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UNITED STATES OF AMERICA
FEDERAL AVIATION AGENCY
Washington, D. C.

May 15, 1961

CIVIL AIR REGULATIONS DRAFT RELEASE NO. 61-10

SUBJECT: Coded Radar Beacon Transponder Requirement in Positive Air Traffic Control Areas and Jet Advisory Areas; Amendment of SR-424C and SR-444

The Bureau of Air Traffic Management has under consideration a proposal to amend the radar beacon requirement in positive air traffic control areas and jet advisory areas. The reasons therefor are set forth in the explanatory statement of the attached proposal which is being published in the Federal Register as a notice of proposed rule making.

The Agency desires that all persons who will be affected by the requirements of this proposal be fully informed as to its effect upon them and is therefore circulating copies in order to afford interested persons ample opportunity to submit comments as they may desire.

Because of the large number of comments which we anticipate receiving in response to this draft release, we will be unable to acknowledge receipt of each reply. However, you may be assured that all comments will be given careful consideration.

It should be noted that comments must be submitted in duplicate to the DOCKET SECTION of the Federal Aviation Agency, Room B-316, 1711 New York Avenue, N. W., Washington 25, D. C., prior to July 5, 1961.

D. D. Thomas

Director, Bureau of Air Traffic Management

FEDERAL AVIATION AGENCY
BUREAU OF AIR TRAFFIC MANAGEMENT

[14 CFR 60] May 15, 1961

[Reg. Docket No. 747; Draft Release 61-10]

Special Civil Air Regulation No. SR-424C
Special Civil Air Regulation No. SR-444

NOTICE OF PROPOSED RULE MAKING

Coded Radar Beacon Transponder Requirement in Positive Air Traffic Control Areas and Jet Advisory Areas

Pursuant to the authority delegated to me by the Administrator (14 CFR Part 405), notice is hereby given that the Federal Aviation Agency has under consideration a proposal to amend Special Civil Air Regulations Nos. SR-424C and SR-444 as hereinafter set forth.

Interested persons may participate in the making of the proposed rule by submitting such written data, views or arguments as they may desire. Communications should be submitted in duplicate to the Docket Section of the Federal Aviation Agency, Room B-316, 1711 New York Avenue, N.W., Washington 25, D.C. All communications received prior to July 5, 1961, will be considered by the Administrator before taking action upon the proposed rule. The proposals contained in this notice may be changed in the light of comments received. All comments submitted will be available for examination by interested persons in the Docket Section when the prescribed date for the return of comments has expired. Because of the large number of comments which we anticipate receiving in response to this draft release, we will be unable to acknowledge receipt of each reply.

The operating rules of both Special Civil Air Regulation No. SR-424C, in its application to positive control areas, and Special Civil Air Regulation No. SR-444, with respect to Visual Flight Rules (VFR) and VFR-on-top flights in radar jet advisory areas, permit the operation of aircraft equipped with an uncoded radar beacon transponder.

There are currently three types of radar beacon transponders in use. These are the Basic Mark X, the Mark X SIF (Selective Identification Feature) and the ATCRBS (Air Traffic Control Radar Beacon System). Basic Mark X is uncoded and, in normal operation, transmits a single pulse in response to ground interrogations on Mode 3. The other two transponders are coded and transmit up to nine pulses in each response. Each combination of pulses so transmitted is known as a "code train."

All three transponders are currently used in the air traffic control system. Civil Mode A, which is identical to military Mode 3, has been designated as the Air Traffic Control Mode. This proposal would amend SR-424C and SR-444 by requiring the use of coded beacon transponders operated to reply to Mode 3/A. Experience has revealed that the use of Basic Mark X transponders limits the provision of radar jet advisory service and positive control on an area basis. To accommodate Basic Mark X transponders in these programs, it is necessary for most ground equipment to present all "code trains," resulting in excessive radar scope clutter and thus limiting the use of the primary radar, as well as the radar beacon system.

