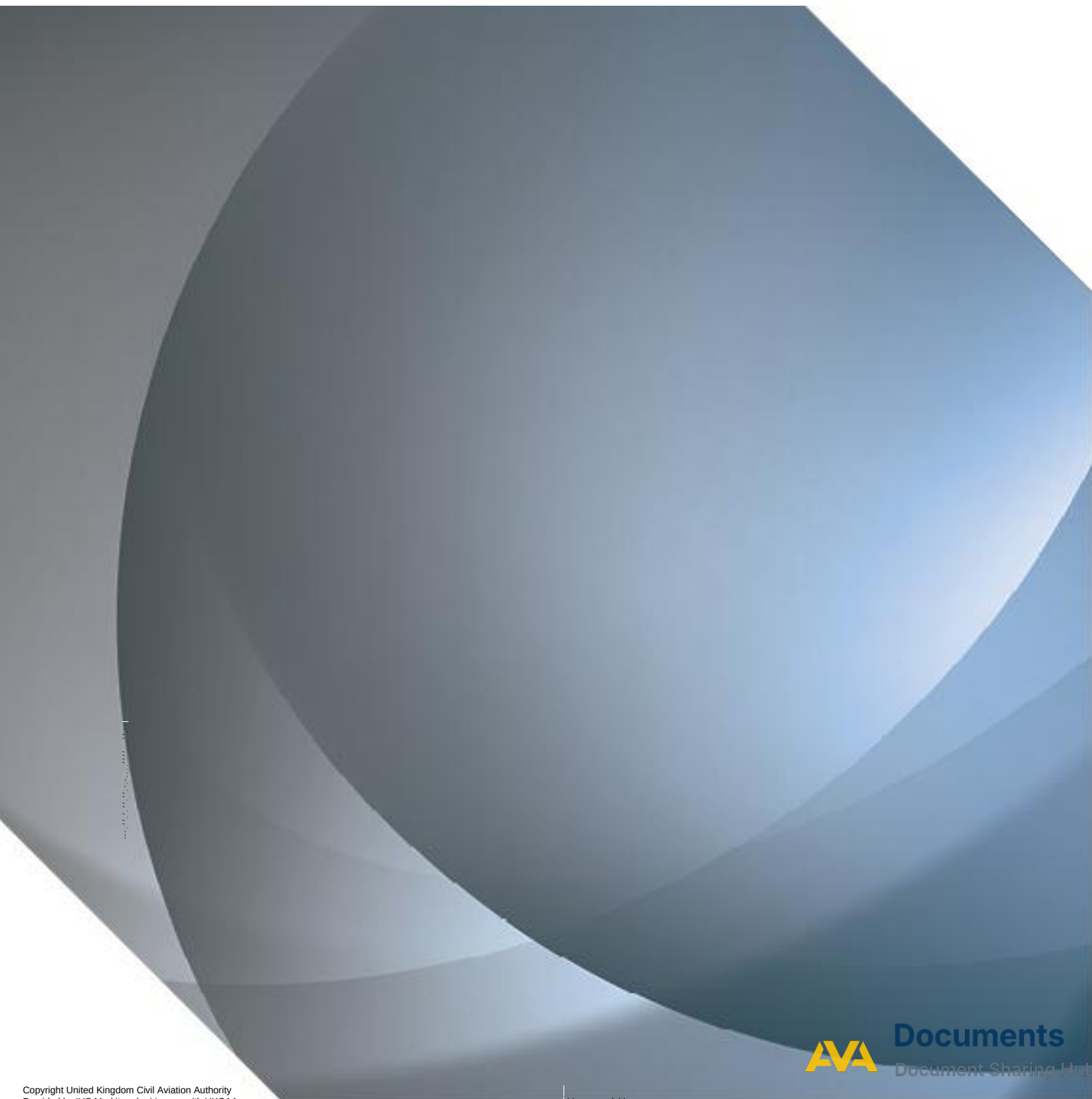




Operation of IFF/SSR interrogators in the UK: Planning principles and procedures

CAP 761



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Foreword

This document defines the agreed authorities, regulations, functions, procedures and principles that apply when considering the applications for Secondary Surveillance Interrogator approval in the United Kingdom. The National IFF/SSR Policy Board, set-up jointly by the Safety and Airspace Regulation Group (SARG) and the Ministry of Defence (MOD) on behalf of the Cabinet Office, sponsor this document. Any queries concerning this document should be addressed to the Secretariat, at the details provided in Annex C.

