NATO STANDARD

AFSP-4

IN-FLIGHT VISUAL SIGNALS

Edition A Version 1

November 2013

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED FLIGHT SAFETY PUBLICATION

Published by the
NATO STANDARDIZATION AGENCY (NSA)

INTENTIONALLY BLANK

NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION AGENCY (NSA)

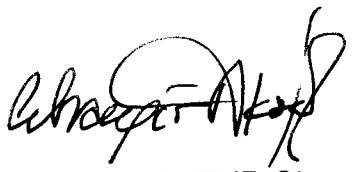
NATO LETTER OF PROMULGATION

7 November 2013

1. The enclosed Allied Flight Safety Publication AFSP-4, Edition A, Version 1, IN-FLIGHT VISUAL SIGNALS, which has been approved by the nations in the Military Committee Air Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 3379.

2 AFSP-4, Edition A, Version 1, is effective upon receipt.

4. This publication shall be handled in accordance with C-M(2002)60.



Dr. Cihangir Aksit, TUR Civ
Director, NATO Standardization Agency

INTENTIONALLY BLANK

RESERVED FOR NATIONAL LETTER OF PROMULGATION

INTENTIONALLY BLANK

RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

INTENTIONALLY BLANK

RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

INTENTIONALLY BLANK

TABLE OF CONTENTS

INTENTIONALLY BLANK

CHAPTER 1 INTRODUCTION

1.1. AIM

The aim of this standard is to establish in-flight visual signals and the essential procedures for using them.

1.2. AGREEMENT

Participating nations agree that in-flight visual signals and the procedures for using them are as detailed herein. Specialized signals or a complete list of the signals, which apply only to a particular aircraft or operational role are not included in this standard. They should continue to be included in the unit operating instructions and other specialized publications of the appropriate service. If individual nations develop additional in-flight visual signals or procedures to meet national requirements, these additional signals and procedures should be consistent with and should not lead to confusion with the signals and procedures detailed herein.

1.3. GENERAL

The in-flight visual signals and procedures detailed herein apply in all situations requiring the use of in-flight visual communication. The primary reason for these signals and procedures is to facilitate the passage of information between a radio inoperative aircraft and an intercepting aircraft or an Air Traffic Control unit. The worst-case scenario for their use is a radio inoperative aircraft that is not able to recover to visual meteorological conditions without assistance. Other uses include initial aircrew training and conversion, recurrent aircrew evaluation, exercises or operations when radio silence is in effect and situations when language difficulties are encountered.

1.4. MEANS TO ATTRACT ATTENTION WITH COMMS FAILURES

The pilot of an aircraft with inoperative radios and no other means of communication shall attempt to attract attention visually by:

a. rocking the aircraft wings;

b. by flashing on the landing light(s), taxi light(s) and/or other lights (except navigation lights) during darkness conditions; or

c. by any other means.

1.5. INTERCEPTING AIRCRAFT ACTIONS

1. When an aircraft with a suspected inoperative radio is about to be intercepted, the intercepting pilot shall attempt to establish radio contact on the aeronautical emergency frequencies (40.5, 121.5, 243.0 and 406 MHz). If radio contact is not established, the in-flight visual signals and procedures detailed herein shall be used to pass information.

2. The intercepting pilot should assume that the intercepted aircraft has one or more inoperative systems and should manoeuvre with caution. When intercepting a radio inoperative aircraft, the intercepting aircraft shall be established in position slightly forward and normally to the left of the intercepted aircraft. This established relative position shall be maintained until a change of position is signalled.

3. In order not to dazzle the pilot and to prevent disorientation or distraction in either daylight or darkness conditions, all anti-collision lights such as rotating beacons and strobe light should be switched off as soon as the initial intercept is assured. Navigation lights should be on.

1.6. AIRSPEED COORDINATION

En route and penetration airspeeds are left to the good judgement of aircrew considering such things as aircraft type and configuration, nature of the problem, fuel remaining, weather conditions, etc. In order to allow for the full range of possible aircraft from helicopter to fast jet, two speed ranges with basic approach airspeeds of 60/160 KIAS or 130/230 KIAS are used. The basic approach airspeed may be increased as required using the appropriate signals for daylight or darkness conditions. The intercepted pilot indicates what approach speed is required; the lead pilot is responsible for deciding which speed range is required by the following aircraft. A straight-in approach for landing is preferred, especially during instrument meteorological conditions and during darkness conditions. The intercepted pilot should land from the approach while the lead pilot executes an overshoot or a missed approach.