Many facilities providing radar jet advisory service have decoding capability which could be employed to eliminate "code trains." This feature cannot be employed because of the requirement to provide service to aircraft equipped with Basic Mark X transponders. During the winter of 1961 there will be a temporary decrease in the number of decoder-equipped ground facilities. This decrease will result from the transfer of the radar jet advisory service function from decoder-equipped Air Defense Command radar facilities to air traffic control facilities which are programmed for, but not yet equipped with, radar beacon decoders. However, a substantial number of facilities will retain decoding capability. Following this period, the number of decoder-equipped facilities will increase. Even during the period when the number of ground decoder-equipped facilities is lowest, the elimination of the requirement to observe Basic Mark X transponder replies will permit improved service within radar jet advisory areas.

Another problem exists at facilities with ground decoding equipment having the capability to simultaneously display returns from both coded and uncoded transponders without displaying "code trains." Such equipment is utilized to provide radar service in positive control area. In order to present a Basic Mark X beacon return on the radar scope, the controller must use a special feature of his decoder. This action results in the display of all coded and uncoded transponder returns received by the ground equipment. This precludes the use of the selectivity capability of coded radar beacon equipment and clutters up the radar scope.

This proposal would permit adjustment of ground equipment to observe only coded radar beacon transponder responses, eliminate the undesirable display of "code trains" and permit a higher degree of selectivity in the identification and flight following of aircraft.

Should a valid requirement exist to operate aircraft not equipped with coded radar beacon transponders within a positive control area, authorization may be obtained as provided for in SR–424C. VFR flights and Instrument Flight Rules (IFR) flights cleared to maintain "VFR conditions" or "VFR conditions on top," which are not equipped with coded radar beacon transponders, may operate in radar jet advisory areas by obtaining the authorization provided for in SR–444. IFR flights assigned specific altitudes are not required to be equipped with radar beacon transponders to operate within radar jet advisory areas.

In the interest of brevity and clarity, paragraphs 3(a) of SR–444 and (1)(c)(2) of SR–424C would be shortened by deleting the words ". . . for the area in which flight is conducted."

In view of the foregoing, it is proposed to amend:

1. *Special Civil Air Regulation No. SR–424C* by changing the reference of subnote [1] to subnote [2], by adding a new subnote [1] and by amending paragraph (1)(c)(2) to read as follows:

(2) Be equipped with a coded radar beacon transponder which shall be operated to reply to Mode 3/A interrogation with any code specified by air traffic control.[1]

[1] Mode A is identical to military Mode 3. For purposes of brevity and clarity, it is referred to herein as Mode 3/A.

2. *Special Civil Air Regulation No. SR–444* by amending subnote [2] and by amending paragraphs 3(a)(i) and 3(a)(ii) to read as follows:

(a) *In radar jet advisory areas.*

(i) Aircraft equipped with a coded radar beacon transponder shall operate the transponder to reply to Mode 3/A interrogation with any code specified by air traffic control.[2]

(ii) Aircraft not equipped with a functioning coded radar beacon transponder shall obtain specific prior authorization from air traffic control, except that flights unable to obtain authorization because of radio failure may transit jet advisory areas by maintaining the appropriate VFR cruising flight level specified in § 60.32 of the Civil Air Regulations.

[2] Mode A is identical to military Mode 3. For purposes of brevity and clarity, it is referred to herein as Mode 3/A. Mode 3/A requirements and other detailed operational procedures for the radar beacon transponder are published in the Airman's Guide and are also depicted on Flight Information Publication—"En Route—High Altiture (U.S.)" and U.S. Coast and Geodetic Survey Radio Facility Chart—"High Altitude—En Route."

This amendment is proposed under the authority of Section 307 of the Federal Aviation Act of 1958 (72 Stat. 749; 49 U.S.C. 1348).

D. D. Thomas

Director, Bureau of Air Traffic Management

Issued in Washington, D.C., on May 15, 1961.