

101 Sqn RAFvirtual – Commanding Officer Joos Bral

Air-to-Air Refuelling Procedures – Version 04.00.00 / 03 Sep 2007

If the Controller fails to hand off the Receiver in time and the 10 mile limit is infringed, the Tanker will take evasive action, assuming that the Receiver is hostile.

BZN0_ , this is _____, request Wet/Dry refuel	
<i>You will be vectored in by AWACS/Tanker to a Rendezvous point – 1000 Ft below tankers FL</i>	(Callsign) _____, this is BZN0_, due N/E/S/W of your location, heading ____ degrees at FL _____, Currently receiving. Report your Judy
Roger , turning to intercept (Callsign) _____	Confirm altimeter settings 1013.2 – 29.92 inch
Roger , confirm altimeter set to 1013.2 – 29.92 inches	Maintain FL ... (= tankers level – 1,000 Ft)

If the Tanker is busy refuelling other aircraft and is currently unavailable, the Tanker will order the receiver to approach but to stay back by saying “(Callsign) _____, **Standby**”. The Receiver should remain **10** miles astern.

BZN0_ , Judy (Callsign) _____	
<i>Receiver calls Judy when he has radar contact, further closing within visual range is receivers responsibility.</i>	Copy your “Judy”, continue approach, Report your Visual BZN0_
Visual , (Callsign) _____, current _____ % fuel on board	
<i>Radio call from the receiver confirming visual contact with the Tanker.</i>	(@10nm) Copy your Visual and fuel situation, continue approach, BZN0_
<i>Radio call from Tanker clearing receiver to Join Left, moving forward ahead of the tankers wingline for visual identification.</i>	(@5nm) _____, clear for Left Join, move forward ahead of the wingline for visual identification) BZN0_
Left Join , (Callsign) _____	
	_____, clear for Observation Position BZN0_
Observation Area , (Callsign) _____	

Once 1.0 NM inbound on Tanker: receiver will reduce his airspeed to Tankerspeed +20 Kts, unless otherwise directed. If receiver is coming in to fast Execute Overrun procedure will be called !

<i>Call from Tanker clearing receiver astern and move to stabilize in the Pre-Contact position on designated hose.</i>	(@0.2nm) (Callsign) _____, Clear Pre-Contact position (Right/Centre/Left) hose, confirm probe is out, report when stable, BZN0_
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If the Tanker feels that there is imminent danger to either or both aircraft, the breakaway/Overrun order will be given

Command requiring an emergency separation between Tanker and receiver

Break away (Callsign) _____

(Callsign) _____, BreakAway, BreakAway, BreakAway BZN0_ or Execute Overrun.

(@0.2NM / 0.3 NM) Pre-Contact , (Callsign) _____	Wing hoses are trailed by tanker.
<i>Tanker call clearing receiver, waiting in Pre-Contact Area on designated hose, to move into Contact Position</i>	Roger (Callsign) _____, Clear Contact, Report Contact and fuel valve open (Callsign) _____
Contact and fuel valve open (Callsign) _____	Roger, fuel valve open and passing fuel now, maintain position, BZN0_
Roger receiving fuel , (Callsign) _____	<i>BZN0_ informs receiver of fuel/time progress</i>
<i>Tanker instructs receiver to disconnect, receiver drops back to Astern position on designated hose.</i>	(Callsign) _____ Close fuel valve, transfer done, Disconnect, maintain Astern BZN0_
Fuel valve closed, Disconnect, go Astern (Callsign) _____	<i>These steps are each time to be verified</i>
<i>Tanker instructing receiver to go Echelon Right</i>	Roger (Callsign) _____, Clear Reform Area. BZN0_
Reform area , (Callsign) _____	
<i>Tanker instructs receiver to leave Tanker formation</i>	(Callsign) _____, is cleared to leave, maintain Tanker FL, throttle up to ..., once past Tanker climb to FL ... (or resume own nav) BZN0_
Cleared to leave, thank you good day (Callsign) _____	<i>Tanker gives leaving instructions</i>

