	05-54	18-14
- 15	04-41	19-28	05-06	18-55	05-21	18-39	05-33	18-28	05-41	18-18
May 1	03-59	19-57	04-37	19-18	05-01	18-54	05-18	18-37	05-31	18-23
- 15	03-11	20-33	04-13	19-43	04-44	19-09	05-06	18-47	05-24	18-29
June 1	02-49	21-07	03-56	20-00	04-33	19-22	04-59	18-56	05-20	18-35
- 15	02-36	21-06	03-50	20-11	04-30	19-31	04-58	19-02	05-20	18-41
July 1	02-41	21-05	03-54	20-13	04-34	19-33	05-02	19-05	05-24	18-43
- 15	02-54	21-06	04-06	20-23	04-44	19-37	05-09	19-02	05-29	18-42
Aug. 1	03-29	20-51	04-29	20-43	04-58	19-14	05-18	18-53	05-35	18-37
- 15	04-14	20-31	04-50	20-30	05-12	19-56	05-28	18-40	05-40	18-28
Sept. 1	04-54	19-55	05-14	19-45	05-27	19-32	05-37	18-23	05-44	18-15
- 15	05-19	19-19	05-37	19-11	05-41	19-08	05-45	18-05	05-47	18-02
Oct. 1	06-04	17-34	06-59	17-39	05-56	17-43	05-53	17-46	05-51	17-48
- 15	06-41	16-49	06-33	17-36	06-11	17-20	06-02	17-29	05-55	17-36
Nov. 1	07-21	14-05	06-49	16-38	06-29	16-58	06-14	17-13	06-01	17-26
- 15	08-00	13-28	07-14	16-15	06-46	16-43	06-26	17-04	06-09	17-20
Dec. 1	09-24	11-03	07-36	15-01	07-02	15-36	06-38	17-00	06-19	17-19
- 15	09-53	10-53	07-53	15-59	07-15	16-36	06-49	17-02	06-28	17-24

Times for latitudes 10° N.-40° S. are given overleaf.

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Latitude.			10° N.		Equator.		10° S.		20° S.		30° S.		40° S.	
			Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.	Rise. h.m.	Set. h.m.
Jan.	1	..	06-17	17-50	06-00	18-07	05-42	18-25	05-24	18-43	05-02	19-05	04-34	19-33
"	16	..	06-21	17-58	06-06	18-13	05-51	18-29	05-34	18-46	05-14	19-05	04-50	19-30
Feb.	1	..	06-23	18-05	06-10	18-17	05-58	18-30	05-44	18-43	05-28	18-59	05-08	19-19
"	16	..	06-20	18-09	06-11	18-18	06-02	18-27	05-52	18-37	05-40	18-48	05-26	19-03
Mar.	1	..	06-15	18-11	06-09	18-16	06-04	18-21	05-58	18-27	05-51	18-33	05-42	18-42
"	16	..	06-07	18-11	06-05	18-12	06-04	18-14	06-03	18-15	06-01	18-17	05-58	18-19
Apr.	1	..	05-58	18-11	06-01	18-07	06-04	18-04	06-08	18-01	06-11	17-57	06-16	17-53
"	16	..	05-49	18-10	05-56	18-03	06-04	17-56	06-11	17-49	06-19	17-40	06-29	17-30
May	1	..	05-43	18-12	05-54	18-01	06-04	17-49	06-15	17-38	06-38	17-25	06-44	17-09
"	16	..	05-39	18-14	05-53	18-00	06-06	17-46	06-21	17-31	06-38	17-14	06-58	16-54
June	1	..	05-38	18-18	05-54	18-01	06-11	17-45	06-28	17-28	06-48	17-08	07-12	16-43
"	16	..	05-39	18-22	05-57	18-04	06-14	17-46	06-32	17-28	06-54	17-07	07-20	16-40
July	1	..	05-42	18-25	06-00	18-07	06-18	17-51	06-36	17-32	06-57	17-11	07-23	16-45
"	16	..	05-46	18-25	06-02	18-09	06-18	17-54	06-35	17-38	06-55	17-19	07-18	16-55
Aug.	1	..	05-49	18-23	06-03	18-09	06-16	17-57	06-30	17-43	06-45	17-28	07-05	17-08
"	16	..	05-51	18-17	06-01	18-07	06-11	17-58	06-21	17-48	06-33	17-36	06-47	17-22
Sept.	1	..	05-51	18-09	05-57	18-03	06-03	17-57	06-09	17-51	06-16	17-45	06-24	17-36
"	16	..	05-50	18-00	05-52	17-58	05-54	17-57	06-56	17-55	05-58	17-54	06-00	17-51
Oct.	1	..	05-49	17-51	05-46	17-53	05-45	17-56	05-42	17-58	05-40	18-01	05-36	18-05
"	16	..	05-49	17-43	05-42	17-49	05-36	17-55	05-29	18-03	05-21	18-11	05-11	18-21
Nov.	1	..	05-51	17-37	05-40	17-47	05-30	17-57	05-18	18-09	05-05	18-22	04-49	18-38
"	16	..	05-55	17-35	05-41	17-48	05-28	18-02	05-13	18-17	04-56	18-34	04-35	18-56
Dec.	1	..	06-02	17-36	05-45	17-53	05-30	18-09	05-12	18-27	04-52	18-47	04-26	19-13
"	16	..	06-09	17-42	05-52	17-59	05-34	18-16	05-15	18-35	04-53	18-57	04-25	19-25