1.7. LANDING CLEARANCE REQUEST WITH COMMS FAILURE

1. The procedure described below is to be used by single-ship aircraft during visual meteorological conditions, day or night, for indicating landing intentions when radio contact cannot be established with an air traffic control unit and the visual signal for clearance to land has not been received. Caution should be exercised throughout the procedure to avoid other aircraft.

2. The aircraft is to approach alongside the desired runway in the landing direction at a height of 150 m (500 ft) AGL with all available lights flashing and slowly rocking the aircraft wings. Upon reaching the departure end of the runway, the

aircraft is to climb and turn downwind with the pilot checking the tower or the mobile control unit for light or pyrotechnic signals.

1.8. ACKNOWLEDGEMENT DURING DAYLIGHT CONDITIONS

1. During daylight conditions, visual signals shall be acknowledged using the general head signals at Annex A. Turning the head left and right means “Negative” or “I will not comply” and a nod of the head up and down means “Affirmative” or “I will comply”. The receiver should not repeat visual signals. Questions should not be posed by gestures or non-standard signals.

2. After the intercepting aircraft is established in position slightly forward and normally to the left of the intercepted aircraft, the intercepting pilot shall rock the aircraft wings to indicate:

   a. that he is ready to assist;

   b. that the intercepted aircraft should follow or fly formation with the intercepting aircraft; and

   c. that the intercepting aircraft is the lead aircraft.

3. To signal concurrence with these conditions, the intercepted pilot shall rock the aircraft wings. The intercepted pilot shall ensure that communication by visual signals is possible and then use the appropriate signals at Annex A to pass information.

1.9. ACKNOWLEDGEMENT DURING DARKNESS CONDITIONS

1. During conditions of darkness, performing interception and flying in formation, particularly in poor visual conditions, is hazardous. Further, daylight visual signals may be difficult to understand, leading to confusion or dazzling one of the pilots. Therefore only a minimum number of light signals shall be used between the intercepting and intercepted pilot and special care should be taken not to dazzle either pilot. This is particularly important if NVGs are being used during the manoeuvres.

2. After the intercepting aircraft is established in position slightly forward and normally to the left of the intercepted aircraft, the intercepted pilot shall send a series of intermittent white flashes with a flashlight, a utility light, the landing light(s) or the taxi light(s). The navigation lights should not be used for acknowledging signal.

3. This initial flashing white light response by the intercepted aircraft acknowledges the presence of the intercepting aircraft and signifies to the intercepting pilot that:

a. the intercepted pilot wishes to land as soon as possible;

b. the intercepting aircraft is the lead aircraft; and the intercepted aircraft will follow on the wing of the intercepting aircraft; and

c. the intercepting aircraft should initiate a penetration descent without delay.

4. Visual signals by the intercepting aircraft shall be acknowledged by the intercepted aircraft using one distinct white flash meaning “Affirmative” or “I will comply” and two distinct flashes meaning “Negative” or “I will not comply”. The intercepted aircraft should not repeat the visual signals received by the intercepting aircraft; and the intercepted aircraft should not ask questions using gestures or non-standard signals.

5. Following a short pause after the initial acknowledgement signal, the intercepted pilot shall indicate the desired approach airspeed by using the same type of light(s) used for the initial signal and send a steady light signal for approximately five seconds followed by distinct flash(es) for each desired increase of 10 KIAS above 60 KIAS for helicopters and 130 KIAS for other aircraft types.

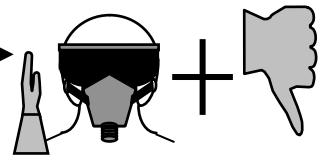
6. The warning signal to prepare for any configuration change by the lead aircraft (air brakes, flaps, undercarriage, etc.) shall be given to the intercepted aircraft by turning on and off the navigation lights. The signal to execute the configuration change will take place when the flashing light(s) remain(s) steady on. Abrupt changes of airspeed should be avoided. Of note, the intercepted aircraft may be required to change its configuration at any time without having received the preparatory signal.