Abbreviations

ACAS	Assistant Chief of the Air Staff or Airborne Collision Avoidance System
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
ANO	Air Navigation Order
ATC	Air Traffic Control
ATS	Air Traffic Service
ATM	Air Traffic Management
ATSU	Air Traffic Service Unit
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CWS	Collision Warning System
DE&S	Defence Equipment & Support
DISC	Defence IFF/SSR Committee
DSM	Defence Spectrum Management
EASA	European Aviation Safety Agency
FIR	Flight Information Region
FRUIT	False Returns Unsynchronised in Time
Hz	Hertz
ICAO	International Civil Aviation Organisation
IFF	Identification Friend or Foe
ISR	Intelligence, Surveillance and Reconnaissance
JTEPS	Joint Tactical Exercise Planning Staff
MHz	Megahertz
MICA	Mode S Interrogator Code Allocation (Cell)
MIP	Mode Interlace Pattern

MOD	Ministry of Defence
Mode S	Mode Select
MOR	Mandatory Occurrence Report
NATO	North Atlantic Treaty Organisation
NISC	National IFF/SSR Committee
OFCOM	Office of Communications
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMU	Radar Measurement Unit
SAC	System Area Code
SARG	Safety and Airspace Regulation Group
SARPS	ICAO Standards and Recommended Practices
SIC	System Identifier Code
SIEM	SSR/IFF Environment Model
SSR	Secondary Surveillance Radar
STANAG	NATO Standardisation Agreement
T & D	Test and Development
ToRs	Terms of Reference
TRD	Test, Research and Development
UIR	Upper Airspace Information Region
UK SSC	UK Spectrum Strategy Committee

References

1. UK IAIP, Part 2 – En Route (ENR), 1-6-2.
2. ICAO Annex 10 – Aeronautical Communications, Vol IV.
3. Radar Surveillance in En-Route Airspace and Major Terminal Areas – Eurocontrol Standard Document, reference – SUR.ET1.1000-STD-01-01, Edition 1 dated March 1997.
4. NATO STANAG 4193 Parts I to VI.
5. Mode S IC Allocation Process (latest version), Eurocontrol.
6. European Mode S (EMS) Station Functional Specification
SUR/ModeS/SPE-01 Edition 3.11 dated 9 May 05 (or latest version).
7. AIC 37/2006 (Yellow 199) TCAS I Systems Approvals Policy.
8. Commission Regulation (EC) No 262/2009 for the coordinated allocation and use of Mode S interrogator codes for the single European Sky.
9. Commission Regulation (EU) 1207/2011 and amendment (EU) 1028/2014 for the performance and the interoperability for the single European Sky.

Revision history

Edition	Date
First published as CAA Doc714	1978
Second edition	1983
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Generic editorial updates

Update to Abbreviation and References

Editorial changes, including updates to organisation names and posts

Inclusion of contact point in cases of loss of detection

Chapter 1

General

Introduction

- 1.1 The increasing use of Identification Friend or Foe (IFF)/Secondary Surveillance Radar (SSR) systems for both civil and military applications has meant that there is a serious risk of mutual interference from the uncoordinated installation and operation of interrogators. If such installations are not carefully controlled, their operation could have potentially adverse implications for system integrity and hence flight safety.
- 1.2 To minimise the risk and to secure optimum efficiency for secondary surveillance in its air defence, air traffic radar service and airspace management roles, it is necessary to exercise control over all interrogator installations regardless of whether they are static or mobile and operated on land, sea or in the air for whatever function.

Aim

- 1.3 All equipment capable of transmitting in the 1030MHz band is required to hold an approval issued by the National IFF/SSR Committee (NISC) Secretariat. The aim of this document is to set out application procedures and the basic planning principles that will be applied before approval of any new interrogator installation or changes to an existing approved interrogator installation.

Priorities

- 1.4 In applying the planning principles of this document, where conflicting operating requirements cannot be reconciled to satisfy fully the needs of all users, priority will generally be assigned in the following order:

- 1) **Peacetime situation:**
 - a) Air Traffic Services (ATS) requirements.
 - b) Other civil and military requirements.
- 2) **Crisis, tension and war situations:**
 - a) Air Defence requirements.
 - b) ATS requirements.
 - c) Other requirements.