CONNECTED TIME IN MINUTES & SECONDS FOR PASSING FUEL
REAL WORLD FUEL LOADS

Eurofighter EF2000 (Typhoon)											
MIN/SEC COMBAT						MIN/SEC FERRY					
FUEL %	AAR	WING	CENTER	KG	LBS	FUEL %	AAR	WING	CENTER	KG	LBS
100	0	0	0	4.000	8.816	100	0	0	0	10.500	23.142
90	400	0:24	0:12	3.600	7.934	90	1.050	1:03	0:32	9.450	20.828
80	800	0:48	0:24	3.200	7.053	80	2.100	2:06	1:03	8.400	18.514
70	1.200	1:12	0:36	2.800	6.171	70	3.150	3:09	1:35	7.350	16.199
60	1.600	1:36	0:48	2.400	5.290	60	4.200	4:12	2:06	6.300	13.885
50	2.000	2:00	1:00	2.000	4.408	50	5.250	5:15	2:38	5.250	11.571
40	2.400	2:24	1:12	1.600	3.526	40	6.300	6:18	3:09	4.200	9.257
30	2.800	2:48	1:24	1.200	2.645	30	7.350	7:21	3:41	3.150	6.943
20	3.200	3:12	1:36	800	1.763	20	8.400	8:24	4:12	2.100	4.628
10	3.600	3:36	1:48	400	882	10	9.450	9:27	4:44	1.050	2.314

TORNADO GR4 - F3											
MIN/SEC COMBAT						MIN/SEC FERRY					
FUEL %	AAR	WING	CENTER	KG	LBS	FUEL %	AAR	WING	CENTER	KG	LBS
100	0	0	0	7.100	15.648	100	0	0	0	14.100	31.076
90	710	0:43	0:21	6.390	14.084	90	1.410	1:25	0:42	12.690	27.969
80	1.420	1:25	0:43	5.680	12.519	80	2.820	2:49	1:25	11.280	24.861
70	2.130	2:08	1:04	4.970	10.954	70	4.230	4:14	2:07	9.870	21.753
60	2.840	2:50	1:25	4.260	9.389	60	5.640	5:38	2:49	8.460	18.646
50	3.550	3:33	1:47	3.550	7.824	50	7.050	7:23	3:32	7.050	15.538
40	4.260	4:16	2:08	2.840	6.259	40	8.460	8:28	4:14	5.640	12.431
30	4.970	4:58	2:28	2.130	4.695	30	9.870	9:52	4:56	4.230	9.323
20	5.680	5:41	2:50	1.420	3.130	20	11.280	11:17	5:38	2.820	6.215
10	6.390	6:23	3:12	710	1.565	10	12.690	12:41	5:21	1.410	3.108

Harrier GR7/7A - GR9/9A											
MIN/SEC COMBAT						MIN/SEC FERRY					
FUEL %	AAR	WING	CENTER	KG	LBS	FUEL %	AAR	WING	CENTER	KG	LBS
100	0	0	0	3.519	7.756	100	0	0	0	7.180	15.825
90	352	0:21	0:11	3.167	6.980	90	718	0:43	0:22	6.462	14.242
80	704	0:42	0:21	2.815	6.205	80	1.436	1:26	0:43	5.744	12.660
70	1.056	1:03	0:32	2.463	5.429	70	2.154	2:09	1:05	5.026	11.077
60	1.408	1:24	0:42	2.111	4.654	60	2.872	2:52	1:26	4.308	9.495
50	1.760	1:46	0:53	1.760	3.878	50	3.590	3:35	1:48	3.590	7.912
40	2.111	2:07	1:03	1.408	3.102	40	4.308	4:18	2:09	2.872	6.330
30	2.463	2:28	1:14	1.056	2.327	30	5.026	5:02	2:31	2.154	4.747
20	2.815	2:49	1:24	704	1.551	20	5.744	6:28	2:52	1.436	3.165
10	3.167	3:10	1:35	352	776	10	6.462	388	3:14	718	1.582

Combat means: max internal fuel load for this type.

Ferry means: max fuel load for ferry flights.

FUEL % means: amount of fuel that receivers have when coming for refuel.

Receiver: in FS9 press Shift Z twice to see the % fuel you have.

AAR means: max fuel that can be transfered on current fuel % for this type.

Wing/Center means: contact time needed for refuel in minutes & seconds.