7. The signal to change the lead shall be a steady light moved horizontally forward along the canopy rail.

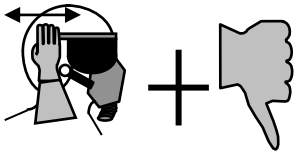
ANNEX A DESCRIPTION OF IN-FLIGHT VISUAL SIGNALS

A-1. RECEIVER FAILURE

Tap earphone with an open hand and then move hand forward and backward over the ear position followed by a thumbs down.

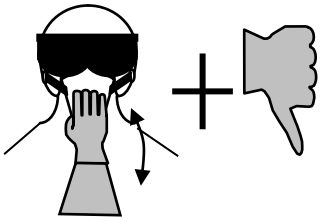


(SIDE VIEW)

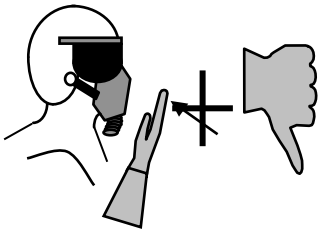


A-2. TRANSMITTER FAILURE

Tap microphone with an open hand and then move hand up and down in front of the face followed by a thumbs down.



(SIDE VIEW)



A-3. SYSTEMS FAILURES (HEFOE CODE)

To indicate the nature of the problem or the malfunctioning system, hold a closed hand at or above eye level and then extend vertically the appropriate number of fingers as follows:

PREPARATORY

H - Hydraulic: 1 finger (index)

E - Electrical: 2 fingers

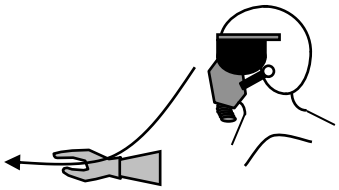
F – Fuel: 3 fingers

O – Oxygen: 4 fingers

E – Engine: 5 fingers (open hand)

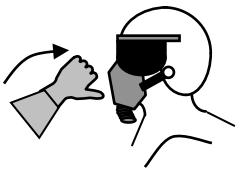
A-4. DESIRE TO LAND AS SOON AS POSSIBLE

Hold an open hand horizontally above the shoulder and then slide it forward and downward to shoulder level finishing with a movement to simulate rounding out for landing.



A-5. FUEL REMAINING

To signal intent to indicate the amount of fuel remaining or to query the amount of fuel remaining, hold a closed hand in front of the face with thumb extended to touch the oxygen mask and then rotate the hand slightly to simulate drinking from a cup. Thereafter, to indicate less than 10 minutes of fuel remaining, give the signal for "Desire to Land as soon as Possible". To indicate a greater amount of fuel remaining, hold a closed hand at or above eye level with the appropriate number of fingers extended vertically as follows:



10 - 19 minutes: 1 finger (index)

20 - 29 minutes: 2 fingers

30 - 39 minutes: 3 fingers

40 - 49 minutes: 4 fingers

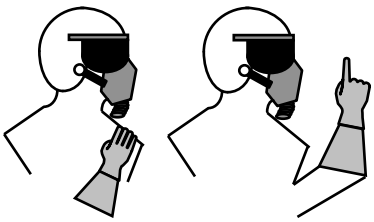
50 minutes or more: 5 fingers (open hand)

A-6. DESIRED APPROACH AIRSPEED

In order to allow for the full range of possible aircraft from helicopter to fast jet, two speed ranges have been incorporated into one series of hand signals. The lead pilot is responsible for deciding which speed range is intended by the following aircraft. As there is a speed difference of 70 KIAS between the two speed ranges, no confusion should exist between the two ranges.

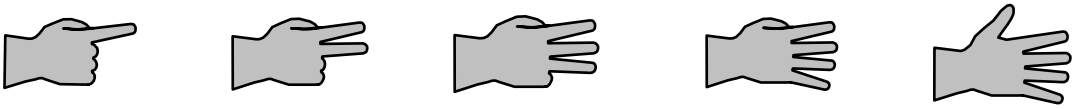
To signal a desired approach airspeed, tap a shoulder with an open hand, then hold a closed hand at or above eye level with one finger extended vertically or horizontally to indicate the desired approach speed as indicated below.

Example to the right shows an approach speed of 70 knots, if using the low speed range, and 140 knots, if using the high speed range.