1.5 The environmental benefits of using Mode S interrogators for both civil and military ATS applications are fully recognised by the NISC. Consequently, under Schedule 5 of the Air Navigation Order (ANO) 2009 and European Commission regulation EC 262/2009 the carriage of Mode S transponders for the majority of aircraft operating in designated airspace is mandated¹. The environmental benefits are only realised fully with widespread Mode S equipage of ground interrogators and airborne transponders. Therefore, the NISC no longer issue approvals for ground-based (including maritime) or airborne² IFF/SSR Mode A/C interrogators.

Applicability

- 1.6 Applications for approval to operate apply to all civil and military, UK based or visiting, secondary surveillance interrogators³ transmitting within the UK Flight Information Region/Upper Airspace Information Region (UK FIR/UIR).
- 1.7 Transponders, including those capable of acquisition or extended squitter, do not require approval to operate providing they comply with the requirements of Annex 10 to the Convention on International Civil Aviation Volume IV, or STANAG 4193, as appropriate.

¹ For further information refer to AIP GEN 1-5-3 paragraph 1.3 'Carriage of SSR Transponders'.

² Airborne in this context refers to military ISR platforms used for surveillance in the UK FIR/UIR. Mindful of the RF footprint of IFF interrogator equipped combat aircraft, the NISC will review the Mode S requirements for these on a platform-by-platform basis.

³ Interrogator as defined in Section 3, paragraph 2.

- 1.8 Equipment capable of unsolicited transmissions on 1090MHz, excluding transponders as defined above, shall not be operated without informing the NISC.

Chapter 2

IFF/SSR management structure

Introduction

- 2.1 The purpose of this section is to describe the authority under which policy and approval decisions relating to the IFF/SSR frequency bands are made. This section will detail the individuals or agencies and their responsibilities within this structure. See diagram at paragraph 6.

National IFF/SSR policy board

- 2.2 The Cabinet Office sponsored National Frequency Planning Group has delegated authority for frequency assignments in the Band 960 - 1215MHz jointly to the Ministry of Defence (MOD) and the Safety and Airspace Regulation Group SARG. In respect of the 1030 and 1090MHz sub-bands (IFF/SSR), MOD and SARG have established a National IFF/SSR Policy Board to manage this delegated authority. The Policy Board reports to the Cabinet Office committee on spectrum strategy, the UK Spectrum Strategy Committee (UK SSC).
- 2.3 The Director SARG and the Assistant Chief of the Air Staff (ACAS MOD) jointly chair the National IFF/SSR Policy Board. The membership also consists of representatives from Defence Equipment & Support (DE&S), NATS and OFCOM. Terms of Reference for the Board are maintained by the NISC Secretariat.
- 2.4 The Policy Board does not generally meet unless there is a policy issue that cannot be resolved in the subordinate committee.

National IFF/SSR Committee

- 2.5 Executive authority for IFF/SSR matters is vested in the National IFF/SSR Committee (NISC), which is subordinate to the Policy Board. It meets at least twice a year to review policy and planning matters.
- 2.6 The Committee is chaired by the CAA's Manager Infrastructure and comprises representatives from NATS, CAA, DE&S, Defence Airspace and Air Traffic Management, Royal Navy (RN), Royal Air Force (RAF), MOD Defence Spectrum Management (DSM) and QinetiQ Ltd. The Army can send representatives if they see fit.
- 2.7 The NISC membership and ToRs are at Annex A.

NISC Secretariat

- 2.8 The NISC Secretariat is responsible for the day-to-day management of NISC policy. This work includes the assessment and processing of IFF/SSR applications for approval, technical studies and compliance monitoring.
- 2.9 The Infrastructure section, SARG staffs the Secretariat, with the Frequency Management Specialist post fulfilling the role of Secretary to the NISC. The contact details of the Secretariat are at Annex B.

Defence IFF/SSR Committee

- 2.10 The Defence IFF/SSR Committee (DISC) is the MOD body responsible for the co-ordination of military policy for the use of IFF systems in the IFF/SSR spectrum.
- 2.11 Although the DISC is responsible for the co-ordination of military IFF policy, it has no authority to approve the use of any systems in the IFF/SSR frequency bands.
- 2.12 The Chairman and Secretary of the DISC are both members of the NISC.