INTERNATIONAL SIGNALS OF DISTRESS

VISUAL (1) A succession of red pyrotechnic lights fired at short intervals.

(2) S.O.S. made with signalling apparatus.

(3) The distant signal consisting of a square flag having either above or below it, a ball or anything resembling a ball.

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ARMAMENT TRAINING SIGNALS

GROUND TO AIR SIGNALS
TO BOMBING AIRCRAFT

PERMANENT MARKING FOR PRACTICE BOMBING RANGES.



BOMBING IN PROGRESS.



PERMANENT MARKING FOR LIVE BOMBING RANGES.



BOMBING IN PROGRESS.



AERODROME BOMBING RANGE. BOMBING IN PROGRESS.



SEA RANGE

*ANY MOTOR BOAT UNDER WAY, BUT NOT MAKING
SMOKE, MUST BE REGARDED AS A TARGET
BEING BOMBED BY OTHER AIRCRAFT*

BOMBING IN PROGRESS

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**ARMAMENT TRAINING SIGNALS
CUNNERY
GROUND TO AIR SIGNALS**

CONE TO CUNNERY AIRCRAFT



**ALL CLEAR -
CARRY ON FIRING**



**CEASE FIRE -
WAIT**



**CEASE FIRE -
GO HOME**

DISC TO TOWING AIRCRAFT

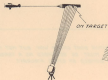


*DISCS 10" DIA. COLOUR TO SUIT LOCALITY -
LOCATED AT CONTROL TOWER OR BOMBING
COORDINATOR WHERE NO BOMBING SIGNAL
EXISTS.*

SEARCHLIGHT TO TOWING AIRCRAFT



RANGE ALL CLEAR



COMMENCE FIRING



**CEASE FIRE -
GO HOME**

GROUND MARKINGS



Special rules applying to air traffic on or in the vicinity of public aerodromes cancelled.



Displayed when the circuit, in case of 1 above, shall be right-handed.



Aerodrome with RIGHT-hand circuit.



Landing on this aerodrome prohibited indefinitely.



Care to be taken in landing due to bad ground or other causes.



Caution, a landing is taking place by radio-electric guide.

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PHOTOGRAPHIC DATA

CALCULATOR FOR DETERMINING THE NUMBER OF EXPOSURES REQUIRED TO COVER A GIVEN AREA

The chart gives the number of exposures required to cover any known area at any required scale. The reading obtained will not be accurate unless the photographs can be taken at such a height and with a lens of such a focal length as to obtain the required scale without recourse to enlargement or reduction.

To find the number of exposures required, place a slip of paper along the scale on the left-hand side of the chart, so that the bottom corner of the paper is against the zero, and make a mark on the paper opposite the figure on the scale representing the length of the area. Carry out a similar procedure on the same slip of paper using the scale on the right-hand side of the chart representing the breadth of the area. Place the bottom edge of the paper on the bottom line of the chart so that the corner lies at the division representing the required scale. The number of exposures in each run and the number of runs required may then be read off on the radiating lines registering with the marks on the paper.

These numbers multiplied together give the total number of exposures required. When the marks lie between two lines the larger figure should be taken for the purpose of calculation.

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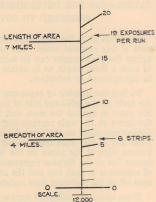
16

ARMY PHOTOGRAPHY

F - 24 CAMERA.

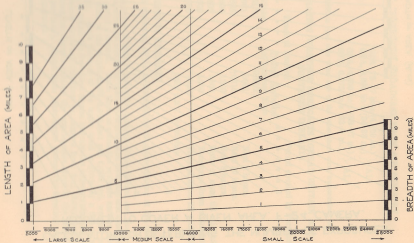
Example :—

Camera F.24.
 Length of area 7 miles.
 Breadth of area 4 miles.
 Scale required Medium scale
 (approx. 1/12000).



On carrying out the procedure detailed in the previous paragraphs, it will be found that there will be 19 exposures in each run and 6 runs will be required. Hence the total number of photographs will be 19×6 , or 114.

CALCULATOR FOR DETERMINING THE NUMBER OF EXPOSURES
 REQUIRED TO COVER A GIVEN AREA. F-8. CAMERA.