GENERAL CONNECTED TIME IN SECONDS FOR PASSING FUEL

WING HOSES – 1,000 Kg/min

KG	POUNDS	SEC	POUNDS	KG	SEC
1.000	2.204	60	2.000	907	54
1.100	2.424	66	2.200	998	60
1.200	2.645	72	2.400	1.089	65
1.300	2.865	78	2.600	1.180	71
1.400	3.086	84	2.800	1.270	76
1.500	3.306	90	3.000	1.361	82
1.600	3.526	96	3.200	1.452	87
1.700	3.747	102	3.400	1.543	93
1.800	3.967	108	3.600	1.633	98
1.900	4.188	114	3.800	1.724	103
2.000	4.408	120	4.000	1.815	109
2.100	4.628	126	4.200	1.906	114
2.200	4.849	132	4.400	1.996	120
2.300	5.069	138	4.600	2.087	125
2.400	5.290	144	4.800	2.178	131
2.500	5.510	150	5.000	2.269	136
2.600	5.730	156	5.200	2.359	142
2.700	5.951	162	5.400	2.450	147
2.800	6.171	168	5.600	2.541	152
2.900	6.392	174	5.800	2.632	158
3.000	6.612	180	6.000	2.722	163
3.100	6.832	186	6.200	2.813	169
3.200	7.053	192	6.400	2.904	174
3.300	7.273	198	6.600	2.995	180
3.400	7.494	204	6.800	3.085	185
3.500	7.714	210	7.000	3.176	191
3.600	7.934	216	7.200	3.267	196
3.700	8.155	222	7.400	3.358	201
3.800	8.375	228	7.600	3.448	207
3.900	8.596	234	7.800	3.539	212
4.000	8.816	240	8.000	3.630	218
4.100	9.036	246	8.200	3.721	223
4.200	9.257	252	8.400	3.811	229
4.300	9.477	258	8.600	3.902	234
4.400	9.698	264	8.800	3.993	240
4.500	9.918	270	9.000	4.083	245
4.600	10.138	276	9.200	4.174	250
4.700	10.359	282	9.400	4.265	256
4.800	10.579	288	9.600	4.356	261
4.900	10.800	294	9.800	4.446	267
5.000	11.020	300	10.000	4.537	272
5.100	11.240	306	10.200	4.628	278
5.200	11.461	312	10.400	4.719	283
5.300	11.681	318	10.600	4.809	289
5.400	11.902	324	10.800	4.900	294
5.500	12.122	330	11.000	4.991	299
5.600	12.342	336	11.200	5.082	305
5.700	12.563	342	11.400	5.172	310
5.800	12.783	348	11.600	5.263	316
5.900	13.004	354	11.800	5.354	321
6.000	13.224	360	12.000	5.445	327

CENTER HOSE – 2,000 Kg/min

KG	POUNDS	SEC	POUNDS	KG	SEC
2.000	4.408	60	4.000	1.815	54
2.500	5.510	75	4.400	1.996	60
3.000	6.612	90	4.800	2.178	65
3.500	7.714	105	5.200	2.359	71
4.000	8.816	120	5.600	2.541	76
4.500	9.918	135	6.000	2.722	82
5.000	11.020	150	6.400	2.904	87
5.500	12.122	165	6.800	3.085	93
6.000	13.224	180	7.200	3.267	98
6.500	14.326	195	7.600	3.448	103
7.000	15.428	210	8.000	3.630	109
7.500	16.530	225	8.400	3.811	114
8.000	17.632	240	8.800	3.993	120
8.500	18.734	255	9.200	4.174	125
9.000	19.836	270	9.600	4.356	131
9.500	20.938	285	10.000	4.537	136
10.000	22.040	300	10.400	4.719	142
10.500	23.142	315	10.800	4.900	147
11.000	24.244	330	11.200	5.082	152
11.500	25.346	345	11.600	5.263	158
12.000	26.448	360	12.000	5.445	163
12.500	27.550	375	12.400	5.626	169
13.000	28.652	390	12.800	5.808	174
13.500	29.754	405	13.200	5.989	180
14.000	30.856	420	13.600	6.171	185
14.500	31.958	435	14.000	6.352	191
15.000	33.060	450	14.400	6.534	196
15.500	34.162	465	14.800	6.715	201
16.000	35.264	480	15.200	6.897	207
16.500	36.366	495	15.600	7.078	212
17.000	37.468	510	16.000	7.260	218
17.500	38.570	525	16.400	7.441	223
18.000	39.672	540	16.800	7.623	229
18.500	40.774	555	17.200	7.804	234
19.000	41.876	570	17.600	7.985	240
19.500	42.978	585	18.000	8.167	245
20.000	44.080	600	18.400	8.348	250
20.500	45.182	615	18.800	8.530	256
21.000	46.284	630	19.200	8.711	261
21.500	47.386	645	19.600	8.893	267
22.000	48.488	660	20.000	9.074	272
22.500	49.590	675	20.400	9.256	278
23.000	50.692	690	20.800	9.437	283
23.500	51.794	705	21.200	9.619	289
24.000	52.896	720	21.600	9.800	294
24.500	53.998	735	22.000	9.982	299
25.000	55.100	750	22.400	10.163	305
25.500	56.202	765	22.800	10.345	310
26.000	57.304	780	23.200	10.526	316
26.500	58.406	795	23.600	10.708	321
27.000	59.508	810	24.000	10.889	327