Low Speed Range

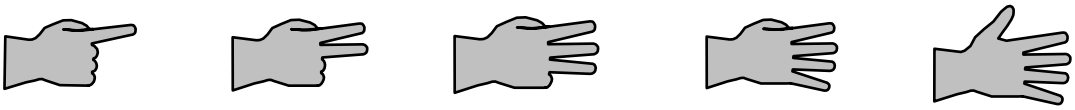
60 70 80 90 100 110



120 130 140 150 160

High Speed Range

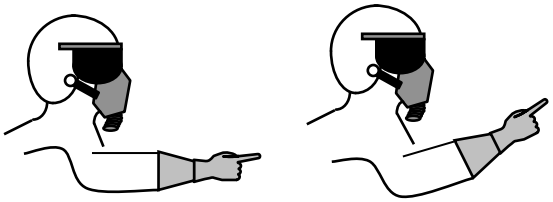
130 140 150 160 170 180



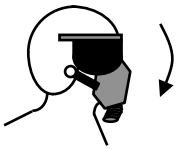
190 200 210 220 230

A-7. POSITION CHANGE

To signal intent to change position, point with an index finger at the pilot who is to change position, and then point at the new position to which this pilot is to move.

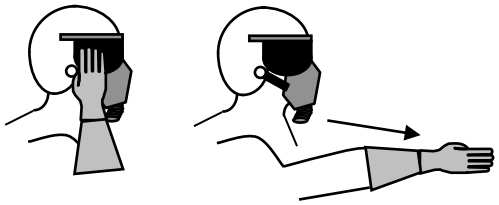


The pilot who is to change position acknowledges with a head nod and then manoeuvres to take the new position.



A-8. LEAD CHANGE

To signal intent to change the lead, point with an index finger at the pilot who is to take the lead, then hold an open hand vertically at eye level with fingers together, and then move it horizontally forward with rotation to finish with hand held horizontally and arm fully extended.



The pilot who is to take the lead acknowledges with a head nod and then manoeuvres to take the lead.

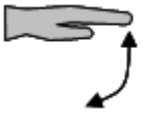
A-9. CONFIGURATION CHANGE PREPARATORY SIGNALS

A-9-A. AIR BRAKES RETRACTION/EXTENSION PREP SIGNAL

To signal intent to extend or retract the air brakes, hold an open hand horizontally at eye level and then move the fingers and thumb to simulate a biting motion.

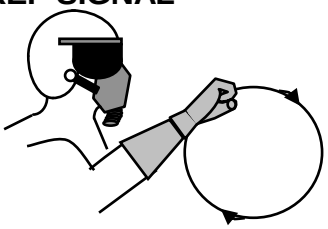
A-9-B. FLAPS RETRACTION/EXTENSION PREP SIGNAL

To signal intent to extend or retract the flaps, hold an open hand horizontally at eye level with fingers and thumb flat and then tilt the hand downward by bending the wrist.



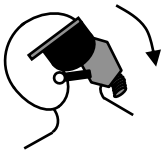
A-9-C. UNDERCARRIAGE RETRACTION/EXTENSION PREP SIGNAL

To signal intent to extend or retract the undercarriage, hold a closed hand forward of your head and rotate it in a circular motion in the vertical plane.



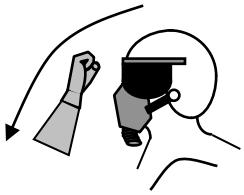
A-10. CONFIGURATION CHANGE EXECUTION SIGNAL

To signal execution of a configuration change following the required preparatory signal as described in A-9 above, tilt the head back and then make an accentuated nod.



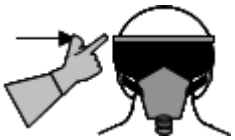
A-11. EJECTION

To signal intent to eject, hold closed hand(s) above the head and then move it (them) downward across the face to simulate pulling the ejection blind.



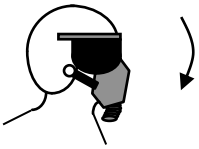
A-12. TERRORIST ATTACK

To signal a terrorist attack, hold pointed finger to your head with thumb sticking up to simulate a pointed gun to the head.



A-13. AFFIRMATIVE / I WILL COMPLY

Nod the head forward and back or a thumbs up.



A-14. NEGATIVE / I WILL NOT COMPLY

Turn the head left and right or give or a thumbs down.

INTENTIONALLY BLANK

AFSP-4 (A)(1)