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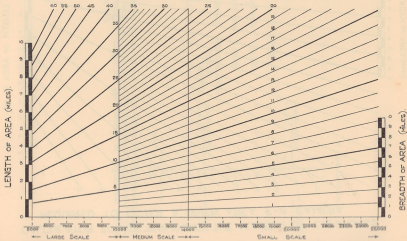
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CALCULATOR FOR DETERMINING THE NUMBER OF EXPOSURES
 REQUIRED TO COVER A GIVEN AREA. F-24 CAMERA.



FORECASTS BROADCAST FROM AIR MINISTRY

GFA 73.17 kc/s (4,100 m.)	}	A1.
GFA ₂ 8,600 kc/s (34.88 m.)		
GFA ₃ 4,300 kc/s (69.77 m.)	}	A1.
*GFN ₂ 6,975 kc/s (43.0 m.)		

*GFN₂ is used only when one of the other short wave transmissions fail.

AVIATION WEATHER FORECASTS (GREAT BRITAIN AND NORTHERN IRELAND)

	Times of Sending	Period covered by Forecast
	During operation of Summer Time	
In Winter	G.M.T.	
	0001	Next 8 hours.
	0825	Next 10 hours.
	1200	Next 8 hours.
	1500	Time of issue till midnight.
	1800	Tomorrow from midnight.
	1920	Time of issue till midnight.

†0825 G.M.T. on Sundays.

CONTENTS OF MESSAGES.

(a) A statement of the meteorological situation existing at the time of issue.

(b) A series of district forecasts, covering Great Britain and Northern Ireland, arranged according to the meteorological situation and applicable to the period indicated. Each forecast states the probable surface wind, upper wind at the height 2,000-3,000 feet and 6,000 feet, weather and visibility. Each forecast of the upper wind is given by a five figure group, in which the first three figures indicate the approximate direction from which the wind will blow (in degrees from true North) and the remaining two figures indicate the approximate speed of the wind (in miles per hour). Apart from these figure groups the forecasts are in plain language.

TIMES OF BROADCASTS FROM BOROUGH HILL
ON 245Kc's (1224m.)

Winter G.M.T.	Summer B.S.T.	
—	0745	(Not Sundays—not in winter) Navigational warnings. Forecast for next ten hours.
0715	0815	Meteorological warnings. Reports from Stations (Observation hour 0700 G.M.T.).
0815	0915	Meteorological warnings. Reports from Stations (Observation hour 0800 G.M.T.).
0845	0945	Navigational warnings. Forecast for next ten hours.
0915	1015	Meteorological warnings. Reports from Stations (Observation hour 0900 G.M.T.).
1015	1115	Meteorological warnings. Reports from Stations (Observation hour 1000 G.M.T.).
1115	1215	Meteorological warnings. Reports from Stations (Observation hour 1100 G.M.T.).
1145	1245	Navigational warnings. Forecast for next eight hours.
1215	1315	Meteorological warnings. Reports from Stations (Observation hour 1200 G.M.T.).
1315	1415	Meteorological warnings. Reports from Stations (Observation hour 1300 G.M.T.).
1415	1515	Meteorological warnings. Reports from Stations (Observation hour 1400 G.M.T.).
1445	1545	Navigational warnings. Forecast for period from time of issue until midnight.
1515	1615	Meteorological warnings. Reports from Stations (Observation hour 1500 G.M.T.).
1545	1645	Navigational warnings. General forecast for next day commencing at midnight.
1615	1715	Meteorological warnings. Reports from Stations (Observation hour 1600 G.M.T.).
1715	1815	Meteorological warnings. Reports from Stations (Observation hour 1700 G.M.T.).

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Winter G.M.T.	Summer E.S.T.	
1815	1915	Meteorological warnings. Reports from Stations (Observation hour 1800 G.M.T.).
1915	2015	Meteorological warnings. Reports from Stations (Observation hour 1900 G.M.T.).
1945	2045	Navigational warnings. Forecast for period from time of issue till midnight ; forecast for next day commencing at midnight.
2015	2115	Meteorological warnings. Reports from Stations (Observation hour 2000 G.M.T.).
2115	2215	Meteorological warnings. Reports from Stations (Observation hour 2100 G.M.T.).
2215	2315	Meteorological warnings. Reports from Stations (Observation hour 2200 G.M.T.).
2315	0015	Meteorological warnings. Reports from Stations (Observation hour 2300 G.M.T.).
0015	—	Meteorological warnings. Reports from Stations (Observation hour 2359 G.M.T.).

When hours of observation are given in G.M.T., add one hour to get Summer Time.

Summer is the period during which British Summer Time is in force.

The broadcast of station reports from 1915 to 0015 G.M.T., inclusive, will not take place on the nights of Saturday and Sunday.